

# Filter Summary Report: TIA,some,parasitic,Z2,Z4,ZL

Generated by MacAnalog-Symbolix

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## Contents

<b>1</b>	<b>Examined <math>H(z)</math> for TIA some parasitic Z2 Z4 ZL:</b>	$\frac{Z_4 Z_L (Z_2 g_m r_o + Z_2 + r_o)}{Z_2 Z_4 g_m r_o + Z_2 Z_4 + 2 Z_2 Z_L g_m r_o + 2 Z_2 Z_L + Z_4 r_o + 2 Z_L r_o}$	<b>27</b>
<b>2</b>	<b>HP</b>		<b>27</b>
<b>3</b>	<b>BP</b>		<b>27</b>
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3.25 BP-25	$Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$	35
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3.27 BP-27	$Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, R_4, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$	35
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3.29 BP-29	$Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{1}{C_4 s}, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$	36
3.30 BP-30	$Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$	36
3.31 BP-31	$Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$	37
3.32 BP-32	$Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, R_L \right)$	37
3.33 BP-33	$Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, \frac{R_L}{C_L R_L s + 1} \right)$	37
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3.38 BP-38	$Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$	39
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3.40 BP-40	$Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, R_4, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$	40
3.41 BP-41	$Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, R_4, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$	40
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3.43 BP-43	$Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$	41
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3.50 BP-50	$Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, \frac{R_L}{C_L R_L s + 1} \right)$	43
3.51 BP-51	$Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$	43

3.52 BP-52	$Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$	44
3.53 BP-53	$Z(s) = \left( \infty, L_2 s + \frac{1}{C_2 s}, \infty, R_4, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$	44
3.54 BP-54	$Z(s) = \left( \infty, L_2 s + \frac{1}{C_2 s}, \infty, R_4, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$	44
3.55 BP-55	$Z(s) = \left( \infty, L_2 s + \frac{1}{C_2 s}, \infty, \frac{1}{C_4 s}, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$	45
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3.58 BP-58	$Z(s) = \left( \infty, L_2 s + \frac{1}{C_2 s}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, R_L \right)$	46
3.59 BP-59	$Z(s) = \left( \infty, L_2 s + \frac{1}{C_2 s}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, \frac{R_L}{C_L R_L s + 1} \right)$	46
3.60 BP-60	$Z(s) = \left( \infty, L_2 s + \frac{1}{C_2 s}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$	46
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3.66 BP-66	$Z(s) = \left( \infty, L_2 s + R_2 + \frac{1}{C_2 s}, \infty, R_4, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$	48
3.67 BP-67	$Z(s) = \left( \infty, L_2 s + R_2 + \frac{1}{C_2 s}, \infty, R_4, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$	49
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3.69 BP-69	$Z(s) = \left( \infty, L_2 s + R_2 + \frac{1}{C_2 s}, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$	49
3.70 BP-70	$Z(s) = \left( \infty, L_2 s + R_2 + \frac{1}{C_2 s}, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$	50
3.71 BP-71	$Z(s) = \left( \infty, L_2 s + R_2 + \frac{1}{C_2 s}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, R_L \right)$	50
3.72 BP-72	$Z(s) = \left( \infty, L_2 s + R_2 + \frac{1}{C_2 s}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, \frac{R_L}{C_L R_L s + 1} \right)$	50
3.73 BP-73	$Z(s) = \left( \infty, L_2 s + R_2 + \frac{1}{C_2 s}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$	51
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3.75 BP-75	$Z(s) = \left( \infty, L_2 s + R_2 + \frac{1}{C_2 s}, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, \frac{1}{C_L s} \right)$	51
3.76 BP-76	$Z(s) = \left( \infty, L_2 s + R_2 + \frac{1}{C_2 s}, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, \frac{R_L}{C_L R_L s + 1} \right)$	52
3.77 BP-77	$Z(s) = \left( \infty, L_2 s + R_2 + \frac{1}{C_2 s}, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$	52
3.78 BP-78	$Z(s) = \left( \infty, L_2 s + R_2 + \frac{1}{C_2 s}, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$	52
3.79 BP-79	$Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, R_4, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$	53
3.80 BP-80	$Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, R_4, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$	53
3.81 BP-81	$Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{1}{C_4 s}, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$	53

3.82	BP-82	$Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$	54
3.83	BP-83	$Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$	54
3.84	BP-84	$Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, R_L \right)$	54
3.85	BP-85	$Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, \frac{R_L}{C_L R_L s + 1} \right)$	55
3.86	BP-86	$Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$	55
3.87	BP-87	$Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, R_L \right)$	55
3.88	BP-88	$Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, \frac{1}{C_L s} \right)$	56
3.89	BP-89	$Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, \frac{R_L}{C_L R_L s + 1} \right)$	56
3.90	BP-90	$Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$	56
3.91	BP-91	$Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$	57
3.92	BP-92	$Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, R_4, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$	57
3.93	BP-93	$Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, R_4, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$	57
3.94	BP-94	$Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{1}{C_4 s}, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$	58
3.95	BP-95	$Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$	58
3.96	BP-96	$Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$	58
3.97	BP-97	$Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, R_L \right)$	59
3.98	BP-98	$Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, \frac{R_L}{C_L R_L s + 1} \right)$	59
3.99	BP-99	$Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$	59
3.100	BP-100	$Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, R_L \right)$	60
3.101	BP-101	$Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, \frac{1}{C_L s} \right)$	60
3.102	BP-102	$Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, \frac{R_L}{C_L R_L s + 1} \right)$	60
3.103	BP-103	$Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$	61
3.104	BP-104	$Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$	61
<b>4</b>	<b>LP</b>		<b>61</b>
<b>5</b>	<b>BS</b>		<b>61</b>
5.1	BS-1	$Z(s) = \left( \infty, R_2, \infty, R_4, \infty, L_L s + \frac{1}{C_L s} \right)$	61
5.2	BS-2	$Z(s) = \left( \infty, R_2, \infty, R_4, \infty, \frac{R_L \left( L_L s + \frac{1}{C_L s} \right)}{L_L s + R_L + \frac{1}{C_L s}} \right)$	62
5.3	BS-3	$Z(s) = \left( \infty, R_2, \infty, L_4 s + \frac{1}{C_4 s}, \infty, R_L \right)$	62
5.4	BS-4	$Z(s) = \left( \infty, R_2, \infty, \frac{R_4 \left( L_4 s + \frac{1}{C_4 s} \right)}{L_4 s + R_4 + \frac{1}{C_4 s}}, \infty, R_L \right)$	62

5.5	BS-5	$Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, R_4, \infty, L_L s + \frac{1}{C_L s} \right)$	63
5.6	BS-6	$Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, R_4, \infty, \frac{R_L \left( L_L s + \frac{1}{C_L s} \right)}{L_L s + R_L + \frac{1}{C_L s}} \right)$	63
5.7	BS-7	$Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, L_4 s + \frac{1}{C_4 s}, \infty, R_L \right)$	63
5.8	BS-8	$Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{R_4 \left( L_4 s + \frac{1}{C_4 s} \right)}{L_4 s + R_4 + \frac{1}{C_4 s}}, \infty, R_L \right)$	64
5.9	BS-9	$Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, R_4, \infty, L_L s + \frac{1}{C_L s} \right)$	64
5.10	BS-10	$Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, R_4, \infty, \frac{R_L \left( L_L s + \frac{1}{C_L s} \right)}{L_L s + R_L + \frac{1}{C_L s}} \right)$	64
5.11	BS-11	$Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, L_4 s + \frac{1}{C_4 s}, \infty, R_L \right)$	65
5.12	BS-12	$Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{R_4 \left( L_4 s + \frac{1}{C_4 s} \right)}{L_4 s + R_4 + \frac{1}{C_4 s}}, \infty, R_L \right)$	65
5.13	BS-13	$Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, R_4, \infty, L_L s + \frac{1}{C_L s} \right)$	65
5.14	BS-14	$Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, R_4, \infty, \frac{R_L \left( L_L s + \frac{1}{C_L s} \right)}{L_L s + R_L + \frac{1}{C_L s}} \right)$	66
5.15	BS-15	$Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, L_4 s + \frac{1}{C_4 s}, \infty, R_L \right)$	66
5.16	BS-16	$Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, \frac{R_4 \left( L_4 s + \frac{1}{C_4 s} \right)}{L_4 s + R_4 + \frac{1}{C_4 s}}, \infty, R_L \right)$	66
5.17	BS-17	$Z(s) = \left( \infty, L_2 s + \frac{1}{C_2 s}, \infty, R_4, \infty, L_L s + \frac{1}{C_L s} \right)$	67
5.18	BS-18	$Z(s) = \left( \infty, L_2 s + \frac{1}{C_2 s}, \infty, R_4, \infty, \frac{R_L \left( L_L s + \frac{1}{C_L s} \right)}{L_L s + R_L + \frac{1}{C_L s}} \right)$	67
5.19	BS-19	$Z(s) = \left( \infty, L_2 s + \frac{1}{C_2 s}, \infty, L_4 s + \frac{1}{C_4 s}, \infty, R_L \right)$	67
5.20	BS-20	$Z(s) = \left( \infty, L_2 s + \frac{1}{C_2 s}, \infty, \frac{R_4 \left( L_4 s + \frac{1}{C_4 s} \right)}{L_4 s + R_4 + \frac{1}{C_4 s}}, \infty, R_L \right)$	68
5.21	BS-21	$Z(s) = \left( \infty, L_2 s + R_2 + \frac{1}{C_2 s}, \infty, R_4, \infty, L_L s + \frac{1}{C_L s} \right)$	68
5.22	BS-22	$Z(s) = \left( \infty, L_2 s + R_2 + \frac{1}{C_2 s}, \infty, R_4, \infty, \frac{R_L \left( L_L s + \frac{1}{C_L s} \right)}{L_L s + R_L + \frac{1}{C_L s}} \right)$	68
5.23	BS-23	$Z(s) = \left( \infty, L_2 s + R_2 + \frac{1}{C_2 s}, \infty, L_4 s + \frac{1}{C_4 s}, \infty, R_L \right)$	69
5.24	BS-24	$Z(s) = \left( \infty, L_2 s + R_2 + \frac{1}{C_2 s}, \infty, \frac{R_4 \left( L_4 s + \frac{1}{C_4 s} \right)}{L_4 s + R_4 + \frac{1}{C_4 s}}, \infty, R_L \right)$	69
5.25	BS-25	$Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, R_4, \infty, L_L s + \frac{1}{C_L s} \right)$	69
5.26	BS-26	$Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, R_4, \infty, \frac{R_L \left( L_L s + \frac{1}{C_L s} \right)}{L_L s + R_L + \frac{1}{C_L s}} \right)$	70
5.27	BS-27	$Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, L_4 s + \frac{1}{C_4 s}, \infty, R_L \right)$	70
5.28	BS-28	$Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{R_4 \left( L_4 s + \frac{1}{C_4 s} \right)}{L_4 s + R_4 + \frac{1}{C_4 s}}, \infty, R_L \right)$	70
5.29	BS-29	$Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, R_4, \infty, L_L s + \frac{1}{C_L s} \right)$	71
5.30	BS-30	$Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, R_4, \infty, \frac{R_L \left( L_L s + \frac{1}{C_L s} \right)}{L_L s + R_L + \frac{1}{C_L s}} \right)$	71
5.31	BS-31	$Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, L_4 s + \frac{1}{C_4 s}, \infty, R_L \right)$	71
5.32	BS-32	$Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{R_4 \left( L_4 s + \frac{1}{C_4 s} \right)}{L_4 s + R_4 + \frac{1}{C_4 s}}, \infty, R_L \right)$	72
<b>6</b>	<b>GE</b>		<b>72</b>
6.1	GE-1	$Z(s) = \left( \infty, R_2, \infty, R_4, \infty, L_L s + R_L + \frac{1}{C_L s} \right)$	72
6.2	GE-2	$Z(s) = \left( \infty, R_2, \infty, R_4, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$	72

6.3	GE-3 $Z(s) = \left( \infty, R_2, \infty, L_4s + R_4 + \frac{1}{C_4s}, \infty, R_L \right)$	73
6.4	GE-4 $Z(s) = \left( \infty, R_2, \infty, \frac{L_4s}{C_4L_4s^2+1} + R_4, \infty, R_L \right)$	73
6.5	GE-5 $Z(s) = \left( \infty, \frac{1}{C_2s}, \infty, R_4, \infty, L_Ls + R_L + \frac{1}{C_Ls} \right)$	73
6.6	GE-6 $Z(s) = \left( \infty, \frac{1}{C_2s}, \infty, R_4, \infty, \frac{L_Ls}{C_LL_Ls^2+1} + R_L \right)$	74
6.7	GE-7 $Z(s) = \left( \infty, \frac{1}{C_2s}, \infty, L_4s + R_4 + \frac{1}{C_4s}, \infty, R_L \right)$	74
6.8	GE-8 $Z(s) = \left( \infty, \frac{1}{C_2s}, \infty, \frac{L_4s}{C_4L_4s^2+1} + R_4, \infty, R_L \right)$	74
6.9	GE-9 $Z(s) = \left( \infty, \frac{R_2}{C_2R_2s+1}, \infty, R_4, \infty, L_Ls + R_L + \frac{1}{C_Ls} \right)$	75
6.10	GE-10 $Z(s) = \left( \infty, \frac{R_2}{C_2R_2s+1}, \infty, R_4, \infty, \frac{L_Ls}{C_LL_Ls^2+1} + R_L \right)$	75
6.11	GE-11 $Z(s) = \left( \infty, \frac{R_2}{C_2R_2s+1}, \infty, L_4s + R_4 + \frac{1}{C_4s}, \infty, R_L \right)$	75
6.12	GE-12 $Z(s) = \left( \infty, \frac{R_2}{C_2R_2s+1}, \infty, \frac{L_4s}{C_4L_4s^2+1} + R_4, \infty, R_L \right)$	76
6.13	GE-13 $Z(s) = \left( \infty, R_2 + \frac{1}{C_2s}, \infty, R_4, \infty, L_Ls + R_L + \frac{1}{C_Ls} \right)$	76
6.14	GE-14 $Z(s) = \left( \infty, R_2 + \frac{1}{C_2s}, \infty, R_4, \infty, \frac{L_Ls}{C_LL_Ls^2+1} + R_L \right)$	76
6.15	GE-15 $Z(s) = \left( \infty, R_2 + \frac{1}{C_2s}, \infty, L_4s + R_4 + \frac{1}{C_4s}, \infty, R_L \right)$	77
6.16	GE-16 $Z(s) = \left( \infty, R_2 + \frac{1}{C_2s}, \infty, \frac{L_4s}{C_4L_4s^2+1} + R_4, \infty, R_L \right)$	77
6.17	GE-17 $Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, R_4, \infty, L_Ls + R_L + \frac{1}{C_Ls} \right)$	77
6.18	GE-18 $Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, R_4, \infty, \frac{L_Ls}{C_LL_Ls^2+1} + R_L \right)$	78
6.19	GE-19 $Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, L_4s + R_4 + \frac{1}{C_4s}, \infty, R_L \right)$	78
6.20	GE-20 $Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{L_4s}{C_4L_4s^2+1} + R_4, \infty, R_L \right)$	78
6.21	GE-21 $Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, R_4, \infty, L_Ls + R_L + \frac{1}{C_Ls} \right)$	79
6.22	GE-22 $Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, R_4, \infty, \frac{L_Ls}{C_LL_Ls^2+1} + R_L \right)$	79
6.23	GE-23 $Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, L_4s + R_4 + \frac{1}{C_4s}, \infty, R_L \right)$	79
6.24	GE-24 $Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{L_4s}{C_4L_4s^2+1} + R_4, \infty, R_L \right)$	80
6.25	GE-25 $Z(s) = \left( \infty, \frac{L_2s}{C_2L_2s^2+1} + R_2, \infty, R_4, \infty, L_Ls + R_L + \frac{1}{C_Ls} \right)$	80
6.26	GE-26 $Z(s) = \left( \infty, \frac{L_2s}{C_2L_2s^2+1} + R_2, \infty, R_4, \infty, \frac{L_Ls}{C_LL_Ls^2+1} + R_L \right)$	80
6.27	GE-27 $Z(s) = \left( \infty, \frac{L_2s}{C_2L_2s^2+1} + R_2, \infty, L_4s + R_4 + \frac{1}{C_4s}, \infty, R_L \right)$	81
6.28	GE-28 $Z(s) = \left( \infty, \frac{L_2s}{C_2L_2s^2+1} + R_2, \infty, \frac{L_4s}{C_4L_4s^2+1} + R_4, \infty, R_L \right)$	81
6.29	GE-29 $Z(s) = \left( \infty, \frac{R_2(L_2s + \frac{1}{C_2s})}{L_2s + R_2 + \frac{1}{C_2s}}, \infty, R_4, \infty, L_Ls + R_L + \frac{1}{C_Ls} \right)$	81
6.30	GE-30 $Z(s) = \left( \infty, \frac{R_2(L_2s + \frac{1}{C_2s})}{L_2s + R_2 + \frac{1}{C_2s}}, \infty, R_4, \infty, \frac{L_Ls}{C_LL_Ls^2+1} + R_L \right)$	82
6.31	GE-31 $Z(s) = \left( \infty, \frac{R_2(L_2s + \frac{1}{C_2s})}{L_2s + R_2 + \frac{1}{C_2s}}, \infty, L_4s + R_4 + \frac{1}{C_4s}, \infty, R_L \right)$	82
6.32	GE-32 $Z(s) = \left( \infty, \frac{R_2(L_2s + \frac{1}{C_2s})}{L_2s + R_2 + \frac{1}{C_2s}}, \infty, \frac{L_4s}{C_4L_4s^2+1} + R_4, \infty, R_L \right)$	83
<b>7</b>	<b>AP</b>	<b>83</b>
<b>8</b>	<b>INVALID-NUMER</b>	<b>83</b>
8.1	INVALID-NUMER-1 $Z(s) = \left( \infty, R_2, \infty, \frac{R_4}{C_4R_4s+1}, \infty, R_L + \frac{1}{C_Ls} \right)$	83
8.2	INVALID-NUMER-2 $Z(s) = \left( \infty, R_2, \infty, R_4 + \frac{1}{C_4s}, \infty, \frac{R_L}{C_LR_Ls+1} \right)$	83
8.3	INVALID-NUMER-3 $Z(s) = \left( \infty, \frac{1}{C_2s}, \infty, \frac{R_4}{C_4R_4s+1}, \infty, R_L + \frac{1}{C_Ls} \right)$	84

8.4	INVALID-NUMER-4	$Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, R_4 + \frac{1}{C_4 s}, \infty, \frac{R_L}{C_L R_L s + 1} \right)$	84
8.5	INVALID-NUMER-5	$Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, R_L + \frac{1}{C_L s} \right)$	84
8.6	INVALID-NUMER-6	$Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, R_4 + \frac{1}{C_4 s}, \infty, \frac{R_L}{C_L R_L s + 1} \right)$	85
8.7	INVALID-NUMER-7	$Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, R_L + \frac{1}{C_L s} \right)$	85
8.8	INVALID-NUMER-8	$Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, R_4 + \frac{1}{C_4 s}, \infty, \frac{R_L}{C_L R_L s + 1} \right)$	85
8.9	INVALID-NUMER-9	$Z(s) = \left( \infty, L_2 s + \frac{1}{C_2 s}, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, R_L + \frac{1}{C_L s} \right)$	86
8.10	INVALID-NUMER-10	$Z(s) = \left( \infty, L_2 s + \frac{1}{C_2 s}, \infty, R_4 + \frac{1}{C_4 s}, \infty, \frac{R_L}{C_L R_L s + 1} \right)$	86
8.11	INVALID-NUMER-11	$Z(s) = \left( \infty, L_2 s + R_2 + \frac{1}{C_2 s}, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, R_L + \frac{1}{C_L s} \right)$	86
8.12	INVALID-NUMER-12	$Z(s) = \left( \infty, L_2 s + R_2 + \frac{1}{C_2 s}, \infty, R_4 + \frac{1}{C_4 s}, \infty, \frac{R_L}{C_L R_L s + 1} \right)$	87
8.13	INVALID-NUMER-13	$Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, R_L + \frac{1}{C_L s} \right)$	87
8.14	INVALID-NUMER-14	$Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, R_4 + \frac{1}{C_4 s}, \infty, \frac{R_L}{C_L R_L s + 1} \right)$	87
8.15	INVALID-NUMER-15	$Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, R_L + \frac{1}{C_L s} \right)$	88
8.16	INVALID-NUMER-16	$Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, R_4 + \frac{1}{C_4 s}, \infty, \frac{R_L}{C_L R_L s + 1} \right)$	88

## 9 INVALID-WZ 88

## 10 INVALID-ORDER 88

10.1	INVALID-ORDER-1	$Z(s) = (\infty, R_2, \infty, R_4, \infty, R_L)$	88
10.2	INVALID-ORDER-2	$Z(s) = \left( \infty, R_2, \infty, R_4, \infty, \frac{1}{C_L s} \right)$	88
10.3	INVALID-ORDER-3	$Z(s) = \left( \infty, R_2, \infty, R_4, \infty, \frac{R_L}{C_L R_L s + 1} \right)$	89
10.4	INVALID-ORDER-4	$Z(s) = \left( \infty, R_2, \infty, R_4, \infty, R_L + \frac{1}{C_L s} \right)$	89
10.5	INVALID-ORDER-5	$Z(s) = \left( \infty, R_2, \infty, \frac{1}{C_4 s}, \infty, R_L \right)$	89
10.6	INVALID-ORDER-6	$Z(s) = \left( \infty, R_2, \infty, \frac{1}{C_4 s}, \infty, \frac{1}{C_L s} \right)$	89
10.7	INVALID-ORDER-7	$Z(s) = \left( \infty, R_2, \infty, \frac{1}{C_4 s}, \infty, \frac{R_L}{C_L R_L s + 1} \right)$	89
10.8	INVALID-ORDER-8	$Z(s) = \left( \infty, R_2, \infty, \frac{1}{C_4 s}, \infty, R_L + \frac{1}{C_L s} \right)$	89
10.9	INVALID-ORDER-9	$Z(s) = \left( \infty, R_2, \infty, \frac{1}{C_4 s}, \infty, L_L s + \frac{1}{C_L s} \right)$	89
10.10	INVALID-ORDER-10	$Z(s) = \left( \infty, R_2, \infty, \frac{1}{C_4 s}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$	89
10.11	INVALID-ORDER-11	$Z(s) = \left( \infty, R_2, \infty, \frac{1}{C_4 s}, \infty, L_L s + R_L + \frac{1}{C_L s} \right)$	89
10.12	INVALID-ORDER-12	$Z(s) = \left( \infty, R_2, \infty, \frac{1}{C_4 s}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$	90
10.13	INVALID-ORDER-13	$Z(s) = \left( \infty, R_2, \infty, \frac{1}{C_4 s}, \infty, \frac{R_L \left( L_L s + \frac{1}{C_L s} \right)}{L_L s + R_L + \frac{1}{C_L s}} \right)$	90
10.14	INVALID-ORDER-14	$Z(s) = \left( \infty, R_2, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, R_L \right)$	90
10.15	INVALID-ORDER-15	$Z(s) = \left( \infty, R_2, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, \frac{1}{C_L s} \right)$	90
10.16	INVALID-ORDER-16	$Z(s) = \left( \infty, R_2, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, \frac{R_L}{C_L R_L s + 1} \right)$	90
10.17	INVALID-ORDER-17	$Z(s) = \left( \infty, R_2, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, L_L s + \frac{1}{C_L s} \right)$	90
10.18	INVALID-ORDER-18	$Z(s) = \left( \infty, R_2, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, L_L s + R_L + \frac{1}{C_L s} \right)$	90
10.19	INVALID-ORDER-19	$Z(s) = \left( \infty, R_2, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$	90
10.20	INVALID-ORDER-20	$Z(s) = \left( \infty, R_2, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, \frac{R_L \left( L_L s + \frac{1}{C_L s} \right)}{L_L s + R_L + \frac{1}{C_L s}} \right)$	90

10.21INVALID-ORDER-21	$Z(s) = \left( \infty, R_2, \infty, R_4 + \frac{1}{C_4 s}, \infty, R_L \right)$	91
10.22INVALID-ORDER-22	$Z(s) = \left( \infty, R_2, \infty, R_4 + \frac{1}{C_4 s}, \infty, \frac{1}{C_L s} \right)$	91
10.23INVALID-ORDER-23	$Z(s) = \left( \infty, R_2, \infty, R_4 + \frac{1}{C_4 s}, \infty, R_L + \frac{1}{C_L s} \right)$	91
10.24INVALID-ORDER-24	$Z(s) = \left( \infty, R_2, \infty, R_4 + \frac{1}{C_4 s}, \infty, L_L s + \frac{1}{C_L s} \right)$	91
10.25INVALID-ORDER-25	$Z(s) = \left( \infty, R_2, \infty, R_4 + \frac{1}{C_4 s}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$	91
10.26INVALID-ORDER-26	$Z(s) = \left( \infty, R_2, \infty, R_4 + \frac{1}{C_4 s}, \infty, L_L s + R_L + \frac{1}{C_L s} \right)$	91
10.27INVALID-ORDER-27	$Z(s) = \left( \infty, R_2, \infty, R_4 + \frac{1}{C_4 s}, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$	91
10.28INVALID-ORDER-28	$Z(s) = \left( \infty, R_2, \infty, R_4 + \frac{1}{C_4 s}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$	91
10.29INVALID-ORDER-29	$Z(s) = \left( \infty, R_2, \infty, R_4 + \frac{1}{C_4 s}, \infty, \frac{R_L \left( L_L s + \frac{1}{C_L s} \right)}{L_L s + R_L + \frac{1}{C_L s}} \right)$	91
10.30INVALID-ORDER-30	$Z(s) = \left( \infty, R_2, \infty, L_4 s + \frac{1}{C_4 s}, \infty, \frac{1}{C_L s} \right)$	92
10.31INVALID-ORDER-31	$Z(s) = \left( \infty, R_2, \infty, L_4 s + \frac{1}{C_4 s}, \infty, \frac{R_L}{C_L R_L s + 1} \right)$	92
10.32INVALID-ORDER-32	$Z(s) = \left( \infty, R_2, \infty, L_4 s + \frac{1}{C_4 s}, \infty, R_L + \frac{1}{C_L s} \right)$	92
10.33INVALID-ORDER-33	$Z(s) = \left( \infty, R_2, \infty, L_4 s + \frac{1}{C_4 s}, \infty, L_L s + \frac{1}{C_L s} \right)$	92
10.34INVALID-ORDER-34	$Z(s) = \left( \infty, R_2, \infty, L_4 s + \frac{1}{C_4 s}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$	92
10.35INVALID-ORDER-35	$Z(s) = \left( \infty, R_2, \infty, L_4 s + \frac{1}{C_4 s}, \infty, L_L s + R_L + \frac{1}{C_L s} \right)$	92
10.36INVALID-ORDER-36	$Z(s) = \left( \infty, R_2, \infty, L_4 s + \frac{1}{C_4 s}, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$	92
10.37INVALID-ORDER-37	$Z(s) = \left( \infty, R_2, \infty, L_4 s + \frac{1}{C_4 s}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$	92
10.38INVALID-ORDER-38	$Z(s) = \left( \infty, R_2, \infty, L_4 s + \frac{1}{C_4 s}, \infty, \frac{R_L \left( L_L s + \frac{1}{C_L s} \right)}{L_L s + R_L + \frac{1}{C_L s}} \right)$	93
10.39INVALID-ORDER-39	$Z(s) = \left( \infty, R_2, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, \frac{1}{C_L s} \right)$	93
10.40INVALID-ORDER-40	$Z(s) = \left( \infty, R_2, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, R_L + \frac{1}{C_L s} \right)$	93
10.41INVALID-ORDER-41	$Z(s) = \left( \infty, R_2, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, L_L s + \frac{1}{C_L s} \right)$	93
10.42INVALID-ORDER-42	$Z(s) = \left( \infty, R_2, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$	93
10.43INVALID-ORDER-43	$Z(s) = \left( \infty, R_2, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, L_L s + R_L + \frac{1}{C_L s} \right)$	93
10.44INVALID-ORDER-44	$Z(s) = \left( \infty, R_2, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$	93
10.45INVALID-ORDER-45	$Z(s) = \left( \infty, R_2, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, \frac{R_L \left( L_L s + \frac{1}{C_L s} \right)}{L_L s + R_L + \frac{1}{C_L s}} \right)$	93
10.46INVALID-ORDER-46	$Z(s) = \left( \infty, R_2, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, \frac{1}{C_L s} \right)$	93
10.47INVALID-ORDER-47	$Z(s) = \left( \infty, R_2, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, \frac{R_L}{C_L R_L s + 1} \right)$	94
10.48INVALID-ORDER-48	$Z(s) = \left( \infty, R_2, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, R_L + \frac{1}{C_L s} \right)$	94
10.49INVALID-ORDER-49	$Z(s) = \left( \infty, R_2, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, L_L s + \frac{1}{C_L s} \right)$	94
10.50INVALID-ORDER-50	$Z(s) = \left( \infty, R_2, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$	94
10.51INVALID-ORDER-51	$Z(s) = \left( \infty, R_2, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, L_L s + R_L + \frac{1}{C_L s} \right)$	94
10.52INVALID-ORDER-52	$Z(s) = \left( \infty, R_2, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$	94
10.53INVALID-ORDER-53	$Z(s) = \left( \infty, R_2, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$	94
10.54INVALID-ORDER-54	$Z(s) = \left( \infty, R_2, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, \frac{R_L \left( L_L s + \frac{1}{C_L s} \right)}{L_L s + R_L + \frac{1}{C_L s}} \right)$	94



10.55INVALID-ORDER-55	$Z(s) = \left( \infty, R_2, \infty, \frac{1}{C_4s + \frac{1}{R_4} + \frac{1}{L_4s}}, \infty, R_L + \frac{1}{C_Ls} \right)$	95
10.56INVALID-ORDER-56	$Z(s) = \left( \infty, R_2, \infty, \frac{1}{C_4s + \frac{1}{R_4} + \frac{1}{L_4s}}, \infty, L_Ls + \frac{1}{C_Ls} \right)$	95
10.57INVALID-ORDER-57	$Z(s) = \left( \infty, R_2, \infty, \frac{1}{C_4s + \frac{1}{R_4} + \frac{1}{L_4s}}, \infty, L_Ls + R_L + \frac{1}{C_Ls} \right)$	95
10.58INVALID-ORDER-58	$Z(s) = \left( \infty, R_2, \infty, \frac{1}{C_4s + \frac{1}{R_4} + \frac{1}{L_4s}}, \infty, \frac{L_Ls}{C_LL_Ls^2+1} + R_L \right)$	95
10.59INVALID-ORDER-59	$Z(s) = \left( \infty, R_2, \infty, \frac{1}{C_4s + \frac{1}{R_4} + \frac{1}{L_4s}}, \infty, \frac{R_L(L_Ls + \frac{1}{C_Ls})}{L_Ls + R_L + \frac{1}{C_Ls}} \right)$	95
10.60INVALID-ORDER-60	$Z(s) = \left( \infty, R_2, \infty, \frac{L_4s}{C_4L_4s^2+1} + R_4, \infty, \frac{1}{C_Ls} \right)$	95
10.61INVALID-ORDER-61	$Z(s) = \left( \infty, R_2, \infty, \frac{L_4s}{C_4L_4s^2+1} + R_4, \infty, \frac{R_L}{C_LR_Ls+1} \right)$	95
10.62INVALID-ORDER-62	$Z(s) = \left( \infty, R_2, \infty, \frac{L_4s}{C_4L_4s^2+1} + R_4, \infty, R_L + \frac{1}{C_Ls} \right)$	95
10.63INVALID-ORDER-63	$Z(s) = \left( \infty, R_2, \infty, \frac{L_4s}{C_4L_4s^2+1} + R_4, \infty, L_Ls + \frac{1}{C_Ls} \right)$	96
10.64INVALID-ORDER-64	$Z(s) = \left( \infty, R_2, \infty, \frac{L_4s}{C_4L_4s^2+1} + R_4, \infty, \frac{L_Ls}{C_LL_Ls^2+1} \right)$	96
10.65INVALID-ORDER-65	$Z(s) = \left( \infty, R_2, \infty, \frac{L_4s}{C_4L_4s^2+1} + R_4, \infty, L_Ls + R_L + \frac{1}{C_Ls} \right)$	96
10.66INVALID-ORDER-66	$Z(s) = \left( \infty, R_2, \infty, \frac{L_4s}{C_4L_4s^2+1} + R_4, \infty, \frac{1}{C_Ls + \frac{1}{R_L} + \frac{1}{L_Ls}} \right)$	96
10.67INVALID-ORDER-67	$Z(s) = \left( \infty, R_2, \infty, \frac{L_4s}{C_4L_4s^2+1} + R_4, \infty, \frac{L_Ls}{C_LL_Ls^2+1} + R_L \right)$	96
10.68INVALID-ORDER-68	$Z(s) = \left( \infty, R_2, \infty, \frac{L_4s}{C_4L_4s^2+1} + R_4, \infty, \frac{R_L(L_Ls + \frac{1}{C_Ls})}{L_Ls + R_L + \frac{1}{C_Ls}} \right)$	96
10.69INVALID-ORDER-69	$Z(s) = \left( \infty, R_2, \infty, \frac{R_4(L_4s + \frac{1}{C_4s})}{L_4s + R_4 + \frac{1}{C_4s}}, \infty, \frac{1}{C_Ls} \right)$	96
10.70INVALID-ORDER-70	$Z(s) = \left( \infty, R_2, \infty, \frac{R_4(L_4s + \frac{1}{C_4s})}{L_4s + R_4 + \frac{1}{C_4s}}, \infty, \frac{R_L}{C_LR_Ls+1} \right)$	96
10.71INVALID-ORDER-71	$Z(s) = \left( \infty, R_2, \infty, \frac{R_4(L_4s + \frac{1}{C_4s})}{L_4s + R_4 + \frac{1}{C_4s}}, \infty, R_L + \frac{1}{C_Ls} \right)$	97
10.72INVALID-ORDER-72	$Z(s) = \left( \infty, R_2, \infty, \frac{R_4(L_4s + \frac{1}{C_4s})}{L_4s + R_4 + \frac{1}{C_4s}}, \infty, L_Ls + \frac{1}{C_Ls} \right)$	97
10.73INVALID-ORDER-73	$Z(s) = \left( \infty, R_2, \infty, \frac{R_4(L_4s + \frac{1}{C_4s})}{L_4s + R_4 + \frac{1}{C_4s}}, \infty, \frac{L_Ls}{C_LL_Ls^2+1} \right)$	97
10.74INVALID-ORDER-74	$Z(s) = \left( \infty, R_2, \infty, \frac{R_4(L_4s + \frac{1}{C_4s})}{L_4s + R_4 + \frac{1}{C_4s}}, \infty, L_Ls + R_L + \frac{1}{C_Ls} \right)$	97
10.75INVALID-ORDER-75	$Z(s) = \left( \infty, R_2, \infty, \frac{R_4(L_4s + \frac{1}{C_4s})}{L_4s + R_4 + \frac{1}{C_4s}}, \infty, \frac{1}{C_Ls + \frac{1}{R_L} + \frac{1}{L_Ls}} \right)$	97
10.76INVALID-ORDER-76	$Z(s) = \left( \infty, R_2, \infty, \frac{R_4(L_4s + \frac{1}{C_4s})}{L_4s + R_4 + \frac{1}{C_4s}}, \infty, \frac{L_Ls}{C_LL_Ls^2+1} + R_L \right)$	97
10.77INVALID-ORDER-77	$Z(s) = \left( \infty, R_2, \infty, \frac{R_4(L_4s + \frac{1}{C_4s})}{L_4s + R_4 + \frac{1}{C_4s}}, \infty, \frac{R_L(L_Ls + \frac{1}{C_Ls})}{L_Ls + R_L + \frac{1}{C_Ls}} \right)$	97
10.78INVALID-ORDER-78	$Z(s) = \left( \infty, \frac{1}{C_2s}, \infty, R_4, \infty, R_L \right)$	97
10.79INVALID-ORDER-79	$Z(s) = \left( \infty, \frac{1}{C_2s}, \infty, R_4, \infty, \frac{1}{C_Ls} \right)$	98
10.80INVALID-ORDER-80	$Z(s) = \left( \infty, \frac{1}{C_2s}, \infty, R_4, \infty, \frac{R_L}{C_LR_Ls+1} \right)$	98
10.81INVALID-ORDER-81	$Z(s) = \left( \infty, \frac{1}{C_2s}, \infty, R_4, \infty, R_L + \frac{1}{C_Ls} \right)$	98
10.82INVALID-ORDER-82	$Z(s) = \left( \infty, \frac{1}{C_2s}, \infty, \frac{1}{C_4s}, \infty, R_L \right)$	98
10.83INVALID-ORDER-83	$Z(s) = \left( \infty, \frac{1}{C_2s}, \infty, \frac{1}{C_4s}, \infty, \frac{1}{C_Ls} \right)$	98
10.84INVALID-ORDER-84	$Z(s) = \left( \infty, \frac{1}{C_2s}, \infty, \frac{1}{C_4s}, \infty, \frac{R_L}{C_LR_Ls+1} \right)$	98
10.85INVALID-ORDER-85	$Z(s) = \left( \infty, \frac{1}{C_2s}, \infty, \frac{1}{C_4s}, \infty, R_L + \frac{1}{C_Ls} \right)$	98

10.86	INVALID-ORDER-86	$Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{1}{C_4 s}, \infty, L_L s + \frac{1}{C_L s} \right)$	98
10.87	INVALID-ORDER-87	$Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{1}{C_4 s}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$	98
10.88	INVALID-ORDER-88	$Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{1}{C_4 s}, \infty, L_L s + R_L + \frac{1}{C_L s} \right)$	99
10.89	INVALID-ORDER-89	$Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{1}{C_4 s}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$	99
10.90	INVALID-ORDER-90	$Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{1}{C_4 s}, \infty, \frac{R_L \left( L_L s + \frac{1}{C_L s} \right)}{L_L s + R_L + \frac{1}{C_L s}} \right)$	99
10.91	INVALID-ORDER-91	$Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, R_L \right)$	99
10.92	INVALID-ORDER-92	$Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, \frac{1}{C_L s} \right)$	99
10.93	INVALID-ORDER-93	$Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, \frac{R_L}{C_L R_L s + 1} \right)$	99
10.94	INVALID-ORDER-94	$Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, L_L s + \frac{1}{C_L s} \right)$	99
10.95	INVALID-ORDER-95	$Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, L_L s + R_L + \frac{1}{C_L s} \right)$	99
10.96	INVALID-ORDER-96	$Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$	99
10.97	INVALID-ORDER-97	$Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, \frac{R_L \left( L_L s + \frac{1}{C_L s} \right)}{L_L s + R_L + \frac{1}{C_L s}} \right)$	100
10.98	INVALID-ORDER-98	$Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, R_4 + \frac{1}{C_4 s}, \infty, R_L \right)$	100
10.99	INVALID-ORDER-99	$Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, R_4 + \frac{1}{C_4 s}, \infty, \frac{1}{C_L s} \right)$	100
10.100	INVALID-ORDER-100	$Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, R_4 + \frac{1}{C_4 s}, \infty, R_L + \frac{1}{C_L s} \right)$	100
10.101	INVALID-ORDER-101	$Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, R_4 + \frac{1}{C_4 s}, \infty, L_L s + \frac{1}{C_L s} \right)$	100
10.102	INVALID-ORDER-102	$Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, R_4 + \frac{1}{C_4 s}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$	100
10.103	INVALID-ORDER-103	$Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, R_4 + \frac{1}{C_4 s}, \infty, L_L s + R_L + \frac{1}{C_L s} \right)$	100
10.104	INVALID-ORDER-104	$Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, R_4 + \frac{1}{C_4 s}, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$	100
10.105	INVALID-ORDER-105	$Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, R_4 + \frac{1}{C_4 s}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$	100
10.106	INVALID-ORDER-106	$Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, R_4 + \frac{1}{C_4 s}, \infty, \frac{R_L \left( L_L s + \frac{1}{C_L s} \right)}{L_L s + R_L + \frac{1}{C_L s}} \right)$	101
10.107	INVALID-ORDER-107	$Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, L_4 s + \frac{1}{C_4 s}, \infty, \frac{1}{C_L s} \right)$	101
10.108	INVALID-ORDER-108	$Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, L_4 s + \frac{1}{C_4 s}, \infty, \frac{R_L}{C_L R_L s + 1} \right)$	101
10.109	INVALID-ORDER-109	$Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, L_4 s + \frac{1}{C_4 s}, \infty, R_L + \frac{1}{C_L s} \right)$	101
10.110	INVALID-ORDER-110	$Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, L_4 s + \frac{1}{C_4 s}, \infty, L_L s + \frac{1}{C_L s} \right)$	101
10.111	INVALID-ORDER-111	$Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, L_4 s + \frac{1}{C_4 s}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$	101
10.112	INVALID-ORDER-112	$Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, L_4 s + \frac{1}{C_4 s}, \infty, L_L s + R_L + \frac{1}{C_L s} \right)$	101
10.113	INVALID-ORDER-113	$Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, L_4 s + \frac{1}{C_4 s}, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$	101
10.114	INVALID-ORDER-114	$Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, L_4 s + \frac{1}{C_4 s}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$	102
10.115	INVALID-ORDER-115	$Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, L_4 s + \frac{1}{C_4 s}, \infty, \frac{R_L \left( L_L s + \frac{1}{C_L s} \right)}{L_L s + R_L + \frac{1}{C_L s}} \right)$	102
10.116	INVALID-ORDER-116	$Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, \frac{1}{C_L s} \right)$	102
10.117	INVALID-ORDER-117	$Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, R_L + \frac{1}{C_L s} \right)$	102
10.118	INVALID-ORDER-118	$Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, L_L s + \frac{1}{C_L s} \right)$	102
10.119	INVALID-ORDER-119	$Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$	102
10.120	INVALID-ORDER-120	$Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, L_L s + R_L + \frac{1}{C_L s} \right)$	102

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10.152INVALID-ORDER-152	$Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{R_4 \left( L_4 s + \frac{1}{C_4 s} \right)}{L_4 s + R_4 + \frac{1}{C_4 s}}, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$	106
10.153INVALID-ORDER-153	$Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{R_4 \left( L_4 s + \frac{1}{C_4 s} \right)}{L_4 s + R_4 + \frac{1}{C_4 s}}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$	106
10.154INVALID-ORDER-154	$Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{R_4 \left( L_4 s + \frac{1}{C_4 s} \right)}{L_4 s + R_4 + \frac{1}{C_4 s}}, \infty, \frac{R_L \left( L_L s + \frac{1}{C_L s} \right)}{L_L s + R_L + \frac{1}{C_L s}} \right)$	106
10.155INVALID-ORDER-155	$Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, R_4, \infty, R_L \right)$	107
10.156INVALID-ORDER-156	$Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, R_4, \infty, \frac{1}{C_L s} \right)$	107
10.157INVALID-ORDER-157	$Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, R_4, \infty, \frac{R_L}{C_L R_L s + 1} \right)$	107
10.158INVALID-ORDER-158	$Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, R_4, \infty, R_L + \frac{1}{C_L s} \right)$	107
10.159INVALID-ORDER-159	$Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{1}{C_4 s}, \infty, R_L \right)$	107
10.160INVALID-ORDER-160	$Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{1}{C_4 s}, \infty, \frac{1}{C_L s} \right)$	107
10.161INVALID-ORDER-161	$Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{1}{C_4 s}, \infty, \frac{R_L}{C_L R_L s + 1} \right)$	107
10.162INVALID-ORDER-162	$Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{1}{C_4 s}, \infty, R_L + \frac{1}{C_L s} \right)$	107
10.163INVALID-ORDER-163	$Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{1}{C_4 s}, \infty, L_L s + \frac{1}{C_L s} \right)$	107
10.164INVALID-ORDER-164	$Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{1}{C_4 s}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$	108
10.165INVALID-ORDER-165	$Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{1}{C_4 s}, \infty, L_L s + R_L + \frac{1}{C_L s} \right)$	108
10.166INVALID-ORDER-166	$Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{1}{C_4 s}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$	108
10.167INVALID-ORDER-167	$Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{1}{C_4 s}, \infty, \frac{R_L \left( L_L s + \frac{1}{C_L s} \right)}{L_L s + R_L + \frac{1}{C_L s}} \right)$	108
10.168INVALID-ORDER-168	$Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, R_L \right)$	108
10.169INVALID-ORDER-169	$Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, \frac{1}{C_L s} \right)$	108
10.170INVALID-ORDER-170	$Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, \frac{R_L}{C_L R_L s + 1} \right)$	108
10.171INVALID-ORDER-171	$Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, L_L s + \frac{1}{C_L s} \right)$	108
10.172INVALID-ORDER-172	$Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, L_L s + R_L + \frac{1}{C_L s} \right)$	108
10.173INVALID-ORDER-173	$Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$	109
10.174INVALID-ORDER-174	$Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, \frac{R_L \left( L_L s + \frac{1}{C_L s} \right)}{L_L s + R_L + \frac{1}{C_L s}} \right)$	109
10.175INVALID-ORDER-175	$Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, R_4 + \frac{1}{C_4 s}, \infty, R_L \right)$	109
10.176INVALID-ORDER-176	$Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, R_4 + \frac{1}{C_4 s}, \infty, \frac{1}{C_L s} \right)$	109
10.177INVALID-ORDER-177	$Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, R_4 + \frac{1}{C_4 s}, \infty, R_L + \frac{1}{C_L s} \right)$	109
10.178INVALID-ORDER-178	$Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, R_4 + \frac{1}{C_4 s}, \infty, L_L s + \frac{1}{C_L s} \right)$	109
10.179INVALID-ORDER-179	$Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, R_4 + \frac{1}{C_4 s}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$	109
10.180INVALID-ORDER-180	$Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, R_4 + \frac{1}{C_4 s}, \infty, L_L s + R_L + \frac{1}{C_L s} \right)$	109
10.181INVALID-ORDER-181	$Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, R_4 + \frac{1}{C_4 s}, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$	109
10.182INVALID-ORDER-182	$Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, R_4 + \frac{1}{C_4 s}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$	110
10.183INVALID-ORDER-183	$Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, R_4 + \frac{1}{C_4 s}, \infty, \frac{R_L \left( L_L s + \frac{1}{C_L s} \right)}{L_L s + R_L + \frac{1}{C_L s}} \right)$	110
10.184INVALID-ORDER-184	$Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, L_4 s + \frac{1}{C_4 s}, \infty, \frac{1}{C_L s} \right)$	110
10.185INVALID-ORDER-185	$Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, L_4 s + \frac{1}{C_4 s}, \infty, \frac{R_L}{C_L R_L s + 1} \right)$	110

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10.316INVALID-ORDER-316	$Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{1}{C_4s}, \infty, R_L + \frac{1}{C_Ls} \right)$	126
10.317INVALID-ORDER-317	$Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{1}{C_4s}, \infty, L_Ls + \frac{1}{C_Ls} \right)$	126
10.318INVALID-ORDER-318	$Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{1}{C_4s}, \infty, \frac{L_Ls}{C_LL_Ls^2+1} \right)$	126
10.319INVALID-ORDER-319	$Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{1}{C_4s}, \infty, L_Ls + R_L + \frac{1}{C_Ls} \right)$	126
10.320INVALID-ORDER-320	$Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{1}{C_4s}, \infty, \frac{L_Ls}{C_LL_Ls^2+1} + R_L \right)$	126
10.321INVALID-ORDER-321	$Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{1}{C_4s}, \infty, \frac{R_L \left( L_Ls + \frac{1}{C_Ls} \right)}{L_Ls + R_L + \frac{1}{C_Ls}} \right)$	126
10.322INVALID-ORDER-322	$Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{R_4}{C_4R_4s+1}, \infty, R_L \right)$	126
10.323INVALID-ORDER-323	$Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{R_4}{C_4R_4s+1}, \infty, \frac{1}{C_Ls} \right)$	126
10.324INVALID-ORDER-324	$Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{R_4}{C_4R_4s+1}, \infty, \frac{R_L}{C_LR_Ls+1} \right)$	127
10.325INVALID-ORDER-325	$Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{R_4}{C_4R_4s+1}, \infty, L_Ls + \frac{1}{C_Ls} \right)$	127
10.326INVALID-ORDER-326	$Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{R_4}{C_4R_4s+1}, \infty, L_Ls + R_L + \frac{1}{C_Ls} \right)$	127
10.327INVALID-ORDER-327	$Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{R_4}{C_4R_4s+1}, \infty, \frac{L_Ls}{C_LL_Ls^2+1} + R_L \right)$	127
10.328INVALID-ORDER-328	$Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{R_4}{C_4R_4s+1}, \infty, \frac{R_L \left( L_Ls + \frac{1}{C_Ls} \right)}{L_Ls + R_L + \frac{1}{C_Ls}} \right)$	127
10.329INVALID-ORDER-329	$Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, R_4 + \frac{1}{C_4s}, \infty, R_L \right)$	127
10.330INVALID-ORDER-330	$Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, R_4 + \frac{1}{C_4s}, \infty, \frac{1}{C_Ls} \right)$	127
10.331INVALID-ORDER-331	$Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, R_4 + \frac{1}{C_4s}, \infty, R_L + \frac{1}{C_Ls} \right)$	127
10.332INVALID-ORDER-332	$Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, R_4 + \frac{1}{C_4s}, \infty, L_Ls + \frac{1}{C_Ls} \right)$	127
10.333INVALID-ORDER-333	$Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, R_4 + \frac{1}{C_4s}, \infty, \frac{L_Ls}{C_LL_Ls^2+1} \right)$	128
10.334INVALID-ORDER-334	$Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, R_4 + \frac{1}{C_4s}, \infty, L_Ls + R_L + \frac{1}{C_Ls} \right)$	128
10.335INVALID-ORDER-335	$Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, R_4 + \frac{1}{C_4s}, \infty, \frac{1}{C_Ls + \frac{1}{R_L} + \frac{1}{L_Ls}} \right)$	128
10.336INVALID-ORDER-336	$Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, R_4 + \frac{1}{C_4s}, \infty, \frac{L_Ls}{C_LL_Ls^2+1} + R_L \right)$	128
10.337INVALID-ORDER-337	$Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, R_4 + \frac{1}{C_4s}, \infty, \frac{R_L \left( L_Ls + \frac{1}{C_Ls} \right)}{L_Ls + R_L + \frac{1}{C_Ls}} \right)$	128
10.338INVALID-ORDER-338	$Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, L_4s + \frac{1}{C_4s}, \infty, \frac{1}{C_Ls} \right)$	128
10.339INVALID-ORDER-339	$Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, L_4s + \frac{1}{C_4s}, \infty, \frac{R_L}{C_LR_Ls+1} \right)$	128
10.340INVALID-ORDER-340	$Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, L_4s + \frac{1}{C_4s}, \infty, R_L + \frac{1}{C_Ls} \right)$	128
10.341INVALID-ORDER-341	$Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, L_4s + \frac{1}{C_4s}, \infty, L_Ls + \frac{1}{C_Ls} \right)$	129
10.342INVALID-ORDER-342	$Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, L_4s + \frac{1}{C_4s}, \infty, \frac{L_Ls}{C_LL_Ls^2+1} \right)$	129
10.343INVALID-ORDER-343	$Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, L_4s + \frac{1}{C_4s}, \infty, L_Ls + R_L + \frac{1}{C_Ls} \right)$	129
10.344INVALID-ORDER-344	$Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, L_4s + \frac{1}{C_4s}, \infty, \frac{1}{C_Ls + \frac{1}{R_L} + \frac{1}{L_Ls}} \right)$	129
10.345INVALID-ORDER-345	$Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, L_4s + \frac{1}{C_4s}, \infty, \frac{L_Ls}{C_LL_Ls^2+1} + R_L \right)$	129
10.346INVALID-ORDER-346	$Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, L_4s + \frac{1}{C_4s}, \infty, \frac{R_L \left( L_Ls + \frac{1}{C_Ls} \right)}{L_Ls + R_L + \frac{1}{C_Ls}} \right)$	129
10.347INVALID-ORDER-347	$Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{L_4s}{C_4L_4s^2+1}, \infty, \frac{1}{C_Ls} \right)$	129
10.348INVALID-ORDER-348	$Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{L_4s}{C_4L_4s^2+1}, \infty, R_L + \frac{1}{C_Ls} \right)$	129
10.349INVALID-ORDER-349	$Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{L_4s}{C_4L_4s^2+1}, \infty, L_Ls + \frac{1}{C_Ls} \right)$	130
10.350INVALID-ORDER-350	$Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{L_4s}{C_4L_4s^2+1}, \infty, \frac{L_Ls}{C_LL_Ls^2+1} \right)$	130



10.382INVALID-ORDER-382	$Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{R_4(L_4s + \frac{1}{C_4s})}{L_4s + R_4 + \frac{1}{C_4s}}, \infty, L_Ls + R_L + \frac{1}{C_Ls} \right)$	134
10.383INVALID-ORDER-383	$Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{R_4(L_4s + \frac{1}{C_4s})}{L_4s + R_4 + \frac{1}{C_4s}}, \infty, \frac{1}{C_Ls + \frac{1}{R_L} + \frac{1}{L_Ls}} \right)$	134
10.384INVALID-ORDER-384	$Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{R_4(L_4s + \frac{1}{C_4s})}{L_4s + R_4 + \frac{1}{C_4s}}, \infty, \frac{L_Ls}{C_LL_Ls^2 + 1} + R_L \right)$	134
10.385INVALID-ORDER-385	$Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{R_4(L_4s + \frac{1}{C_4s})}{L_4s + R_4 + \frac{1}{C_4s}}, \infty, \frac{R_L(L_Ls + \frac{1}{C_Ls})}{L_Ls + R_L + \frac{1}{C_Ls}} \right)$	134
10.386INVALID-ORDER-386	$Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, R_4, \infty, R_L \right)$	134
10.387INVALID-ORDER-387	$Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, R_4, \infty, \frac{1}{C_Ls} \right)$	134
10.388INVALID-ORDER-388	$Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, R_4, \infty, \frac{R_L}{C_LR_Ls + 1} \right)$	134
10.389INVALID-ORDER-389	$Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, R_4, \infty, R_L + \frac{1}{C_Ls} \right)$	134
10.390INVALID-ORDER-390	$Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{1}{C_4s}, \infty, R_L \right)$	135
10.391INVALID-ORDER-391	$Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{1}{C_4s}, \infty, \frac{1}{C_Ls} \right)$	135
10.392INVALID-ORDER-392	$Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{1}{C_4s}, \infty, \frac{R_L}{C_LR_Ls + 1} \right)$	135
10.393INVALID-ORDER-393	$Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{1}{C_4s}, \infty, R_L + \frac{1}{C_Ls} \right)$	135
10.394INVALID-ORDER-394	$Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{1}{C_4s}, \infty, L_Ls + \frac{1}{C_Ls} \right)$	135
10.395INVALID-ORDER-395	$Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{1}{C_4s}, \infty, \frac{L_Ls}{C_LL_Ls^2 + 1} \right)$	135
10.396INVALID-ORDER-396	$Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{1}{C_4s}, \infty, L_Ls + R_L + \frac{1}{C_Ls} \right)$	135
10.397INVALID-ORDER-397	$Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{1}{C_4s}, \infty, \frac{L_Ls}{C_LL_Ls^2 + 1} + R_L \right)$	135
10.398INVALID-ORDER-398	$Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{1}{C_4s}, \infty, \frac{R_L(L_Ls + \frac{1}{C_Ls})}{L_Ls + R_L + \frac{1}{C_Ls}} \right)$	135
10.399INVALID-ORDER-399	$Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{R_4}{C_4R_4s + 1}, \infty, R_L \right)$	136
10.400INVALID-ORDER-400	$Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{R_4}{C_4R_4s + 1}, \infty, \frac{1}{C_Ls} \right)$	136
10.401INVALID-ORDER-401	$Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{R_4}{C_4R_4s + 1}, \infty, \frac{R_L}{C_LR_Ls + 1} \right)$	136
10.402INVALID-ORDER-402	$Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{R_4}{C_4R_4s + 1}, \infty, L_Ls + \frac{1}{C_Ls} \right)$	136
10.403INVALID-ORDER-403	$Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{R_4}{C_4R_4s + 1}, \infty, L_Ls + R_L + \frac{1}{C_Ls} \right)$	136
10.404INVALID-ORDER-404	$Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{R_4}{C_4R_4s + 1}, \infty, \frac{L_Ls}{C_LL_Ls^2 + 1} + R_L \right)$	136
10.405INVALID-ORDER-405	$Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{R_4}{C_4R_4s + 1}, \infty, \frac{R_L(L_Ls + \frac{1}{C_Ls})}{L_Ls + R_L + \frac{1}{C_Ls}} \right)$	136
10.406INVALID-ORDER-406	$Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, R_4 + \frac{1}{C_4s}, \infty, R_L \right)$	136
10.407INVALID-ORDER-407	$Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, R_4 + \frac{1}{C_4s}, \infty, \frac{1}{C_Ls} \right)$	136
10.408INVALID-ORDER-408	$Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, R_4 + \frac{1}{C_4s}, \infty, R_L + \frac{1}{C_Ls} \right)$	137
10.409INVALID-ORDER-409	$Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, R_4 + \frac{1}{C_4s}, \infty, L_Ls + \frac{1}{C_Ls} \right)$	137
10.410INVALID-ORDER-410	$Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, R_4 + \frac{1}{C_4s}, \infty, \frac{L_Ls}{C_LL_Ls^2 + 1} \right)$	137
10.411INVALID-ORDER-411	$Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, R_4 + \frac{1}{C_4s}, \infty, L_Ls + R_L + \frac{1}{C_Ls} \right)$	137
10.412INVALID-ORDER-412	$Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, R_4 + \frac{1}{C_4s}, \infty, \frac{1}{C_Ls + \frac{1}{R_L} + \frac{1}{L_Ls}} \right)$	137
10.413INVALID-ORDER-413	$Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, R_4 + \frac{1}{C_4s}, \infty, \frac{L_Ls}{C_LL_Ls^2 + 1} + R_L \right)$	137
10.414INVALID-ORDER-414	$Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, R_4 + \frac{1}{C_4s}, \infty, \frac{R_L(L_Ls + \frac{1}{C_Ls})}{L_Ls + R_L + \frac{1}{C_Ls}} \right)$	137
10.415INVALID-ORDER-415	$Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, L_4s + \frac{1}{C_4s}, \infty, \frac{1}{C_Ls} \right)$	137

10.416INVALID-ORDER-416	$Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, L_4s + \frac{1}{C_4s}, \infty, \frac{R_L}{C_LR_Ls+1} \right)$	138
10.417INVALID-ORDER-417	$Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, L_4s + \frac{1}{C_4s}, \infty, R_L + \frac{1}{C_Ls} \right)$	138
10.418INVALID-ORDER-418	$Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, L_4s + \frac{1}{C_4s}, \infty, L_Ls + \frac{1}{C_Ls} \right)$	138
10.419INVALID-ORDER-419	$Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, L_4s + \frac{1}{C_4s}, \infty, \frac{L_Ls}{C_LL_Ls^2+1} \right)$	138
10.420INVALID-ORDER-420	$Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, L_4s + \frac{1}{C_4s}, \infty, L_Ls + R_L + \frac{1}{C_Ls} \right)$	138
10.421INVALID-ORDER-421	$Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, L_4s + \frac{1}{C_4s}, \infty, \frac{1}{C_Ls + \frac{1}{R_L} + \frac{1}{L_Ls}} \right)$	138
10.422INVALID-ORDER-422	$Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, L_4s + \frac{1}{C_4s}, \infty, \frac{L_Ls}{C_LL_Ls^2+1} + R_L \right)$	138
10.423INVALID-ORDER-423	$Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, L_4s + \frac{1}{C_4s}, \infty, \frac{R_L \left( L_Ls + \frac{1}{C_Ls} \right)}{L_Ls + R_L + \frac{1}{C_Ls}} \right)$	138
10.424INVALID-ORDER-424	$Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{L_4s}{C_4L_4s^2+1}, \infty, \frac{1}{C_Ls} \right)$	139
10.425INVALID-ORDER-425	$Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{L_4s}{C_4L_4s^2+1}, \infty, R_L + \frac{1}{C_Ls} \right)$	139
10.426INVALID-ORDER-426	$Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{L_4s}{C_4L_4s^2+1}, \infty, L_Ls + \frac{1}{C_Ls} \right)$	139
10.427INVALID-ORDER-427	$Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{L_4s}{C_4L_4s^2+1}, \infty, \frac{L_Ls}{C_LL_Ls^2+1} \right)$	139
10.428INVALID-ORDER-428	$Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{L_4s}{C_4L_4s^2+1}, \infty, L_Ls + R_L + \frac{1}{C_Ls} \right)$	139
10.429INVALID-ORDER-429	$Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{L_4s}{C_4L_4s^2+1}, \infty, \frac{L_Ls}{C_LL_Ls^2+1} + R_L \right)$	139
10.430INVALID-ORDER-430	$Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{L_4s}{C_4L_4s^2+1}, \infty, \frac{R_L \left( L_Ls + \frac{1}{C_Ls} \right)}{L_Ls + R_L + \frac{1}{C_Ls}} \right)$	139
10.431INVALID-ORDER-431	$Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, L_4s + R_4 + \frac{1}{C_4s}, \infty, \frac{1}{C_Ls} \right)$	139
10.432INVALID-ORDER-432	$Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, L_4s + R_4 + \frac{1}{C_4s}, \infty, \frac{R_L}{C_LR_Ls+1} \right)$	139
10.433INVALID-ORDER-433	$Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, L_4s + R_4 + \frac{1}{C_4s}, \infty, R_L + \frac{1}{C_Ls} \right)$	140
10.434INVALID-ORDER-434	$Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, L_4s + R_4 + \frac{1}{C_4s}, \infty, L_Ls + \frac{1}{C_Ls} \right)$	140
10.435INVALID-ORDER-435	$Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, L_4s + R_4 + \frac{1}{C_4s}, \infty, \frac{L_Ls}{C_LL_Ls^2+1} \right)$	140
10.436INVALID-ORDER-436	$Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, L_4s + R_4 + \frac{1}{C_4s}, \infty, L_Ls + R_L + \frac{1}{C_Ls} \right)$	140
10.437INVALID-ORDER-437	$Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, L_4s + R_4 + \frac{1}{C_4s}, \infty, \frac{1}{C_Ls + \frac{1}{R_L} + \frac{1}{L_Ls}} \right)$	140
10.438INVALID-ORDER-438	$Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, L_4s + R_4 + \frac{1}{C_4s}, \infty, \frac{L_Ls}{C_LL_Ls^2+1} + R_L \right)$	140
10.439INVALID-ORDER-439	$Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, L_4s + R_4 + \frac{1}{C_4s}, \infty, \frac{R_L \left( L_Ls + \frac{1}{C_Ls} \right)}{L_Ls + R_L + \frac{1}{C_Ls}} \right)$	140
10.440INVALID-ORDER-440	$Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{1}{C_4s + \frac{1}{R_4} + \frac{1}{L_4s}}, \infty, R_L + \frac{1}{C_Ls} \right)$	140
10.441INVALID-ORDER-441	$Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{1}{C_4s + \frac{1}{R_4} + \frac{1}{L_4s}}, \infty, L_Ls + \frac{1}{C_Ls} \right)$	141
10.442INVALID-ORDER-442	$Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{1}{C_4s + \frac{1}{R_4} + \frac{1}{L_4s}}, \infty, L_Ls + R_L + \frac{1}{C_Ls} \right)$	141
10.443INVALID-ORDER-443	$Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{1}{C_4s + \frac{1}{R_4} + \frac{1}{L_4s}}, \infty, \frac{L_Ls}{C_LL_Ls^2+1} + R_L \right)$	141
10.444INVALID-ORDER-444	$Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{1}{C_4s + \frac{1}{R_4} + \frac{1}{L_4s}}, \infty, \frac{R_L \left( L_Ls + \frac{1}{C_Ls} \right)}{L_Ls + R_L + \frac{1}{C_Ls}} \right)$	141
10.445INVALID-ORDER-445	$Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{L_4s}{C_4L_4s^2+1} + R_4, \infty, \frac{1}{C_Ls} \right)$	141
10.446INVALID-ORDER-446	$Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{L_4s}{C_4L_4s^2+1} + R_4, \infty, \frac{R_L}{C_LR_Ls+1} \right)$	141
10.447INVALID-ORDER-447	$Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{L_4s}{C_4L_4s^2+1} + R_4, \infty, R_L + \frac{1}{C_Ls} \right)$	141
10.448INVALID-ORDER-448	$Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{L_4s}{C_4L_4s^2+1} + R_4, \infty, L_Ls + \frac{1}{C_Ls} \right)$	141

[illegible]











10.596	INVALID-ORDER-596	$Z(s) = \left( \infty, \frac{R_2(L_2s + \frac{1}{C_2s})}{L_2s + R_2 + \frac{1}{C_2s}}, \infty, \frac{1}{C_4s + \frac{1}{R_4} + \frac{1}{L_4s}}, \infty, L_Ls + R_L + \frac{1}{C_Ls} \right)$	159
10.597	INVALID-ORDER-597	$Z(s) = \left( \infty, \frac{R_2(L_2s + \frac{1}{C_2s})}{L_2s + R_2 + \frac{1}{C_2s}}, \infty, \frac{1}{C_4s + \frac{1}{R_4} + \frac{1}{L_4s}}, \infty, \frac{L_Ls}{C_L L_L s^2 + 1} + R_L \right)$	160
10.598	INVALID-ORDER-598	$Z(s) = \left( \infty, \frac{R_2(L_2s + \frac{1}{C_2s})}{L_2s + R_2 + \frac{1}{C_2s}}, \infty, \frac{1}{C_4s + \frac{1}{R_4} + \frac{1}{L_4s}}, \infty, \frac{R_L(L_Ls + \frac{1}{C_Ls})}{L_Ls + R_L + \frac{1}{C_Ls}} \right)$	160
10.599	INVALID-ORDER-599	$Z(s) = \left( \infty, \frac{R_2(L_2s + \frac{1}{C_2s})}{L_2s + R_2 + \frac{1}{C_2s}}, \infty, \frac{L_4s}{C_4 L_4 s^2 + 1} + R_4, \infty, \frac{1}{C_Ls} \right)$	160
10.600	INVALID-ORDER-600	$Z(s) = \left( \infty, \frac{R_2(L_2s + \frac{1}{C_2s})}{L_2s + R_2 + \frac{1}{C_2s}}, \infty, \frac{L_4s}{C_4 L_4 s^2 + 1} + R_4, \infty, \frac{R_L}{C_L R_L s + 1} \right)$	160
10.601	INVALID-ORDER-601	$Z(s) = \left( \infty, \frac{R_2(L_2s + \frac{1}{C_2s})}{L_2s + R_2 + \frac{1}{C_2s}}, \infty, \frac{L_4s}{C_4 L_4 s^2 + 1} + R_4, \infty, R_L + \frac{1}{C_Ls} \right)$	160
10.602	INVALID-ORDER-602	$Z(s) = \left( \infty, \frac{R_2(L_2s + \frac{1}{C_2s})}{L_2s + R_2 + \frac{1}{C_2s}}, \infty, \frac{L_4s}{C_4 L_4 s^2 + 1} + R_4, \infty, L_Ls + \frac{1}{C_Ls} \right)$	160
10.603	INVALID-ORDER-603	$Z(s) = \left( \infty, \frac{R_2(L_2s + \frac{1}{C_2s})}{L_2s + R_2 + \frac{1}{C_2s}}, \infty, \frac{L_4s}{C_4 L_4 s^2 + 1} + R_4, \infty, \frac{L_Ls}{C_L L_L s^2 + 1} \right)$	160
10.604	INVALID-ORDER-604	$Z(s) = \left( \infty, \frac{R_2(L_2s + \frac{1}{C_2s})}{L_2s + R_2 + \frac{1}{C_2s}}, \infty, \frac{L_4s}{C_4 L_4 s^2 + 1} + R_4, \infty, L_Ls + R_L + \frac{1}{C_Ls} \right)$	160
10.605	INVALID-ORDER-605	$Z(s) = \left( \infty, \frac{R_2(L_2s + \frac{1}{C_2s})}{L_2s + R_2 + \frac{1}{C_2s}}, \infty, \frac{L_4s}{C_4 L_4 s^2 + 1} + R_4, \infty, \frac{1}{C_Ls + \frac{1}{R_L} + \frac{1}{L_Ls}} \right)$	161
10.606	INVALID-ORDER-606	$Z(s) = \left( \infty, \frac{R_2(L_2s + \frac{1}{C_2s})}{L_2s + R_2 + \frac{1}{C_2s}}, \infty, \frac{L_4s}{C_4 L_4 s^2 + 1} + R_4, \infty, \frac{L_Ls}{C_L L_L s^2 + 1} + R_L \right)$	161
10.607	INVALID-ORDER-607	$Z(s) = \left( \infty, \frac{R_2(L_2s + \frac{1}{C_2s})}{L_2s + R_2 + \frac{1}{C_2s}}, \infty, \frac{L_4s}{C_4 L_4 s^2 + 1} + R_4, \infty, \frac{R_L(L_Ls + \frac{1}{C_Ls})}{L_Ls + R_L + \frac{1}{C_Ls}} \right)$	161
10.608	INVALID-ORDER-608	$Z(s) = \left( \infty, \frac{R_2(L_2s + \frac{1}{C_2s})}{L_2s + R_2 + \frac{1}{C_2s}}, \infty, \frac{R_4(L_4s + \frac{1}{C_4s})}{L_4s + R_4 + \frac{1}{C_4s}}, \infty, \frac{1}{C_Ls} \right)$	161
10.609	INVALID-ORDER-609	$Z(s) = \left( \infty, \frac{R_2(L_2s + \frac{1}{C_2s})}{L_2s + R_2 + \frac{1}{C_2s}}, \infty, \frac{R_4(L_4s + \frac{1}{C_4s})}{L_4s + R_4 + \frac{1}{C_4s}}, \infty, \frac{R_L}{C_L R_L s + 1} \right)$	161
10.610	INVALID-ORDER-610	$Z(s) = \left( \infty, \frac{R_2(L_2s + \frac{1}{C_2s})}{L_2s + R_2 + \frac{1}{C_2s}}, \infty, \frac{R_4(L_4s + \frac{1}{C_4s})}{L_4s + R_4 + \frac{1}{C_4s}}, \infty, R_L + \frac{1}{C_Ls} \right)$	161
10.611	INVALID-ORDER-611	$Z(s) = \left( \infty, \frac{R_2(L_2s + \frac{1}{C_2s})}{L_2s + R_2 + \frac{1}{C_2s}}, \infty, \frac{R_4(L_4s + \frac{1}{C_4s})}{L_4s + R_4 + \frac{1}{C_4s}}, \infty, L_Ls + \frac{1}{C_Ls} \right)$	161
10.612	INVALID-ORDER-612	$Z(s) = \left( \infty, \frac{R_2(L_2s + \frac{1}{C_2s})}{L_2s + R_2 + \frac{1}{C_2s}}, \infty, \frac{R_4(L_4s + \frac{1}{C_4s})}{L_4s + R_4 + \frac{1}{C_4s}}, \infty, \frac{L_Ls}{C_L L_L s^2 + 1} \right)$	161
10.613	INVALID-ORDER-613	$Z(s) = \left( \infty, \frac{R_2(L_2s + \frac{1}{C_2s})}{L_2s + R_2 + \frac{1}{C_2s}}, \infty, \frac{R_4(L_4s + \frac{1}{C_4s})}{L_4s + R_4 + \frac{1}{C_4s}}, \infty, L_Ls + R_L + \frac{1}{C_Ls} \right)$	162
10.614	INVALID-ORDER-614	$Z(s) = \left( \infty, \frac{R_2(L_2s + \frac{1}{C_2s})}{L_2s + R_2 + \frac{1}{C_2s}}, \infty, \frac{R_4(L_4s + \frac{1}{C_4s})}{L_4s + R_4 + \frac{1}{C_4s}}, \infty, \frac{1}{C_Ls + \frac{1}{R_L} + \frac{1}{L_Ls}} \right)$	162
10.615	INVALID-ORDER-615	$Z(s) = \left( \infty, \frac{R_2(L_2s + \frac{1}{C_2s})}{L_2s + R_2 + \frac{1}{C_2s}}, \infty, \frac{R_4(L_4s + \frac{1}{C_4s})}{L_4s + R_4 + \frac{1}{C_4s}}, \infty, \frac{L_Ls}{C_L L_L s^2 + 1} + R_L \right)$	162
10.616	INVALID-ORDER-616	$Z(s) = \left( \infty, \frac{R_2(L_2s + \frac{1}{C_2s})}{L_2s + R_2 + \frac{1}{C_2s}}, \infty, \frac{R_4(L_4s + \frac{1}{C_4s})}{L_4s + R_4 + \frac{1}{C_4s}}, \infty, \frac{R_L(L_Ls + \frac{1}{C_Ls})}{L_Ls + R_L + \frac{1}{C_Ls}} \right)$	162

**1 Examined  $H(z)$  for TIA some parasitic Z2 Z4 ZL:**  $\frac{Z_4 Z_L (Z_2 g_m r_o + Z_2 + r_o)}{Z_2 Z_4 g_m r_o + Z_2 Z_4 + 2 Z_2 Z_L g_m r_o + 2 Z_2 Z_L + Z_4 r_o + 2 Z_L r_o}$

$$H(z) = \frac{Z_4 Z_L (Z_2 g_m r_o + Z_2 + r_o)}{Z_2 Z_4 g_m r_o + Z_2 Z_4 + 2 Z_2 Z_L g_m r_o + 2 Z_2 Z_L + Z_4 r_o + 2 Z_L r_o}$$

**2 HP**

**3 BP**

**3.1 BP-1**  $Z(s) = \left( \infty, R_2, \infty, R_4, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$

$$H(s) = \frac{L_L R_4 s}{C_L L_L R_4 s^2 + 2 L_L s + R_4}$$

**Parameters:**

Q:  $\frac{C_L R_4 \sqrt{\frac{1}{C_L L_L}}}{2}$   
 wo:  $\sqrt{\frac{1}{C_L L_L}}$   
 bandwidth:  $\frac{2}{C_L R_4}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $\frac{R_4}{2}$   
 QZ: 0  
 Wz: None

**3.2 BP-2**  $Z(s) = \left( \infty, R_2, \infty, R_4, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$

$$H(s) = \frac{L_L R_4 R_L s}{C_L L_L R_4 R_L s^2 + L_L R_4 s + 2 L_L R_L s + R_4 R_L}$$

**Parameters:**

Q:  $\frac{C_L R_4 R_L \sqrt{\frac{1}{C_L L_L}}}{R_4 + 2 R_L}$   
 wo:  $\sqrt{\frac{1}{C_L L_L}}$   
 bandwidth:  $\frac{R_4 + 2 R_L}{C_L R_4 R_L}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $\frac{R_4 R_L}{R_4 + 2 R_L}$   
 QZ: 0  
 Wz: None

**3.3 BP-3**  $Z(s) = \left( \infty, R_2, \infty, \frac{1}{C_4 s}, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$

$$H(s) = \frac{L_L R_L s}{2 C_4 L_L R_L s^2 + C_L L_L R_L s^2 + L_L s + R_L}$$

**Parameters:**

Q:  $R_L \sqrt{\frac{1}{L_L (2 C_4 + C_L)}} (2 C_4 + C_L)$

wo:  $\sqrt{\frac{1}{L_L(2C_4+C_L)}}$   
bandwidth:  $\frac{1}{R_L(2C_4+C_L)}$   
K-LP: 0  
K-HP: 0  
K-BP:  $R_L$   
QZ: 0  
Wz: None

**3.4 BP-4**  $Z(s) = \left( \infty, R_2, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$

$$H(s) = \frac{L_L R_4 s}{2C_4 L_L R_4 s^2 + C_L L_L R_4 s^2 + 2L_L s + R_4}$$

**Parameters:**

Q:  $\frac{R_4 \sqrt{\frac{1}{L_L(2C_4+C_L)}}(2C_4+C_L)}{2}$   
wo:  $\sqrt{\frac{1}{L_L(2C_4+C_L)}}$   
bandwidth:  $\frac{2}{R_4(2C_4+C_L)}$   
K-LP: 0  
K-HP: 0  
K-BP:  $\frac{R_4}{2}$   
QZ: 0  
Wz: None

**3.5 BP-5**  $Z(s) = \left( \infty, R_2, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$

$$H(s) = \frac{L_L R_4 R_L s}{2C_4 L_L R_4 R_L s^2 + C_L L_L R_4 R_L s^2 + L_L R_4 s + 2L_L R_L s + R_4 R_L}$$

**Parameters:**

Q:  $\frac{R_4 R_L \sqrt{\frac{1}{L_L(2C_4+C_L)}}(2C_4+C_L)}{R_4 + 2R_L}$   
wo:  $\sqrt{\frac{1}{L_L(2C_4+C_L)}}$   
bandwidth:  $\frac{R_4 + 2R_L}{R_4 R_L(2C_4+C_L)}$   
K-LP: 0  
K-HP: 0  
K-BP:  $\frac{R_4 R_L}{R_4 + 2R_L}$   
QZ: 0  
Wz: None

**3.6 BP-6**  $Z(s) = \left( \infty, R_2, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, R_L \right)$

$$H(s) = \frac{L_4 R_L s}{2C_4 L_4 R_L s^2 + L_4 s + 2R_L}$$

**Parameters:**

Q:  $2C_4 R_L \sqrt{\frac{1}{C_4 L_4}}$   
wo:  $\sqrt{\frac{1}{C_4 L_4}}$   
bandwidth:  $\frac{1}{2C_4 R_L}$   
K-LP: 0

K-HP: 0  
K-BP:  $R_L$   
QZ: 0  
Wz: None

$$\mathbf{3.7 \quad BP-7} \quad Z(s) = \left( \infty, \quad R_2, \quad \infty, \quad \frac{L_4 s}{C_4 L_4 s^2 + 1}, \quad \infty, \quad \frac{R_L}{C_L R_L s + 1} \right)$$

**Parameters:**

Q:  $\sqrt{2} R_L \sqrt{\frac{1}{L_4(2C_4 + C_L)}} (2C_4 + C_L)$   
wo:  $\sqrt{2} \sqrt{\frac{1}{L_4(2C_4 + C_L)}}$   
bandwidth:  $\frac{1}{R_L(2C_4 + C_L)}$   
K-LP: 0  
K-HP: 0  
K-BP:  $R_L$   
QZ: 0  
Wz: None

$$H(s) = \frac{L_4 R_L s}{2C_4 L_4 R_L s^2 + C_L L_4 R_L s^2 + L_4 s + 2R_L}$$

$$\mathbf{3.8 \quad BP-8} \quad Z(s) = \left( \infty, \quad R_2, \quad \infty, \quad \frac{L_4 s}{C_4 L_4 s^2 + 1}, \quad \infty, \quad \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$$

**Parameters:**

Q:  $R_L \sqrt{\frac{L_4 + 2L_L}{L_4 L_L(2C_4 + C_L)}} (2C_4 + C_L)$   
wo:  $\sqrt{\frac{L_4 + 2L_L}{L_4 L_L(2C_4 + C_L)}}$   
bandwidth:  $\frac{1}{R_L(2C_4 + C_L)}$   
K-LP: 0  
K-HP: 0  
K-BP:  $R_L$   
QZ: 0  
Wz: None

$$H(s) = \frac{L_4 L_L R_L s}{2C_4 L_4 L_L R_L s^2 + C_L L_4 L_L R_L s^2 + L_4 L_L s + L_4 R_L + 2L_L R_L}$$

$$\mathbf{3.9 \quad BP-9} \quad Z(s) = \left( \infty, \quad R_2, \quad \infty, \quad \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \quad \infty, \quad R_L \right)$$

**Parameters:**

Q:  $\frac{2C_4 R_4 R_L \sqrt{\frac{1}{C_4 L_4}}}{R_4 + 2R_L}$   
wo:  $\sqrt{\frac{1}{C_4 L_4}}$   
bandwidth:  $\frac{R_4 + 2R_L}{2C_4 R_4 R_L}$   
K-LP: 0  
K-HP: 0  
K-BP:  $\frac{R_4 R_L}{R_4 + 2R_L}$   
QZ: 0

$$H(s) = \frac{L_4 R_4 R_L s}{2C_4 L_4 R_4 R_L s^2 + L_4 R_4 s + 2L_4 R_L s + 2R_4 R_L}$$

Wz: None

$$3.10 \quad \text{BP-10} \quad Z(s) = \left( \infty, \quad R_2, \quad \infty, \quad \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \quad \infty, \quad \frac{1}{C_L s} \right)$$

**Parameters:**

$$\begin{aligned} \text{Q:} & \frac{\sqrt{2} R_4 \sqrt{\frac{1}{L_4 (2C_4 + C_L)}} (2C_4 + C_L)}{2} \\ \text{wo:} & \sqrt{2} \sqrt{\frac{1}{L_4 (2C_4 + C_L)}} \\ \text{bandwidth:} & \frac{2}{R_4 (2C_4 + C_L)} \\ \text{K-LP:} & 0 \\ \text{K-HP:} & 0 \\ \text{K-BP:} & \frac{R_4}{2} \\ \text{QZ:} & 0 \\ \text{Wz:} & \text{None} \end{aligned}$$

$$H(s) = \frac{L_4 R_4 s}{2C_4 L_4 R_4 s^2 + C_L L_4 R_4 s^2 + 2L_4 s + 2R_4}$$

$$3.11 \quad \text{BP-11} \quad Z(s) = \left( \infty, \quad R_2, \quad \infty, \quad \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \quad \infty, \quad \frac{R_L}{C_L R_L s + 1} \right)$$

**Parameters:**

$$\begin{aligned} \text{Q:} & \frac{\sqrt{2} R_4 R_L \sqrt{\frac{1}{L_4 (2C_4 + C_L)}} (2C_4 + C_L)}{R_4 + 2R_L} \\ \text{wo:} & \sqrt{2} \sqrt{\frac{1}{L_4 (2C_4 + C_L)}} \\ \text{bandwidth:} & \frac{R_4 + 2R_L}{R_4 R_L (2C_4 + C_L)} \\ \text{K-LP:} & 0 \\ \text{K-HP:} & 0 \\ \text{K-BP:} & \frac{R_4 R_L}{R_4 + 2R_L} \\ \text{QZ:} & 0 \\ \text{Wz:} & \text{None} \end{aligned}$$

$$H(s) = \frac{L_4 R_4 R_L s}{2C_4 L_4 R_4 R_L s^2 + C_L L_4 R_4 R_L s^2 + L_4 R_4 s + 2L_4 R_L s + 2R_4 R_L}$$

$$3.12 \quad \text{BP-12} \quad Z(s) = \left( \infty, \quad R_2, \quad \infty, \quad \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \quad \infty, \quad \frac{L_L s}{C_L L_L s^2 + 1} \right)$$

**Parameters:**

$$\begin{aligned} \text{Q:} & \frac{R_4 \sqrt{\frac{L_4 + 2L_L}{L_4 L_L (2C_4 + C_L)}} (2C_4 + C_L)}{2} \\ \text{wo:} & \sqrt{\frac{L_4 + 2L_L}{L_4 L_L (2C_4 + C_L)}} \\ \text{bandwidth:} & \frac{2}{R_4 (2C_4 + C_L)} \\ \text{K-LP:} & 0 \\ \text{K-HP:} & 0 \\ \text{K-BP:} & \frac{R_4}{2} \\ \text{QZ:} & 0 \\ \text{Wz:} & \text{None} \end{aligned}$$

$$H(s) = \frac{L_4 L_L R_4 s}{2C_4 L_4 L_L R_4 s^2 + C_L L_4 L_L R_4 s^2 + 2L_4 L_L s + L_4 R_4 + 2L_L R_4}$$

**3.13 BP-13**  $Z(s) = \left( \infty, R_2, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$

$$H(s) = \frac{L_4 L_L R_4 R_L s}{2C_4 L_4 L_L R_4 R_L s^2 + C_L L_4 L_L R_4 R_L s^2 + L_4 L_L R_4 s + 2L_4 L_L R_L s + L_4 R_4 R_L + 2L_L R_4 R_L}$$

**Parameters:**

Q:  $\frac{R_4 R_L \sqrt{\frac{L_4 + 2L_L}{L_4 L_L (2C_4 + C_L)}} (2C_4 + C_L)}{R_4 + 2R_L}$   
 wo:  $\sqrt{\frac{L_4 + 2L_L}{L_4 L_L (2C_4 + C_L)}}$   
 bandwidth:  $\frac{R_4 + 2R_L}{R_4 R_L (2C_4 + C_L)}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $\frac{R_4 R_L}{R_4 + 2R_L}$   
 QZ: 0  
 Wz: None

**3.14 BP-14**  $Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, R_4, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$

$$H(s) = \frac{L_L R_4 s}{C_L L_L R_4 s^2 + 2L_L s + R_4}$$

**Parameters:**

Q:  $\frac{C_L R_4 \sqrt{\frac{1}{C_L L_L}}}{2}$   
 wo:  $\sqrt{\frac{1}{C_L L_L}}$   
 bandwidth:  $\frac{2}{C_L R_4}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $\frac{R_4}{2}$   
 QZ: 0  
 Wz: None

**3.15 BP-15**  $Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, R_4, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$

$$H(s) = \frac{L_L R_4 R_L s}{C_L L_L R_4 R_L s^2 + L_L R_4 s + 2L_L R_L s + R_4 R_L}$$

**Parameters:**

Q:  $\frac{C_L R_4 R_L \sqrt{\frac{1}{C_L L_L}}}{R_4 + 2R_L}$   
 wo:  $\sqrt{\frac{1}{C_L L_L}}$   
 bandwidth:  $\frac{R_4 + 2R_L}{C_L R_4 R_L}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $\frac{R_4 R_L}{R_4 + 2R_L}$   
 QZ: 0  
 Wz: None

**3.16 BP-16**  $Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{1}{C_4 s}, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$

**Parameters:**

Q:  $R_L \sqrt{\frac{1}{L_L(2C_4 + C_L)}} (2C_4 + C_L)$   
 wo:  $\sqrt{\frac{1}{L_L(2C_4 + C_L)}}$   
 bandwidth:  $\frac{1}{R_L(2C_4 + C_L)}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $R_L$   
 QZ: 0  
 WZ: None

$$H(s) = \frac{L_L R_L s}{2C_4 L_L R_L s^2 + C_L L_L R_L s^2 + L_L s + R_L}$$

**3.17 BP-17**  $Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$

**Parameters:**

Q:  $\frac{R_4 \sqrt{\frac{1}{L_L(2C_4 + C_L)}} (2C_4 + C_L)}{2}$   
 wo:  $\sqrt{\frac{1}{L_L(2C_4 + C_L)}}$   
 bandwidth:  $\frac{2}{R_4(2C_4 + C_L)}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $\frac{R_4}{2}$   
 QZ: 0  
 WZ: None

$$H(s) = \frac{L_L R_4 s}{2C_4 L_L R_4 s^2 + C_L L_L R_4 s^2 + 2L_L s + R_4}$$

**3.18 BP-18**  $Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$

**Parameters:**

Q:  $\frac{R_4 R_L \sqrt{\frac{1}{L_L(2C_4 + C_L)}} (2C_4 + C_L)}{R_4 + 2R_L}$   
 wo:  $\sqrt{\frac{1}{L_L(2C_4 + C_L)}}$   
 bandwidth:  $\frac{R_4 + 2R_L}{R_4 R_L(2C_4 + C_L)}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $\frac{R_4 R_L}{R_4 + 2R_L}$   
 QZ: 0  
 WZ: None

$$H(s) = \frac{L_L R_4 R_L s}{2C_4 L_L R_4 R_L s^2 + C_L L_L R_4 R_L s^2 + L_L R_4 s + 2L_L R_L s + R_4 R_L}$$



**3.19 BP-19**  $Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, R_L \right)$

$$H(s) = \frac{L_4 R_L s}{2C_4 L_4 R_L s^2 + L_4 s + 2R_L}$$

**Parameters:**

Q:  $2C_4 R_L \sqrt{\frac{1}{C_4 L_4}}$   
 wo:  $\sqrt{\frac{1}{C_4 L_4}}$   
 bandwidth:  $\frac{1}{2C_4 R_L}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $R_L$   
 QZ: 0  
 Wz: None

**3.20 BP-20**  $Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, \frac{R_L}{C_L R_L s + 1} \right)$

$$H(s) = \frac{L_4 R_L s}{2C_4 L_4 R_L s^2 + C_L L_4 R_L s^2 + L_4 s + 2R_L}$$

**Parameters:**

Q:  $\sqrt{2} R_L \sqrt{\frac{1}{L_4 (2C_4 + C_L)}} (2C_4 + C_L)$   
 wo:  $\sqrt{2} \sqrt{\frac{1}{L_4 (2C_4 + C_L)}}$   
 bandwidth:  $\frac{1}{R_L (2C_4 + C_L)}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $R_L$   
 QZ: 0  
 Wz: None

**3.21 BP-21**  $Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$

$$H(s) = \frac{L_4 L_L R_L s}{2C_4 L_4 L_L R_L s^2 + C_L L_4 L_L R_L s^2 + L_4 L_L s + L_4 R_L + 2L_L R_L}$$

**Parameters:**

Q:  $R_L \sqrt{\frac{L_4 + 2L_L}{L_4 L_L (2C_4 + C_L)}} (2C_4 + C_L)$   
 wo:  $\sqrt{\frac{L_4 + 2L_L}{L_4 L_L (2C_4 + C_L)}}$   
 bandwidth:  $\frac{1}{R_L (2C_4 + C_L)}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $R_L$   
 QZ: 0  
 Wz: None

**3.22 BP-22**  $Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, R_L \right)$

**Parameters:**

Q:  $\frac{2C_4 R_4 R_L \sqrt{\frac{1}{C_4 L_4}}}{R_4 + 2R_L}$   
 wo:  $\sqrt{\frac{1}{C_4 L_4}}$   
 bandwidth:  $\frac{R_4 + 2R_L}{2C_4 R_4 R_L}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $\frac{R_4 R_L}{R_4 + 2R_L}$   
 QZ: 0  
 Wz: None

$$H(s) = \frac{L_4 R_4 R_L s}{2C_4 L_4 R_4 R_L s^2 + L_4 R_4 s + 2L_4 R_L s + 2R_4 R_L}$$

**3.23 BP-23**  $Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, \frac{1}{C_L s} \right)$

**Parameters:**

Q:  $\frac{\sqrt{2} R_4 \sqrt{\frac{1}{L_4 (2C_4 + C_L)}} (2C_4 + C_L)}{2}$   
 wo:  $\sqrt{2} \sqrt{\frac{1}{L_4 (2C_4 + C_L)}}$   
 bandwidth:  $\frac{2}{R_4 (2C_4 + C_L)}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $\frac{R_4}{2}$   
 QZ: 0  
 Wz: None

$$H(s) = \frac{L_4 R_4 s}{2C_4 L_4 R_4 s^2 + C_L L_4 R_4 s^2 + 2L_4 s + 2R_4}$$

**3.24 BP-24**  $Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, \frac{R_L}{C_L R_L s + 1} \right)$

**Parameters:**

Q:  $\frac{\sqrt{2} R_4 R_L \sqrt{\frac{1}{L_4 (2C_4 + C_L)}} (2C_4 + C_L)}{R_4 + 2R_L}$   
 wo:  $\sqrt{2} \sqrt{\frac{1}{L_4 (2C_4 + C_L)}}$   
 bandwidth:  $\frac{R_4 + 2R_L}{R_4 R_L (2C_4 + C_L)}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $\frac{R_4 R_L}{R_4 + 2R_L}$   
 QZ: 0  
 Wz: None

$$H(s) = \frac{L_4 R_4 R_L s}{2C_4 L_4 R_4 R_L s^2 + C_L L_4 R_4 R_L s^2 + L_4 R_4 s + 2L_4 R_L s + 2R_4 R_L}$$

**3.25 BP-25**  $Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$

$$H(s) = \frac{L_4 L_L R_4 s}{2C_4 L_4 L_L R_4 s^2 + C_L L_4 L_L R_4 s^2 + 2L_4 L_L s + L_4 R_4 + 2L_L R_4}$$

**Parameters:**

Q:  $\frac{R_4 \sqrt{\frac{L_4 + 2L_L}{L_4 L_L (2C_4 + C_L)}} (2C_4 + C_L)}{2}$   
 wo:  $\sqrt{\frac{L_4 + 2L_L}{L_4 L_L (2C_4 + C_L)}}$   
 bandwidth:  $\frac{2}{R_4 (2C_4 + C_L)}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $\frac{R_4}{2}$   
 QZ: 0  
 Wz: None

**3.26 BP-26**  $Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$

$$H(s) = \frac{L_4 L_L R_4 R_L s}{2C_4 L_4 L_L R_4 R_L s^2 + C_L L_4 L_L R_4 R_L s^2 + L_4 L_L R_4 s + 2L_4 L_L R_L s + L_4 R_4 R_L + 2L_L R_4 R_L}$$

**Parameters:**

Q:  $\frac{R_4 R_L \sqrt{\frac{L_4 + 2L_L}{L_4 L_L (2C_4 + C_L)}} (2C_4 + C_L)}{R_4 + 2R_L}$   
 wo:  $\sqrt{\frac{L_4 + 2L_L}{L_4 L_L (2C_4 + C_L)}}$   
 bandwidth:  $\frac{R_4 + 2R_L}{R_4 R_L (2C_4 + C_L)}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $\frac{R_4 R_L}{R_4 + 2R_L}$   
 QZ: 0  
 Wz: None

**3.27 BP-27**  $Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, R_4, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$

$$H(s) = \frac{L_L R_4 s}{C_L L_L R_4 s^2 + 2L_L s + R_4}$$

**Parameters:**

Q:  $\frac{C_L R_4 \sqrt{\frac{1}{C_L L_L}}}{2}$   
 wo:  $\sqrt{\frac{1}{C_L L_L}}$   
 bandwidth:  $\frac{2}{C_L R_4}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $\frac{R_4}{2}$   
 QZ: 0  
 Wz: None

**3.28 BP-28**  $Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, R_4, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$

**Parameters:**

Q:  $\frac{C_L R_4 R_L \sqrt{\frac{1}{C_L L_L}}}{R_4 + 2R_L}$   
 wo:  $\sqrt{\frac{1}{C_L L_L}}$   
 bandwidth:  $\frac{R_4 + 2R_L}{C_L R_4 R_L}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $\frac{R_4 R_L}{R_4 + 2R_L}$   
 QZ: 0  
 Wz: None

$$H(s) = \frac{L_L R_4 R_L s}{C_L L_L R_4 R_L s^2 + L_L R_4 s + 2L_L R_L s + R_4 R_L}$$

**3.29 BP-29**  $Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{1}{C_4 s}, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$

**Parameters:**

Q:  $R_L \sqrt{\frac{1}{L_L (2C_4 + C_L)}} (2C_4 + C_L)$   
 wo:  $\sqrt{\frac{1}{L_L (2C_4 + C_L)}}$   
 bandwidth:  $\frac{1}{R_L (2C_4 + C_L)}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $R_L$   
 QZ: 0  
 Wz: None

$$H(s) = \frac{L_L R_L s}{2C_4 L_L R_L s^2 + C_L L_L R_L s^2 + L_L s + R_L}$$

**3.30 BP-30**  $Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$

**Parameters:**

Q:  $\frac{R_4 \sqrt{\frac{1}{L_L (2C_4 + C_L)}} (2C_4 + C_L)}{2}$   
 wo:  $\sqrt{\frac{1}{L_L (2C_4 + C_L)}}$   
 bandwidth:  $\frac{2}{R_4 (2C_4 + C_L)}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $\frac{R_4}{2}$   
 QZ: 0  
 Wz: None

$$H(s) = \frac{L_L R_4 s}{2C_4 L_L R_4 s^2 + C_L L_L R_4 s^2 + 2L_L s + R_4}$$

**3.31 BP-31**  $Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$

$$H(s) = \frac{L_L R_4 R_L s}{2C_4 L_L R_4 R_L s^2 + C_L L_L R_4 R_L s^2 + L_L R_4 s + 2L_L R_L s + R_4 R_L}$$

**Parameters:**

Q:  $\frac{R_4 R_L \sqrt{\frac{1}{L_L (2C_4 + C_L)}} (2C_4 + C_L)}{R_4 + 2R_L}$   
 wo:  $\sqrt{\frac{1}{L_L (2C_4 + C_L)}}$   
 bandwidth:  $\frac{R_4 + 2R_L}{R_4 R_L (2C_4 + C_L)}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $\frac{R_4 R_L}{R_4 + 2R_L}$   
 QZ: 0  
 Wz: None

**3.32 BP-32**  $Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, R_L \right)$

$$H(s) = \frac{L_4 R_L s}{2C_4 L_4 R_L s^2 + L_4 s + 2R_L}$$

**Parameters:**

Q:  $2C_4 R_L \sqrt{\frac{1}{C_4 L_4}}$   
 wo:  $\sqrt{\frac{1}{C_4 L_4}}$   
 bandwidth:  $\frac{1}{2C_4 R_L}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $R_L$   
 QZ: 0  
 Wz: None

**3.33 BP-33**  $Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, \frac{R_L}{C_L R_L s + 1} \right)$

$$H(s) = \frac{L_4 R_L s}{2C_4 L_4 R_L s^2 + C_L L_4 R_L s^2 + L_4 s + 2R_L}$$

**Parameters:**

Q:  $\sqrt{2} R_L \sqrt{\frac{1}{L_4 (2C_4 + C_L)}} (2C_4 + C_L)$   
 wo:  $\sqrt{2} \sqrt{\frac{1}{L_4 (2C_4 + C_L)}}$   
 bandwidth:  $\frac{1}{R_L (2C_4 + C_L)}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $R_L$   
 QZ: 0  
 Wz: None

**3.34 BP-34**  $Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$

$$H(s) = \frac{L_4 L_L R_L s}{2C_4 L_4 L_L R_L s^2 + C_L L_4 L_L R_L s^2 + L_4 L_L s + L_4 R_L + 2L_L R_L}$$

**Parameters:**

Q:  $R_L \sqrt{\frac{L_4 + 2L_L}{L_4 L_L (2C_4 + C_L)}} (2C_4 + C_L)$   
 wo:  $\sqrt{\frac{L_4 + 2L_L}{L_4 L_L (2C_4 + C_L)}}$   
 bandwidth:  $\frac{1}{R_L (2C_4 + C_L)}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $R_L$   
 QZ: 0  
 WZ: None

**3.35 BP-35**  $Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, R_L \right)$

$$H(s) = \frac{L_4 R_4 R_L s}{2C_4 L_4 R_4 R_L s^2 + L_4 R_4 s + 2L_4 R_L s + 2R_4 R_L}$$

**Parameters:**

Q:  $\frac{2C_4 R_4 R_L \sqrt{\frac{1}{C_4 L_4}}}{R_4 + 2R_L}$   
 wo:  $\sqrt{\frac{1}{C_4 L_4}}$   
 bandwidth:  $\frac{R_4 + 2R_L}{2C_4 R_4 R_L}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $\frac{R_4 R_L}{R_4 + 2R_L}$   
 QZ: 0  
 WZ: None

**3.36 BP-36**  $Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, \frac{1}{C_L s} \right)$

$$H(s) = \frac{L_4 R_4 s}{2C_4 L_4 R_4 s^2 + C_L L_4 R_4 s^2 + 2L_4 s + 2R_4}$$

**Parameters:**

Q:  $\frac{\sqrt{2} R_4 \sqrt{\frac{1}{L_4 (2C_4 + C_L)}} (2C_4 + C_L)}{2}$   
 wo:  $\sqrt{2} \sqrt{\frac{1}{L_4 (2C_4 + C_L)}}$   
 bandwidth:  $\frac{2}{R_4 (2C_4 + C_L)}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $\frac{R_4}{2}$   
 QZ: 0  
 WZ: None

$$3.37 \quad \text{BP-37} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, \frac{R_L}{C_L R_L s + 1} \right)$$

$$H(s) = \frac{L_4 R_4 R_L s}{2C_4 L_4 R_4 R_L s^2 + C_L L_4 R_4 R_L s^2 + L_4 R_4 s + 2L_4 R_L s + 2R_4 R_L}$$

Parameters:

$$\begin{aligned} \text{Q: } & \frac{\sqrt{2} R_4 R_L \sqrt{\frac{1}{L_4 (2C_4 + C_L)}} (2C_4 + C_L)}{R_4 + 2R_L} \\ \text{wo: } & \sqrt{2} \sqrt{\frac{1}{L_4 (2C_4 + C_L)}} \\ \text{bandwidth: } & \frac{R_4 + 2R_L}{R_4 R_L (2C_4 + C_L)} \\ \text{K-LP: } & 0 \\ \text{K-HP: } & 0 \\ \text{K-BP: } & \frac{R_4 R_L}{R_4 + 2R_L} \\ \text{QZ: } & 0 \\ \text{Wz: } & \text{None} \end{aligned}$$

$$3.38 \quad \text{BP-38} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$$

$$H(s) = \frac{L_4 L_L R_4 s}{2C_4 L_4 L_L R_4 s^2 + C_L L_4 L_L R_4 s^2 + 2L_4 L_L s + L_4 R_4 + 2L_L R_4}$$

Parameters:

$$\begin{aligned} \text{Q: } & \frac{R_4 \sqrt{\frac{L_4 + 2L_L}{L_4 L_L (2C_4 + C_L)}} (2C_4 + C_L)}{2} \\ \text{wo: } & \sqrt{\frac{L_4 + 2L_L}{L_4 L_L (2C_4 + C_L)}} \\ \text{bandwidth: } & \frac{2}{R_4 (2C_4 + C_L)} \\ \text{K-LP: } & 0 \\ \text{K-HP: } & 0 \\ \text{K-BP: } & \frac{R_4}{2} \\ \text{QZ: } & 0 \\ \text{Wz: } & \text{None} \end{aligned}$$

$$3.39 \quad \text{BP-39} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$$

$$H(s) = \frac{L_4 L_L R_4 R_L s}{2C_4 L_4 L_L R_4 R_L s^2 + C_L L_4 L_L R_4 R_L s^2 + L_4 L_L R_4 s + 2L_4 L_L R_L s + L_4 R_4 R_L + 2L_L R_4 R_L}$$

Parameters:

$$\begin{aligned} \text{Q: } & \frac{R_4 R_L \sqrt{\frac{L_4 + 2L_L}{L_4 L_L (2C_4 + C_L)}} (2C_4 + C_L)}{R_4 + 2R_L} \\ \text{wo: } & \sqrt{\frac{L_4 + 2L_L}{L_4 L_L (2C_4 + C_L)}} \\ \text{bandwidth: } & \frac{R_4 + 2R_L}{R_4 R_L (2C_4 + C_L)} \\ \text{K-LP: } & 0 \\ \text{K-HP: } & 0 \\ \text{K-BP: } & \frac{R_4 R_L}{R_4 + 2R_L} \\ \text{QZ: } & 0 \\ \text{Wz: } & \text{None} \end{aligned}$$

**3.40 BP-40**  $Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, R_4, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$

**Parameters:**

Q:  $\frac{C_L R_4 \sqrt{\frac{1}{C_L L_L}}}{2}$   
 wo:  $\sqrt{\frac{1}{C_L L_L}}$   
 bandwidth:  $\frac{2}{C_L R_4}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $\frac{R_4}{2}$   
 QZ: 0  
 Wz: None

$$H(s) = \frac{L_L R_4 s}{C_L L_L R_4 s^2 + 2 L_L s + R_4}$$

**3.41 BP-41**  $Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, R_4, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$

**Parameters:**

Q:  $\frac{C_L R_4 R_L \sqrt{\frac{1}{C_L L_L}}}{R_4 + 2 R_L}$   
 wo:  $\sqrt{\frac{1}{C_L L_L}}$   
 bandwidth:  $\frac{R_4 + 2 R_L}{C_L R_4 R_L}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $\frac{R_4 R_L}{R_4 + 2 R_L}$   
 QZ: 0  
 Wz: None

$$H(s) = \frac{L_L R_4 R_L s}{C_L L_L R_4 R_L s^2 + L_L R_4 s + 2 L_L R_L s + R_4 R_L}$$

**3.42 BP-42**  $Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, \frac{1}{C_4 s}, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$

**Parameters:**

Q:  $R_L \sqrt{\frac{1}{L_L (2 C_4 + C_L)}} (2 C_4 + C_L)$   
 wo:  $\sqrt{\frac{1}{L_L (2 C_4 + C_L)}}$   
 bandwidth:  $\frac{1}{R_L (2 C_4 + C_L)}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $R_L$   
 QZ: 0  
 Wz: None

$$H(s) = \frac{L_L R_L s}{2 C_4 L_L R_L s^2 + C_L L_L R_L s^2 + L_L s + R_L}$$



**3.43 BP-43**  $Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$

$$H(s) = \frac{L_L R_4 s}{2C_4 L_L R_4 s^2 + C_L L_L R_4 s^2 + 2L_L s + R_4}$$

**Parameters:**

Q:  $\frac{R_4 \sqrt{\frac{1}{L_L(2C_4 + C_L)}}(2C_4 + C_L)}{2}$   
 wo:  $\sqrt{\frac{1}{L_L(2C_4 + C_L)}}$   
 bandwidth:  $\frac{2}{R_4(2C_4 + C_L)}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $\frac{R_4}{2}$   
 QZ: 0  
 Wz: None

**3.44 BP-44**  $Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$

$$H(s) = \frac{L_L R_4 R_L s}{2C_4 L_L R_4 R_L s^2 + C_L L_L R_4 R_L s^2 + L_L R_4 s + 2L_L R_L s + R_4 R_L}$$

**Parameters:**

Q:  $\frac{R_4 R_L \sqrt{\frac{1}{L_L(2C_4 + C_L)}}(2C_4 + C_L)}{R_4 + 2R_L}$   
 wo:  $\sqrt{\frac{1}{L_L(2C_4 + C_L)}}$   
 bandwidth:  $\frac{R_4 + 2R_L}{R_4 R_L(2C_4 + C_L)}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $\frac{R_4 R_L}{R_4 + 2R_L}$   
 QZ: 0  
 Wz: None

**3.45 BP-45**  $Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, R_L \right)$

$$H(s) = \frac{L_4 R_L s}{2C_4 L_4 R_L s^2 + L_4 s + 2R_L}$$

**Parameters:**

Q:  $2C_4 R_L \sqrt{\frac{1}{C_4 L_4}}$   
 wo:  $\sqrt{\frac{1}{C_4 L_4}}$   
 bandwidth:  $\frac{1}{2C_4 R_L}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $R_L$   
 QZ: 0  
 Wz: None

**3.46 BP-46**  $Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, \frac{R_L}{C_L R_L s + 1} \right)$

$$H(s) = \frac{L_4 R_L s}{2C_4 L_4 R_L s^2 + C_L L_4 R_L s^2 + L_4 s + 2R_L}$$

**Parameters:**

Q:  $\sqrt{2}R_L \sqrt{\frac{1}{L_4(2C_4+C_L)}} (2C_4 + C_L)$   
 wo:  $\sqrt{2} \sqrt{\frac{1}{L_4(2C_4+C_L)}}$   
 bandwidth:  $\frac{1}{R_L(2C_4+C_L)}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $R_L$   
 QZ: 0  
 Wz: None

**3.47 BP-47**  $Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$

$$H(s) = \frac{L_4 L_L R_L s}{2C_4 L_4 L_L R_L s^2 + C_L L_4 L_L R_L s^2 + L_4 L_L s + L_4 R_L + 2L_L R_L}$$

**Parameters:**

Q:  $R_L \sqrt{\frac{L_4 + 2L_L}{L_4 L_L (2C_4 + C_L)}} (2C_4 + C_L)$   
 wo:  $\sqrt{\frac{L_4 + 2L_L}{L_4 L_L (2C_4 + C_L)}}$   
 bandwidth:  $\frac{1}{R_L(2C_4 + C_L)}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $R_L$   
 QZ: 0  
 Wz: None

**3.48 BP-48**  $Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, R_L \right)$

$$H(s) = \frac{L_4 R_4 R_L s}{2C_4 L_4 R_4 R_L s^2 + L_4 R_4 s + 2L_4 R_L s + 2R_4 R_L}$$

**Parameters:**

Q:  $\frac{2C_4 R_4 R_L \sqrt{\frac{1}{C_4 L_4}}}{R_4 + 2R_L}$   
 wo:  $\sqrt{\frac{1}{C_4 L_4}}$   
 bandwidth:  $\frac{R_4 + 2R_L}{2C_4 R_4 R_L}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $\frac{R_4 R_L}{R_4 + 2R_L}$   
 QZ: 0  
 Wz: None

**3.49 BP-49**  $Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, \frac{1}{C_L s} \right)$

$$H(s) = \frac{L_4 R_4 s}{2C_4 L_4 R_4 s^2 + C_L L_4 R_4 s^2 + 2L_4 s + 2R_4}$$

**Parameters:**

Q:  $\frac{\sqrt{2} R_4 \sqrt{\frac{1}{L_4 (2C_4 + C_L)}} (2C_4 + C_L)}{2}$   
wo:  $\sqrt{2} \sqrt{\frac{1}{L_4 (2C_4 + C_L)}}$   
bandwidth:  $\frac{2}{R_4 (2C_4 + C_L)}$   
K-LP: 0  
K-HP: 0  
K-BP:  $\frac{R_4}{2}$   
QZ: 0  
Wz: None

**3.50 BP-50**  $Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, \frac{R_L}{C_L R_L s + 1} \right)$

$$H(s) = \frac{L_4 R_4 R_L s}{2C_4 L_4 R_4 R_L s^2 + C_L L_4 R_4 R_L s^2 + L_4 R_4 s + 2L_4 R_L s + 2R_4 R_L}$$

**Parameters:**

Q:  $\frac{\sqrt{2} R_4 R_L \sqrt{\frac{1}{L_4 (2C_4 + C_L)}} (2C_4 + C_L)}{R_4 + 2R_L}$   
wo:  $\sqrt{2} \sqrt{\frac{1}{L_4 (2C_4 + C_L)}}$   
bandwidth:  $\frac{R_4 + 2R_L}{R_4 R_L (2C_4 + C_L)}$   
K-LP: 0  
K-HP: 0  
K-BP:  $\frac{R_4 R_L}{R_4 + 2R_L}$   
QZ: 0  
Wz: None

**3.51 BP-51**  $Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$

$$H(s) = \frac{L_4 L_L R_4 s}{2C_4 L_4 L_L R_4 s^2 + C_L L_4 L_L R_4 s^2 + 2L_4 L_L s + L_4 R_4 + 2L_L R_4}$$

**Parameters:**

Q:  $\frac{R_4 \sqrt{\frac{L_4 + 2L_L}{L_4 L_L (2C_4 + C_L)}} (2C_4 + C_L)}{2}$   
wo:  $\sqrt{\frac{L_4 + 2L_L}{L_4 L_L (2C_4 + C_L)}}$   
bandwidth:  $\frac{2}{R_4 (2C_4 + C_L)}$   
K-LP: 0  
K-HP: 0  
K-BP:  $\frac{R_4}{2}$   
QZ: 0  
Wz: None

**3.52 BP-52**  $Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$

$$H(s) = \frac{L_4 L_L R_4 R_L s}{2C_4 L_4 L_L R_4 R_L s^2 + C_L L_4 L_L R_4 R_L s^2 + L_4 L_L R_4 s + 2L_4 L_L R_L s + L_4 R_4 R_L + 2L_L R_4 R_L}$$

**Parameters:**

Q:  $\frac{R_4 R_L \sqrt{\frac{L_4 + 2L_L}{L_4 L_L (2C_4 + C_L)}} (2C_4 + C_L)}{R_4 + 2R_L}$   
 wo:  $\sqrt{\frac{L_4 + 2L_L}{L_4 L_L (2C_4 + C_L)}}$   
 bandwidth:  $\frac{R_4 + 2R_L}{R_4 R_L (2C_4 + C_L)}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $\frac{R_4 R_L}{R_4 + 2R_L}$   
 QZ: 0  
 Wz: None

**3.53 BP-53**  $Z(s) = \left( \infty, L_2 s + \frac{1}{C_2 s}, \infty, R_4, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$

$$H(s) = \frac{L_L R_4 s}{C_L L_L R_4 s^2 + 2L_L s + R_4}$$

**Parameters:**

Q:  $\frac{C_L R_4 \sqrt{\frac{1}{C_L L_L}}}{2}$   
 wo:  $\sqrt{\frac{1}{C_L L_L}}$   
 bandwidth:  $\frac{2}{C_L R_4}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $\frac{R_4}{2}$   
 QZ: 0  
 Wz: None

**3.54 BP-54**  $Z(s) = \left( \infty, L_2 s + \frac{1}{C_2 s}, \infty, R_4, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$

$$H(s) = \frac{L_L R_4 R_L s}{C_L L_L R_4 R_L s^2 + L_L R_4 s + 2L_L R_L s + R_4 R_L}$$

**Parameters:**

Q:  $\frac{C_L R_4 R_L \sqrt{\frac{1}{C_L L_L}}}{R_4 + 2R_L}$   
 wo:  $\sqrt{\frac{1}{C_L L_L}}$   
 bandwidth:  $\frac{R_4 + 2R_L}{C_L R_4 R_L}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $\frac{R_4 R_L}{R_4 + 2R_L}$   
 QZ: 0  
 Wz: None

**3.55 BP-55**  $Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{1}{C_4s}, \infty, \frac{1}{C_Ls + \frac{1}{R_L} + \frac{1}{L_Ls}} \right)$

**Parameters:**

Q:  $R_L \sqrt{\frac{1}{L_L(2C_4+C_L)}} (2C_4 + C_L)$   
 wo:  $\sqrt{\frac{1}{L_L(2C_4+C_L)}}$   
 bandwidth:  $\frac{1}{R_L(2C_4+C_L)}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $R_L$   
 QZ: 0  
 WZ: None

$$H(s) = \frac{L_LR_Ls}{2C_4L_LR_Ls^2 + C_LL_LR_Ls^2 + L_Ls + R_L}$$

**3.56 BP-56**  $Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{R_4}{C_4R_4s+1}, \infty, \frac{L_Ls}{C_LL_Ls^2+1} \right)$

**Parameters:**

Q:  $\frac{R_4 \sqrt{\frac{1}{L_L(2C_4+C_L)}} (2C_4+C_L)}{2}$   
 wo:  $\sqrt{\frac{1}{L_L(2C_4+C_L)}}$   
 bandwidth:  $\frac{2}{R_4(2C_4+C_L)}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $\frac{R_4}{2}$   
 QZ: 0  
 WZ: None

$$H(s) = \frac{L_LR_4s}{2C_4L_LR_4s^2 + C_LL_LR_4s^2 + 2L_Ls + R_4}$$

**3.57 BP-57**  $Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{R_4}{C_4R_4s+1}, \infty, \frac{1}{C_Ls + \frac{1}{R_L} + \frac{1}{L_Ls}} \right)$

**Parameters:**

Q:  $\frac{R_4R_L \sqrt{\frac{1}{L_L(2C_4+C_L)}} (2C_4+C_L)}{R_4+2R_L}$   
 wo:  $\sqrt{\frac{1}{L_L(2C_4+C_L)}}$   
 bandwidth:  $\frac{R_4+2R_L}{R_4R_L(2C_4+C_L)}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $\frac{R_4R_L}{R_4+2R_L}$   
 QZ: 0  
 WZ: None

$$H(s) = \frac{L_LR_4R_Ls}{2C_4L_LR_4R_Ls^2 + C_LL_LR_4R_Ls^2 + L_LR_4s + 2L_LR_Ls + R_4R_L}$$

**3.58 BP-58**  $Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{L_4s}{C_4L_4s^2+1}, \infty, R_L \right)$

$$H(s) = \frac{L_4R_Ls}{2C_4L_4R_Ls^2 + L_4s + 2R_L}$$

**Parameters:**

Q:  $2C_4R_L\sqrt{\frac{1}{C_4L_4}}$   
 wo:  $\sqrt{\frac{1}{C_4L_4}}$   
 bandwidth:  $\frac{1}{2C_4R_L}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $R_L$   
 QZ: 0  
 Wz: None

**3.59 BP-59**  $Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{L_4s}{C_4L_4s^2+1}, \infty, \frac{R_L}{C_LR_Ls+1} \right)$

$$H(s) = \frac{L_4R_Ls}{2C_4L_4R_Ls^2 + C_LR_Ls + L_4s + 2R_L}$$

**Parameters:**

Q:  $\sqrt{2}R_L\sqrt{\frac{1}{L_4(2C_4+C_L)}}(2C_4 + C_L)$   
 wo:  $\sqrt{2}\sqrt{\frac{1}{L_4(2C_4+C_L)}}$   
 bandwidth:  $\frac{1}{R_L(2C_4+C_L)}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $R_L$   
 QZ: 0  
 Wz: None

**3.60 BP-60**  $Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{L_4s}{C_4L_4s^2+1}, \infty, \frac{1}{C_Ls + \frac{1}{R_L} + \frac{1}{L_Ls}} \right)$

$$H(s) = \frac{L_4L_LR_Ls}{2C_4L_4L_LR_Ls^2 + C_LL_LR_Ls^2 + L_4L_Ls + L_4R_L + 2L_LR_L}$$

**Parameters:**

Q:  $R_L\sqrt{\frac{L_4+2L_L}{L_4L_L(2C_4+C_L)}}(2C_4 + C_L)$   
 wo:  $\sqrt{\frac{L_4+2L_L}{L_4L_L(2C_4+C_L)}}$   
 bandwidth:  $\frac{1}{R_L(2C_4+C_L)}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $R_L$   
 QZ: 0  
 Wz: None

**3.61 BP-61**  $Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{1}{C_4s + \frac{1}{R_4} + \frac{1}{L_4s}}, \infty, R_L \right)$

**Parameters:**

Q:  $\frac{2C_4R_4R_L\sqrt{\frac{1}{C_4L_4}}}{R_4+2R_L}$   
 wo:  $\sqrt{\frac{1}{C_4L_4}}$   
 bandwidth:  $\frac{R_4+2R_L}{2C_4R_4R_L}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $\frac{R_4R_L}{R_4+2R_L}$   
 QZ: 0  
 Wz: None

$$H(s) = \frac{L_4R_4R_Ls}{2C_4L_4R_4R_Ls^2 + L_4R_4s + 2L_4R_Ls + 2R_4R_L}$$

**3.62 BP-62**  $Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{1}{C_4s + \frac{1}{R_4} + \frac{1}{L_4s}}, \infty, \frac{1}{C_Ls} \right)$

**Parameters:**

Q:  $\frac{\sqrt{2}R_4\sqrt{\frac{1}{L_4(2C_4+C_L)}}(2C_4+C_L)}{2}$   
 wo:  $\sqrt{2}\sqrt{\frac{1}{L_4(2C_4+C_L)}}$   
 bandwidth:  $\frac{2}{R_4(2C_4+C_L)}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $\frac{R_4}{2}$   
 QZ: 0  
 Wz: None

$$H(s) = \frac{L_4R_4s}{2C_4L_4R_4s^2 + C_LL_4R_4s^2 + 2L_4s + 2R_4}$$

**3.63 BP-63**  $Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{1}{C_4s + \frac{1}{R_4} + \frac{1}{L_4s}}, \infty, \frac{R_L}{C_LR_Ls+1} \right)$

**Parameters:**

Q:  $\frac{\sqrt{2}R_4R_L\sqrt{\frac{1}{L_4(2C_4+C_L)}}(2C_4+C_L)}{R_4+2R_L}$   
 wo:  $\sqrt{2}\sqrt{\frac{1}{L_4(2C_4+C_L)}}$   
 bandwidth:  $\frac{R_4+2R_L}{R_4R_L(2C_4+C_L)}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $\frac{R_4R_L}{R_4+2R_L}$   
 QZ: 0  
 Wz: None

$$H(s) = \frac{L_4R_4R_Ls}{2C_4L_4R_4R_Ls^2 + C_LL_4R_4R_Ls^2 + L_4R_4s + 2L_4R_Ls + 2R_4R_L}$$

**3.64 BP-64**  $Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{1}{C_4s + \frac{1}{R_4} + \frac{1}{L_4s}}, \infty, \frac{L_Ls}{C_LL_Ls^2 + 1} \right)$

$$H(s) = \frac{L_4L_LR_4s}{2C_4L_4L_LR_4s^2 + C_LL_4L_LR_4s^2 + 2L_4L_Ls + L_4R_4 + 2L_LR_4}$$

**Parameters:**

Q:  $\frac{R_4\sqrt{\frac{L_4+2L_L}{L_4L_L(2C_4+C_L)}}(2C_4+C_L)}{2}$   
 wo:  $\sqrt{\frac{L_4+2L_L}{L_4L_L(2C_4+C_L)}}$   
 bandwidth:  $\frac{2}{R_4(2C_4+C_L)}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $\frac{R_4}{2}$   
 QZ: 0  
 Wz: None

**3.65 BP-65**  $Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{1}{C_4s + \frac{1}{R_4} + \frac{1}{L_4s}}, \infty, \frac{1}{C_Ls + \frac{1}{R_L} + \frac{1}{L_Ls}} \right)$

$$H(s) = \frac{L_4L_LR_4R_Ls}{2C_4L_4L_LR_4R_Ls^2 + C_LL_4L_LR_4R_Ls^2 + L_4L_LR_4s + 2L_4L_LR_Ls + L_4R_4R_L + 2L_LR_4R_L}$$

**Parameters:**

Q:  $\frac{R_4R_L\sqrt{\frac{L_4+2L_L}{L_4L_L(2C_4+C_L)}}(2C_4+C_L)}{R_4+2R_L}$   
 wo:  $\sqrt{\frac{L_4+2L_L}{L_4L_L(2C_4+C_L)}}$   
 bandwidth:  $\frac{R_4+2R_L}{R_4R_L(2C_4+C_L)}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $\frac{R_4R_L}{R_4+2R_L}$   
 QZ: 0  
 Wz: None

**3.66 BP-66**  $Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, R_4, \infty, \frac{L_Ls}{C_LL_Ls^2 + 1} \right)$

$$H(s) = \frac{L_LR_4s}{C_LL_LR_4s^2 + 2L_Ls + R_4}$$

**Parameters:**

Q:  $\frac{C_LR_4\sqrt{\frac{1}{C_LL_L}}}{2}$   
 wo:  $\sqrt{\frac{1}{C_LL_L}}$   
 bandwidth:  $\frac{2}{C_LR_4}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $\frac{R_4}{2}$   
 QZ: 0  
 Wz: None



**3.67 BP-67**  $Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, R_4, \infty, \frac{1}{C_Ls + \frac{1}{R_L} + \frac{1}{L_Ls}} \right)$

**Parameters:**

Q:  $\frac{C_LR_4R_L\sqrt{\frac{1}{C_LL_L}}}{R_4+2R_L}$   
 wo:  $\sqrt{\frac{1}{C_LL_L}}$   
 bandwidth:  $\frac{R_4+2R_L}{C_LR_4R_L}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $\frac{R_4R_L}{R_4+2R_L}$   
 QZ: 0  
 Wz: None

$$H(s) = \frac{L_LR_4R_Ls}{C_LL_LR_4R_Ls^2 + L_LR_4s + 2L_LR_Ls + R_4R_L}$$

**3.68 BP-68**  $Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{1}{C_4s}, \infty, \frac{1}{C_Ls + \frac{1}{R_L} + \frac{1}{L_Ls}} \right)$

**Parameters:**

Q:  $R_L\sqrt{\frac{1}{L_L(2C_4+C_L)}}(2C_4 + C_L)$   
 wo:  $\sqrt{\frac{1}{L_L(2C_4+C_L)}}$   
 bandwidth:  $\frac{1}{R_L(2C_4+C_L)}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $R_L$   
 QZ: 0  
 Wz: None

$$H(s) = \frac{L_LR_Ls}{2C_4L_LR_Ls^2 + C_LL_LR_Ls^2 + L_Ls + R_L}$$

**3.69 BP-69**  $Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{R_4}{C_4R_4s+1}, \infty, \frac{L_Ls}{C_LL_Ls^2+1} \right)$

**Parameters:**

Q:  $\frac{R_4\sqrt{\frac{1}{L_L(2C_4+C_L)}}(2C_4+C_L)}{2}$   
 wo:  $\sqrt{\frac{1}{L_L(2C_4+C_L)}}$   
 bandwidth:  $\frac{2}{R_4(2C_4+C_L)}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $\frac{R_4}{2}$   
 QZ: 0  
 Wz: None

$$H(s) = \frac{L_LR_4s}{2C_4L_LR_4s^2 + C_LL_LR_4s^2 + 2L_Ls + R_4}$$

**3.70 BP-70**  $Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{R_4}{C_4R_4s+1}, \infty, \frac{1}{C_Ls + \frac{1}{R_L} + \frac{1}{L_Ls}} \right)$

$$H(s) = \frac{L_LR_4R_Ls}{2C_4L_LR_4R_Ls^2 + C_LL_LR_4R_Ls^2 + L_LR_4s + 2L_LR_Ls + R_4R_L}$$

**Parameters:**

Q:  $\frac{R_4R_L\sqrt{\frac{1}{L_L(2C_4+C_L)}}(2C_4+C_L)}{R_4+2R_L}$   
 wo:  $\sqrt{\frac{1}{L_L(2C_4+C_L)}}$   
 bandwidth:  $\frac{R_4+2R_L}{R_4R_L(2C_4+C_L)}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $\frac{R_4R_L}{R_4+2R_L}$   
 QZ: 0  
 Wz: None

**3.71 BP-71**  $Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{L_4s}{C_4L_4s^2+1}, \infty, R_L \right)$

$$H(s) = \frac{L_4R_Ls}{2C_4L_4R_Ls^2 + L_4s + 2R_L}$$

**Parameters:**

Q:  $2C_4R_L\sqrt{\frac{1}{C_4L_4}}$   
 wo:  $\sqrt{\frac{1}{C_4L_4}}$   
 bandwidth:  $\frac{1}{2C_4R_L}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $R_L$   
 QZ: 0  
 Wz: None

**3.72 BP-72**  $Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{L_4s}{C_4L_4s^2+1}, \infty, \frac{R_L}{C_LR_Ls+1} \right)$

$$H(s) = \frac{L_4R_Ls}{2C_4L_4R_Ls^2 + C_LL_4R_Ls^2 + L_4s + 2R_L}$$

**Parameters:**

Q:  $\sqrt{2}R_L\sqrt{\frac{1}{L_4(2C_4+C_L)}}(2C_4+C_L)$   
 wo:  $\sqrt{2}\sqrt{\frac{1}{L_4(2C_4+C_L)}}$   
 bandwidth:  $\frac{1}{R_L(2C_4+C_L)}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $R_L$   
 QZ: 0  
 Wz: None

**3.73 BP-73**  $Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{L_4s}{C_4L_4s^2+1}, \infty, \frac{1}{C_Ls+\frac{1}{R_L}+\frac{1}{L_Ls}} \right)$

$$H(s) = \frac{L_4L_LR_Ls}{2C_4L_4L_LR_Ls^2 + C_LL_4L_LR_Ls^2 + L_4L_Ls + L_4R_L + 2L_LR_L}$$

**Parameters:**

Q:  $R_L \sqrt{\frac{L_4+2L_L}{L_4L_L(2C_4+C_L)}} (2C_4 + C_L)$

wo:  $\sqrt{\frac{L_4+2L_L}{L_4L_L(2C_4+C_L)}}$

bandwidth:  $\frac{1}{R_L(2C_4+C_L)}$

K-LP: 0

K-HP: 0

K-BP:  $R_L$

QZ: 0

WZ: None

**3.74 BP-74**  $Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{1}{C_4s+\frac{1}{R_4}+\frac{1}{L_4s}}, \infty, R_L \right)$

$$H(s) = \frac{L_4R_4R_Ls}{2C_4L_4R_4R_Ls^2 + L_4R_4s + 2L_4R_Ls + 2R_4R_L}$$

**Parameters:**

Q:  $\frac{2C_4R_4R_L\sqrt{\frac{1}{C_4L_4}}}{R_4+2R_L}$

wo:  $\sqrt{\frac{1}{C_4L_4}}$

bandwidth:  $\frac{R_4+2R_L}{2C_4R_4R_L}$

K-LP: 0

K-HP: 0

K-BP:  $\frac{R_4R_L}{R_4+2R_L}$

QZ: 0

WZ: None

**3.75 BP-75**  $Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{1}{C_4s+\frac{1}{R_4}+\frac{1}{L_4s}}, \infty, \frac{1}{C_Ls} \right)$

$$H(s) = \frac{L_4R_4s}{2C_4L_4R_4s^2 + C_LL_4R_4s^2 + 2L_4s + 2R_4}$$

**Parameters:**

Q:  $\frac{\sqrt{2}R_4\sqrt{\frac{1}{L_4(2C_4+C_L)}}(2C_4+C_L)}{2}$

wo:  $\sqrt{2}\sqrt{\frac{1}{L_4(2C_4+C_L)}}$

bandwidth:  $\frac{2}{R_4(2C_4+C_L)}$

K-LP: 0

K-HP: 0

K-BP:  $\frac{R_4}{2}$

QZ: 0

WZ: None

**3.76 BP-76**  $Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{1}{C_4s + \frac{1}{R_4} + \frac{1}{L_4s}}, \infty, \frac{R_L}{C_LR_Ls + 1} \right)$

$$H(s) = \frac{L_4R_4R_Ls}{2C_4L_4R_4R_Ls^2 + C_LL_4R_4R_Ls^2 + L_4R_4s + 2L_4R_Ls + 2R_4R_L}$$

**Parameters:**

Q:  $\frac{\sqrt{2}R_4R_L\sqrt{\frac{1}{L_4(2C_4+C_L)}}(2C_4+C_L)}{R_4+2R_L}$

wo:  $\sqrt{2}\sqrt{\frac{1}{L_4(2C_4+C_L)}}$

bandwidth:  $\frac{R_4+2R_L}{R_4R_L(2C_4+C_L)}$

K-LP: 0

K-HP: 0

K-BP:  $\frac{R_4R_L}{R_4+2R_L}$

QZ: 0

Wz: None

**3.77 BP-77**  $Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{1}{C_4s + \frac{1}{R_4} + \frac{1}{L_4s}}, \infty, \frac{L_Ls}{C_LL_Ls^2 + 1} \right)$

$$H(s) = \frac{L_4L_LR_4s}{2C_4L_4L_LR_4s^2 + C_LL_4L_LR_4s^2 + 2L_4L_Ls + L_4R_4 + 2L_LR_4}$$

**Parameters:**

Q:  $\frac{R_4\sqrt{\frac{L_4+2L_L}{L_4L_L(2C_4+C_L)}}(2C_4+C_L)}{2}$

wo:  $\sqrt{\frac{L_4+2L_L}{L_4L_L(2C_4+C_L)}}$

bandwidth:  $\frac{2}{R_4(2C_4+C_L)}$

K-LP: 0

K-HP: 0

K-BP:  $\frac{R_4}{2}$

QZ: 0

Wz: None

**3.78 BP-78**  $Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{1}{C_4s + \frac{1}{R_4} + \frac{1}{L_4s}}, \infty, \frac{1}{C_Ls + \frac{1}{R_L} + \frac{1}{L_Ls}} \right)$

$$H(s) = \frac{L_4L_LR_4R_Ls}{2C_4L_4L_LR_4R_Ls^2 + C_LL_4L_LR_4R_Ls^2 + L_4L_LR_4s + 2L_4L_LR_Ls + L_4R_4R_L + 2L_LR_4R_L}$$

**Parameters:**

Q:  $\frac{R_4R_L\sqrt{\frac{L_4+2L_L}{L_4L_L(2C_4+C_L)}}(2C_4+C_L)}{R_4+2R_L}$

wo:  $\sqrt{\frac{L_4+2L_L}{L_4L_L(2C_4+C_L)}}$

bandwidth:  $\frac{R_4+2R_L}{R_4R_L(2C_4+C_L)}$

K-LP: 0

K-HP: 0

K-BP:  $\frac{R_4R_L}{R_4+2R_L}$

QZ: 0

Wz: None

**3.79 BP-79**  $Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, R_4, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$

**Parameters:**

Q:  $\frac{C_L R_4 \sqrt{\frac{1}{C_L L_L}}}{2}$   
 wo:  $\sqrt{\frac{1}{C_L L_L}}$   
 bandwidth:  $\frac{2}{C_L R_4}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $\frac{R_4}{2}$   
 QZ: 0  
 Wz: None

$$H(s) = \frac{L_L R_4 s}{C_L L_L R_4 s^2 + 2 L_L s + R_4}$$

**3.80 BP-80**  $Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, R_4, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$

**Parameters:**

Q:  $\frac{C_L R_4 R_L \sqrt{\frac{1}{C_L L_L}}}{R_4 + 2 R_L}$   
 wo:  $\sqrt{\frac{1}{C_L L_L}}$   
 bandwidth:  $\frac{R_4 + 2 R_L}{C_L R_4 R_L}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $\frac{R_4 R_L}{R_4 + 2 R_L}$   
 QZ: 0  
 Wz: None

$$H(s) = \frac{L_L R_4 R_L s}{C_L L_L R_4 R_L s^2 + L_L R_4 s + 2 L_L R_L s + R_4 R_L}$$

**3.81 BP-81**  $Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{1}{C_4 s}, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$

**Parameters:**

Q:  $R_L \sqrt{\frac{1}{L_L (2 C_4 + C_L)}} (2 C_4 + C_L)$   
 wo:  $\sqrt{\frac{1}{L_L (2 C_4 + C_L)}}$   
 bandwidth:  $\frac{1}{R_L (2 C_4 + C_L)}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $R_L$   
 QZ: 0  
 Wz: None

$$H(s) = \frac{L_L R_L s}{2 C_4 L_L R_L s^2 + C_L L_L R_L s^2 + L_L s + R_L}$$

**3.82 BP-82**  $Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$

$$H(s) = \frac{L_L R_4 s}{2C_4 L_L R_4 s^2 + C_L L_L R_4 s^2 + 2L_L s + R_4}$$

**Parameters:**

Q:  $\frac{R_4 \sqrt{\frac{1}{L_L(2C_4+C_L)}}(2C_4+C_L)}{2}$   
 wo:  $\sqrt{\frac{1}{L_L(2C_4+C_L)}}$   
 bandwidth:  $\frac{2}{R_4(2C_4+C_L)}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $\frac{R_4}{2}$   
 QZ: 0  
 Wz: None

**3.83 BP-83**  $Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$

$$H(s) = \frac{L_L R_4 R_L s}{2C_4 L_L R_4 R_L s^2 + C_L L_L R_4 R_L s^2 + L_L R_4 s + 2L_L R_L s + R_4 R_L}$$

**Parameters:**

Q:  $\frac{R_4 R_L \sqrt{\frac{1}{L_L(2C_4+C_L)}}(2C_4+C_L)}{R_4+2R_L}$   
 wo:  $\sqrt{\frac{1}{L_L(2C_4+C_L)}}$   
 bandwidth:  $\frac{R_4+2R_L}{R_4 R_L(2C_4+C_L)}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $\frac{R_4 R_L}{R_4+2R_L}$   
 QZ: 0  
 Wz: None

**3.84 BP-84**  $Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, R_L \right)$

$$H(s) = \frac{L_4 R_L s}{2C_4 L_4 R_L s^2 + L_4 s + 2R_L}$$

**Parameters:**

Q:  $2C_4 R_L \sqrt{\frac{1}{C_4 L_4}}$   
 wo:  $\sqrt{\frac{1}{C_4 L_4}}$   
 bandwidth:  $\frac{1}{2C_4 R_L}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $R_L$   
 QZ: 0  
 Wz: None

**3.85 BP-85**  $Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, \frac{R_L}{C_L R_L s + 1} \right)$

$$H(s) = \frac{L_4 R_L s}{2C_4 L_4 R_L s^2 + C_L L_4 R_L s^2 + L_4 s + 2R_L}$$

**Parameters:**

Q:  $\sqrt{2}R_L \sqrt{\frac{1}{L_4(2C_4+C_L)}} (2C_4 + C_L)$   
 wo:  $\sqrt{2} \sqrt{\frac{1}{L_4(2C_4+C_L)}}$   
 bandwidth:  $\frac{1}{R_L(2C_4+C_L)}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $R_L$   
 QZ: 0  
 Wz: None

**3.86 BP-86**  $Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$

$$H(s) = \frac{L_4 L_L R_L s}{2C_4 L_4 L_L R_L s^2 + C_L L_4 L_L R_L s^2 + L_4 L_L s + L_4 R_L + 2L_L R_L}$$

**Parameters:**

Q:  $R_L \sqrt{\frac{L_4 + 2L_L}{L_4 L_L (2C_4 + C_L)}} (2C_4 + C_L)$   
 wo:  $\sqrt{\frac{L_4 + 2L_L}{L_4 L_L (2C_4 + C_L)}}$   
 bandwidth:  $\frac{1}{R_L(2C_4+C_L)}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $R_L$   
 QZ: 0  
 Wz: None

**3.87 BP-87**  $Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, R_L \right)$

$$H(s) = \frac{L_4 R_4 R_L s}{2C_4 L_4 R_4 R_L s^2 + L_4 R_4 s + 2L_4 R_L s + 2R_4 R_L}$$

**Parameters:**

Q:  $\frac{2C_4 R_4 R_L \sqrt{\frac{1}{C_4 L_4}}}{R_4 + 2R_L}$   
 wo:  $\sqrt{\frac{1}{C_4 L_4}}$   
 bandwidth:  $\frac{R_4 + 2R_L}{2C_4 R_4 R_L}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $\frac{R_4 R_L}{R_4 + 2R_L}$   
 QZ: 0  
 Wz: None

**3.88 BP-88**  $Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, \frac{1}{C_L s} \right)$

$$H(s) = \frac{L_4 R_4 s}{2C_4 L_4 R_4 s^2 + C_L L_4 R_4 s^2 + 2L_4 s + 2R_4}$$

**Parameters:**

Q:  $\frac{\sqrt{2} R_4 \sqrt{\frac{1}{L_4 (2C_4 + C_L)}} (2C_4 + C_L)}{2}$   
 wo:  $\sqrt{2} \sqrt{\frac{1}{L_4 (2C_4 + C_L)}}$   
 bandwidth:  $\frac{2}{R_4 (2C_4 + C_L)}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $\frac{R_4}{2}$   
 QZ: 0  
 Wz: None

**3.89 BP-89**  $Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, \frac{R_L}{C_L R_L s + 1} \right)$

$$H(s) = \frac{L_4 R_4 R_L s}{2C_4 L_4 R_4 R_L s^2 + C_L L_4 R_4 R_L s^2 + L_4 R_4 s + 2L_4 R_L s + 2R_4 R_L}$$

**Parameters:**

Q:  $\frac{\sqrt{2} R_4 R_L \sqrt{\frac{1}{L_4 (2C_4 + C_L)}} (2C_4 + C_L)}{R_4 + 2R_L}$   
 wo:  $\sqrt{2} \sqrt{\frac{1}{L_4 (2C_4 + C_L)}}$   
 bandwidth:  $\frac{R_4 + 2R_L}{R_4 R_L (2C_4 + C_L)}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $\frac{R_4 R_L}{R_4 + 2R_L}$   
 QZ: 0  
 Wz: None

**3.90 BP-90**  $Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$

$$H(s) = \frac{L_4 L_L R_4 s}{2C_4 L_4 L_L R_4 s^2 + C_L L_4 L_L R_4 s^2 + 2L_4 L_L s + L_4 R_4 + 2L_L R_4}$$

**Parameters:**

Q:  $\frac{R_4 \sqrt{\frac{L_4 + 2L_L}{L_4 L_L (2C_4 + C_L)}} (2C_4 + C_L)}{2}$   
 wo:  $\sqrt{\frac{L_4 + 2L_L}{L_4 L_L (2C_4 + C_L)}}$   
 bandwidth:  $\frac{2}{R_4 (2C_4 + C_L)}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $\frac{R_4}{2}$   
 QZ: 0  
 Wz: None



**3.91 BP-91**  $Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$

$$H(s) = \frac{L_4 L_L R_4 R_L s}{2 C_4 L_4 L_L R_4 R_L s^2 + C_L L_4 L_L R_4 R_L s^2 + L_4 L_L R_4 s + 2 L_4 L_L R_L s + L_4 R_4 R_L + 2 L_L R_4 R_L}$$

**Parameters:**

Q:  $\frac{R_4 R_L \sqrt{\frac{L_4 + 2 L_L}{L_4 L_L (2 C_4 + C_L)}} (2 C_4 + C_L)}{R_4 + 2 R_L}$   
 wo:  $\sqrt{\frac{L_4 + 2 L_L}{L_4 L_L (2 C_4 + C_L)}}$   
 bandwidth:  $\frac{R_4 + 2 R_L}{R_4 R_L (2 C_4 + C_L)}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $\frac{R_4 R_L}{R_4 + 2 R_L}$   
 QZ: 0  
 Wz: None

**3.92 BP-92**  $Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, R_4, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$

$$H(s) = \frac{L_L R_4 s}{C_L L_L R_4 s^2 + 2 L_L s + R_4}$$

**Parameters:**

Q:  $\frac{C_L R_4 \sqrt{\frac{1}{C_L L_L}}}{2}$   
 wo:  $\sqrt{\frac{1}{C_L L_L}}$   
 bandwidth:  $\frac{2}{C_L R_4}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $\frac{R_4}{2}$   
 QZ: 0  
 Wz: None

**3.93 BP-93**  $Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, R_4, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$

$$H(s) = \frac{L_L R_4 R_L s}{C_L L_L R_4 R_L s^2 + L_L R_4 s + 2 L_L R_L s + R_4 R_L}$$

**Parameters:**

Q:  $\frac{C_L R_4 R_L \sqrt{\frac{1}{C_L L_L}}}{R_4 + 2 R_L}$   
 wo:  $\sqrt{\frac{1}{C_L L_L}}$   
 bandwidth:  $\frac{R_4 + 2 R_L}{C_L R_4 R_L}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $\frac{R_4 R_L}{R_4 + 2 R_L}$   
 QZ: 0  
 Wz: None

$$3.94 \quad \text{BP-94} \quad Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{1}{C_4 s}, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$$

**Parameters:**

$$\begin{aligned} \text{Q: } & R_L \sqrt{\frac{1}{L_L(2C_4+C_L)}} (2C_4 + C_L) \\ \text{wo: } & \sqrt{\frac{1}{L_L(2C_4+C_L)}} \\ \text{bandwidth: } & \frac{1}{R_L(2C_4+C_L)} \\ \text{K-LP: } & 0 \\ \text{K-HP: } & 0 \\ \text{K-BP: } & R_L \\ \text{QZ: } & 0 \\ \text{WZ: } & \text{None} \end{aligned}$$

$$H(s) = \frac{L_L R_L s}{2C_4 L_L R_L s^2 + C_L L_L R_L s^2 + L_L s + R_L}$$

$$3.95 \quad \text{BP-95} \quad Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$$

**Parameters:**

$$\begin{aligned} \text{Q: } & \frac{R_4 \sqrt{\frac{1}{L_L(2C_4+C_L)}} (2C_4 + C_L)}{2} \\ \text{wo: } & \sqrt{\frac{1}{L_L(2C_4+C_L)}} \\ \text{bandwidth: } & \frac{2}{R_4(2C_4+C_L)} \\ \text{K-LP: } & 0 \\ \text{K-HP: } & 0 \\ \text{K-BP: } & \frac{R_4}{2} \\ \text{QZ: } & 0 \\ \text{WZ: } & \text{None} \end{aligned}$$

$$H(s) = \frac{L_L R_4 s}{2C_4 L_L R_4 s^2 + C_L L_L R_4 s^2 + 2L_L s + R_4}$$

$$3.96 \quad \text{BP-96} \quad Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$$

**Parameters:**

$$\begin{aligned} \text{Q: } & \frac{R_4 R_L \sqrt{\frac{1}{L_L(2C_4+C_L)}} (2C_4 + C_L)}{R_4 + 2R_L} \\ \text{wo: } & \sqrt{\frac{1}{L_L(2C_4+C_L)}} \\ \text{bandwidth: } & \frac{R_4 + 2R_L}{R_4 R_L (2C_4 + C_L)} \\ \text{K-LP: } & 0 \\ \text{K-HP: } & 0 \\ \text{K-BP: } & \frac{R_4 R_L}{R_4 + 2R_L} \\ \text{QZ: } & 0 \\ \text{WZ: } & \text{None} \end{aligned}$$

$$H(s) = \frac{L_L R_4 R_L s}{2C_4 L_L R_4 R_L s^2 + C_L L_L R_4 R_L s^2 + L_L R_4 s + 2L_L R_L s + R_4 R_L}$$

$$\mathbf{3.97 \quad BP-97} \quad Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, R_L \right)$$

$$H(s) = \frac{L_4 R_L s}{2C_4 L_4 R_L s^2 + L_4 s + 2R_L}$$

**Parameters:**

Q:  $2C_4 R_L \sqrt{\frac{1}{C_4 L_4}}$   
 wo:  $\sqrt{\frac{1}{C_4 L_4}}$   
 bandwidth:  $\frac{1}{2C_4 R_L}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $R_L$   
 QZ: 0  
 Wz: None

$$\mathbf{3.98 \quad BP-98} \quad Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, \frac{R_L}{C_L R_L s + 1} \right)$$

$$H(s) = \frac{L_4 R_L s}{2C_4 L_4 R_L s^2 + C_L L_4 R_L s^2 + L_4 s + 2R_L}$$

**Parameters:**

Q:  $\sqrt{2} R_L \sqrt{\frac{1}{L_4 (2C_4 + C_L)}} (2C_4 + C_L)$   
 wo:  $\sqrt{2} \sqrt{\frac{1}{L_4 (2C_4 + C_L)}}$   
 bandwidth:  $\frac{1}{R_L (2C_4 + C_L)}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $R_L$   
 QZ: 0  
 Wz: None

$$\mathbf{3.99 \quad BP-99} \quad Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$$

$$H(s) = \frac{L_4 L_L R_L s}{2C_4 L_4 L_L R_L s^2 + C_L L_4 L_L R_L s^2 + L_4 L_L s + L_4 R_L + 2L_L R_L}$$

**Parameters:**

Q:  $R_L \sqrt{\frac{L_4 + 2L_L}{L_4 L_L (2C_4 + C_L)}} (2C_4 + C_L)$   
 wo:  $\sqrt{\frac{L_4 + 2L_L}{L_4 L_L (2C_4 + C_L)}}$   
 bandwidth:  $\frac{1}{R_L (2C_4 + C_L)}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $R_L$   
 QZ: 0  
 Wz: None

**3.100 BP-100**  $Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, R_L \right)$

$$H(s) = \frac{L_4 R_4 R_L s}{2C_4 L_4 R_4 R_L s^2 + L_4 R_4 s + 2L_4 R_L s + 2R_4 R_L}$$

**Parameters:**

Q:  $\frac{2C_4 R_4 R_L \sqrt{\frac{1}{C_4 L_4}}}{R_4 + 2R_L}$   
 wo:  $\sqrt{\frac{1}{C_4 L_4}}$   
 bandwidth:  $\frac{R_4 + 2R_L}{2C_4 R_4 R_L}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $\frac{R_4 R_L}{R_4 + 2R_L}$   
 QZ: 0  
 Wz: None

**3.101 BP-101**  $Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, \frac{1}{C_L s} \right)$

$$H(s) = \frac{L_4 R_4 s}{2C_4 L_4 R_4 s^2 + C_L L_4 R_4 s^2 + 2L_4 s + 2R_4}$$

**Parameters:**

Q:  $\frac{\sqrt{2} R_4 \sqrt{\frac{1}{L_4 (2C_4 + C_L)}} (2C_4 + C_L)}{2}$   
 wo:  $\sqrt{2} \sqrt{\frac{1}{L_4 (2C_4 + C_L)}}$   
 bandwidth:  $\frac{2}{R_4 (2C_4 + C_L)}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $\frac{R_4}{2}$   
 QZ: 0  
 Wz: None

**3.102 BP-102**  $Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, \frac{R_L}{C_L R_L s + 1} \right)$

$$H(s) = \frac{L_4 R_4 R_L s}{2C_4 L_4 R_4 R_L s^2 + C_L L_4 R_4 R_L s^2 + L_4 R_4 s + 2L_4 R_L s + 2R_4 R_L}$$

**Parameters:**

Q:  $\frac{\sqrt{2} R_4 R_L \sqrt{\frac{1}{L_4 (2C_4 + C_L)}} (2C_4 + C_L)}{R_4 + 2R_L}$   
 wo:  $\sqrt{2} \sqrt{\frac{1}{L_4 (2C_4 + C_L)}}$   
 bandwidth:  $\frac{R_4 + 2R_L}{R_4 R_L (2C_4 + C_L)}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $\frac{R_4 R_L}{R_4 + 2R_L}$   
 QZ: 0  
 Wz: None

**3.103 BP-103**  $Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$

$$H(s) = \frac{L_4 L_L R_4 s}{2C_4 L_4 L_L R_4 s^2 + C_L L_4 L_L R_4 s^2 + 2L_4 L_L s + L_4 R_4 + 2L_L R_4}$$

**Parameters:**

Q:  $\frac{R_4 \sqrt{\frac{L_4 + 2L_L}{L_4 L_L (2C_4 + C_L)}} (2C_4 + C_L)}{2}$   
 wo:  $\sqrt{\frac{L_4 + 2L_L}{L_4 L_L (2C_4 + C_L)}}$   
 bandwidth:  $\frac{2}{R_4 (2C_4 + C_L)}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $\frac{R_4}{2}$   
 QZ: 0  
 Wz: None

**3.104 BP-104**  $Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$

$$H(s) = \frac{L_4 L_L R_4 R_L s}{2C_4 L_4 L_L R_4 R_L s^2 + C_L L_4 L_L R_4 R_L s^2 + L_4 L_L R_4 s + 2L_4 L_L R_L s + L_4 R_4 R_L + 2L_L R_4 R_L}$$

**Parameters:**

Q:  $\frac{R_4 R_L \sqrt{\frac{L_4 + 2L_L}{L_4 L_L (2C_4 + C_L)}} (2C_4 + C_L)}{R_4 + 2R_L}$   
 wo:  $\sqrt{\frac{L_4 + 2L_L}{L_4 L_L (2C_4 + C_L)}}$   
 bandwidth:  $\frac{R_4 + 2R_L}{R_4 R_L (2C_4 + C_L)}$   
 K-LP: 0  
 K-HP: 0  
 K-BP:  $\frac{R_4 R_L}{R_4 + 2R_L}$   
 QZ: 0  
 Wz: None

## 4 LP

## 5 BS

**5.1 BS-1**  $Z(s) = \left( \infty, R_2, \infty, R_4, \infty, L_L s + \frac{1}{C_L s} \right)$

$$H(s) = \frac{R_4 (C_L L_L s^2 + 1)}{2C_L L_L s^2 + C_L R_4 s + 2}$$

**Parameters:**

Q:  $\frac{2L_L \sqrt{\frac{1}{C_L L_L}}}{R_4}$   
 wo:  $\sqrt{\frac{1}{C_L L_L}}$   
 bandwidth:  $\frac{R_4}{2L_L}$   
 K-LP:  $\frac{R_4}{2}$   
 K-HP:  $\frac{R_4}{2}$

K-BP: 0  
 QZ: None  
 WZ:  $\sqrt{\frac{1}{C_L L_L}}$

$$5.2 \quad \text{BS-2} \quad Z(s) = \left( \infty, R_2, \infty, R_4, \infty, \frac{R_L \left( L_L s + \frac{1}{C_L s} \right)}{L_L s + R_L + \frac{1}{C_L s}} \right)$$

**Parameters:**

Q:  $\frac{L_L \sqrt{\frac{1}{C_L L_L}} (R_4 + 2R_L)}{R_4 R_L}$   
 wo:  $\sqrt{\frac{1}{C_L L_L}}$   
 bandwidth:  $\frac{R_4 R_L}{L_L (R_4 + 2R_L)}$   
 K-LP:  $\frac{R_4 R_L}{R_4 + 2R_L}$   
 K-HP:  $\frac{R_4 R_L}{R_4 + 2R_L}$   
 K-BP: 0  
 QZ: None  
 WZ:  $\sqrt{\frac{1}{C_L L_L}}$

$$5.3 \quad \text{BS-3} \quad Z(s) = \left( \infty, R_2, \infty, L_4 s + \frac{1}{C_4 s}, \infty, R_L \right)$$

**Parameters:**

Q:  $\frac{L_4 \sqrt{\frac{1}{C_4 L_4}}}{2R_L}$   
 wo:  $\sqrt{\frac{1}{C_4 L_4}}$   
 bandwidth:  $\frac{2R_L}{L_4}$   
 K-LP:  $R_L$   
 K-HP:  $R_L$   
 K-BP: 0  
 QZ: None  
 WZ:  $\sqrt{\frac{1}{C_4 L_4}}$

$$5.4 \quad \text{BS-4} \quad Z(s) = \left( \infty, R_2, \infty, \frac{R_4 \left( L_4 s + \frac{1}{C_4 s} \right)}{L_4 s + R_4 + \frac{1}{C_4 s}}, \infty, R_L \right)$$

**Parameters:**

Q:  $\frac{L_4 \sqrt{\frac{1}{C_4 L_4}} (R_4 + 2R_L)}{2R_4 R_L}$   
 wo:  $\sqrt{\frac{1}{C_4 L_4}}$   
 bandwidth:  $\frac{2R_4 R_L}{L_4 (R_4 + 2R_L)}$   
 K-LP:  $\frac{R_4 R_L}{R_4 + 2R_L}$   
 K-HP:  $\frac{R_4 R_L}{R_4 + 2R_L}$   
 K-BP: 0

$$H(s) = \frac{R_4 R_L (C_L L_L s^2 + 1)}{C_L L_L R_4 s^2 + 2C_L L_L R_L s^2 + C_L R_4 R_L s + R_4 + 2R_L}$$

$$H(s) = \frac{R_L (C_4 L_4 s^2 + 1)}{C_4 L_4 s^2 + 2C_4 R_L s + 1}$$

$$H(s) = \frac{R_4 R_L (C_4 L_4 s^2 + 1)}{C_4 L_4 R_4 s^2 + 2C_4 L_4 R_L s^2 + 2C_4 R_4 R_L s + R_4 + 2R_L}$$

Qz: None  
Wz:  $\sqrt{\frac{1}{C_4 L_4}}$

**5.5 BS-5**  $Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, R_4, \infty, L_L s + \frac{1}{C_L s} \right)$

**Parameters:**

Q:  $\frac{2L_L \sqrt{\frac{1}{C_L L_L}}}{R_4}$   
wo:  $\sqrt{\frac{1}{C_L L_L}}$   
bandwidth:  $\frac{R_4}{2L_L}$   
K-LP:  $\frac{R_4}{2}$   
K-HP:  $\frac{R_4}{2}$   
K-BP: 0  
Qz: None  
Wz:  $\sqrt{\frac{1}{C_L L_L}}$

$$H(s) = \frac{R_4 (C_L L_L s^2 + 1)}{2C_L L_L s^2 + C_L R_4 s + 2}$$

**5.6 BS-6**  $Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, R_4, \infty, \frac{R_L (L_L s + \frac{1}{C_L s})}{L_L s + R_L + \frac{1}{C_L s}} \right)$

**Parameters:**

Q:  $\frac{L_L \sqrt{\frac{1}{C_L L_L}} (R_4 + 2R_L)}{R_4 R_L}$   
wo:  $\sqrt{\frac{1}{C_L L_L}}$   
bandwidth:  $\frac{R_4 R_L}{L_L (R_4 + 2R_L)}$   
K-LP:  $\frac{R_4 R_L}{R_4 + 2R_L}$   
K-HP:  $\frac{R_4 R_L}{R_4 + 2R_L}$   
K-BP: 0  
Qz: None  
Wz:  $\sqrt{\frac{1}{C_L L_L}}$

$$H(s) = \frac{R_4 R_L (C_L L_L s^2 + 1)}{C_L L_L R_4 s^2 + 2C_L L_L R_L s^2 + C_L R_4 R_L s + R_4 + 2R_L}$$

**5.7 BS-7**  $Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, L_4 s + \frac{1}{C_4 s}, \infty, R_L \right)$

**Parameters:**

Q:  $\frac{L_4 \sqrt{\frac{1}{C_4 L_4}}}{2R_L}$   
wo:  $\sqrt{\frac{1}{C_4 L_4}}$   
bandwidth:  $\frac{2R_L}{L_4}$   
K-LP:  $R_L$   
K-HP:  $R_L$   
K-BP: 0  
Qz: None

$$H(s) = \frac{R_L (C_4 L_4 s^2 + 1)}{C_4 L_4 s^2 + 2C_4 R_L s + 1}$$

$$\text{Wz: } \sqrt{\frac{1}{C_4 L_4}}$$

$$\mathbf{5.8 \quad BS-8} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{R_4 \left( L_4 s + \frac{1}{C_4 s} \right)}{L_4 s + R_4 + \frac{1}{C_4 s}}, \infty, R_L \right)$$

**Parameters:**

$$\begin{aligned} \text{Q: } & \frac{L_4 \sqrt{\frac{1}{C_4 L_4}} (R_4 + 2R_L)}{2R_4 R_L} \\ \text{wo: } & \sqrt{\frac{1}{C_4 L_4}} \\ \text{bandwidth: } & \frac{2R_4 R_L}{L_4 (R_4 + 2R_L)} \\ \text{K-LP: } & \frac{R_4 R_L}{R_4 + 2R_L} \\ \text{K-HP: } & \frac{R_4 R_L}{R_4 + 2R_L} \\ \text{K-BP: } & 0 \\ \text{Qz: } & \text{None} \\ \text{Wz: } & \sqrt{\frac{1}{C_4 L_4}} \end{aligned}$$

$$H(s) = \frac{R_4 R_L (C_4 L_4 s^2 + 1)}{C_4 L_4 R_4 s^2 + 2C_4 L_4 R_L s^2 + 2C_4 R_4 R_L s + R_4 + 2R_L}$$

$$\mathbf{5.9 \quad BS-9} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, R_4, \infty, L_L s + \frac{1}{C_L s} \right)$$

**Parameters:**

$$\begin{aligned} \text{Q: } & \frac{2L_L \sqrt{\frac{1}{C_L L_L}}}{R_4} \\ \text{wo: } & \sqrt{\frac{1}{C_L L_L}} \\ \text{bandwidth: } & \frac{R_4}{2L_L} \\ \text{K-LP: } & \frac{R_4}{2} \\ \text{K-HP: } & \frac{R_4}{2} \\ \text{K-BP: } & 0 \\ \text{Qz: } & \text{None} \\ \text{Wz: } & \sqrt{\frac{1}{C_L L_L}} \end{aligned}$$

$$H(s) = \frac{R_4 (C_L L_L s^2 + 1)}{2C_L L_L s^2 + C_L R_4 s + 2}$$

$$\mathbf{5.10 \quad BS-10} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, R_4, \infty, \frac{R_L \left( L_L s + \frac{1}{C_L s} \right)}{L_L s + R_L + \frac{1}{C_L s}} \right)$$

**Parameters:**

$$\begin{aligned} \text{Q: } & \frac{L_L \sqrt{\frac{1}{C_L L_L}} (R_4 + 2R_L)}{R_4 R_L} \\ \text{wo: } & \sqrt{\frac{1}{C_L L_L}} \\ \text{bandwidth: } & \frac{R_4 R_L}{L_L (R_4 + 2R_L)} \\ \text{K-LP: } & \frac{R_4 R_L}{R_4 + 2R_L} \\ \text{K-HP: } & \frac{R_4 R_L}{R_4 + 2R_L} \\ \text{K-BP: } & 0 \\ \text{Qz: } & \text{None} \end{aligned}$$

$$H(s) = \frac{R_4 R_L (C_L L_L s^2 + 1)}{C_L L_L R_4 s^2 + 2C_L L_L R_L s^2 + C_L R_4 R_L s + R_4 + 2R_L}$$



$$\text{Wz: } \sqrt{\frac{1}{C_L L_L}}$$

$$\mathbf{5.11 \quad BS-11} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, L_4 s + \frac{1}{C_4 s}, \infty, R_L \right)$$

**Parameters:**

$$\begin{aligned} \text{Q: } & \frac{L_4 \sqrt{\frac{1}{C_4 L_4}}}{2 R_L} \\ \text{wo: } & \sqrt{\frac{1}{C_4 L_4}} \\ \text{bandwidth: } & \frac{2 R_L}{L_4} \\ \text{K-LP: } & R_L \\ \text{K-HP: } & R_L \\ \text{K-BP: } & 0 \\ \text{Qz: } & \text{None} \\ \text{Wz: } & \sqrt{\frac{1}{C_4 L_4}} \end{aligned}$$

$$H(s) = \frac{R_L (C_4 L_4 s^2 + 1)}{C_4 L_4 s^2 + 2 C_4 R_L s + 1}$$

$$\mathbf{5.12 \quad BS-12} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{R_4 (L_4 s + \frac{1}{C_4 s})}{L_4 s + R_4 + \frac{1}{C_4 s}}, \infty, R_L \right)$$

**Parameters:**

$$\begin{aligned} \text{Q: } & \frac{L_4 \sqrt{\frac{1}{C_4 L_4}} (R_4 + 2 R_L)}{2 R_4 R_L} \\ \text{wo: } & \sqrt{\frac{1}{C_4 L_4}} \\ \text{bandwidth: } & \frac{2 R_4 R_L}{L_4 (R_4 + 2 R_L)} \\ \text{K-LP: } & \frac{R_4 R_L}{R_4 + 2 R_L} \\ \text{K-HP: } & \frac{R_4 R_L}{R_4 + 2 R_L} \\ \text{K-BP: } & 0 \\ \text{Qz: } & \text{None} \\ \text{Wz: } & \sqrt{\frac{1}{C_4 L_4}} \end{aligned}$$

$$H(s) = \frac{R_4 R_L (C_4 L_4 s^2 + 1)}{C_4 L_4 R_4 s^2 + 2 C_4 L_4 R_L s^2 + 2 C_4 R_4 R_L s + R_4 + 2 R_L}$$

$$\mathbf{5.13 \quad BS-13} \quad Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, R_4, \infty, L_L s + \frac{1}{C_L s} \right)$$

**Parameters:**

$$\begin{aligned} \text{Q: } & \frac{2 L_L \sqrt{\frac{1}{C_L L_L}}}{R_4} \\ \text{wo: } & \sqrt{\frac{1}{C_L L_L}} \\ \text{bandwidth: } & \frac{R_4}{2 L_L} \\ \text{K-LP: } & \frac{R_4}{2} \\ \text{K-HP: } & \frac{R_4}{2} \\ \text{K-BP: } & 0 \\ \text{Qz: } & \text{None} \\ \text{Wz: } & \sqrt{\frac{1}{C_L L_L}} \end{aligned}$$

$$H(s) = \frac{R_4 (C_L L_L s^2 + 1)}{2 C_L L_L s^2 + C_L R_4 s + 2}$$

**5.14 BS-14**  $Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, R_4, \infty, \frac{R_L \left( L_L s + \frac{1}{C_L s} \right)}{L_L s + R_L + \frac{1}{C_L s}} \right)$

**Parameters:**

Q:  $\frac{L_L \sqrt{\frac{1}{C_L L_L}} (R_4 + 2R_L)}{R_4 R_L}$   
 wo:  $\sqrt{\frac{1}{C_L L_L}}$   
 bandwidth:  $\frac{R_4 R_L}{L_L (R_4 + 2R_L)}$   
 K-LP:  $\frac{R_4 R_L}{R_4 + 2R_L}$   
 K-HP:  $\frac{R_4 R_L}{R_4 + 2R_L}$   
 K-BP: 0  
 QZ: None  
 WZ:  $\sqrt{\frac{1}{C_L L_L}}$

$$H(s) = \frac{R_4 R_L (C_L L_L s^2 + 1)}{C_L L_L R_4 s^2 + 2C_L L_L R_L s^2 + C_L R_4 R_L s + R_4 + 2R_L}$$

**5.15 BS-15**  $Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, L_4 s + \frac{1}{C_4 s}, \infty, R_L \right)$

**Parameters:**

Q:  $\frac{L_4 \sqrt{\frac{1}{C_4 L_4}}}{2R_L}$   
 wo:  $\sqrt{\frac{1}{C_4 L_4}}$   
 bandwidth:  $\frac{2R_L}{L_4}$   
 K-LP:  $R_L$   
 K-HP:  $R_L$   
 K-BP: 0  
 QZ: None  
 WZ:  $\sqrt{\frac{1}{C_4 L_4}}$

$$H(s) = \frac{R_L (C_4 L_4 s^2 + 1)}{C_4 L_4 s^2 + 2C_4 R_L s + 1}$$

**5.16 BS-16**  $Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, \frac{R_4 \left( L_4 s + \frac{1}{C_4 s} \right)}{L_4 s + R_4 + \frac{1}{C_4 s}}, \infty, R_L \right)$

**Parameters:**

Q:  $\frac{L_4 \sqrt{\frac{1}{C_4 L_4}} (R_4 + 2R_L)}{2R_4 R_L}$   
 wo:  $\sqrt{\frac{1}{C_4 L_4}}$   
 bandwidth:  $\frac{2R_4 R_L}{L_4 (R_4 + 2R_L)}$   
 K-LP:  $\frac{R_4 R_L}{R_4 + 2R_L}$   
 K-HP:  $\frac{R_4 R_L}{R_4 + 2R_L}$   
 K-BP: 0  
 QZ: None  
 WZ:  $\sqrt{\frac{1}{C_4 L_4}}$

$$H(s) = \frac{R_4 R_L (C_4 L_4 s^2 + 1)}{C_4 L_4 R_4 s^2 + 2C_4 L_4 R_L s^2 + 2C_4 R_4 R_L s + R_4 + 2R_L}$$

**5.17 BS-17**  $Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, R_4, \infty, L_Ls + \frac{1}{C_Ls} \right)$

$$H(s) = \frac{R_4 (C_L L_L s^2 + 1)}{2C_L L_L s^2 + C_L R_4 s + 2}$$

**Parameters:**

Q:  $\frac{2L_L \sqrt{\frac{1}{C_L L_L}}}{R_4}$   
 wo:  $\sqrt{\frac{1}{C_L L_L}}$   
 bandwidth:  $\frac{R_4}{2L_L}$   
 K-LP:  $\frac{R_4}{2}$   
 K-HP:  $\frac{R_4}{2}$   
 K-BP: 0  
 Qz: None  
 Wz:  $\sqrt{\frac{1}{C_L L_L}}$

**5.18 BS-18**  $Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, R_4, \infty, \frac{R_L (L_L s + \frac{1}{C_L s})}{L_L s + R_L + \frac{1}{C_L s}} \right)$

$$H(s) = \frac{R_4 R_L (C_L L_L s^2 + 1)}{C_L L_L R_4 s^2 + 2C_L L_L R_L s^2 + C_L R_4 R_L s + R_4 + 2R_L}$$

**Parameters:**

Q:  $\frac{L_L \sqrt{\frac{1}{C_L L_L}} (R_4 + 2R_L)}{R_4 R_L}$   
 wo:  $\sqrt{\frac{1}{C_L L_L}}$   
 bandwidth:  $\frac{R_4 R_L}{L_L (R_4 + 2R_L)}$   
 K-LP:  $\frac{R_4 R_L}{R_4 + 2R_L}$   
 K-HP:  $\frac{R_4 R_L}{R_4 + 2R_L}$   
 K-BP: 0  
 Qz: None  
 Wz:  $\sqrt{\frac{1}{C_L L_L}}$

**5.19 BS-19**  $Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, L_4s + \frac{1}{C_4s}, \infty, R_L \right)$

$$H(s) = \frac{R_L (C_4 L_4 s^2 + 1)}{C_4 L_4 s^2 + 2C_4 R_L s + 1}$$

**Parameters:**

Q:  $\frac{L_4 \sqrt{\frac{1}{C_4 L_4}}}{2R_L}$   
 wo:  $\sqrt{\frac{1}{C_4 L_4}}$   
 bandwidth:  $\frac{2R_L}{L_4}$   
 K-LP:  $R_L$   
 K-HP:  $R_L$   
 K-BP: 0  
 Qz: None  
 Wz:  $\sqrt{\frac{1}{C_4 L_4}}$

**5.20 BS-20**  $Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{R_4(L_4s + \frac{1}{C_4s})}{L_4s + R_4 + \frac{1}{C_4s}}, \infty, R_L \right)$

$$H(s) = \frac{R_4R_L (C_4L_4s^2 + 1)}{C_4L_4R_4s^2 + 2C_4L_4R_Ls^2 + 2C_4R_4R_Ls + R_4 + 2R_L}$$

**Parameters:**

Q:  $\frac{L_4\sqrt{\frac{1}{C_4L_4}}(R_4+2R_L)}{2R_4R_L}$   
 wo:  $\sqrt{\frac{1}{C_4L_4}}$   
 bandwidth:  $\frac{2R_4R_L}{L_4(R_4+2R_L)}$   
 K-LP:  $\frac{R_4R_L}{R_4+2R_L}$   
 K-HP:  $\frac{R_4R_L}{R_4+2R_L}$   
 K-BP: 0  
 QZ: None  
 WZ:  $\sqrt{\frac{1}{C_4L_4}}$

**5.21 BS-21**  $Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, R_4, \infty, L_Ls + \frac{1}{C_Ls} \right)$

$$H(s) = \frac{R_4 (C_LL_Ls^2 + 1)}{2C_LL_Ls^2 + C_LR_4s + 2}$$

**Parameters:**

Q:  $\frac{2L_L\sqrt{\frac{1}{C_LL_L}}}{R_4}$   
 wo:  $\sqrt{\frac{1}{C_LL_L}}$   
 bandwidth:  $\frac{R_4}{2L_L}$   
 K-LP:  $\frac{R_4}{2}$   
 K-HP:  $\frac{R_4}{2}$   
 K-BP: 0  
 QZ: None  
 WZ:  $\sqrt{\frac{1}{C_LL_L}}$

**5.22 BS-22**  $Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, R_4, \infty, \frac{R_L(L_Ls + \frac{1}{C_Ls})}{L_Ls + R_L + \frac{1}{C_Ls}} \right)$

$$H(s) = \frac{R_4R_L (C_LL_Ls^2 + 1)}{C_LL_LR_4s^2 + 2C_LL_LR_Ls^2 + C_LR_4R_Ls + R_4 + 2R_L}$$

**Parameters:**

Q:  $\frac{L_L\sqrt{\frac{1}{C_LL_L}}(R_4+2R_L)}{R_4R_L}$   
 wo:  $\sqrt{\frac{1}{C_LL_L}}$   
 bandwidth:  $\frac{R_4R_L}{L_L(R_4+2R_L)}$   
 K-LP:  $\frac{R_4R_L}{R_4+2R_L}$   
 K-HP:  $\frac{R_4R_L}{R_4+2R_L}$   
 K-BP: 0  
 QZ: None  
 WZ:  $\sqrt{\frac{1}{C_LL_L}}$

**5.23 BS-23**  $Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, L_4s + \frac{1}{C_4s}, \infty, R_L \right)$

$$H(s) = \frac{R_L (C_4L_4s^2 + 1)}{C_4L_4s^2 + 2C_4R_Ls + 1}$$

**Parameters:**

Q:  $\frac{L_4\sqrt{\frac{1}{C_4L_4}}}{2R_L}$   
 wo:  $\sqrt{\frac{1}{C_4L_4}}$   
 bandwidth:  $\frac{2R_L}{L_4}$   
 K-LP:  $R_L$   
 K-HP:  $R_L$   
 K-BP: 0  
 QZ: None  
 Wz:  $\sqrt{\frac{1}{C_4L_4}}$

**5.24 BS-24**  $Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{R_4(L_4s + \frac{1}{C_4s})}{L_4s + R_4 + \frac{1}{C_4s}}, \infty, R_L \right)$

$$H(s) = \frac{R_4R_L (C_4L_4s^2 + 1)}{C_4L_4R_4s^2 + 2C_4L_4R_Ls^2 + 2C_4R_4R_Ls + R_4 + 2R_L}$$

**Parameters:**

Q:  $\frac{L_4\sqrt{\frac{1}{C_4L_4}}(R_4 + 2R_L)}{2R_4R_L}$   
 wo:  $\sqrt{\frac{1}{C_4L_4}}$   
 bandwidth:  $\frac{2R_4R_L}{L_4(R_4 + 2R_L)}$   
 K-LP:  $\frac{R_4R_L}{R_4 + 2R_L}$   
 K-HP:  $\frac{R_4R_L}{R_4 + 2R_L}$   
 K-BP: 0  
 QZ: None  
 Wz:  $\sqrt{\frac{1}{C_4L_4}}$

**5.25 BS-25**  $Z(s) = \left( \infty, \frac{L_2s}{C_2L_2s^2 + 1} + R_2, \infty, R_4, \infty, L_Ls + \frac{1}{C_Ls} \right)$

$$H(s) = \frac{R_4 (C_LL_Ls^2 + 1)}{2C_LL_Ls^2 + C_LR_4s + 2}$$

**Parameters:**

Q:  $\frac{2L_L\sqrt{\frac{1}{C_LL_L}}}{R_4}$   
 wo:  $\sqrt{\frac{1}{C_LL_L}}$   
 bandwidth:  $\frac{R_4}{2L_L}$   
 K-LP:  $\frac{R_4}{2}$   
 K-HP:  $\frac{R_4}{2}$   
 K-BP: 0  
 QZ: None  
 Wz:  $\sqrt{\frac{1}{C_LL_L}}$

**5.26 BS-26**  $Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, R_4, \infty, \frac{R_L \left( L_L s + \frac{1}{C_L s} \right)}{L_L s + R_L + \frac{1}{C_L s}} \right)$

**Parameters:**

$$\begin{aligned} \text{Q: } & \frac{L_L \sqrt{\frac{1}{C_L L_L}} (R_4 + 2R_L)}{R_4 R_L} \\ \text{wo: } & \sqrt{\frac{1}{C_L L_L}} \\ \text{bandwidth: } & \frac{R_4 R_L}{L_L (R_4 + 2R_L)} \\ \text{K-LP: } & \frac{R_4 R_L}{R_4 + 2R_L} \\ \text{K-HP: } & \frac{R_4 R_L}{R_4 + 2R_L} \\ \text{K-BP: } & 0 \\ \text{QZ: } & \text{None} \\ \text{WZ: } & \sqrt{\frac{1}{C_L L_L}} \end{aligned}$$

$$H(s) = \frac{R_4 R_L (C_L L_L s^2 + 1)}{C_L L_L R_4 s^2 + 2C_L L_L R_L s^2 + C_L R_4 R_L s + R_4 + 2R_L}$$

**5.27 BS-27**  $Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, L_4 s + \frac{1}{C_4 s}, \infty, R_L \right)$

**Parameters:**

$$\begin{aligned} \text{Q: } & \frac{L_4 \sqrt{\frac{1}{C_4 L_4}}}{2R_L} \\ \text{wo: } & \sqrt{\frac{1}{C_4 L_4}} \\ \text{bandwidth: } & \frac{2R_L}{L_4} \\ \text{K-LP: } & R_L \\ \text{K-HP: } & R_L \\ \text{K-BP: } & 0 \\ \text{QZ: } & \text{None} \\ \text{WZ: } & \sqrt{\frac{1}{C_4 L_4}} \end{aligned}$$

$$H(s) = \frac{R_L (C_4 L_4 s^2 + 1)}{C_4 L_4 s^2 + 2C_4 R_L s + 1}$$

**5.28 BS-28**  $Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{R_4 \left( L_4 s + \frac{1}{C_4 s} \right)}{L_4 s + R_4 + \frac{1}{C_4 s}}, \infty, R_L \right)$

**Parameters:**

$$\begin{aligned} \text{Q: } & \frac{L_4 \sqrt{\frac{1}{C_4 L_4}} (R_4 + 2R_L)}{2R_4 R_L} \\ \text{wo: } & \sqrt{\frac{1}{C_4 L_4}} \\ \text{bandwidth: } & \frac{2R_4 R_L}{L_4 (R_4 + 2R_L)} \\ \text{K-LP: } & \frac{R_4 R_L}{R_4 + 2R_L} \\ \text{K-HP: } & \frac{R_4 R_L}{R_4 + 2R_L} \\ \text{K-BP: } & 0 \\ \text{QZ: } & \text{None} \\ \text{WZ: } & \sqrt{\frac{1}{C_4 L_4}} \end{aligned}$$

$$H(s) = \frac{R_4 R_L (C_4 L_4 s^2 + 1)}{C_4 L_4 R_4 s^2 + 2C_4 L_4 R_L s^2 + 2C_4 R_4 R_L s + R_4 + 2R_L}$$

$$5.29 \quad \text{BS-29} \quad Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, R_4, \infty, L_L s + \frac{1}{C_L s} \right)$$

**Parameters:**

$$\begin{aligned} \text{Q: } & \frac{2L_L \sqrt{\frac{1}{C_L L_L}}}{R_4} \\ \text{wo: } & \sqrt{\frac{1}{C_L L_L}} \\ \text{bandwidth: } & \frac{R_4}{2L_L} \\ \text{K-LP: } & \frac{R_4}{2} \\ \text{K-HP: } & \frac{R_4}{2} \\ \text{K-BP: } & 0 \\ \text{Qz: } & \text{None} \\ \text{Wz: } & \sqrt{\frac{1}{C_L L_L}} \end{aligned}$$

$$H(s) = \frac{R_4 (C_L L_L s^2 + 1)}{2C_L L_L s^2 + C_L R_4 s + 2}$$

$$5.30 \quad \text{BS-30} \quad Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, R_4, \infty, \frac{R_L \left( L_L s + \frac{1}{C_L s} \right)}{L_L s + R_L + \frac{1}{C_L s}} \right)$$

**Parameters:**

$$\begin{aligned} \text{Q: } & \frac{L_L \sqrt{\frac{1}{C_L L_L}} (R_4 + 2R_L)}{R_4 R_L} \\ \text{wo: } & \sqrt{\frac{1}{C_L L_L}} \\ \text{bandwidth: } & \frac{R_4 R_L}{L_L (R_4 + 2R_L)} \\ \text{K-LP: } & \frac{R_4 R_L}{R_4 + 2R_L} \\ \text{K-HP: } & \frac{R_4 R_L}{R_4 + 2R_L} \\ \text{K-BP: } & 0 \\ \text{Qz: } & \text{None} \\ \text{Wz: } & \sqrt{\frac{1}{C_L L_L}} \end{aligned}$$

$$H(s) = \frac{R_4 R_L (C_L L_L s^2 + 1)}{C_L L_L R_4 s^2 + 2C_L L_L R_L s^2 + C_L R_4 R_L s + R_4 + 2R_L}$$

$$5.31 \quad \text{BS-31} \quad Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, L_4 s + \frac{1}{C_4 s}, \infty, R_L \right)$$

**Parameters:**

$$\begin{aligned} \text{Q: } & \frac{L_4 \sqrt{\frac{1}{C_4 L_4}}}{2R_L} \\ \text{wo: } & \sqrt{\frac{1}{C_4 L_4}} \\ \text{bandwidth: } & \frac{2R_L}{L_4} \\ \text{K-LP: } & R_L \\ \text{K-HP: } & R_L \\ \text{K-BP: } & 0 \\ \text{Qz: } & \text{None} \\ \text{Wz: } & \sqrt{\frac{1}{C_4 L_4}} \end{aligned}$$

$$H(s) = \frac{R_L (C_4 L_4 s^2 + 1)}{C_4 L_4 s^2 + 2C_4 R_L s + 1}$$

**5.32 BS-32**  $Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{R_4 \left( L_4 s + \frac{1}{C_4 s} \right)}{L_4 s + R_4 + \frac{1}{C_4 s}}, \infty, R_L \right)$

**Parameters:**

Q:  $\frac{L_4 \sqrt{\frac{1}{C_4 L_4}} (R_4 + 2R_L)}{2R_4 R_L}$   
 wo:  $\sqrt{\frac{1}{C_4 L_4}}$   
 bandwidth:  $\frac{2R_4 R_L}{L_4 (R_4 + 2R_L)}$   
 K-LP:  $\frac{R_4 R_L}{R_4 + 2R_L}$   
 K-HP:  $\frac{R_4 R_L}{R_4 + 2R_L}$   
 K-BP: 0  
 QZ: None  
 WZ:  $\sqrt{\frac{1}{C_4 L_4}}$

$$H(s) = \frac{R_4 R_L (C_4 L_4 s^2 + 1)}{C_4 L_4 R_4 s^2 + 2C_4 L_4 R_L s^2 + 2C_4 R_4 R_L s + R_4 + 2R_L}$$

## 6 GE

**6.1 GE-1**  $Z(s) = \left( \infty, R_2, \infty, R_4, \infty, L_L s + R_L + \frac{1}{C_L s} \right)$

**Parameters:**

Q:  $\frac{2L_L \sqrt{\frac{1}{C_L L_L}}}{R_4 + 2R_L}$   
 wo:  $\sqrt{\frac{1}{C_L L_L}}$   
 bandwidth:  $\frac{R_4 + 2R_L}{2L_L}$   
 K-LP:  $\frac{R_4}{2}$   
 K-HP:  $\frac{R_4}{2}$   
 K-BP:  $\frac{R_4 R_L}{R_4 + 2R_L}$   
 QZ:  $\frac{L_L \sqrt{\frac{1}{C_L L_L}}}{R_L}$   
 WZ:  $\sqrt{\frac{1}{C_L L_L}}$

$$H(s) = \frac{R_4 (C_L L_L s^2 + C_L R_L s + 1)}{2C_L L_L s^2 + C_L R_4 s + 2C_L R_L s + 2}$$

**6.2 GE-2**  $Z(s) = \left( \infty, R_2, \infty, R_4, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$

**Parameters:**

Q:  $\frac{C_L \sqrt{\frac{1}{C_L L_L}} (R_4 + 2R_L)}{2}$   
 wo:  $\sqrt{\frac{1}{C_L L_L}}$   
 bandwidth:  $\frac{2}{C_L (R_4 + 2R_L)}$   
 K-LP:  $\frac{R_4 R_L}{R_4 + 2R_L}$   
 K-HP:  $\frac{R_4 R_L}{R_4 + 2R_L}$   
 K-BP:  $\frac{R_4}{2}$

$$H(s) = \frac{R_4 (C_L L_L R_L s^2 + L_L s + R_L)}{C_L L_L R_4 s^2 + 2C_L L_L R_L s^2 + 2L_L s + R_4 + 2R_L}$$



$$\begin{aligned} \text{Qz: } & C_L R_L \sqrt{\frac{1}{C_L L_L}} \\ \text{Wz: } & \sqrt{\frac{1}{C_L L_L}} \end{aligned}$$

$$\mathbf{6.3 \quad GE-3} \quad Z(s) = \left( \infty, \quad R_2, \quad \infty, \quad L_4 s + R_4 + \frac{1}{C_4 s}, \quad \infty, \quad R_L \right)$$

**Parameters:**

$$\begin{aligned} \text{Q: } & \frac{L_4 \sqrt{\frac{1}{C_4 L_4}}}{R_4 + 2R_L} \\ \text{wo: } & \sqrt{\frac{1}{C_4 L_4}} \\ \text{bandwidth: } & \frac{R_4 + 2R_L}{L_4} \\ \text{K-LP: } & R_L \\ \text{K-HP: } & R_L \\ \text{K-BP: } & \frac{R_4 R_L}{R_4 + 2R_L} \\ \text{Qz: } & \frac{L_4 \sqrt{\frac{1}{C_4 L_4}}}{R_4} \\ \text{Wz: } & \sqrt{\frac{1}{C_4 L_4}} \end{aligned}$$

$$H(s) = \frac{R_L (C_4 L_4 s^2 + C_4 R_4 s + 1)}{C_4 L_4 s^2 + C_4 R_4 s + 2C_4 R_L s + 1}$$

$$\mathbf{6.4 \quad GE-4} \quad Z(s) = \left( \infty, \quad R_2, \quad \infty, \quad \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \quad \infty, \quad R_L \right)$$

**Parameters:**

$$\begin{aligned} \text{Q: } & C_4 \sqrt{\frac{1}{C_4 L_4}} (R_4 + 2R_L) \\ \text{wo: } & \sqrt{\frac{1}{C_4 L_4}} \\ \text{bandwidth: } & \frac{1}{C_4 (R_4 + 2R_L)} \\ \text{K-LP: } & \frac{R_4 R_L}{R_4 + 2R_L} \\ \text{K-HP: } & \frac{R_4 R_L}{R_4 + 2R_L} \\ \text{K-BP: } & R_L \\ \text{Qz: } & C_4 R_4 \sqrt{\frac{1}{C_4 L_4}} \\ \text{Wz: } & \sqrt{\frac{1}{C_4 L_4}} \end{aligned}$$

$$H(s) = \frac{R_L (C_4 L_4 R_4 s^2 + L_4 s + R_4)}{C_4 L_4 R_4 s^2 + 2C_4 L_4 R_L s^2 + L_4 s + R_4 + 2R_L}$$

$$\mathbf{6.5 \quad GE-5} \quad Z(s) = \left( \infty, \quad \frac{1}{C_2 s}, \quad \infty, \quad R_4, \quad \infty, \quad L_L s + R_L + \frac{1}{C_L s} \right)$$

**Parameters:**

$$\begin{aligned} \text{Q: } & \frac{2L_L \sqrt{\frac{1}{C_L L_L}}}{R_4 + 2R_L} \\ \text{wo: } & \sqrt{\frac{1}{C_L L_L}} \\ \text{bandwidth: } & \frac{R_4 + 2R_L}{2L_L} \\ \text{K-LP: } & \frac{R_4}{2} \\ \text{K-HP: } & \frac{R_4}{2} \\ \text{K-BP: } & \frac{R_4 R_L}{R_4 + 2R_L} \end{aligned}$$

$$H(s) = \frac{R_4 (C_L L_L s^2 + C_L R_L s + 1)}{2C_L L_L s^2 + C_L R_4 s + 2C_L R_L s + 2}$$

$$\begin{aligned} \text{QZ: } & \frac{L_L \sqrt{\frac{1}{C_L L_L}}}{R_L} \\ \text{WZ: } & \sqrt{\frac{1}{C_L L_L}} \end{aligned}$$

$$\mathbf{6.6 \quad GE-6} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, R_4, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$$

**Parameters:**

$$\begin{aligned} \text{Q: } & \frac{C_L \sqrt{\frac{1}{C_L L_L}} (R_4 + 2R_L)}{2} \\ \text{wo: } & \sqrt{\frac{1}{C_L L_L}} \\ \text{bandwidth: } & \frac{2}{C_L (R_4 + 2R_L)} \\ \text{K-LP: } & \frac{R_4 R_L}{R_4 + 2R_L} \\ \text{K-HP: } & \frac{R_4 R_L}{R_4 + 2R_L} \\ \text{K-BP: } & \frac{R_4}{2} \\ \text{QZ: } & C_L R_L \sqrt{\frac{1}{C_L L_L}} \\ \text{WZ: } & \sqrt{\frac{1}{C_L L_L}} \end{aligned}$$

$$\mathbf{6.7 \quad GE-7} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, R_L \right)$$

**Parameters:**

$$\begin{aligned} \text{Q: } & \frac{L_4 \sqrt{\frac{1}{C_4 L_4}}}{R_4 + 2R_L} \\ \text{wo: } & \sqrt{\frac{1}{C_4 L_4}} \\ \text{bandwidth: } & \frac{R_4 + 2R_L}{L_4} \\ \text{K-LP: } & R_L \\ \text{K-HP: } & R_L \\ \text{K-BP: } & \frac{R_4 R_L}{R_4 + 2R_L} \\ \text{QZ: } & \frac{L_4 \sqrt{\frac{1}{C_4 L_4}}}{R_4} \\ \text{WZ: } & \sqrt{\frac{1}{C_4 L_4}} \end{aligned}$$

$$\mathbf{6.8 \quad GE-8} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \infty, R_L \right)$$

**Parameters:**

$$\begin{aligned} \text{Q: } & C_4 \sqrt{\frac{1}{C_4 L_4}} (R_4 + 2R_L) \\ \text{wo: } & \sqrt{\frac{1}{C_4 L_4}} \\ \text{bandwidth: } & \frac{1}{C_4 (R_4 + 2R_L)} \\ \text{K-LP: } & \frac{R_4 R_L}{R_4 + 2R_L} \\ \text{K-HP: } & \frac{R_4 R_L}{R_4 + 2R_L} \end{aligned}$$

$$H(s) = \frac{R_4 (C_L L_L R_L s^2 + L_L s + R_L)}{C_L L_L R_4 s^2 + 2C_L L_L R_L s^2 + 2L_L s + R_4 + 2R_L}$$

$$H(s) = \frac{R_L (C_4 L_4 s^2 + C_4 R_4 s + 1)}{C_4 L_4 s^2 + C_4 R_4 s + 2C_4 R_L s + 1}$$

$$H(s) = \frac{R_L (C_4 L_4 R_4 s^2 + L_4 s + R_4)}{C_4 L_4 R_4 s^2 + 2C_4 L_4 R_L s^2 + L_4 s + R_4 + 2R_L}$$

$$\begin{aligned}\text{K-BP: } & R_L \\ \text{QZ: } & C_4 R_4 \sqrt{\frac{1}{C_4 L_4}} \\ \text{WZ: } & \sqrt{\frac{1}{C_4 L_4}}\end{aligned}$$

$$\mathbf{6.9 \quad GE-9} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, R_4, \infty, L_L s + R_L + \frac{1}{C_L s} \right)$$

**Parameters:**

$$\begin{aligned}\text{Q: } & \frac{2L_L \sqrt{\frac{1}{C_L L_L}}}{R_4 + 2R_L} \\ \text{wo: } & \sqrt{\frac{1}{C_L L_L}} \\ \text{bandwidth: } & \frac{R_4 + 2R_L}{2L_L} \\ \text{K-LP: } & \frac{R_4}{2} \\ \text{K-HP: } & \frac{R_4}{2} \\ \text{K-BP: } & \frac{R_4 R_L}{R_4 + 2R_L} \\ \text{QZ: } & \frac{L_L \sqrt{\frac{1}{C_L L_L}}}{R_L} \\ \text{WZ: } & \sqrt{\frac{1}{C_L L_L}}\end{aligned}$$

$$\mathbf{6.10 \quad GE-10} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, R_4, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$$

**Parameters:**

$$\begin{aligned}\text{Q: } & \frac{C_L \sqrt{\frac{1}{C_L L_L}} (R_4 + 2R_L)}{2} \\ \text{wo: } & \sqrt{\frac{1}{C_L L_L}} \\ \text{bandwidth: } & \frac{2}{C_L (R_4 + 2R_L)} \\ \text{K-LP: } & \frac{R_4 R_L}{R_4 + 2R_L} \\ \text{K-HP: } & \frac{R_4 R_L}{R_4 + 2R_L} \\ \text{K-BP: } & \frac{R_4}{2} \\ \text{QZ: } & C_L R_L \sqrt{\frac{1}{C_L L_L}} \\ \text{WZ: } & \sqrt{\frac{1}{C_L L_L}}\end{aligned}$$

$$\mathbf{6.11 \quad GE-11} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, R_L \right)$$

**Parameters:**

$$\begin{aligned}\text{Q: } & \frac{L_4 \sqrt{\frac{1}{C_4 L_4}}}{R_4 + 2R_L} \\ \text{wo: } & \sqrt{\frac{1}{C_4 L_4}} \\ \text{bandwidth: } & \frac{R_4 + 2R_L}{L_4} \\ \text{K-LP: } & R_L\end{aligned}$$

$$H(s) = \frac{R_4 (C_L L_L s^2 + C_L R_L s + 1)}{2C_L L_L s^2 + C_L R_4 s + 2C_L R_L s + 2}$$

$$H(s) = \frac{R_4 (C_L L_L R_L s^2 + L_L s + R_L)}{C_L L_L R_4 s^2 + 2C_L L_L R_L s^2 + 2L_L s + R_4 + 2R_L}$$

$$H(s) = \frac{R_L (C_4 L_4 s^2 + C_4 R_4 s + 1)}{C_4 L_4 s^2 + C_4 R_4 s + 2C_4 R_L s + 1}$$

$$\begin{aligned}\text{K-HP: } & R_L \\ \text{K-BP: } & \frac{R_4 R_L}{R_4 + 2R_L} \\ \text{QZ: } & \frac{L_4 \sqrt{\frac{1}{C_4 L_4}}}{R_4} \\ \text{WZ: } & \sqrt{\frac{1}{C_4 L_4}}\end{aligned}$$

$$\mathbf{6.12 \quad GE-12} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \infty, R_L \right)$$

**Parameters:**

$$\begin{aligned}\text{Q: } & C_4 \sqrt{\frac{1}{C_4 L_4}} (R_4 + 2R_L) \\ \text{wo: } & \sqrt{\frac{1}{C_4 L_4}} \\ \text{bandwidth: } & \frac{1}{C_4 (R_4 + 2R_L)} \\ \text{K-LP: } & \frac{R_4 R_L}{R_4 + 2R_L} \\ \text{K-HP: } & \frac{R_4 R_L}{R_4 + 2R_L} \\ \text{K-BP: } & R_L \\ \text{QZ: } & C_4 R_4 \sqrt{\frac{1}{C_4 L_4}} \\ \text{WZ: } & \sqrt{\frac{1}{C_4 L_4}}\end{aligned}$$

$$\mathbf{6.13 \quad GE-13} \quad Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, R_4, \infty, L_L s + R_L + \frac{1}{C_L s} \right)$$

**Parameters:**

$$\begin{aligned}\text{Q: } & \frac{2L_L \sqrt{\frac{1}{C_L L_L}}}{R_4 + 2R_L} \\ \text{wo: } & \sqrt{\frac{1}{C_L L_L}} \\ \text{bandwidth: } & \frac{R_4 + 2R_L}{2L_L} \\ \text{K-LP: } & \frac{R_4}{2} \\ \text{K-HP: } & \frac{R_4}{2} \\ \text{K-BP: } & \frac{R_4 R_L}{R_4 + 2R_L} \\ \text{QZ: } & \frac{L_L \sqrt{\frac{1}{C_L L_L}}}{R_L} \\ \text{WZ: } & \sqrt{\frac{1}{C_L L_L}}\end{aligned}$$

$$\mathbf{6.14 \quad GE-14} \quad Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, R_4, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$$

**Parameters:**

$$\begin{aligned}\text{Q: } & \frac{C_L \sqrt{\frac{1}{C_L L_L}} (R_4 + 2R_L)}{2} \\ \text{wo: } & \sqrt{\frac{1}{C_L L_L}} \\ \text{bandwidth: } & \frac{2}{C_L (R_4 + 2R_L)}\end{aligned}$$

$$H(s) = \frac{R_L (C_4 L_4 R_4 s^2 + L_4 s + R_4)}{C_4 L_4 R_4 s^2 + 2C_4 L_4 R_L s^2 + L_4 s + R_4 + 2R_L}$$

$$H(s) = \frac{R_4 (C_L L_L s^2 + C_L R_L s + 1)}{2C_L L_L s^2 + C_L R_4 s + 2C_L R_L s + 2}$$

$$H(s) = \frac{R_4 (C_L L_L R_L s^2 + L_L s + R_L)}{C_L L_L R_4 s^2 + 2C_L L_L R_L s^2 + 2L_L s + R_4 + 2R_L}$$

$$\begin{aligned}
\text{K-LP: } & \frac{R_4 R_L}{R_4 + 2R_L} \\
\text{K-HP: } & \frac{R_4 R_L}{R_4 + 2R_L} \\
\text{K-BP: } & \frac{R_4}{2} \\
\text{QZ: } & C_L R_L \sqrt{\frac{1}{C_L L_L}} \\
\text{WZ: } & \sqrt{\frac{1}{C_L L_L}}
\end{aligned}$$

$$6.15 \quad \text{GE-15} \quad Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, R_L \right)$$

Parameters:

$$\begin{aligned}
\text{Q: } & \frac{L_4 \sqrt{\frac{1}{C_4 L_4}}}{R_4 + 2R_L} \\
\text{wo: } & \sqrt{\frac{1}{C_4 L_4}} \\
\text{bandwidth: } & \frac{R_4 + 2R_L}{L_4} \\
\text{K-LP: } & R_L \\
\text{K-HP: } & R_L \\
\text{K-BP: } & \frac{R_4 R_L}{R_4 + 2R_L} \\
\text{QZ: } & \frac{L_4 \sqrt{\frac{1}{C_4 L_4}}}{R_4} \\
\text{WZ: } & \sqrt{\frac{1}{C_4 L_4}}
\end{aligned}$$

$$6.16 \quad \text{GE-16} \quad Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \infty, R_L \right)$$

Parameters:

$$\begin{aligned}
\text{Q: } & C_4 \sqrt{\frac{1}{C_4 L_4}} (R_4 + 2R_L) \\
\text{wo: } & \sqrt{\frac{1}{C_4 L_4}} \\
\text{bandwidth: } & \frac{1}{C_4 (R_4 + 2R_L)} \\
\text{K-LP: } & \frac{R_4 R_L}{R_4 + 2R_L} \\
\text{K-HP: } & \frac{R_4 R_L}{R_4 + 2R_L} \\
\text{K-BP: } & R_L \\
\text{QZ: } & C_4 R_4 \sqrt{\frac{1}{C_4 L_4}} \\
\text{WZ: } & \sqrt{\frac{1}{C_4 L_4}}
\end{aligned}$$

$$6.17 \quad \text{GE-17} \quad Z(s) = \left( \infty, L_2 s + \frac{1}{C_2 s}, \infty, R_4, \infty, L_L s + R_L + \frac{1}{C_L s} \right)$$

Parameters:

$$\begin{aligned}
\text{Q: } & \frac{2L_L \sqrt{\frac{1}{C_L L_L}}}{R_4 + 2R_L} \\
\text{wo: } & \sqrt{\frac{1}{C_L L_L}} \\
\text{bandwidth: } & \frac{R_4 + 2R_L}{2L_L}
\end{aligned}$$

$$H(s) = \frac{R_L (C_4 L_4 s^2 + C_4 R_4 s + 1)}{C_4 L_4 s^2 + C_4 R_4 s + 2C_4 R_L s + 1}$$

$$H(s) = \frac{R_L (C_4 L_4 R_4 s^2 + L_4 s + R_4)}{C_4 L_4 R_4 s^2 + 2C_4 L_4 R_L s^2 + L_4 s + R_4 + 2R_L}$$

$$H(s) = \frac{R_4 (C_L L_L s^2 + C_L R_L s + 1)}{2C_L L_L s^2 + C_L R_4 s + 2C_L R_L s + 2}$$

$$\begin{aligned}
\text{K-LP: } & \frac{R_4}{2} \\
\text{K-HP: } & \frac{R_4}{2} \\
\text{K-BP: } & \frac{R_4 R_L}{R_4 + 2R_L} \\
\text{QZ: } & \frac{L_L \sqrt{\frac{1}{C_L L_L}}}{R_L} \\
\text{WZ: } & \sqrt{\frac{1}{C_L L_L}}
\end{aligned}$$

$$6.18 \quad \text{GE-18} \quad Z(s) = \left( \infty, L_2 s + \frac{1}{C_2 s}, \infty, R_4, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$$

**Parameters:**

$$\begin{aligned}
\text{Q: } & \frac{C_L \sqrt{\frac{1}{C_L L_L}} (R_4 + 2R_L)}{2} \\
\text{wo: } & \sqrt{\frac{1}{C_L L_L}} \\
\text{bandwidth: } & \frac{2}{C_L (R_4 + 2R_L)} \\
\text{K-LP: } & \frac{R_4 R_L}{R_4 + 2R_L} \\
\text{K-HP: } & \frac{R_4 R_L}{R_4 + 2R_L} \\
\text{K-BP: } & \frac{R_4}{2} \\
\text{QZ: } & C_L R_L \sqrt{\frac{1}{C_L L_L}} \\
\text{WZ: } & \sqrt{\frac{1}{C_L L_L}}
\end{aligned}$$

$$6.19 \quad \text{GE-19} \quad Z(s) = \left( \infty, L_2 s + \frac{1}{C_2 s}, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, R_L \right)$$

**Parameters:**

$$\begin{aligned}
\text{Q: } & \frac{L_4 \sqrt{\frac{1}{C_4 L_4}}}{R_4 + 2R_L} \\
\text{wo: } & \sqrt{\frac{1}{C_4 L_4}} \\
\text{bandwidth: } & \frac{R_4 + 2R_L}{L_4} \\
\text{K-LP: } & R_L \\
\text{K-HP: } & R_L \\
\text{K-BP: } & \frac{R_4 R_L}{R_4 + 2R_L} \\
\text{QZ: } & \frac{L_4 \sqrt{\frac{1}{C_4 L_4}}}{R_4} \\
\text{WZ: } & \sqrt{\frac{1}{C_4 L_4}}
\end{aligned}$$

$$6.20 \quad \text{GE-20} \quad Z(s) = \left( \infty, L_2 s + \frac{1}{C_2 s}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \infty, R_L \right)$$

**Parameters:**

$$\begin{aligned}
\text{Q: } & C_4 \sqrt{\frac{1}{C_4 L_4}} (R_4 + 2R_L) \\
\text{wo: } & \sqrt{\frac{1}{C_4 L_4}}
\end{aligned}$$

$$H(s) = \frac{R_4 (C_L L_L R_L s^2 + L_L s + R_L)}{C_L L_L R_4 s^2 + 2C_L L_L R_L s^2 + 2L_L s + R_4 + 2R_L}$$

$$H(s) = \frac{R_L (C_4 L_4 s^2 + C_4 R_4 s + 1)}{C_4 L_4 s^2 + C_4 R_4 s + 2C_4 R_L s + 1}$$

$$H(s) = \frac{R_L (C_4 L_4 R_4 s^2 + L_4 s + R_4)}{C_4 L_4 R_4 s^2 + 2C_4 L_4 R_L s^2 + L_4 s + R_4 + 2R_L}$$

$$\begin{aligned}
&\text{bandwidth: } \frac{1}{C_4(R_4+2R_L)} \\
&\text{K-LP: } \frac{R_4 R_L}{R_4+2R_L} \\
&\text{K-HP: } \frac{R_4 R_L}{R_4+2R_L} \\
&\text{K-BP: } R_L \\
&\text{QZ: } C_4 R_4 \sqrt{\frac{1}{C_4 L_4}} \\
&\text{WZ: } \sqrt{\frac{1}{C_4 L_4}}
\end{aligned}$$

$$6.21 \quad \text{GE-21} \quad Z(s) = \left( \infty, \quad L_2 s + R_2 + \frac{1}{C_2 s}, \quad \infty, \quad R_4, \quad \infty, \quad L_L s + R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{R_4 (C_L L_L s^2 + C_L R_L s + 1)}{2C_L L_L s^2 + C_L R_4 s + 2C_L R_L s + 2}$$

Parameters:

$$\begin{aligned}
&\text{Q: } \frac{2L_L \sqrt{\frac{1}{C_L L_L}}}{R_4+2R_L} \\
&\text{wo: } \sqrt{\frac{1}{C_L L_L}} \\
&\text{bandwidth: } \frac{R_4+2R_L}{2L_L} \\
&\text{K-LP: } \frac{R_4}{2} \\
&\text{K-HP: } \frac{R_4}{2} \\
&\text{K-BP: } \frac{R_4 R_L}{R_4+2R_L} \\
&\text{QZ: } \frac{L_L \sqrt{\frac{1}{C_L L_L}}}{R_L} \\
&\text{WZ: } \sqrt{\frac{1}{C_L L_L}}
\end{aligned}$$

$$6.22 \quad \text{GE-22} \quad Z(s) = \left( \infty, \quad L_2 s + R_2 + \frac{1}{C_2 s}, \quad \infty, \quad R_4, \quad \infty, \quad \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$$

$$H(s) = \frac{R_4 (C_L L_L R_L s^2 + L_L s + R_L)}{C_L L_L R_4 s^2 + 2C_L L_L R_L s^2 + 2L_L s + R_4 + 2R_L}$$

Parameters:

$$\begin{aligned}
&\text{Q: } \frac{C_L \sqrt{\frac{1}{C_L L_L}} (R_4+2R_L)}{2} \\
&\text{wo: } \sqrt{\frac{1}{C_L L_L}} \\
&\text{bandwidth: } \frac{2}{C_L (R_4+2R_L)} \\
&\text{K-LP: } \frac{R_4 R_L}{R_4+2R_L} \\
&\text{K-HP: } \frac{R_4 R_L}{R_4+2R_L} \\
&\text{K-BP: } \frac{R_4}{2} \\
&\text{QZ: } C_L R_L \sqrt{\frac{1}{C_L L_L}} \\
&\text{WZ: } \sqrt{\frac{1}{C_L L_L}}
\end{aligned}$$

$$6.23 \quad \text{GE-23} \quad Z(s) = \left( \infty, \quad L_2 s + R_2 + \frac{1}{C_2 s}, \quad \infty, \quad L_4 s + R_4 + \frac{1}{C_4 s}, \quad \infty, \quad R_L \right)$$

$$H(s) = \frac{R_L (C_4 L_4 s^2 + C_4 R_4 s + 1)}{C_4 L_4 s^2 + C_4 R_4 s + 2C_4 R_L s + 1}$$

Parameters:

$$\text{Q: } \frac{L_4 \sqrt{\frac{1}{C_4 L_4}}}{R_4+2R_L}$$

$$\begin{aligned}
\text{wo: } & \sqrt{\frac{1}{C_4 L_4}} \\
\text{bandwidth: } & \frac{R_4 + 2R_L}{L_4} \\
\text{K-LP: } & R_L \\
\text{K-HP: } & R_L \\
\text{K-BP: } & \frac{R_4 R_L}{R_4 + 2R_L} \\
\text{QZ: } & \frac{L_4 \sqrt{\frac{1}{C_4 L_4}}}{R_4} \\
\text{WZ: } & \sqrt{\frac{1}{C_4 L_4}}
\end{aligned}$$

$$\mathbf{6.24 \quad GE-24} \quad Z(s) = \left( \infty, \quad L_2 s + R_2 + \frac{1}{C_2 s}, \quad \infty, \quad \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \quad \infty, \quad R_L \right)$$

$$H(s) = \frac{R_L (C_4 L_4 R_4 s^2 + L_4 s + R_4)}{C_4 L_4 R_4 s^2 + 2C_4 L_4 R_L s^2 + L_4 s + R_4 + 2R_L}$$

**Parameters:**

$$\begin{aligned}
\text{Q: } & C_4 \sqrt{\frac{1}{C_4 L_4}} (R_4 + 2R_L) \\
\text{wo: } & \sqrt{\frac{1}{C_4 L_4}} \\
\text{bandwidth: } & \frac{1}{C_4 (R_4 + 2R_L)} \\
\text{K-LP: } & \frac{R_4 R_L}{R_4 + 2R_L} \\
\text{K-HP: } & \frac{R_4 R_L}{R_4 + 2R_L} \\
\text{K-BP: } & R_L \\
\text{QZ: } & C_4 R_4 \sqrt{\frac{1}{C_4 L_4}} \\
\text{WZ: } & \sqrt{\frac{1}{C_4 L_4}}
\end{aligned}$$

$$\mathbf{6.25 \quad GE-25} \quad Z(s) = \left( \infty, \quad \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \quad \infty, \quad R_4, \quad \infty, \quad L_L s + R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{R_4 (C_L L_L s^2 + C_L R_L s + 1)}{2C_L L_L s^2 + C_L R_4 s + 2C_L R_L s + 2}$$

**Parameters:**

$$\begin{aligned}
\text{Q: } & \frac{2L_L \sqrt{\frac{1}{C_L L_L}}}{R_4 + 2R_L} \\
\text{wo: } & \sqrt{\frac{1}{C_L L_L}} \\
\text{bandwidth: } & \frac{R_4 + 2R_L}{2L_L} \\
\text{K-LP: } & \frac{R_4}{2} \\
\text{K-HP: } & \frac{R_4}{2} \\
\text{K-BP: } & \frac{R_4 R_L}{R_4 + 2R_L} \\
\text{QZ: } & \frac{L_L \sqrt{\frac{1}{C_L L_L}}}{R_L} \\
\text{WZ: } & \sqrt{\frac{1}{C_L L_L}}
\end{aligned}$$

$$\mathbf{6.26 \quad GE-26} \quad Z(s) = \left( \infty, \quad \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \quad \infty, \quad R_4, \quad \infty, \quad \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$$

$$H(s) = \frac{R_4 (C_L L_L R_L s^2 + L_L s + R_L)}{C_L L_L R_4 s^2 + 2C_L L_L R_L s^2 + 2L_L s + R_4 + 2R_L}$$

**Parameters:**

$$\text{Q: } \frac{C_L \sqrt{\frac{1}{C_L L_L}} (R_4 + 2R_L)}{2}$$



$$\begin{aligned}
\text{wo: } & \sqrt{\frac{1}{C_L L_L}} \\
\text{bandwidth: } & \frac{2}{C_L(R_4+2R_L)} \\
\text{K-LP: } & \frac{R_4 R_L}{R_4+2R_L} \\
\text{K-HP: } & \frac{R_4 R_L}{R_4+2R_L} \\
\text{K-BP: } & \frac{R_4}{2} \\
\text{Qz: } & C_L R_L \sqrt{\frac{1}{C_L L_L}} \\
\text{Wz: } & \sqrt{\frac{1}{C_L L_L}}
\end{aligned}$$

$$\mathbf{6.27 \quad GE-27} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, R_L \right)$$

$$H(s) = \frac{R_L (C_4 L_4 s^2 + C_4 R_4 s + 1)}{C_4 L_4 s^2 + C_4 R_4 s + 2C_4 R_L s + 1}$$

**Parameters:**

$$\begin{aligned}
\text{Q: } & \frac{L_4 \sqrt{\frac{1}{C_4 L_4}}}{R_4+2R_L} \\
\text{wo: } & \sqrt{\frac{1}{C_4 L_4}} \\
\text{bandwidth: } & \frac{R_4+2R_L}{L_4} \\
\text{K-LP: } & R_L \\
\text{K-HP: } & R_L \\
\text{K-BP: } & \frac{R_4 R_L}{R_4+2R_L} \\
\text{Qz: } & \frac{L_4 \sqrt{\frac{1}{C_4 L_4}}}{R_4} \\
\text{Wz: } & \sqrt{\frac{1}{C_4 L_4}}
\end{aligned}$$

$$\mathbf{6.28 \quad GE-28} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \infty, R_L \right)$$

$$H(s) = \frac{R_L (C_4 L_4 R_4 s^2 + L_4 s + R_4)}{C_4 L_4 R_4 s^2 + 2C_4 L_4 R_L s^2 + L_4 s + R_4 + 2R_L}$$

**Parameters:**

$$\begin{aligned}
\text{Q: } & C_4 \sqrt{\frac{1}{C_4 L_4}} (R_4 + 2R_L) \\
\text{wo: } & \sqrt{\frac{1}{C_4 L_4}} \\
\text{bandwidth: } & \frac{1}{C_4(R_4+2R_L)} \\
\text{K-LP: } & \frac{R_4 R_L}{R_4+2R_L} \\
\text{K-HP: } & \frac{R_4 R_L}{R_4+2R_L} \\
\text{K-BP: } & R_L \\
\text{Qz: } & C_4 R_4 \sqrt{\frac{1}{C_4 L_4}} \\
\text{Wz: } & \sqrt{\frac{1}{C_4 L_4}}
\end{aligned}$$

$$\mathbf{6.29 \quad GE-29} \quad Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, R_4, \infty, L_L s + R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{R_4 (C_L L_L s^2 + C_L R_L s + 1)}{2C_L L_L s^2 + C_L R_4 s + 2C_L R_L s + 2}$$

**Parameters:**

$$\begin{aligned}
\text{Q: } & \frac{2L_L \sqrt{\frac{1}{C_L L_L}}}{R_4 + 2R_L} \\
\text{wo: } & \sqrt{\frac{1}{C_L L_L}} \\
\text{bandwidth: } & \frac{R_4 + 2R_L}{2L_L} \\
\text{K-LP: } & \frac{R_4}{2} \\
\text{K-HP: } & \frac{R_4}{2} \\
\text{K-BP: } & \frac{R_4 R_L}{R_4 + 2R_L} \\
\text{QZ: } & \frac{L_L \sqrt{\frac{1}{C_L L_L}}}{R_L} \\
\text{WZ: } & \sqrt{\frac{1}{C_L L_L}}
\end{aligned}$$

$$\mathbf{6.30 \quad GE-30} \quad Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, R_4, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$$

$$H(s) = \frac{R_4 (C_L L_L R_L s^2 + L_L s + R_L)}{C_L L_L R_4 s^2 + 2C_L L_L R_L s^2 + 2L_L s + R_4 + 2R_L}$$

**Parameters:**

$$\begin{aligned}
\text{Q: } & \frac{C_L \sqrt{\frac{1}{C_L L_L}} (R_4 + 2R_L)}{2} \\
\text{wo: } & \sqrt{\frac{1}{C_L L_L}} \\
\text{bandwidth: } & \frac{2}{C_L (R_4 + 2R_L)} \\
\text{K-LP: } & \frac{R_4 R_L}{R_4 + 2R_L} \\
\text{K-HP: } & \frac{R_4 R_L}{R_4 + 2R_L} \\
\text{K-BP: } & \frac{R_4}{2} \\
\text{QZ: } & C_L R_L \sqrt{\frac{1}{C_L L_L}} \\
\text{WZ: } & \sqrt{\frac{1}{C_L L_L}}
\end{aligned}$$

$$\mathbf{6.31 \quad GE-31} \quad Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, R_L \right)$$

$$H(s) = \frac{R_L (C_4 L_4 s^2 + C_4 R_4 s + 1)}{C_4 L_4 s^2 + C_4 R_4 s + 2C_4 R_L s + 1}$$

**Parameters:**

$$\begin{aligned}
\text{Q: } & \frac{L_4 \sqrt{\frac{1}{C_4 L_4}}}{R_4 + 2R_L} \\
\text{wo: } & \sqrt{\frac{1}{C_4 L_4}} \\
\text{bandwidth: } & \frac{R_4 + 2R_L}{L_4} \\
\text{K-LP: } & R_L \\
\text{K-HP: } & R_L \\
\text{K-BP: } & \frac{R_4 R_L}{R_4 + 2R_L} \\
\text{QZ: } & \frac{L_4 \sqrt{\frac{1}{C_4 L_4}}}{R_4} \\
\text{WZ: } & \sqrt{\frac{1}{C_4 L_4}}
\end{aligned}$$

**6.32 GE-32**  $Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \infty, R_L \right)$

$$H(s) = \frac{R_L (C_4 L_4 R_4 s^2 + L_4 s + R_4)}{C_4 L_4 R_4 s^2 + 2C_4 L_4 R_L s^2 + L_4 s + R_4 + 2R_L}$$

**Parameters:**

Q:  $C_4 \sqrt{\frac{1}{C_4 L_4}} (R_4 + 2R_L)$

wo:  $\sqrt{\frac{1}{C_4 L_4}}$

bandwidth:  $\frac{1}{C_4 (R_4 + 2R_L)}$

K-LP:  $\frac{R_4 R_L}{R_4 + 2R_L}$

K-HP:  $\frac{R_4 R_L}{R_4 + 2R_L}$

K-BP:  $R_L$

QZ:  $C_4 R_4 \sqrt{\frac{1}{C_4 L_4}}$

WZ:  $\sqrt{\frac{1}{C_4 L_4}}$

## 7 AP

## 8 INVALID-NUMER

**8.1 INVALID-NUMER-1**  $Z(s) = \left( \infty, R_2, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, R_L + \frac{1}{C_L s} \right)$

$$H(s) = \frac{R_4 (C_L R_L s + 1)}{2C_4 C_L R_4 R_L s^2 + 2C_4 R_4 s + C_L R_4 s + 2C_L R_L s + 2}$$

**Parameters:**

Q:  $\frac{2C_4 C_L R_4 R_L \sqrt{\frac{1}{C_4 C_L R_4 R_L}}}{2C_4 R_4 + C_L R_4 + 2C_L R_L}$

wo:  $\sqrt{\frac{1}{C_4 C_L R_4 R_L}}$

bandwidth:  $\frac{2C_4 R_4 + C_L R_4 + 2C_L R_L}{2C_4 C_L R_4 R_L}$

K-LP:  $\frac{R_4}{2}$

K-HP: 0

K-BP:  $\frac{C_L R_4 R_L}{2C_4 R_4 + C_L R_4 + 2C_L R_L}$

QZ: 0

WZ: None

**8.2 INVALID-NUMER-2**  $Z(s) = \left( \infty, R_2, \infty, R_4 + \frac{1}{C_4 s}, \infty, \frac{R_L}{C_L R_L s + 1} \right)$

$$H(s) = \frac{R_L (C_4 R_4 s + 1)}{C_4 C_L R_4 R_L s^2 + C_4 R_4 s + 2C_4 R_L s + C_L R_L s + 1}$$

**Parameters:**

Q:  $\frac{C_4 C_L R_4 R_L \sqrt{\frac{1}{C_4 C_L R_4 R_L}}}{C_4 R_4 + 2C_4 R_L + C_L R_L}$

wo:  $\sqrt{\frac{1}{C_4 C_L R_4 R_L}}$

bandwidth:  $\frac{C_4 R_4 + 2C_4 R_L + C_L R_L}{C_4 C_L R_4 R_L}$

K-LP:  $R_L$

K-HP: 0

K-BP:  $\frac{C_4 R_4 R_L}{C_4 R_4 + 2C_4 R_L + C_L R_L}$   
 QZ: 0  
 Wz: None

**8.3 INVALID-NUMER-3**  $Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, R_L + \frac{1}{C_L s} \right)$

$$H(s) = \frac{R_4 (C_L R_L s + 1)}{2C_4 C_L R_4 R_L s^2 + 2C_4 R_4 s + C_L R_4 s + 2C_L R_L s + 2}$$

**Parameters:**

Q:  $\frac{2C_4 C_L R_4 R_L \sqrt{\frac{1}{C_4 C_L R_4 R_L}}}{2C_4 R_4 + C_L R_4 + 2C_L R_L}$   
 wo:  $\sqrt{\frac{1}{C_4 C_L R_4 R_L}}$   
 bandwidth:  $\frac{2C_4 R_4 + C_L R_4 + 2C_L R_L}{2C_4 C_L R_4 R_L}$   
 K-LP:  $\frac{R_4}{2}$   
 K-HP: 0  
 K-BP:  $\frac{C_L R_4 R_L}{2C_4 R_4 + C_L R_4 + 2C_L R_L}$   
 QZ: 0  
 Wz: None

**8.4 INVALID-NUMER-4**  $Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, R_4 + \frac{1}{C_4 s}, \infty, \frac{R_L}{C_L R_L s + 1} \right)$

$$H(s) = \frac{R_L (C_4 R_4 s + 1)}{C_4 C_L R_4 R_L s^2 + C_4 R_4 s + 2C_4 R_L s + C_L R_L s + 1}$$

**Parameters:**

Q:  $\frac{C_4 C_L R_4 R_L \sqrt{\frac{1}{C_4 C_L R_4 R_L}}}{C_4 R_4 + 2C_4 R_L + C_L R_L}$   
 wo:  $\sqrt{\frac{1}{C_4 C_L R_4 R_L}}$   
 bandwidth:  $\frac{C_4 R_4 + 2C_4 R_L + C_L R_L}{C_4 C_L R_4 R_L}$   
 K-LP:  $R_L$   
 K-HP: 0  
 K-BP:  $\frac{C_4 R_4 R_L}{C_4 R_4 + 2C_4 R_L + C_L R_L}$   
 QZ: 0  
 Wz: None

**8.5 INVALID-NUMER-5**  $Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, R_L + \frac{1}{C_L s} \right)$

$$H(s) = \frac{R_4 (C_L R_L s + 1)}{2C_4 C_L R_4 R_L s^2 + 2C_4 R_4 s + C_L R_4 s + 2C_L R_L s + 2}$$

**Parameters:**

Q:  $\frac{2C_4 C_L R_4 R_L \sqrt{\frac{1}{C_4 C_L R_4 R_L}}}{2C_4 R_4 + C_L R_4 + 2C_L R_L}$   
 wo:  $\sqrt{\frac{1}{C_4 C_L R_4 R_L}}$   
 bandwidth:  $\frac{2C_4 R_4 + C_L R_4 + 2C_L R_L}{2C_4 C_L R_4 R_L}$   
 K-LP:  $\frac{R_4}{2}$   
 K-HP: 0  
 K-BP:  $\frac{C_L R_4 R_L}{2C_4 R_4 + C_L R_4 + 2C_L R_L}$   
 QZ: 0  
 Wz: None

**8.6 INVALID-NUMER-6**  $Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, R_4 + \frac{1}{C_4 s}, \infty, \frac{R_L}{C_L R_L s + 1} \right)$

$$H(s) = \frac{R_L (C_4 R_4 s + 1)}{C_4 C_L R_4 R_L s^2 + C_4 R_4 s + 2C_4 R_L s + C_L R_L s + 1}$$

**Parameters:**

$$\begin{aligned} \text{Q: } & \frac{C_4 C_L R_4 R_L \sqrt{\frac{1}{C_4 C_L R_4 R_L}}}{C_4 R_4 + 2C_4 R_L + C_L R_L} \\ \text{wo: } & \sqrt{\frac{1}{C_4 C_L R_4 R_L}} \\ \text{bandwidth: } & \frac{C_4 R_4 + 2C_4 R_L + C_L R_L}{C_4 C_L R_4 R_L} \\ \text{K-LP: } & R_L \\ \text{K-HP: } & 0 \\ \text{K-BP: } & \frac{C_4 R_4 R_L}{C_4 R_4 + 2C_4 R_L + C_L R_L} \\ \text{QZ: } & 0 \\ \text{WZ: } & \text{None} \end{aligned}$$

**8.7 INVALID-NUMER-7**  $Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, R_L + \frac{1}{C_L s} \right)$

$$H(s) = \frac{R_4 (C_L R_L s + 1)}{2C_4 C_L R_4 R_L s^2 + 2C_4 R_4 s + C_L R_4 s + 2C_L R_L s + 2}$$

**Parameters:**

$$\begin{aligned} \text{Q: } & \frac{2C_4 C_L R_4 R_L \sqrt{\frac{1}{C_4 C_L R_4 R_L}}}{2C_4 R_4 + C_L R_4 + 2C_L R_L} \\ \text{wo: } & \sqrt{\frac{1}{C_4 C_L R_4 R_L}} \\ \text{bandwidth: } & \frac{2C_4 R_4 + C_L R_4 + 2C_L R_L}{2C_4 C_L R_4 R_L} \\ \text{K-LP: } & \frac{R_4}{2} \\ \text{K-HP: } & 0 \\ \text{K-BP: } & \frac{C_L R_4 R_L}{2C_4 R_4 + C_L R_4 + 2C_L R_L} \\ \text{QZ: } & 0 \\ \text{WZ: } & \text{None} \end{aligned}$$

**8.8 INVALID-NUMER-8**  $Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, R_4 + \frac{1}{C_4 s}, \infty, \frac{R_L}{C_L R_L s + 1} \right)$

$$H(s) = \frac{R_L (C_4 R_4 s + 1)}{C_4 C_L R_4 R_L s^2 + C_4 R_4 s + 2C_4 R_L s + C_L R_L s + 1}$$

**Parameters:**

$$\begin{aligned} \text{Q: } & \frac{C_4 C_L R_4 R_L \sqrt{\frac{1}{C_4 C_L R_4 R_L}}}{C_4 R_4 + 2C_4 R_L + C_L R_L} \\ \text{wo: } & \sqrt{\frac{1}{C_4 C_L R_4 R_L}} \\ \text{bandwidth: } & \frac{C_4 R_4 + 2C_4 R_L + C_L R_L}{C_4 C_L R_4 R_L} \\ \text{K-LP: } & R_L \\ \text{K-HP: } & 0 \\ \text{K-BP: } & \frac{C_4 R_4 R_L}{C_4 R_4 + 2C_4 R_L + C_L R_L} \\ \text{QZ: } & 0 \\ \text{WZ: } & \text{None} \end{aligned}$$

**8.9 INVALID-NUMER-9**  $Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{R_4}{C_4R_4s+1}, \infty, R_L + \frac{1}{C_Ls} \right)$

$$H(s) = \frac{R_4 (C_L R_L s + 1)}{2C_4 C_L R_4 R_L s^2 + 2C_4 R_4 s + C_L R_4 s + 2C_L R_L s + 2}$$

**Parameters:**

$$\begin{aligned} \text{Q: } & \frac{2C_4 C_L R_4 R_L \sqrt{\frac{1}{C_4 C_L R_4 R_L}}}{2C_4 R_4 + C_L R_4 + 2C_L R_L} \\ \text{wo: } & \sqrt{\frac{1}{C_4 C_L R_4 R_L}} \\ \text{bandwidth: } & \frac{2C_4 R_4 + C_L R_4 + 2C_L R_L}{2C_4 C_L R_4 R_L} \\ \text{K-LP: } & \frac{R_4}{2} \\ \text{K-HP: } & 0 \\ \text{K-BP: } & \frac{C_L R_4 R_L}{2C_4 R_4 + C_L R_4 + 2C_L R_L} \\ \text{QZ: } & 0 \\ \text{Wz: } & \text{None} \end{aligned}$$

**8.10 INVALID-NUMER-10**  $Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, R_4 + \frac{1}{C_4s}, \infty, \frac{R_L}{C_L R_L s + 1} \right)$

$$H(s) = \frac{R_L (C_4 R_4 s + 1)}{C_4 C_L R_4 R_L s^2 + C_4 R_4 s + 2C_4 R_L s + C_L R_L s + 1}$$

**Parameters:**

$$\begin{aligned} \text{Q: } & \frac{C_4 C_L R_4 R_L \sqrt{\frac{1}{C_4 C_L R_4 R_L}}}{C_4 R_4 + 2C_4 R_L + C_L R_L} \\ \text{wo: } & \sqrt{\frac{1}{C_4 C_L R_4 R_L}} \\ \text{bandwidth: } & \frac{C_4 R_4 + 2C_4 R_L + C_L R_L}{C_4 C_L R_4 R_L} \\ \text{K-LP: } & R_L \\ \text{K-HP: } & 0 \\ \text{K-BP: } & \frac{C_4 R_4 R_L}{C_4 R_4 + 2C_4 R_L + C_L R_L} \\ \text{QZ: } & 0 \\ \text{Wz: } & \text{None} \end{aligned}$$

**8.11 INVALID-NUMER-11**  $Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, R_L + \frac{1}{C_L s} \right)$

$$H(s) = \frac{R_4 (C_L R_L s + 1)}{2C_4 C_L R_4 R_L s^2 + 2C_4 R_4 s + C_L R_4 s + 2C_L R_L s + 2}$$

**Parameters:**

$$\begin{aligned} \text{Q: } & \frac{2C_4 C_L R_4 R_L \sqrt{\frac{1}{C_4 C_L R_4 R_L}}}{2C_4 R_4 + C_L R_4 + 2C_L R_L} \\ \text{wo: } & \sqrt{\frac{1}{C_4 C_L R_4 R_L}} \\ \text{bandwidth: } & \frac{2C_4 R_4 + C_L R_4 + 2C_L R_L}{2C_4 C_L R_4 R_L} \\ \text{K-LP: } & \frac{R_4}{2} \\ \text{K-HP: } & 0 \\ \text{K-BP: } & \frac{C_L R_4 R_L}{2C_4 R_4 + C_L R_4 + 2C_L R_L} \\ \text{QZ: } & 0 \\ \text{Wz: } & \text{None} \end{aligned}$$

**8.12 INVALID-NUMER-12**  $Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, R_4 + \frac{1}{C_4s}, \infty, \frac{R_L}{C_LR_Ls+1} \right)$

$$H(s) = \frac{R_L (C_4R_4s + 1)}{C_4C_LR_4R_Ls^2 + C_4R_4s + 2C_4R_Ls + C_LR_Ls + 1}$$

**Parameters:**

Q:  $\frac{C_4C_LR_4R_L\sqrt{\frac{1}{C_4C_LR_4R_L}}}{C_4R_4+2C_4R_L+C_LR_L}$   
 wo:  $\sqrt{\frac{1}{C_4C_LR_4R_L}}$   
 bandwidth:  $\frac{C_4R_4+2C_4R_L+C_LR_L}{C_4C_LR_4R_L}$   
 K-LP:  $R_L$   
 K-HP: 0  
 K-BP:  $\frac{C_4R_4R_L}{C_4R_4+2C_4R_L+C_LR_L}$   
 QZ: 0  
 Wz: None

**8.13 INVALID-NUMER-13**  $Z(s) = \left( \infty, \frac{L_2s}{C_2L_2s^2+1} + R_2, \infty, \frac{R_4}{C_4R_4s+1}, \infty, R_L + \frac{1}{C_Ls} \right)$

$$H(s) = \frac{R_4 (C_LR_Ls + 1)}{2C_4C_LR_4R_Ls^2 + 2C_4R_4s + C_LR_4s + 2C_LR_Ls + 2}$$

**Parameters:**

Q:  $\frac{2C_4C_LR_4R_L\sqrt{\frac{1}{C_4C_LR_4R_L}}}{2C_4R_4+C_LR_4+2C_LR_L}$   
 wo:  $\sqrt{\frac{1}{C_4C_LR_4R_L}}$   
 bandwidth:  $\frac{2C_4R_4+C_LR_4+2C_LR_L}{2C_4C_LR_4R_L}$   
 K-LP:  $\frac{R_4}{2}$   
 K-HP: 0  
 K-BP:  $\frac{C_LR_4R_L}{2C_4R_4+C_LR_4+2C_LR_L}$   
 QZ: 0  
 Wz: None

**8.14 INVALID-NUMER-14**  $Z(s) = \left( \infty, \frac{L_2s}{C_2L_2s^2+1} + R_2, \infty, R_4 + \frac{1}{C_4s}, \infty, \frac{R_L}{C_LR_Ls+1} \right)$

$$H(s) = \frac{R_L (C_4R_4s + 1)}{C_4C_LR_4R_Ls^2 + C_4R_4s + 2C_4R_Ls + C_LR_Ls + 1}$$

**Parameters:**

Q:  $\frac{C_4C_LR_4R_L\sqrt{\frac{1}{C_4C_LR_4R_L}}}{C_4R_4+2C_4R_L+C_LR_L}$   
 wo:  $\sqrt{\frac{1}{C_4C_LR_4R_L}}$   
 bandwidth:  $\frac{C_4R_4+2C_4R_L+C_LR_L}{C_4C_LR_4R_L}$   
 K-LP:  $R_L$   
 K-HP: 0  
 K-BP:  $\frac{C_4R_4R_L}{C_4R_4+2C_4R_L+C_LR_L}$   
 QZ: 0  
 Wz: None

**8.15 INVALID-NUMER-15**  $Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, R_L + \frac{1}{C_L s} \right)$

$$H(s) = \frac{R_4 (C_L R_L s + 1)}{2C_4 C_L R_4 R_L s^2 + 2C_4 R_4 s + C_L R_4 s + 2C_L R_L s + 2}$$

**Parameters:**

Q:  $\frac{2C_4 C_L R_4 R_L \sqrt{\frac{1}{C_4 C_L R_4 R_L}}}{2C_4 R_4 + C_L R_4 + 2C_L R_L}$   
 wo:  $\sqrt{\frac{1}{C_4 C_L R_4 R_L}}$   
 bandwidth:  $\frac{2C_4 R_4 + C_L R_4 + 2C_L R_L}{2C_4 C_L R_4 R_L}$   
 K-LP:  $\frac{R_4}{2}$   
 K-HP: 0  
 K-BP:  $\frac{C_L R_4 R_L}{2C_4 R_4 + C_L R_4 + 2C_L R_L}$   
 QZ: 0  
 WZ: None

**8.16 INVALID-NUMER-16**  $Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, R_4 + \frac{1}{C_4 s}, \infty, \frac{R_L}{C_L R_L s + 1} \right)$

$$H(s) = \frac{R_L (C_4 R_4 s + 1)}{C_4 C_L R_4 R_L s^2 + C_4 R_4 s + 2C_4 R_L s + C_L R_L s + 1}$$

**Parameters:**

Q:  $\frac{C_4 C_L R_4 R_L \sqrt{\frac{1}{C_4 C_L R_4 R_L}}}{C_4 R_4 + 2C_4 R_L + C_L R_L}$   
 wo:  $\sqrt{\frac{1}{C_4 C_L R_4 R_L}}$   
 bandwidth:  $\frac{C_4 R_4 + 2C_4 R_L + C_L R_L}{C_4 C_L R_4 R_L}$   
 K-LP:  $R_L$   
 K-HP: 0  
 K-BP:  $\frac{C_4 R_4 R_L}{C_4 R_4 + 2C_4 R_L + C_L R_L}$   
 QZ: 0  
 WZ: None

## 9 INVALID-WZ

## 10 INVALID-ORDER

**10.1 INVALID-ORDER-1**  $Z(s) = (\infty, R_2, \infty, R_4, \infty, R_L)$

$$H(s) = \frac{R_4 R_L}{R_4 + 2R_L}$$

**10.2 INVALID-ORDER-2**  $Z(s) = \left( \infty, R_2, \infty, R_4, \infty, \frac{1}{C_L s} \right)$

$$H(s) = \frac{R_4}{C_L R_4 s + 2}$$



$$10.3 \quad \text{INVALID-ORDER-3} \quad Z(s) = \left( \infty, R_2, \infty, R_4, \infty, \frac{R_L}{C_L R_L s + 1} \right)$$

$$H(s) = \frac{R_4 R_L}{C_L R_4 R_L s + R_4 + 2R_L}$$

$$10.4 \quad \text{INVALID-ORDER-4} \quad Z(s) = \left( \infty, R_2, \infty, R_4, \infty, R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{R_4 (C_L R_L s + 1)}{C_L R_4 s + 2C_L R_L s + 2}$$

$$10.5 \quad \text{INVALID-ORDER-5} \quad Z(s) = \left( \infty, R_2, \infty, \frac{1}{C_4 s}, \infty, R_L \right)$$

$$H(s) = \frac{R_L}{2C_4 R_L s + 1}$$

$$10.6 \quad \text{INVALID-ORDER-6} \quad Z(s) = \left( \infty, R_2, \infty, \frac{1}{C_4 s}, \infty, \frac{1}{C_L s} \right)$$

$$H(s) = \frac{1}{s(2C_4 + C_L)}$$

$$10.7 \quad \text{INVALID-ORDER-7} \quad Z(s) = \left( \infty, R_2, \infty, \frac{1}{C_4 s}, \infty, \frac{R_L}{C_L R_L s + 1} \right)$$

$$H(s) = \frac{R_L}{2C_4 R_L s + C_L R_L s + 1}$$

$$10.8 \quad \text{INVALID-ORDER-8} \quad Z(s) = \left( \infty, R_2, \infty, \frac{1}{C_4 s}, \infty, R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{C_L R_L s + 1}{s(2C_4 C_L R_L s + 2C_4 + C_L)}$$

$$10.9 \quad \text{INVALID-ORDER-9} \quad Z(s) = \left( \infty, R_2, \infty, \frac{1}{C_4 s}, \infty, L_L s + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{C_L L_L s^2 + 1}{s(2C_4 C_L L_L s^2 + 2C_4 + C_L)}$$

$$10.10 \quad \text{INVALID-ORDER-10} \quad Z(s) = \left( \infty, R_2, \infty, \frac{1}{C_4 s}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$$

$$H(s) = \frac{L_L s}{2C_4 L_L s^2 + C_L L_L s^2 + 1}$$

$$10.11 \quad \text{INVALID-ORDER-11} \quad Z(s) = \left( \infty, R_2, \infty, \frac{1}{C_4 s}, \infty, L_L s + R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{C_L L_L s^2 + C_L R_L s + 1}{s(2C_4 C_L L_L s^2 + 2C_4 C_L R_L s + 2C_4 + C_L)}$$

$$10.12 \quad \text{INVALID-ORDER-12} \quad Z(s) = \left( \infty, R_2, \infty, \frac{1}{C_4 s}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$$

$$H(s) = \frac{C_L L_L R_L s^2 + L_L s + R_L}{2C_4 C_L L_L R_L s^3 + 2C_4 L_L s^2 + 2C_4 R_L s + C_L L_L s^2 + 1}$$

$$10.13 \quad \text{INVALID-ORDER-13} \quad Z(s) = \left( \infty, R_2, \infty, \frac{1}{C_4 s}, \infty, \frac{R_L \left( L_L s + \frac{1}{C_L s} \right)}{L_L s + R_L + \frac{1}{C_L s}} \right)$$

$$H(s) = \frac{R_L (C_L L_L s^2 + 1)}{2C_4 C_L L_L R_L s^3 + 2C_4 R_L s + C_L L_L s^2 + C_L R_L s + 1}$$

$$10.14 \quad \text{INVALID-ORDER-14} \quad Z(s) = \left( \infty, R_2, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, R_L \right)$$

$$H(s) = \frac{R_4 R_L}{2C_4 R_4 R_L s + R_4 + 2R_L}$$

$$10.15 \quad \text{INVALID-ORDER-15} \quad Z(s) = \left( \infty, R_2, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, \frac{1}{C_L s} \right)$$

$$H(s) = \frac{R_4}{2C_4 R_4 s + C_L R_4 s + 2}$$

$$10.16 \quad \text{INVALID-ORDER-16} \quad Z(s) = \left( \infty, R_2, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, \frac{R_L}{C_L R_L s + 1} \right)$$

$$H(s) = \frac{R_4 R_L}{2C_4 R_4 R_L s + C_L R_4 R_L s + R_4 + 2R_L}$$

$$10.17 \quad \text{INVALID-ORDER-17} \quad Z(s) = \left( \infty, R_2, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, L_L s + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{R_4 (C_L L_L s^2 + 1)}{2C_4 C_L L_L R_4 s^3 + 2C_4 R_4 s + 2C_L L_L s^2 + C_L R_4 s + 2}$$

$$10.18 \quad \text{INVALID-ORDER-18} \quad Z(s) = \left( \infty, R_2, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, L_L s + R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{R_4 (C_L L_L s^2 + C_L R_L s + 1)}{2C_4 C_L L_L R_4 s^3 + 2C_4 C_L R_4 R_L s^2 + 2C_4 R_4 s + 2C_L L_L s^2 + C_L R_4 s + 2C_L R_L s + 2}$$

$$10.19 \quad \text{INVALID-ORDER-19} \quad Z(s) = \left( \infty, R_2, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$$

$$H(s) = \frac{R_4 (C_L L_L R_L s^2 + L_L s + R_L)}{2C_4 C_L L_L R_4 R_L s^3 + 2C_4 L_L R_4 s^2 + 2C_4 R_4 R_L s + C_L L_L R_4 s^2 + 2C_L L_L R_L s^2 + 2L_L s + R_4 + 2R_L}$$

$$10.20 \quad \text{INVALID-ORDER-20} \quad Z(s) = \left( \infty, R_2, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, \frac{R_L \left( L_L s + \frac{1}{C_L s} \right)}{L_L s + R_L + \frac{1}{C_L s}} \right)$$

$$H(s) = \frac{R_4 R_L (C_L L_L s^2 + 1)}{2C_4 C_L L_L R_4 R_L s^3 + 2C_4 R_4 R_L s + C_L L_L R_4 s^2 + 2C_L L_L R_L s^2 + C_L R_4 R_L s + R_4 + 2R_L}$$

$$10.21 \quad \text{INVALID-ORDER-21} \quad Z(s) = \left( \infty, R_2, \infty, R_4 + \frac{1}{C_4 s}, \infty, R_L \right)$$

$$H(s) = \frac{R_L (C_4 R_4 s + 1)}{C_4 R_4 s + 2C_4 R_L s + 1}$$

$$10.22 \quad \text{INVALID-ORDER-22} \quad Z(s) = \left( \infty, R_2, \infty, R_4 + \frac{1}{C_4 s}, \infty, \frac{1}{C_L s} \right)$$

$$H(s) = \frac{C_4 R_4 s + 1}{s (C_4 C_L R_4 s + 2C_4 + C_L)}$$

$$10.23 \quad \text{INVALID-ORDER-23} \quad Z(s) = \left( \infty, R_2, \infty, R_4 + \frac{1}{C_4 s}, \infty, R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{(C_4 R_4 s + 1) (C_L R_L s + 1)}{s (C_4 C_L R_4 s + 2C_4 C_L R_L s + 2C_4 + C_L)}$$

$$10.24 \quad \text{INVALID-ORDER-24} \quad Z(s) = \left( \infty, R_2, \infty, R_4 + \frac{1}{C_4 s}, \infty, L_L s + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{(C_4 R_4 s + 1) (C_L L_L s^2 + 1)}{s (2C_4 C_L L_L s^2 + C_4 C_L R_4 s + 2C_4 + C_L)}$$

$$10.25 \quad \text{INVALID-ORDER-25} \quad Z(s) = \left( \infty, R_2, \infty, R_4 + \frac{1}{C_4 s}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$$

$$H(s) = \frac{L_L s (C_4 R_4 s + 1)}{C_4 C_L L_L R_4 s^3 + 2C_4 L_L s^2 + C_4 R_4 s + C_L L_L s^2 + 1}$$

$$10.26 \quad \text{INVALID-ORDER-26} \quad Z(s) = \left( \infty, R_2, \infty, R_4 + \frac{1}{C_4 s}, \infty, L_L s + R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{(C_4 R_4 s + 1) (C_L L_L s^2 + C_L R_L s + 1)}{s (2C_4 C_L L_L s^2 + C_4 C_L R_4 s + 2C_4 C_L R_L s + 2C_4 + C_L)}$$

$$10.27 \quad \text{INVALID-ORDER-27} \quad Z(s) = \left( \infty, R_2, \infty, R_4 + \frac{1}{C_4 s}, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$$

$$H(s) = \frac{L_L R_L s (C_4 R_4 s + 1)}{C_4 C_L L_L R_4 R_L s^3 + C_4 L_L R_4 s^2 + 2C_4 L_L R_L s^2 + C_4 R_4 R_L s + C_L L_L R_L s^2 + L_L s + R_L}$$

$$10.28 \quad \text{INVALID-ORDER-28} \quad Z(s) = \left( \infty, R_2, \infty, R_4 + \frac{1}{C_4 s}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$$

$$H(s) = \frac{(C_4 R_4 s + 1) (C_L L_L R_L s^2 + L_L s + R_L)}{C_4 C_L L_L R_4 s^3 + 2C_4 C_L L_L R_L s^3 + 2C_4 L_L s^2 + C_4 R_4 s + 2C_4 R_L s + C_L L_L s^2 + 1}$$

$$10.29 \quad \text{INVALID-ORDER-29} \quad Z(s) = \left( \infty, R_2, \infty, R_4 + \frac{1}{C_4 s}, \infty, \frac{R_L (L_L s + \frac{1}{C_L s})}{L_L s + R_L + \frac{1}{C_L s}} \right)$$

$$H(s) = \frac{R_L (C_4 R_4 s + 1) (C_L L_L s^2 + 1)}{C_4 C_L L_L R_4 s^3 + 2C_4 C_L L_L R_L s^3 + C_4 C_L R_4 R_L s^2 + C_4 R_4 s + 2C_4 R_L s + C_L L_L s^2 + C_L R_L s + 1}$$

**10.30 INVALID-ORDER-30**  $Z(s) = \left( \infty, R_2, \infty, L_4s + \frac{1}{C_4s}, \infty, \frac{1}{C_Ls} \right)$

$$H(s) = \frac{C_4L_4s^2 + 1}{s(C_4C_LL_4s^2 + 2C_4 + C_L)}$$

**10.31 INVALID-ORDER-31**  $Z(s) = \left( \infty, R_2, \infty, L_4s + \frac{1}{C_4s}, \infty, \frac{R_L}{C_LR_Ls+1} \right)$

$$H(s) = \frac{R_L(C_4L_4s^2 + 1)}{C_4C_LL_4R_Ls^3 + C_4L_4s^2 + 2C_4R_Ls + C_LR_Ls + 1}$$

**10.32 INVALID-ORDER-32**  $Z(s) = \left( \infty, R_2, \infty, L_4s + \frac{1}{C_4s}, \infty, R_L + \frac{1}{C_Ls} \right)$

$$H(s) = \frac{(C_4L_4s^2 + 1)(C_LR_Ls + 1)}{s(C_4C_LL_4s^2 + 2C_4C_LR_Ls + 2C_4 + C_L)}$$

**10.33 INVALID-ORDER-33**  $Z(s) = \left( \infty, R_2, \infty, L_4s + \frac{1}{C_4s}, \infty, L_Ls + \frac{1}{C_Ls} \right)$

$$H(s) = \frac{(C_4L_4s^2 + 1)(C_LL_Ls^2 + 1)}{s(C_4C_LL_4s^2 + 2C_4C_LL_Ls^2 + 2C_4 + C_L)}$$

**10.34 INVALID-ORDER-34**  $Z(s) = \left( \infty, R_2, \infty, L_4s + \frac{1}{C_4s}, \infty, \frac{L_Ls}{C_LL_Ls^2+1} \right)$

$$H(s) = \frac{L_Ls(C_4L_4s^2 + 1)}{C_4C_LL_4L_Ls^4 + C_4L_4s^2 + 2C_4L_Ls^2 + C_LL_Ls^2 + 1}$$

**10.35 INVALID-ORDER-35**  $Z(s) = \left( \infty, R_2, \infty, L_4s + \frac{1}{C_4s}, \infty, L_Ls + R_L + \frac{1}{C_Ls} \right)$

$$H(s) = \frac{(C_4L_4s^2 + 1)(C_LL_Ls^2 + C_LR_Ls + 1)}{s(C_4C_LL_4s^2 + 2C_4C_LL_Ls^2 + 2C_4C_LR_Ls + 2C_4 + C_L)}$$

**10.36 INVALID-ORDER-36**  $Z(s) = \left( \infty, R_2, \infty, L_4s + \frac{1}{C_4s}, \infty, \frac{1}{C_Ls + \frac{1}{R_L} + \frac{1}{L_Ls}} \right)$

$$H(s) = \frac{L_LR_Ls(C_4L_4s^2 + 1)}{C_4C_LL_4L_LR_Ls^4 + C_4L_4L_Ls^3 + C_4L_4R_Ls^2 + 2C_4L_LR_Ls^2 + C_LL_LR_Ls^2 + L_Ls + R_L}$$

**10.37 INVALID-ORDER-37**  $Z(s) = \left( \infty, R_2, \infty, L_4s + \frac{1}{C_4s}, \infty, \frac{L_Ls}{C_LL_Ls^2+1} + R_L \right)$

$$H(s) = \frac{(C_4L_4s^2 + 1)(C_LL_LR_Ls^2 + L_Ls + R_L)}{C_4C_LL_4L_Ls^4 + 2C_4C_LL_LR_Ls^3 + C_4L_4s^2 + 2C_4L_Ls^2 + 2C_4R_Ls + C_LL_Ls^2 + 1}$$

$$10.38 \quad \text{INVALID-ORDER-38} \quad Z(s) = \left( \infty, R_2, \infty, L_4 s + \frac{1}{C_4 s}, \infty, \frac{R_L \left( L_L s + \frac{1}{C_L s} \right)}{L_L s + R_L + \frac{1}{C_L s}} \right)$$

$$H(s) = \frac{R_L (C_4 L_4 s^2 + 1) (C_L L_L s^2 + 1)}{C_4 C_L L_4 L_L s^4 + C_4 C_L L_4 R_L s^3 + 2C_4 C_L L_L R_L s^3 + C_4 L_4 s^2 + 2C_4 R_L s + C_L L_L s^2 + C_L R_L s + 1}$$

$$10.39 \quad \text{INVALID-ORDER-39} \quad Z(s) = \left( \infty, R_2, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, \frac{1}{C_L s} \right)$$

$$H(s) = \frac{L_4 s}{2C_4 L_4 s^2 + C_L L_4 s^2 + 2}$$

$$10.40 \quad \text{INVALID-ORDER-40} \quad Z(s) = \left( \infty, R_2, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{L_4 s (C_L R_L s + 1)}{2C_4 C_L L_4 R_L s^3 + 2C_4 L_4 s^2 + C_L L_4 s^2 + 2C_L R_L s + 2}$$

$$10.41 \quad \text{INVALID-ORDER-41} \quad Z(s) = \left( \infty, R_2, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, L_L s + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{L_4 s (C_L L_L s^2 + 1)}{2C_4 C_L L_4 L_L s^4 + 2C_4 L_4 s^2 + C_L L_4 s^2 + 2C_L L_L s^2 + 2}$$

$$10.42 \quad \text{INVALID-ORDER-42} \quad Z(s) = \left( \infty, R_2, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$$

$$H(s) = \frac{L_4 L_L s}{2C_4 L_4 L_L s^2 + C_L L_4 L_L s^2 + L_4 + 2L_L}$$

$$10.43 \quad \text{INVALID-ORDER-43} \quad Z(s) = \left( \infty, R_2, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, L_L s + R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{L_4 s (C_L L_L s^2 + C_L R_L s + 1)}{2C_4 C_L L_4 L_L s^4 + 2C_4 C_L L_4 R_L s^3 + 2C_4 L_4 s^2 + C_L L_4 s^2 + 2C_L L_L s^2 + 2C_L R_L s + 2}$$

$$10.44 \quad \text{INVALID-ORDER-44} \quad Z(s) = \left( \infty, R_2, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$$

$$H(s) = \frac{L_4 s (C_L L_L R_L s^2 + L_L s + R_L)}{2C_4 C_L L_4 L_L R_L s^4 + 2C_4 L_4 L_L s^3 + 2C_4 L_4 R_L s^2 + C_L L_4 L_L s^3 + 2C_L L_L R_L s^2 + L_4 s + 2L_L s + 2R_L}$$

$$10.45 \quad \text{INVALID-ORDER-45} \quad Z(s) = \left( \infty, R_2, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, \frac{R_L \left( L_L s + \frac{1}{C_L s} \right)}{L_L s + R_L + \frac{1}{C_L s}} \right)$$

$$H(s) = \frac{L_4 R_L s (C_L L_L s^2 + 1)}{2C_4 C_L L_4 L_L R_L s^4 + 2C_4 L_4 R_L s^2 + C_L L_4 L_L s^3 + C_L L_4 R_L s^2 + 2C_L L_L R_L s^2 + L_4 s + 2R_L}$$

$$10.46 \quad \text{INVALID-ORDER-46} \quad Z(s) = \left( \infty, R_2, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, \frac{1}{C_L s} \right)$$

$$H(s) = \frac{C_4 L_4 s^2 + C_4 R_4 s + 1}{s (C_4 C_L L_4 s^2 + C_4 C_L R_4 s + 2C_4 + C_L)}$$

**10.47 INVALID-ORDER-47**  $Z(s) = \left( \infty, R_2, \infty, L_4s + R_4 + \frac{1}{C_4s}, \infty, \frac{R_L}{C_LR_Ls+1} \right)$

$$H(s) = \frac{R_L (C_4L_4s^2 + C_4R_4s + 1)}{C_4C_L L_4R_Ls^3 + C_4C_LR_4R_Ls^2 + C_4L_4s^2 + C_4R_4s + 2C_4R_Ls + C_LR_Ls + 1}$$

**10.48 INVALID-ORDER-48**  $Z(s) = \left( \infty, R_2, \infty, L_4s + R_4 + \frac{1}{C_4s}, \infty, R_L + \frac{1}{C_Ls} \right)$

$$H(s) = \frac{(C_LR_Ls + 1) (C_4L_4s^2 + C_4R_4s + 1)}{s (C_4C_LL_4s^2 + C_4C_LR_4s + 2C_4C_LR_Ls + 2C_4 + C_L)}$$

**10.49 INVALID-ORDER-49**  $Z(s) = \left( \infty, R_2, \infty, L_4s + R_4 + \frac{1}{C_4s}, \infty, L_Ls + \frac{1}{C_Ls} \right)$

$$H(s) = \frac{(C_LL_Ls^2 + 1) (C_4L_4s^2 + C_4R_4s + 1)}{s (C_4C_LL_4s^2 + 2C_4C_LL_Ls^2 + C_4C_LR_4s + 2C_4 + C_L)}$$

**10.50 INVALID-ORDER-50**  $Z(s) = \left( \infty, R_2, \infty, L_4s + R_4 + \frac{1}{C_4s}, \infty, \frac{L_Ls}{C_LL_Ls^2+1} \right)$

$$H(s) = \frac{L_Ls (C_4L_4s^2 + C_4R_4s + 1)}{C_4C_LL_4L_Ls^4 + C_4C_LL_LR_4s^3 + C_4L_4s^2 + 2C_4L_Ls^2 + C_4R_4s + C_LL_Ls^2 + 1}$$

**10.51 INVALID-ORDER-51**  $Z(s) = \left( \infty, R_2, \infty, L_4s + R_4 + \frac{1}{C_4s}, \infty, L_Ls + R_L + \frac{1}{C_Ls} \right)$

$$H(s) = \frac{(C_4L_4s^2 + C_4R_4s + 1) (C_LL_Ls^2 + C_LR_Ls + 1)}{s (C_4C_LL_4s^2 + 2C_4C_LL_Ls^2 + C_4C_LR_4s + 2C_4C_LR_Ls + 2C_4 + C_L)}$$

**10.52 INVALID-ORDER-52**  $Z(s) = \left( \infty, R_2, \infty, L_4s + R_4 + \frac{1}{C_4s}, \infty, \frac{1}{C_Ls + \frac{1}{R_L} + \frac{1}{L_Ls}} \right)$

$$H(s) = \frac{L_LR_Ls (C_4L_4s^2 + C_4R_4s + 1)}{C_4C_LL_4L_LR_Ls^4 + C_4C_LL_LR_4R_Ls^3 + C_4L_4L_Ls^3 + C_4L_4R_Ls^2 + C_4L_LR_4s^2 + 2C_4L_LR_Ls^2 + C_4R_4R_Ls + C_LL_LR_Ls^2 + L_Ls + R_L}$$

**10.53 INVALID-ORDER-53**  $Z(s) = \left( \infty, R_2, \infty, L_4s + R_4 + \frac{1}{C_4s}, \infty, \frac{L_Ls}{C_LL_Ls^2+1} + R_L \right)$

$$H(s) = \frac{(C_4L_4s^2 + C_4R_4s + 1) (C_LL_LR_Ls^2 + L_Ls + R_L)}{C_4C_LL_4L_Ls^4 + C_4C_LL_LR_4s^3 + 2C_4C_LL_LR_Ls^3 + C_4L_4s^2 + 2C_4L_Ls^2 + C_4R_4s + 2C_4R_Ls + C_LL_Ls^2 + 1}$$

**10.54 INVALID-ORDER-54**  $Z(s) = \left( \infty, R_2, \infty, L_4s + R_4 + \frac{1}{C_4s}, \infty, \frac{R_L (L_Ls + \frac{1}{C_Ls})}{L_Ls + R_L + \frac{1}{C_Ls}} \right)$

$$H(s) = \frac{R_L (C_LL_Ls^2 + 1) (C_4L_4s^2 + C_4R_4s + 1)}{C_4C_LL_4L_Ls^4 + C_4C_LL_4R_Ls^3 + C_4C_LL_LR_4s^3 + 2C_4C_LL_LR_Ls^3 + C_4C_LR_4R_Ls^2 + C_4L_4s^2 + C_4R_4s + 2C_4R_Ls + C_LL_Ls^2 + C_LR_Ls + 1}$$

$$10.55 \quad \text{INVALID-ORDER-55} \quad Z(s) = \left( \infty, R_2, \infty, \frac{1}{C_4s + \frac{1}{R_4} + \frac{1}{L_4s}}, \infty, R_L + \frac{1}{C_Ls} \right)$$

$$H(s) = \frac{L_4R_4s(C_LR_Ls + 1)}{2C_4C_LL_4R_4R_Ls^3 + 2C_4L_4R_4s^2 + C_LL_4R_4s^2 + 2C_LL_4R_Ls^2 + 2C_LR_4R_Ls + 2L_4s + 2R_4}$$

$$10.56 \quad \text{INVALID-ORDER-56} \quad Z(s) = \left( \infty, R_2, \infty, \frac{1}{C_4s + \frac{1}{R_4} + \frac{1}{L_4s}}, \infty, L_Ls + \frac{1}{C_Ls} \right)$$

$$H(s) = \frac{L_4R_4s(C_LL_Ls^2 + 1)}{2C_4C_LL_4L_LR_4s^4 + 2C_4L_4R_4s^2 + 2C_LL_4L_Ls^3 + C_LL_4R_4s^2 + 2C_LL_R_4s^2 + 2L_4s + 2R_4}$$

$$10.57 \quad \text{INVALID-ORDER-57} \quad Z(s) = \left( \infty, R_2, \infty, \frac{1}{C_4s + \frac{1}{R_4} + \frac{1}{L_4s}}, \infty, L_Ls + R_L + \frac{1}{C_Ls} \right)$$

$$H(s) = \frac{L_4R_4s(C_LL_Ls^2 + C_LR_Ls + 1)}{2C_4C_LL_4L_LR_4s^4 + 2C_4C_LL_4R_4R_Ls^3 + 2C_4L_4R_4s^2 + 2C_LL_4L_Ls^3 + C_LL_4R_4s^2 + 2C_LL_R_4s^2 + 2C_LL_R_4s^2 + 2C_LR_4R_Ls + 2L_4s + 2R_4}$$

$$10.58 \quad \text{INVALID-ORDER-58} \quad Z(s) = \left( \infty, R_2, \infty, \frac{1}{C_4s + \frac{1}{R_4} + \frac{1}{L_4s}}, \infty, \frac{L_Ls}{C_LL_Ls^2 + 1} + R_L \right)$$

$$H(s) = \frac{L_4R_4s(C_LL_LR_Ls^2 + L_Ls + R_L)}{2C_4C_LL_4L_LR_4R_Ls^4 + 2C_4L_4L_LR_4s^3 + 2C_4L_4R_4R_Ls^2 + C_LL_4L_LR_4s^3 + 2C_LL_4L_LR_Ls^3 + 2C_LL_R_4R_Ls^2 + 2L_4L_Ls^2 + L_4R_4s + 2L_4R_Ls + 2L_LR_4s + 2R_4R_L}$$

$$10.59 \quad \text{INVALID-ORDER-59} \quad Z(s) = \left( \infty, R_2, \infty, \frac{1}{C_4s + \frac{1}{R_4} + \frac{1}{L_4s}}, \infty, \frac{R_L(L_Ls + \frac{1}{C_Ls})}{L_Ls + R_L + \frac{1}{C_Ls}} \right)$$

$$H(s) = \frac{L_4R_4R_Ls(C_LL_Ls^2 + 1)}{2C_4C_LL_4L_LR_4R_Ls^4 + 2C_4L_4R_4R_Ls^2 + C_LL_4L_LR_4s^3 + 2C_LL_4L_LR_Ls^3 + C_LL_4R_4R_Ls^2 + 2C_LL_R_4R_Ls^2 + L_4R_4s + 2L_4R_Ls + 2R_4R_L}$$

$$10.60 \quad \text{INVALID-ORDER-60} \quad Z(s) = \left( \infty, R_2, \infty, \frac{L_4s}{C_4L_4s^2 + 1} + R_4, \infty, \frac{1}{C_Ls} \right)$$

$$H(s) = \frac{C_4L_4R_4s^2 + L_4s + R_4}{C_4C_LL_4R_4s^3 + 2C_4L_4s^2 + C_LL_4s^2 + C_LR_4s + 2}$$

$$10.61 \quad \text{INVALID-ORDER-61} \quad Z(s) = \left( \infty, R_2, \infty, \frac{L_4s}{C_4L_4s^2 + 1} + R_4, \infty, \frac{R_L}{C_LR_Ls + 1} \right)$$

$$H(s) = \frac{R_L(C_4L_4R_4s^2 + L_4s + R_4)}{C_4C_LL_4R_4R_Ls^3 + C_4L_4R_4s^2 + 2C_4L_4R_Ls^2 + C_LL_4R_Ls^2 + C_LR_4R_Ls + L_4s + R_4 + 2R_L}$$

$$10.62 \quad \text{INVALID-ORDER-62} \quad Z(s) = \left( \infty, R_2, \infty, \frac{L_4s}{C_4L_4s^2 + 1} + R_4, \infty, R_L + \frac{1}{C_Ls} \right)$$

$$H(s) = \frac{(C_LR_Ls + 1)(C_4L_4R_4s^2 + L_4s + R_4)}{C_4C_LL_4R_4s^3 + 2C_4C_LL_4R_Ls^3 + 2C_4L_4s^2 + C_LL_4s^2 + C_LR_4s + 2C_LR_Ls + 2}$$

**10.63 INVALID-ORDER-63**  $Z(s) = \left( \infty, R_2, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \infty, L_L s + \frac{1}{C_L s} \right)$

$$H(s) = \frac{(C_L L_L s^2 + 1)(C_4 L_4 R_4 s^2 + L_4 s + R_4)}{2C_4 C_L L_4 L_L s^4 + C_4 C_L L_4 R_4 s^3 + 2C_4 L_4 s^2 + C_L L_4 s^2 + 2C_L L_L s^2 + C_L R_4 s + 2}$$

**10.64 INVALID-ORDER-64**  $Z(s) = \left( \infty, R_2, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$

$$H(s) = \frac{L_L s (C_4 L_4 R_4 s^2 + L_4 s + R_4)}{C_4 C_L L_4 L_L R_4 s^4 + 2C_4 L_4 L_L s^3 + C_4 L_4 R_4 s^2 + C_L L_4 L_L s^3 + C_L L_L R_4 s^2 + L_4 s + 2L_L s + R_4}$$

**10.65 INVALID-ORDER-65**  $Z(s) = \left( \infty, R_2, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \infty, L_L s + R_L + \frac{1}{C_L s} \right)$

$$H(s) = \frac{(C_L L_L s^2 + C_L R_L s + 1)(C_4 L_4 R_4 s^2 + L_4 s + R_4)}{2C_4 C_L L_4 L_L s^4 + C_4 C_L L_4 R_4 s^3 + 2C_4 C_L L_4 R_L s^3 + 2C_4 L_4 s^2 + C_L L_4 s^2 + 2C_L L_L s^2 + C_L R_4 s + 2C_L R_L s + 2}$$

**10.66 INVALID-ORDER-66**  $Z(s) = \left( \infty, R_2, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$

$$H(s) = \frac{L_L R_L s (C_4 L_4 R_4 s^2 + L_4 s + R_4)}{C_4 C_L L_4 L_L R_4 R_L s^4 + C_4 L_4 L_L R_4 s^3 + 2C_4 L_4 L_L R_L s^3 + C_4 L_4 R_4 R_L s^2 + C_L L_4 L_L R_L s^3 + C_L L_L R_4 R_L s^2 + L_4 L_L s^2 + L_4 R_L s + L_L R_4 s + 2L_L R_L s + R_4 R_L}$$

**10.67 INVALID-ORDER-67**  $Z(s) = \left( \infty, R_2, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$

$$H(s) = \frac{(C_4 L_4 R_4 s^2 + L_4 s + R_4)(C_L L_L R_L s^2 + L_L s + R_L)}{C_4 C_L L_4 L_L R_4 s^4 + 2C_4 C_L L_4 L_L R_L s^4 + 2C_4 L_4 L_L s^3 + C_4 L_4 R_4 s^2 + 2C_4 L_4 R_L s^2 + C_L L_4 L_L s^3 + C_L L_L R_4 s^2 + 2C_L L_L R_L s^2 + L_4 s + 2L_L s + R_4 + 2R_L}$$

**10.68 INVALID-ORDER-68**  $Z(s) = \left( \infty, R_2, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \infty, \frac{R_L (L_L s + \frac{1}{C_L s})}{L_L s + R_L + \frac{1}{C_L s}} \right)$

$$H(s) = \frac{R_L (C_L L_L s^2 + 1)(C_4 L_4 R_4 s^2 + L_4 s + R_4)}{C_4 C_L L_4 L_L R_4 s^4 + 2C_4 C_L L_4 L_L R_L s^4 + C_4 C_L L_4 R_4 R_L s^3 + C_4 L_4 R_4 s^2 + 2C_4 L_4 R_L s^2 + C_L L_4 L_L s^3 + C_L L_4 R_L s^2 + C_L L_L R_4 s^2 + 2C_L L_L R_L s^2 + C_L R_4 R_L s + L_4 s + R_4 + 2R_L}$$

**10.69 INVALID-ORDER-69**  $Z(s) = \left( \infty, R_2, \infty, \frac{R_4 (L_4 s + \frac{1}{C_4 s})}{L_4 s + R_4 + \frac{1}{C_4 s}}, \infty, \frac{1}{C_L s} \right)$

$$H(s) = \frac{R_4 (C_4 L_4 s^2 + 1)}{C_4 C_L L_4 R_4 s^3 + 2C_4 L_4 s^2 + 2C_4 R_4 s + C_L R_4 s + 2}$$

**10.70 INVALID-ORDER-70**  $Z(s) = \left( \infty, R_2, \infty, \frac{R_4 (L_4 s + \frac{1}{C_4 s})}{L_4 s + R_4 + \frac{1}{C_4 s}}, \infty, \frac{R_L}{C_L R_L s + 1} \right)$

$$H(s) = \frac{R_4 R_L (C_4 L_4 s^2 + 1)}{C_4 C_L L_4 R_4 R_L s^3 + C_4 L_4 R_4 s^2 + 2C_4 L_4 R_L s^2 + 2C_4 R_4 R_L s + C_L R_4 R_L s + R_4 + 2R_L}$$



$$10.71 \quad \text{INVALID-ORDER-71} \quad Z(s) = \left( \infty, \quad R_2, \quad \infty, \quad \frac{R_4 \left( L_4 s + \frac{1}{C_4 s} \right)}{L_4 s + R_4 + \frac{1}{C_4 s}}, \quad \infty, \quad R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{R_4 (C_4 L_4 s^2 + 1) (C_L R_L s + 1)}{C_4 C_L L_4 R_4 s^3 + 2C_4 C_L L_4 R_L s^3 + 2C_4 C_L R_4 R_L s^2 + 2C_4 L_4 s^2 + 2C_4 R_4 s + C_L R_4 s + 2C_L R_L s + 2}$$

$$10.72 \quad \text{INVALID-ORDER-72} \quad Z(s) = \left( \infty, \quad R_2, \quad \infty, \quad \frac{R_4 \left( L_4 s + \frac{1}{C_4 s} \right)}{L_4 s + R_4 + \frac{1}{C_4 s}}, \quad \infty, \quad L_L s + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{R_4 (C_4 L_4 s^2 + 1) (C_L L_L s^2 + 1)}{2C_4 C_L L_4 L_L s^4 + C_4 C_L L_4 R_4 s^3 + 2C_4 C_L L_L R_4 s^3 + 2C_4 L_4 s^2 + 2C_4 R_4 s + 2C_L L_L s^2 + C_L R_4 s + 2}$$

$$10.73 \quad \text{INVALID-ORDER-73} \quad Z(s) = \left( \infty, \quad R_2, \quad \infty, \quad \frac{R_4 \left( L_4 s + \frac{1}{C_4 s} \right)}{L_4 s + R_4 + \frac{1}{C_4 s}}, \quad \infty, \quad \frac{L_L s}{C_L L_L s^2 + 1} \right)$$

$$H(s) = \frac{L_L R_4 s (C_4 L_4 s^2 + 1)}{C_4 C_L L_4 L_L R_4 s^4 + 2C_4 L_4 L_L s^3 + C_4 L_4 R_4 s^2 + 2C_4 L_L R_4 s^2 + C_L L_L R_4 s^2 + 2L_L s + R_4}$$

$$10.74 \quad \text{INVALID-ORDER-74} \quad Z(s) = \left( \infty, \quad R_2, \quad \infty, \quad \frac{R_4 \left( L_4 s + \frac{1}{C_4 s} \right)}{L_4 s + R_4 + \frac{1}{C_4 s}}, \quad \infty, \quad L_L s + R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{R_4 (C_4 L_4 s^2 + 1) (C_L L_L s^2 + C_L R_L s + 1)}{2C_4 C_L L_4 L_L s^4 + C_4 C_L L_4 R_4 s^3 + 2C_4 C_L L_4 R_L s^3 + 2C_4 C_L L_L R_4 s^3 + 2C_4 C_L R_4 R_L s^2 + 2C_4 L_4 s^2 + 2C_4 R_4 s + 2C_L L_L s^2 + C_L R_4 s + 2C_L R_L s + 2}$$

$$10.75 \quad \text{INVALID-ORDER-75} \quad Z(s) = \left( \infty, \quad R_2, \quad \infty, \quad \frac{R_4 \left( L_4 s + \frac{1}{C_4 s} \right)}{L_4 s + R_4 + \frac{1}{C_4 s}}, \quad \infty, \quad \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$$

$$H(s) = \frac{L_L R_4 R_L s (C_4 L_4 s^2 + 1)}{C_4 C_L L_4 L_L R_4 R_L s^4 + C_4 L_4 L_L R_4 s^3 + 2C_4 L_4 L_L R_L s^3 + C_4 L_4 R_4 R_L s^2 + 2C_4 L_L R_4 R_L s^2 + C_L L_L R_4 R_L s^2 + L_L R_4 s + 2L_L R_L s + R_4 R_L}$$

$$10.76 \quad \text{INVALID-ORDER-76} \quad Z(s) = \left( \infty, \quad R_2, \quad \infty, \quad \frac{R_4 \left( L_4 s + \frac{1}{C_4 s} \right)}{L_4 s + R_4 + \frac{1}{C_4 s}}, \quad \infty, \quad \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$$

$$H(s) = \frac{R_4 (C_4 L_4 s^2 + 1) (C_L L_L R_L s^2 + L_L s + R_L)}{C_4 C_L L_4 L_L R_4 s^4 + 2C_4 C_L L_4 L_L R_L s^4 + 2C_4 C_L L_L R_4 R_L s^3 + 2C_4 L_4 L_L s^3 + C_4 L_4 R_4 s^2 + 2C_4 L_4 R_L s^2 + 2C_4 L_L R_4 s^2 + 2C_4 R_4 R_L s + C_L L_L R_4 s^2 + 2C_L L_L R_L s^2 + 2L_L s + R_4 + 2R_L}$$

$$10.77 \quad \text{INVALID-ORDER-77} \quad Z(s) = \left( \infty, \quad R_2, \quad \infty, \quad \frac{R_4 \left( L_4 s + \frac{1}{C_4 s} \right)}{L_4 s + R_4 + \frac{1}{C_4 s}}, \quad \infty, \quad \frac{R_L \left( L_L s + \frac{1}{C_L s} \right)}{L_L s + R_L + \frac{1}{C_L s}} \right)$$

$$H(s) = \frac{R_4 R_L (C_4 L_4 s^2 + 1) (C_L L_L s^2 + 1)}{C_4 C_L L_4 L_L R_4 s^4 + 2C_4 C_L L_4 L_L R_L s^4 + C_4 C_L L_4 R_4 R_L s^3 + 2C_4 C_L L_L R_4 R_L s^3 + C_4 L_4 R_4 s^2 + 2C_4 L_4 R_L s^2 + 2C_4 R_4 R_L s + C_L L_L R_4 s^2 + 2C_L L_L R_L s^2 + C_L R_4 R_L s + R_4 + 2R_L}$$

$$10.78 \quad \text{INVALID-ORDER-78} \quad Z(s) = \left( \infty, \quad \frac{1}{C_2 s}, \quad \infty, \quad R_4, \quad \infty, \quad R_L \right)$$

$$H(s) = \frac{R_4 R_L}{R_4 + 2R_L}$$

$$10.79 \quad \text{INVALID-ORDER-79} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, R_4, \infty, \frac{1}{C_L s} \right)$$

$$H(s) = \frac{R_4}{C_L R_4 s + 2}$$

$$10.80 \quad \text{INVALID-ORDER-80} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, R_4, \infty, \frac{R_L}{C_L R_L s + 1} \right)$$

$$H(s) = \frac{R_4 R_L}{C_L R_4 R_L s + R_4 + 2 R_L}$$

$$10.81 \quad \text{INVALID-ORDER-81} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, R_4, \infty, R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{R_4 (C_L R_L s + 1)}{C_L R_4 s + 2 C_L R_L s + 2}$$

$$10.82 \quad \text{INVALID-ORDER-82} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{1}{C_4 s}, \infty, R_L \right)$$

$$H(s) = \frac{R_L}{2 C_4 R_L s + 1}$$

$$10.83 \quad \text{INVALID-ORDER-83} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{1}{C_4 s}, \infty, \frac{1}{C_L s} \right)$$

$$H(s) = \frac{1}{s (2 C_4 + C_L)}$$

$$10.84 \quad \text{INVALID-ORDER-84} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{1}{C_4 s}, \infty, \frac{R_L}{C_L R_L s + 1} \right)$$

$$H(s) = \frac{R_L}{2 C_4 R_L s + C_L R_L s + 1}$$

$$10.85 \quad \text{INVALID-ORDER-85} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{1}{C_4 s}, \infty, R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{C_L R_L s + 1}{s (2 C_4 C_L R_L s + 2 C_4 + C_L)}$$

$$10.86 \quad \text{INVALID-ORDER-86} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{1}{C_4 s}, \infty, L_L s + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{C_L L_L s^2 + 1}{s (2 C_4 C_L L_L s^2 + 2 C_4 + C_L)}$$

$$10.87 \quad \text{INVALID-ORDER-87} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{1}{C_4 s}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$$

$$H(s) = \frac{L_L s}{2 C_4 L_L s^2 + C_L L_L s^2 + 1}$$

$$10.88 \quad \text{INVALID-ORDER-88} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{1}{C_4 s}, \infty, L_L s + R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{C_L L_L s^2 + C_L R_L s + 1}{s(2C_4 C_L L_L s^2 + 2C_4 C_L R_L s + 2C_4 + C_L)}$$

$$10.89 \quad \text{INVALID-ORDER-89} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{1}{C_4 s}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$$

$$H(s) = \frac{C_L L_L R_L s^2 + L_L s + R_L}{2C_4 C_L L_L R_L s^3 + 2C_4 L_L s^2 + 2C_4 R_L s + C_L L_L s^2 + 1}$$

$$10.90 \quad \text{INVALID-ORDER-90} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{1}{C_4 s}, \infty, \frac{R_L \left( L_L s + \frac{1}{C_L s} \right)}{L_L s + R_L + \frac{1}{C_L s}} \right)$$

$$H(s) = \frac{R_L (C_L L_L s^2 + 1)}{2C_4 C_L L_L R_L s^3 + 2C_4 R_L s + C_L L_L s^2 + C_L R_L s + 1}$$

$$10.91 \quad \text{INVALID-ORDER-91} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, R_L \right)$$

$$H(s) = \frac{R_4 R_L}{2C_4 R_4 R_L s + R_4 + 2R_L}$$

$$10.92 \quad \text{INVALID-ORDER-92} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, \frac{1}{C_L s} \right)$$

$$H(s) = \frac{R_4}{2C_4 R_4 s + C_L R_4 s + 2}$$

$$10.93 \quad \text{INVALID-ORDER-93} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, \frac{R_L}{C_L R_L s + 1} \right)$$

$$H(s) = \frac{R_4 R_L}{2C_4 R_4 R_L s + C_L R_4 R_L s + R_4 + 2R_L}$$

$$10.94 \quad \text{INVALID-ORDER-94} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, L_L s + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{R_4 (C_L L_L s^2 + 1)}{2C_4 C_L L_L R_4 s^3 + 2C_4 R_4 s + 2C_L L_L s^2 + C_L R_4 s + 2}$$

$$10.95 \quad \text{INVALID-ORDER-95} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, L_L s + R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{R_4 (C_L L_L s^2 + C_L R_L s + 1)}{2C_4 C_L L_L R_4 s^3 + 2C_4 C_L R_4 R_L s^2 + 2C_4 R_4 s + 2C_L L_L s^2 + C_L R_4 s + 2C_L R_L s + 2}$$

$$10.96 \quad \text{INVALID-ORDER-96} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$$

$$H(s) = \frac{R_4 (C_L L_L R_L s^2 + L_L s + R_L)}{2C_4 C_L L_L R_4 R_L s^3 + 2C_4 L_L R_4 s^2 + 2C_4 R_4 R_L s + C_L L_L R_4 s^2 + 2C_L L_L R_L s^2 + 2L_L s + R_4 + 2R_L}$$

$$10.97 \quad \text{INVALID-ORDER-97} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, \frac{R_L (L_L s + \frac{1}{C_L s})}{L_L s + R_L + \frac{1}{C_L s}} \right)$$

$$H(s) = \frac{R_4 R_L (C_L L_L s^2 + 1)}{2C_4 C_L L_L R_4 R_L s^3 + 2C_4 R_4 R_L s + C_L L_L R_4 s^2 + 2C_L L_L R_L s^2 + C_L R_4 R_L s + R_4 + 2R_L}$$

$$10.98 \quad \text{INVALID-ORDER-98} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, R_4 + \frac{1}{C_4 s}, \infty, R_L \right)$$

$$H(s) = \frac{R_L (C_4 R_4 s + 1)}{C_4 R_4 s + 2C_4 R_L s + 1}$$

$$10.99 \quad \text{INVALID-ORDER-99} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, R_4 + \frac{1}{C_4 s}, \infty, \frac{1}{C_L s} \right)$$

$$H(s) = \frac{C_4 R_4 s + 1}{s (C_4 C_L R_4 s + 2C_4 + C_L)}$$

$$10.100 \quad \text{INVALID-ORDER-100} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, R_4 + \frac{1}{C_4 s}, \infty, R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{(C_4 R_4 s + 1) (C_L R_L s + 1)}{s (C_4 C_L R_4 s + 2C_4 C_L R_L s + 2C_4 + C_L)}$$

$$10.101 \quad \text{INVALID-ORDER-101} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, R_4 + \frac{1}{C_4 s}, \infty, L_L s + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{(C_4 R_4 s + 1) (C_L L_L s^2 + 1)}{s (2C_4 C_L L_L s^2 + C_4 C_L R_4 s + 2C_4 + C_L)}$$

$$10.102 \quad \text{INVALID-ORDER-102} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, R_4 + \frac{1}{C_4 s}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$$

$$H(s) = \frac{L_L s (C_4 R_4 s + 1)}{C_4 C_L L_L R_4 s^3 + 2C_4 L_L s^2 + C_4 R_4 s + C_L L_L s^2 + 1}$$

$$10.103 \quad \text{INVALID-ORDER-103} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, R_4 + \frac{1}{C_4 s}, \infty, L_L s + R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{(C_4 R_4 s + 1) (C_L L_L s^2 + C_L R_L s + 1)}{s (2C_4 C_L L_L s^2 + C_4 C_L R_4 s + 2C_4 C_L R_L s + 2C_4 + C_L)}$$

$$10.104 \quad \text{INVALID-ORDER-104} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, R_4 + \frac{1}{C_4 s}, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$$

$$H(s) = \frac{L_L R_L s (C_4 R_4 s + 1)}{C_4 C_L L_L R_4 R_L s^3 + C_4 L_L R_4 s^2 + 2C_4 L_L R_L s^2 + C_4 R_4 R_L s + C_L L_L R_L s^2 + L_L s + R_L}$$

$$10.105 \quad \text{INVALID-ORDER-105} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, R_4 + \frac{1}{C_4 s}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$$

$$H(s) = \frac{(C_4 R_4 s + 1) (C_L L_L R_L s^2 + L_L s + R_L)}{C_4 C_L L_L R_4 s^3 + 2C_4 C_L L_L R_L s^3 + 2C_4 L_L s^2 + C_4 R_4 s + 2C_4 R_L s + C_L L_L s^2 + 1}$$

$$10.106 \quad \text{INVALID-ORDER-106} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, R_4 + \frac{1}{C_4 s}, \infty, \frac{R_L \left( L_L s + \frac{1}{C_L s} \right)}{L_L s + R_L + \frac{1}{C_L s}} \right)$$

$$H(s) = \frac{R_L (C_4 R_4 s + 1) (C_L L_L s^2 + 1)}{C_4 C_L L_L R_4 s^3 + 2C_4 C_L L_L R_L s^3 + C_4 C_L R_4 R_L s^2 + C_4 R_4 s + 2C_4 R_L s + C_L L_L s^2 + C_L R_L s + 1}$$

$$10.107 \quad \text{INVALID-ORDER-107} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, L_4 s + \frac{1}{C_4 s}, \infty, \frac{1}{C_L s} \right)$$

$$H(s) = \frac{C_4 L_4 s^2 + 1}{s (C_4 C_L L_4 s^2 + 2C_4 + C_L)}$$

$$10.108 \quad \text{INVALID-ORDER-108} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, L_4 s + \frac{1}{C_4 s}, \infty, \frac{R_L}{C_L R_L s + 1} \right)$$

$$H(s) = \frac{R_L (C_4 L_4 s^2 + 1)}{C_4 C_L L_4 R_L s^3 + C_4 L_4 s^2 + 2C_4 R_L s + C_L R_L s + 1}$$

$$10.109 \quad \text{INVALID-ORDER-109} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, L_4 s + \frac{1}{C_4 s}, \infty, R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{(C_4 L_4 s^2 + 1) (C_L R_L s + 1)}{s (C_4 C_L L_4 s^2 + 2C_4 C_L R_L s + 2C_4 + C_L)}$$

$$10.110 \quad \text{INVALID-ORDER-110} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, L_4 s + \frac{1}{C_4 s}, \infty, L_L s + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{(C_4 L_4 s^2 + 1) (C_L L_L s^2 + 1)}{s (C_4 C_L L_4 s^2 + 2C_4 C_L L_L s^2 + 2C_4 + C_L)}$$

$$10.111 \quad \text{INVALID-ORDER-111} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, L_4 s + \frac{1}{C_4 s}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$$

$$H(s) = \frac{L_L s (C_4 L_4 s^2 + 1)}{C_4 C_L L_4 L_L s^4 + C_4 L_4 s^2 + 2C_4 L_L s^2 + C_L L_L s^2 + 1}$$

$$10.112 \quad \text{INVALID-ORDER-112} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, L_4 s + \frac{1}{C_4 s}, \infty, L_L s + R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{(C_4 L_4 s^2 + 1) (C_L L_L s^2 + C_L R_L s + 1)}{s (C_4 C_L L_4 s^2 + 2C_4 C_L L_L s^2 + 2C_4 C_L R_L s + 2C_4 + C_L)}$$

$$10.113 \quad \text{INVALID-ORDER-113} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, L_4 s + \frac{1}{C_4 s}, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$$

$$H(s) = \frac{L_L R_L s (C_4 L_4 s^2 + 1)}{C_4 C_L L_4 L_L R_L s^4 + C_4 L_4 L_L s^3 + C_4 L_4 R_L s^2 + 2C_4 L_L R_L s^2 + C_L L_L R_L s^2 + L_L s + R_L}$$

$$10.114 \quad \text{INVALID-ORDER-114} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, L_4 s + \frac{1}{C_4 s}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$$

$$H(s) = \frac{(C_4 L_4 s^2 + 1) (C_L L_L R_L s^2 + L_L s + R_L)}{C_4 C_L L_4 L_L s^4 + 2 C_4 C_L L_L R_L s^3 + C_4 L_4 s^2 + 2 C_4 L_L s^2 + 2 C_4 R_L s + C_L L_L s^2 + 1}$$

$$10.115 \quad \text{INVALID-ORDER-115} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, L_4 s + \frac{1}{C_4 s}, \infty, \frac{R_L (L_L s + \frac{1}{C_L s})}{L_L s + R_L + \frac{1}{C_L s}} \right)$$

$$H(s) = \frac{R_L (C_4 L_4 s^2 + 1) (C_L L_L s^2 + 1)}{C_4 C_L L_4 L_L s^4 + C_4 C_L L_4 R_L s^3 + 2 C_4 C_L L_L R_L s^3 + C_4 L_4 s^2 + 2 C_4 R_L s + C_L L_L s^2 + C_L R_L s + 1}$$

$$10.116 \quad \text{INVALID-ORDER-116} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, \frac{1}{C_L s} \right)$$

$$H(s) = \frac{L_4 s}{2 C_4 L_4 s^2 + C_L L_4 s^2 + 2}$$

$$10.117 \quad \text{INVALID-ORDER-117} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{L_4 s (C_L R_L s + 1)}{2 C_4 C_L L_4 R_L s^3 + 2 C_4 L_4 s^2 + C_L L_4 s^2 + 2 C_L R_L s + 2}$$

$$10.118 \quad \text{INVALID-ORDER-118} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, L_L s + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{L_4 s (C_L L_L s^2 + 1)}{2 C_4 C_L L_4 L_L s^4 + 2 C_4 L_4 s^2 + C_L L_4 s^2 + 2 C_L L_L s^2 + 2}$$

$$10.119 \quad \text{INVALID-ORDER-119} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$$

$$H(s) = \frac{L_4 L_L s}{2 C_4 L_4 L_L s^2 + C_L L_4 L_L s^2 + L_4 + 2 L_L}$$

$$10.120 \quad \text{INVALID-ORDER-120} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, L_L s + R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{L_4 s (C_L L_L s^2 + C_L R_L s + 1)}{2 C_4 C_L L_4 L_L s^4 + 2 C_4 C_L L_4 R_L s^3 + 2 C_4 L_4 s^2 + C_L L_4 s^2 + 2 C_L L_L s^2 + 2 C_L R_L s + 2}$$

$$10.121 \quad \text{INVALID-ORDER-121} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$$

$$H(s) = \frac{L_4 s (C_L L_L R_L s^2 + L_L s + R_L)}{2 C_4 C_L L_4 L_L R_L s^4 + 2 C_4 L_4 L_L s^3 + 2 C_4 L_4 R_L s^2 + C_L L_4 L_L s^3 + 2 C_L L_L R_L s^2 + L_4 s + 2 L_L s + 2 R_L}$$

$$10.122 \quad \text{INVALID-ORDER-122} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, \frac{R_L (L_L s + \frac{1}{C_L s})}{L_L s + R_L + \frac{1}{C_L s}} \right)$$

$$H(s) = \frac{L_4 R_L s (C_L L_L s^2 + 1)}{2 C_4 C_L L_4 L_L R_L s^4 + 2 C_4 L_4 R_L s^2 + C_L L_4 L_L s^3 + C_L L_4 R_L s^2 + 2 C_L L_L R_L s^2 + L_4 s + 2 R_L}$$

**10.123 INVALID-ORDER-123**  $Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, \frac{1}{C_L s} \right)$

$$H(s) = \frac{C_4 L_4 s^2 + C_4 R_4 s + 1}{s (C_4 C_L L_4 s^2 + C_4 C_L R_4 s + 2C_4 + C_L)}$$

**10.124 INVALID-ORDER-124**  $Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, \frac{R_L}{C_L R_L s + 1} \right)$

$$H(s) = \frac{R_L (C_4 L_4 s^2 + C_4 R_4 s + 1)}{C_4 C_L L_4 R_L s^3 + C_4 C_L R_4 R_L s^2 + C_4 L_4 s^2 + C_4 R_4 s + 2C_4 R_L s + C_L R_L s + 1}$$

**10.125 INVALID-ORDER-125**  $Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, R_L + \frac{1}{C_L s} \right)$

$$H(s) = \frac{(C_L R_L s + 1) (C_4 L_4 s^2 + C_4 R_4 s + 1)}{s (C_4 C_L L_4 s^2 + C_4 C_L R_4 s + 2C_4 C_L R_L s + 2C_4 + C_L)}$$

**10.126 INVALID-ORDER-126**  $Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, L_L s + \frac{1}{C_L s} \right)$

$$H(s) = \frac{(C_L L_L s^2 + 1) (C_4 L_4 s^2 + C_4 R_4 s + 1)}{s (C_4 C_L L_4 s^2 + 2C_4 C_L L_L s^2 + C_4 C_L R_4 s + 2C_4 + C_L)}$$

**10.127 INVALID-ORDER-127**  $Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$

$$H(s) = \frac{L_L s (C_4 L_4 s^2 + C_4 R_4 s + 1)}{C_4 C_L L_4 L_L s^4 + C_4 C_L L_L R_4 s^3 + C_4 L_4 s^2 + 2C_4 L_L s^2 + C_4 R_4 s + C_L L_L s^2 + 1}$$

**10.128 INVALID-ORDER-128**  $Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, L_L s + R_L + \frac{1}{C_L s} \right)$

$$H(s) = \frac{(C_4 L_4 s^2 + C_4 R_4 s + 1) (C_L L_L s^2 + C_L R_L s + 1)}{s (C_4 C_L L_4 s^2 + 2C_4 C_L L_L s^2 + C_4 C_L R_4 s + 2C_4 C_L R_L s + 2C_4 + C_L)}$$

**10.129 INVALID-ORDER-129**  $Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$

$$H(s) = \frac{L_L R_L s (C_4 L_4 s^2 + C_4 R_4 s + 1)}{C_4 C_L L_4 L_L R_L s^4 + C_4 C_L L_L R_4 R_L s^3 + C_4 L_4 L_L s^3 + C_4 L_4 R_L s^2 + C_4 L_L R_4 s^2 + 2C_4 L_L R_L s^2 + C_4 R_4 R_L s + C_L L_L R_L s^2 + L_L s + R_L}$$

**10.130 INVALID-ORDER-130**  $Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$

$$H(s) = \frac{(C_4 L_4 s^2 + C_4 R_4 s + 1) (C_L L_L R_L s^2 + L_L s + R_L)}{C_4 C_L L_4 L_L s^4 + C_4 C_L L_L R_4 s^3 + 2C_4 C_L L_L R_L s^3 + C_4 L_4 s^2 + 2C_4 L_L s^2 + C_4 R_4 s + 2C_4 R_L s + C_L L_L s^2 + 1}$$

$$10.131 \quad \text{INVALID-ORDER-131} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, \frac{R_L \left( L_L s + \frac{1}{C_L s} \right)}{L_L s + R_L + \frac{1}{C_L s}} \right)$$

$$H(s) = \frac{R_L (C_L L_L s^2 + 1) (C_4 L_4 s^2 + C_4 R_4 s + 1)}{C_4 C_L L_4 L_L s^4 + C_4 C_L L_4 R_L s^3 + C_4 C_L L_L R_4 s^3 + 2C_4 C_L L_L R_L s^3 + C_4 C_L R_4 R_L s^2 + C_4 L_4 s^2 + C_4 R_4 s + 2C_4 R_L s + C_L L_L s^2 + C_L R_L s + 1}$$

$$10.132 \quad \text{INVALID-ORDER-132} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{L_4 R_4 s (C_L R_L s + 1)}{2C_4 C_L L_4 R_4 R_L s^3 + 2C_4 L_4 R_4 s^2 + C_L L_4 R_4 s^2 + 2C_L L_4 R_L s^2 + 2C_L R_4 R_L s + 2L_4 s + 2R_4}$$

$$10.133 \quad \text{INVALID-ORDER-133} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, L_L s + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{L_4 R_4 s (C_L L_L s^2 + 1)}{2C_4 C_L L_4 L_L R_4 s^4 + 2C_4 L_4 R_4 s^2 + 2C_L L_4 L_L s^3 + C_L L_4 R_4 s^2 + 2C_L L_L R_4 s^2 + 2L_4 s + 2R_4}$$

$$10.134 \quad \text{INVALID-ORDER-134} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, L_L s + R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{L_4 R_4 s (C_L L_L s^2 + C_L R_L s + 1)}{2C_4 C_L L_4 L_L R_4 s^4 + 2C_4 C_L L_4 R_4 R_L s^3 + 2C_4 L_4 R_4 s^2 + 2C_L L_4 L_L s^3 + C_L L_4 R_4 s^2 + 2C_L L_4 R_L s^2 + 2C_L L_L R_4 s^2 + 2C_L R_4 R_L s + 2L_4 s + 2R_4}$$

$$10.135 \quad \text{INVALID-ORDER-135} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$$

$$H(s) = \frac{L_4 R_4 s (C_L L_L R_L s^2 + L_L s + R_L)}{2C_4 C_L L_4 L_L R_4 R_L s^4 + 2C_4 L_4 L_L R_4 s^3 + 2C_4 L_4 R_4 R_L s^2 + C_L L_4 L_L R_4 s^3 + 2C_L L_4 L_L R_L s^3 + 2C_L L_L R_4 R_L s^2 + 2L_4 L_L s^2 + L_4 R_4 s + 2L_4 R_L s + 2L_L R_4 s + 2R_4 R_L}$$

$$10.136 \quad \text{INVALID-ORDER-136} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, \frac{R_L \left( L_L s + \frac{1}{C_L s} \right)}{L_L s + R_L + \frac{1}{C_L s}} \right)$$

$$H(s) = \frac{L_4 R_4 R_L s (C_L L_L s^2 + 1)}{2C_4 C_L L_4 L_L R_4 R_L s^4 + 2C_4 L_4 R_4 R_L s^2 + C_L L_4 L_L R_4 s^3 + 2C_L L_4 L_L R_L s^3 + C_L L_4 R_4 R_L s^2 + 2C_L L_L R_4 R_L s^2 + L_4 R_4 s + 2L_4 R_L s + 2R_4 R_L}$$

$$10.137 \quad \text{INVALID-ORDER-137} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \infty, \frac{1}{C_L s} \right)$$

$$H(s) = \frac{C_4 L_4 R_4 s^2 + L_4 s + R_4}{C_4 C_L L_4 R_4 s^3 + 2C_4 L_4 s^2 + C_L L_4 s^2 + C_L R_4 s + 2}$$

$$10.138 \quad \text{INVALID-ORDER-138} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \infty, \frac{R_L}{C_L R_L s + 1} \right)$$

$$H(s) = \frac{R_L (C_4 L_4 R_4 s^2 + L_4 s + R_4)}{C_4 C_L L_4 R_4 R_L s^3 + C_4 L_4 R_4 s^2 + 2C_4 L_4 R_L s^2 + C_L L_4 R_L s^2 + C_L R_4 R_L s + L_4 s + R_4 + 2R_L}$$



$$10.139 \quad \text{INVALID-ORDER-139} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \infty, R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{(C_L R_L s + 1) (C_4 L_4 R_4 s^2 + L_4 s + R_4)}{C_4 C_L L_4 R_4 s^3 + 2C_4 C_L L_4 R_L s^3 + 2C_4 L_4 s^2 + C_L L_4 s^2 + C_L R_4 s + 2C_L R_L s + 2}$$

$$10.140 \quad \text{INVALID-ORDER-140} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \infty, L_L s + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{(C_L L_L s^2 + 1) (C_4 L_4 R_4 s^2 + L_4 s + R_4)}{2C_4 C_L L_4 L_L s^4 + C_4 C_L L_4 R_4 s^3 + 2C_4 L_4 s^2 + C_L L_4 s^2 + 2C_L L_L s^2 + C_L R_4 s + 2}$$

$$10.141 \quad \text{INVALID-ORDER-141} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$$

$$H(s) = \frac{L_L s (C_4 L_4 R_4 s^2 + L_4 s + R_4)}{C_4 C_L L_4 L_L R_4 s^4 + 2C_4 L_4 L_L s^3 + C_4 L_4 R_4 s^2 + C_L L_4 L_L s^3 + C_L L_L R_4 s^2 + L_4 s + 2L_L s + R_4}$$

$$10.142 \quad \text{INVALID-ORDER-142} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \infty, L_L s + R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{(C_L L_L s^2 + C_L R_L s + 1) (C_4 L_4 R_4 s^2 + L_4 s + R_4)}{2C_4 C_L L_4 L_L s^4 + C_4 C_L L_4 R_4 s^3 + 2C_4 C_L L_4 R_L s^3 + 2C_4 L_4 s^2 + C_L L_4 s^2 + 2C_L L_L s^2 + C_L R_4 s + 2C_L R_L s + 2}$$

$$10.143 \quad \text{INVALID-ORDER-143} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$$

$$H(s) = \frac{L_L R_L s (C_4 L_4 R_4 s^2 + L_4 s + R_4)}{C_4 C_L L_4 L_L R_4 R_L s^4 + C_4 L_4 L_L R_4 s^3 + 2C_4 L_4 L_L R_L s^3 + C_4 L_4 R_4 R_L s^2 + C_L L_4 L_L R_L s^3 + C_L L_L R_4 R_L s^2 + L_4 L_L s^2 + L_4 R_L s + L_L R_4 s + 2L_L R_L s + R_4 R_L}$$

$$10.144 \quad \text{INVALID-ORDER-144} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$$

$$H(s) = \frac{(C_4 L_4 R_4 s^2 + L_4 s + R_4) (C_L L_L R_L s^2 + L_L s + R_L)}{C_4 C_L L_4 L_L R_4 s^4 + 2C_4 C_L L_4 L_L R_L s^4 + 2C_4 L_4 L_L s^3 + C_4 L_4 R_4 s^2 + 2C_4 L_4 R_L s^2 + C_L L_4 L_L s^3 + C_L L_L R_4 s^2 + 2C_L L_L R_L s^2 + L_4 s + 2L_L s + R_4 + 2R_L}$$

$$10.145 \quad \text{INVALID-ORDER-145} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \infty, \frac{R_L (L_L s + \frac{1}{C_L s})}{L_L s + R_L + \frac{1}{C_L s}} \right)$$

$$H(s) = \frac{R_L (C_L L_L s^2 + 1) (C_4 L_4 R_4 s^2 + L_4 s + R_4)}{C_4 C_L L_4 L_L R_4 s^4 + 2C_4 C_L L_4 L_L R_L s^4 + C_4 C_L L_4 R_4 R_L s^3 + C_4 L_4 R_4 s^2 + 2C_4 L_4 R_L s^2 + C_L L_4 L_L s^3 + C_L L_4 R_L s^2 + C_L L_L R_4 s^2 + 2C_L L_L R_L s^2 + C_L R_4 R_L s + L_4 s + R_4 + 2R_L}$$

$$10.146 \quad \text{INVALID-ORDER-146} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{R_4 (L_4 s + \frac{1}{C_4 s})}{L_4 s + R_4 + \frac{1}{C_4 s}}, \infty, \frac{1}{C_L s} \right)$$

$$H(s) = \frac{R_4 (C_4 L_4 s^2 + 1)}{C_4 C_L L_4 R_4 s^3 + 2C_4 L_4 s^2 + 2C_4 R_4 s + C_L R_4 s + 2}$$

$$10.147 \quad \text{INVALID-ORDER-147} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{R_4 \left( L_4 s + \frac{1}{C_4 s} \right)}{L_4 s + R_4 + \frac{1}{C_4 s}}, \infty, \frac{R_L}{C_L R_L s + 1} \right)$$

$$H(s) = \frac{R_4 R_L (C_4 L_4 s^2 + 1)}{C_4 C_L L_4 R_4 R_L s^3 + C_4 L_4 R_4 s^2 + 2C_4 L_4 R_L s^2 + 2C_4 R_4 R_L s + C_L R_4 R_L s + R_4 + 2R_L}$$

$$10.148 \quad \text{INVALID-ORDER-148} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{R_4 \left( L_4 s + \frac{1}{C_4 s} \right)}{L_4 s + R_4 + \frac{1}{C_4 s}}, \infty, R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{R_4 (C_4 L_4 s^2 + 1) (C_L R_L s + 1)}{C_4 C_L L_4 R_4 s^3 + 2C_4 C_L L_4 R_L s^3 + 2C_4 C_L R_4 R_L s^2 + 2C_4 L_4 s^2 + 2C_4 R_4 s + C_L R_4 s + 2C_L R_L s + 2}$$

$$10.149 \quad \text{INVALID-ORDER-149} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{R_4 \left( L_4 s + \frac{1}{C_4 s} \right)}{L_4 s + R_4 + \frac{1}{C_4 s}}, \infty, L_L s + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{R_4 (C_4 L_4 s^2 + 1) (C_L L_L s^2 + 1)}{2C_4 C_L L_4 L_L s^4 + C_4 C_L L_4 R_4 s^3 + 2C_4 C_L L_L R_4 s^3 + 2C_4 L_4 s^2 + 2C_4 R_4 s + 2C_L L_L s^2 + C_L R_4 s + 2}$$

$$10.150 \quad \text{INVALID-ORDER-150} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{R_4 \left( L_4 s + \frac{1}{C_4 s} \right)}{L_4 s + R_4 + \frac{1}{C_4 s}}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$$

$$H(s) = \frac{L_L R_4 s (C_4 L_4 s^2 + 1)}{C_4 C_L L_4 L_L R_4 s^4 + 2C_4 L_4 L_L s^3 + C_4 L_4 R_4 s^2 + 2C_4 L_L R_4 s^2 + C_L L_L R_4 s^2 + 2L_L s + R_4}$$

$$10.151 \quad \text{INVALID-ORDER-151} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{R_4 \left( L_4 s + \frac{1}{C_4 s} \right)}{L_4 s + R_4 + \frac{1}{C_4 s}}, \infty, L_L s + R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{R_4 (C_4 L_4 s^2 + 1) (C_L L_L s^2 + C_L R_L s + 1)}{2C_4 C_L L_4 L_L s^4 + C_4 C_L L_4 R_4 s^3 + 2C_4 C_L L_4 R_L s^3 + 2C_4 C_L L_L R_4 s^3 + 2C_4 C_L R_4 R_L s^2 + 2C_4 L_4 s^2 + 2C_4 R_4 s + 2C_L L_L s^2 + C_L R_4 s + 2C_L R_L s + 2}$$

$$10.152 \quad \text{INVALID-ORDER-152} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{R_4 \left( L_4 s + \frac{1}{C_4 s} \right)}{L_4 s + R_4 + \frac{1}{C_4 s}}, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$$

$$H(s) = \frac{L_L R_4 R_L s (C_4 L_4 s^2 + 1)}{C_4 C_L L_4 L_L R_4 R_L s^4 + C_4 L_4 L_L R_4 s^3 + 2C_4 L_4 L_L R_L s^3 + C_4 L_4 R_4 R_L s^2 + 2C_4 L_L R_4 R_L s^2 + C_L L_L R_4 R_L s^2 + L_L R_4 s + 2L_L R_L s + R_4 R_L}$$

$$10.153 \quad \text{INVALID-ORDER-153} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{R_4 \left( L_4 s + \frac{1}{C_4 s} \right)}{L_4 s + R_4 + \frac{1}{C_4 s}}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$$

$$H(s) = \frac{R_4 (C_4 L_4 s^2 + 1) (C_L L_L R_L s^2 + L_L s + R_L)}{C_4 C_L L_4 L_L R_4 s^4 + 2C_4 C_L L_4 L_L R_L s^4 + 2C_4 C_L L_L R_4 R_L s^3 + 2C_4 L_4 L_L s^3 + C_4 L_4 R_4 s^2 + 2C_4 L_4 R_L s^2 + 2C_4 L_L R_4 s^2 + 2C_4 R_4 R_L s + C_L L_L R_4 s^2 + 2C_L L_L R_L s^2 + 2L_L s + R_4 + 2R_L}$$

$$10.154 \quad \text{INVALID-ORDER-154} \quad Z(s) = \left( \infty, \frac{1}{C_2 s}, \infty, \frac{R_4 \left( L_4 s + \frac{1}{C_4 s} \right)}{L_4 s + R_4 + \frac{1}{C_4 s}}, \infty, \frac{R_L \left( L_L s + \frac{1}{C_L s} \right)}{L_L s + R_L + \frac{1}{C_L s}} \right)$$

$$H(s) = \frac{R_4 R_L (C_4 L_4 s^2 + 1) (C_L L_L s^2 + 1)}{C_4 C_L L_4 L_L R_4 s^4 + 2C_4 C_L L_4 L_L R_L s^4 + C_4 C_L L_4 R_4 R_L s^3 + 2C_4 C_L L_L R_4 R_L s^3 + C_4 L_4 R_4 s^2 + 2C_4 L_4 R_L s^2 + 2C_4 R_4 R_L s + C_L L_L R_4 s^2 + 2C_L L_L R_L s^2 + C_L R_4 R_L s + R_4 + 2R_L}$$

$$10.155 \quad \text{INVALID-ORDER-155} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, R_4, \infty, R_L \right)$$

$$H(s) = \frac{R_4 R_L}{R_4 + 2R_L}$$

$$10.156 \quad \text{INVALID-ORDER-156} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, R_4, \infty, \frac{1}{C_L s} \right)$$

$$H(s) = \frac{R_4}{C_L R_4 s + 2}$$

$$10.157 \quad \text{INVALID-ORDER-157} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, R_4, \infty, \frac{R_L}{C_L R_L s + 1} \right)$$

$$H(s) = \frac{R_4 R_L}{C_L R_4 R_L s + R_4 + 2R_L}$$

$$10.158 \quad \text{INVALID-ORDER-158} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, R_4, \infty, R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{R_4 (C_L R_L s + 1)}{C_L R_4 s + 2C_L R_L s + 2}$$

$$10.159 \quad \text{INVALID-ORDER-159} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{1}{C_4 s}, \infty, R_L \right)$$

$$H(s) = \frac{R_L}{2C_4 R_L s + 1}$$

$$10.160 \quad \text{INVALID-ORDER-160} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{1}{C_4 s}, \infty, \frac{1}{C_L s} \right)$$

$$H(s) = \frac{1}{s(2C_4 + C_L)}$$

$$10.161 \quad \text{INVALID-ORDER-161} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{1}{C_4 s}, \infty, \frac{R_L}{C_L R_L s + 1} \right)$$

$$H(s) = \frac{R_L}{2C_4 R_L s + C_L R_L s + 1}$$

$$10.162 \quad \text{INVALID-ORDER-162} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{1}{C_4 s}, \infty, R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{C_L R_L s + 1}{s(2C_4 C_L R_L s + 2C_4 + C_L)}$$

$$10.163 \quad \text{INVALID-ORDER-163} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{1}{C_4 s}, \infty, L_L s + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{C_L L_L s^2 + 1}{s(2C_4 C_L L_L s^2 + 2C_4 + C_L)}$$

$$10.164 \quad \text{INVALID-ORDER-164} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{1}{C_4 s}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$$

$$H(s) = \frac{L_L s}{2C_4 L_L s^2 + C_L L_L s^2 + 1}$$

$$10.165 \quad \text{INVALID-ORDER-165} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{1}{C_4 s}, \infty, L_L s + R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{C_L L_L s^2 + C_L R_L s + 1}{s(2C_4 C_L L_L s^2 + 2C_4 C_L R_L s + 2C_4 + C_L)}$$

$$10.166 \quad \text{INVALID-ORDER-166} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{1}{C_4 s}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$$

$$H(s) = \frac{C_L L_L R_L s^2 + L_L s + R_L}{2C_4 C_L L_L R_L s^3 + 2C_4 L_L s^2 + 2C_4 R_L s + C_L L_L s^2 + 1}$$

$$10.167 \quad \text{INVALID-ORDER-167} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{1}{C_4 s}, \infty, \frac{R_L \left( L_L s + \frac{1}{C_L s} \right)}{L_L s + R_L + \frac{1}{C_L s}} \right)$$

$$H(s) = \frac{R_L (C_L L_L s^2 + 1)}{2C_4 C_L L_L R_L s^3 + 2C_4 R_L s + C_L L_L s^2 + C_L R_L s + 1}$$

$$10.168 \quad \text{INVALID-ORDER-168} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, R_L \right)$$

$$H(s) = \frac{R_4 R_L}{2C_4 R_4 R_L s + R_4 + 2R_L}$$

$$10.169 \quad \text{INVALID-ORDER-169} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, \frac{1}{C_L s} \right)$$

$$H(s) = \frac{R_4}{2C_4 R_4 s + C_L R_4 s + 2}$$

$$10.170 \quad \text{INVALID-ORDER-170} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, \frac{R_L}{C_L R_L s + 1} \right)$$

$$H(s) = \frac{R_4 R_L}{2C_4 R_4 R_L s + C_L R_4 R_L s + R_4 + 2R_L}$$

$$10.171 \quad \text{INVALID-ORDER-171} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, L_L s + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{R_4 (C_L L_L s^2 + 1)}{2C_4 C_L L_L R_4 s^3 + 2C_4 R_4 s + 2C_L L_L s^2 + C_L R_4 s + 2}$$

$$10.172 \quad \text{INVALID-ORDER-172} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, L_L s + R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{R_4 (C_L L_L s^2 + C_L R_L s + 1)}{2C_4 C_L L_L R_4 s^3 + 2C_4 C_L R_4 R_L s^2 + 2C_4 R_4 s + 2C_L L_L s^2 + C_L R_4 s + 2C_L R_L s + 2}$$

$$10.173 \quad \text{INVALID-ORDER-173} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$$

$$H(s) = \frac{R_4 (C_L L_L R_L s^2 + L_L s + R_L)}{2C_4 C_L L_L R_4 R_L s^3 + 2C_4 L_L R_4 s^2 + 2C_4 R_4 R_L s + C_L L_L R_4 s^2 + 2C_L L_L R_L s^2 + 2L_L s + R_4 + 2R_L}$$

$$10.174 \quad \text{INVALID-ORDER-174} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, \frac{R_L (L_L s + \frac{1}{C_L s})}{L_L s + R_L + \frac{1}{C_L s}} \right)$$

$$H(s) = \frac{R_4 R_L (C_L L_L s^2 + 1)}{2C_4 C_L L_L R_4 R_L s^3 + 2C_4 R_4 R_L s + C_L L_L R_4 s^2 + 2C_L L_L R_L s^2 + C_L R_4 R_L s + R_4 + 2R_L}$$

$$10.175 \quad \text{INVALID-ORDER-175} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, R_4 + \frac{1}{C_4 s}, \infty, R_L \right)$$

$$H(s) = \frac{R_L (C_4 R_4 s + 1)}{C_4 R_4 s + 2C_4 R_L s + 1}$$

$$10.176 \quad \text{INVALID-ORDER-176} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, R_4 + \frac{1}{C_4 s}, \infty, \frac{1}{C_L s} \right)$$

$$H(s) = \frac{C_4 R_4 s + 1}{s (C_4 C_L R_4 s + 2C_4 + C_L)}$$

$$10.177 \quad \text{INVALID-ORDER-177} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, R_4 + \frac{1}{C_4 s}, \infty, R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{(C_4 R_4 s + 1) (C_L R_L s + 1)}{s (C_4 C_L R_4 s + 2C_4 C_L R_L s + 2C_4 + C_L)}$$

$$10.178 \quad \text{INVALID-ORDER-178} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, R_4 + \frac{1}{C_4 s}, \infty, L_L s + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{(C_4 R_4 s + 1) (C_L L_L s^2 + 1)}{s (2C_4 C_L L_L s^2 + C_4 C_L R_4 s + 2C_4 + C_L)}$$

$$10.179 \quad \text{INVALID-ORDER-179} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, R_4 + \frac{1}{C_4 s}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$$

$$H(s) = \frac{L_L s (C_4 R_4 s + 1)}{C_4 C_L L_L R_4 s^3 + 2C_4 L_L s^2 + C_4 R_4 s + C_L L_L s^2 + 1}$$

$$10.180 \quad \text{INVALID-ORDER-180} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, R_4 + \frac{1}{C_4 s}, \infty, L_L s + R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{(C_4 R_4 s + 1) (C_L L_L s^2 + C_L R_L s + 1)}{s (2C_4 C_L L_L s^2 + C_4 C_L R_4 s + 2C_4 C_L R_L s + 2C_4 + C_L)}$$

$$10.181 \quad \text{INVALID-ORDER-181} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, R_4 + \frac{1}{C_4 s}, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$$

$$H(s) = \frac{L_L R_L s (C_4 R_4 s + 1)}{C_4 C_L L_L R_4 R_L s^3 + C_4 L_L R_4 s^2 + 2C_4 L_L R_L s^2 + C_4 R_4 R_L s + C_L L_L R_L s^2 + L_L s + R_L}$$

$$10.182 \quad \text{INVALID-ORDER-182} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, R_4 + \frac{1}{C_4 s}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$$

$$H(s) = \frac{(C_4 R_4 s + 1) (C_L L_L R_L s^2 + L_L s + R_L)}{C_4 C_L L_L R_4 s^3 + 2 C_4 C_L L_L R_L s^3 + 2 C_4 L_L s^2 + C_4 R_4 s + 2 C_4 R_L s + C_L L_L s^2 + 1}$$

$$10.183 \quad \text{INVALID-ORDER-183} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, R_4 + \frac{1}{C_4 s}, \infty, \frac{R_L (L_L s + \frac{1}{C_L s})}{L_L s + R_L + \frac{1}{C_L s}} \right)$$

$$H(s) = \frac{R_L (C_4 R_4 s + 1) (C_L L_L s^2 + 1)}{C_4 C_L L_L R_4 s^3 + 2 C_4 C_L L_L R_L s^3 + C_4 C_L R_4 R_L s^2 + C_4 R_4 s + 2 C_4 R_L s + C_L L_L s^2 + C_L R_L s + 1}$$

$$10.184 \quad \text{INVALID-ORDER-184} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, L_4 s + \frac{1}{C_4 s}, \infty, \frac{1}{C_L s} \right)$$

$$H(s) = \frac{C_4 L_4 s^2 + 1}{s (C_4 C_L L_4 s^2 + 2 C_4 + C_L)}$$

$$10.185 \quad \text{INVALID-ORDER-185} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, L_4 s + \frac{1}{C_4 s}, \infty, \frac{R_L}{C_L R_L s + 1} \right)$$

$$H(s) = \frac{R_L (C_4 L_4 s^2 + 1)}{C_4 C_L L_4 R_L s^3 + C_4 L_4 s^2 + 2 C_4 R_L s + C_L R_L s + 1}$$

$$10.186 \quad \text{INVALID-ORDER-186} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, L_4 s + \frac{1}{C_4 s}, \infty, R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{(C_4 L_4 s^2 + 1) (C_L R_L s + 1)}{s (C_4 C_L L_4 s^2 + 2 C_4 C_L R_L s + 2 C_4 + C_L)}$$

$$10.187 \quad \text{INVALID-ORDER-187} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, L_4 s + \frac{1}{C_4 s}, \infty, L_L s + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{(C_4 L_4 s^2 + 1) (C_L L_L s^2 + 1)}{s (C_4 C_L L_4 s^2 + 2 C_4 C_L L_L s^2 + 2 C_4 + C_L)}$$

$$10.188 \quad \text{INVALID-ORDER-188} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, L_4 s + \frac{1}{C_4 s}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$$

$$H(s) = \frac{L_L s (C_4 L_4 s^2 + 1)}{C_4 C_L L_4 L_L s^4 + C_4 L_4 s^2 + 2 C_4 L_L s^2 + C_L L_L s^2 + 1}$$

$$10.189 \quad \text{INVALID-ORDER-189} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, L_4 s + \frac{1}{C_4 s}, \infty, L_L s + R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{(C_4 L_4 s^2 + 1) (C_L L_L s^2 + C_L R_L s + 1)}{s (C_4 C_L L_4 s^2 + 2 C_4 C_L L_L s^2 + 2 C_4 C_L R_L s + 2 C_4 + C_L)}$$

**10.190 INVALID-ORDER-190**  $Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, L_4 s + \frac{1}{C_4 s}, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$

$$H(s) = \frac{L_L R_L s (C_4 L_4 s^2 + 1)}{C_4 C_L L_4 L_L R_L s^4 + C_4 L_4 L_L s^3 + C_4 L_4 R_L s^2 + 2 C_4 L_L R_L s^2 + C_L L_L R_L s^2 + L_L s + R_L}$$

**10.191 INVALID-ORDER-191**  $Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, L_4 s + \frac{1}{C_4 s}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$

$$H(s) = \frac{(C_4 L_4 s^2 + 1) (C_L L_L R_L s^2 + L_L s + R_L)}{C_4 C_L L_4 L_L s^4 + 2 C_4 C_L L_L R_L s^3 + C_4 L_4 s^2 + 2 C_4 L_L s^2 + 2 C_4 R_L s + C_L L_L s^2 + 1}$$

**10.192 INVALID-ORDER-192**  $Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, L_4 s + \frac{1}{C_4 s}, \infty, \frac{R_L (L_L s + \frac{1}{C_L s})}{L_L s + R_L + \frac{1}{C_L s}} \right)$

$$H(s) = \frac{R_L (C_4 L_4 s^2 + 1) (C_L L_L s^2 + 1)}{C_4 C_L L_4 L_L s^4 + C_4 C_L L_4 R_L s^3 + 2 C_4 C_L L_L R_L s^3 + C_4 L_4 s^2 + 2 C_4 R_L s + C_L L_L s^2 + C_L R_L s + 1}$$

**10.193 INVALID-ORDER-193**  $Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, \frac{1}{C_L s} \right)$

$$H(s) = \frac{L_4 s}{2 C_4 L_4 s^2 + C_L L_4 s^2 + 2}$$

**10.194 INVALID-ORDER-194**  $Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, R_L + \frac{1}{C_L s} \right)$

$$H(s) = \frac{L_4 s (C_L R_L s + 1)}{2 C_4 C_L L_4 R_L s^3 + 2 C_4 L_4 s^2 + C_L L_4 s^2 + 2 C_L R_L s + 2}$$

**10.195 INVALID-ORDER-195**  $Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, L_L s + \frac{1}{C_L s} \right)$

$$H(s) = \frac{L_4 s (C_L L_L s^2 + 1)}{2 C_4 C_L L_4 L_L s^4 + 2 C_4 L_4 s^2 + C_L L_4 s^2 + 2 C_L L_L s^2 + 2}$$

**10.196 INVALID-ORDER-196**  $Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$

$$H(s) = \frac{L_4 L_L s}{2 C_4 L_4 L_L s^2 + C_L L_4 L_L s^2 + L_4 + 2 L_L}$$

**10.197 INVALID-ORDER-197**  $Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, L_L s + R_L + \frac{1}{C_L s} \right)$

$$H(s) = \frac{L_4 s (C_L L_L s^2 + C_L R_L s + 1)}{2 C_4 C_L L_4 L_L s^4 + 2 C_4 C_L L_4 R_L s^3 + 2 C_4 L_4 s^2 + C_L L_4 s^2 + 2 C_L L_L s^2 + 2 C_L R_L s + 2}$$

**10.198 INVALID-ORDER-198**  $Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$

$$H(s) = \frac{L_4 s (C_L L_L R_L s^2 + L_L s + R_L)}{2 C_4 C_L L_4 L_L R_L s^4 + 2 C_4 L_4 L_L s^3 + 2 C_4 L_4 R_L s^2 + C_L L_4 L_L s^3 + 2 C_L L_L R_L s^2 + L_4 s + 2 L_L s + 2 R_L}$$

$$10.199 \quad \text{INVALID-ORDER-199} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, \frac{R_L (L_L s + \frac{1}{C_L s})}{L_L s + R_L + \frac{1}{C_L s}} \right)$$

$$H(s) = \frac{L_4 R_L s (C_L L_L s^2 + 1)}{2 C_4 C_L L_4 L_L R_L s^4 + 2 C_4 L_4 R_L s^2 + C_L L_4 L_L s^3 + C_L L_4 R_L s^2 + 2 C_L L_L R_L s^2 + L_4 s + 2 R_L}$$

$$10.200 \quad \text{INVALID-ORDER-200} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, \frac{1}{C_L s} \right)$$

$$H(s) = \frac{C_4 L_4 s^2 + C_4 R_4 s + 1}{s (C_4 C_L L_4 s^2 + C_4 C_L R_4 s + 2 C_4 + C_L)}$$

$$10.201 \quad \text{INVALID-ORDER-201} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, \frac{R_L}{C_L R_L s + 1} \right)$$

$$H(s) = \frac{R_L (C_4 L_4 s^2 + C_4 R_4 s + 1)}{C_4 C_L L_4 R_L s^3 + C_4 C_L R_4 R_L s^2 + C_4 L_4 s^2 + C_4 R_4 s + 2 C_4 R_L s + C_L R_L s + 1}$$

$$10.202 \quad \text{INVALID-ORDER-202} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{(C_L R_L s + 1) (C_4 L_4 s^2 + C_4 R_4 s + 1)}{s (C_4 C_L L_4 s^2 + C_4 C_L R_4 s + 2 C_4 C_L R_L s + 2 C_4 + C_L)}$$

$$10.203 \quad \text{INVALID-ORDER-203} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, L_L s + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{(C_L L_L s^2 + 1) (C_4 L_4 s^2 + C_4 R_4 s + 1)}{s (C_4 C_L L_4 s^2 + 2 C_4 C_L L_L s^2 + C_4 C_L R_4 s + 2 C_4 + C_L)}$$

$$10.204 \quad \text{INVALID-ORDER-204} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$$

$$H(s) = \frac{L_L s (C_4 L_4 s^2 + C_4 R_4 s + 1)}{C_4 C_L L_4 L_L s^4 + C_4 C_L L_L R_4 s^3 + C_4 L_4 s^2 + 2 C_4 L_L s^2 + C_4 R_4 s + C_L L_L s^2 + 1}$$

$$10.205 \quad \text{INVALID-ORDER-205} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, L_L s + R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{(C_4 L_4 s^2 + C_4 R_4 s + 1) (C_L L_L s^2 + C_L R_L s + 1)}{s (C_4 C_L L_4 s^2 + 2 C_4 C_L L_L s^2 + C_4 C_L R_4 s + 2 C_4 C_L R_L s + 2 C_4 + C_L)}$$

$$10.206 \quad \text{INVALID-ORDER-206} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$$

$$H(s) = \frac{L_L R_L s (C_4 L_4 s^2 + C_4 R_4 s + 1)}{C_4 C_L L_4 L_L R_L s^4 + C_4 C_L L_L R_4 R_L s^3 + C_4 L_4 L_L s^3 + C_4 L_4 R_L s^2 + C_4 L_L R_4 s^2 + 2 C_4 L_L R_L s^2 + C_4 R_4 R_L s + C_L L_L R_L s^2 + L_L s + R_L}$$



$$10.207 \quad \text{INVALID-ORDER-207} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$$

$$H(s) = \frac{(C_4 L_4 s^2 + C_4 R_4 s + 1) (C_L L_L R_L s^2 + L_L s + R_L)}{C_4 C_L L_4 L_L s^4 + C_4 C_L L_L R_4 s^3 + 2C_4 C_L L_L R_L s^3 + C_4 L_4 s^2 + 2C_4 L_L s^2 + C_4 R_4 s + 2C_4 R_L s + C_L L_L s^2 + 1}$$

$$10.208 \quad \text{INVALID-ORDER-208} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, \frac{R_L (L_L s + \frac{1}{C_L s})}{L_L s + R_L + \frac{1}{C_L s}} \right)$$

$$H(s) = \frac{R_L (C_L L_L s^2 + 1) (C_4 L_4 s^2 + C_4 R_4 s + 1)}{C_4 C_L L_4 L_L s^4 + C_4 C_L L_4 R_L s^3 + C_4 C_L L_L R_4 s^3 + 2C_4 C_L L_L R_L s^3 + C_4 C_L R_4 R_L s^2 + C_4 L_4 s^2 + C_4 R_4 s + 2C_4 R_L s + C_L L_L s^2 + C_L R_L s + 1}$$

$$10.209 \quad \text{INVALID-ORDER-209} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{L_4 R_4 s (C_L R_L s + 1)}{2C_4 C_L L_4 R_4 R_L s^3 + 2C_4 L_4 R_4 s^2 + C_L L_4 R_4 s^2 + 2C_L L_4 R_L s^2 + 2C_L R_4 R_L s + 2L_4 s + 2R_4}$$

$$10.210 \quad \text{INVALID-ORDER-210} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, L_L s + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{L_4 R_4 s (C_L L_L s^2 + 1)}{2C_4 C_L L_4 L_L R_4 s^4 + 2C_4 L_4 R_4 s^2 + 2C_L L_4 L_L s^3 + C_L L_4 R_4 s^2 + 2C_L L_L R_4 s^2 + 2L_4 s + 2R_4}$$

$$10.211 \quad \text{INVALID-ORDER-211} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, L_L s + R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{L_4 R_4 s (C_L L_L s^2 + C_L R_L s + 1)}{2C_4 C_L L_4 L_L R_4 s^4 + 2C_4 C_L L_4 R_4 R_L s^3 + 2C_4 L_4 R_4 s^2 + 2C_L L_4 L_L s^3 + C_L L_4 R_4 s^2 + 2C_L L_4 R_L s^2 + 2C_L L_L R_4 s^2 + 2C_L R_4 R_L s + 2L_4 s + 2R_4}$$

$$10.212 \quad \text{INVALID-ORDER-212} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$$

$$H(s) = \frac{L_4 R_4 s (C_L L_L R_L s^2 + L_L s + R_L)}{2C_4 C_L L_4 L_L R_4 R_L s^4 + 2C_4 L_4 L_L R_4 s^3 + 2C_4 L_4 R_4 R_L s^2 + C_L L_4 L_L R_4 s^3 + 2C_L L_4 L_L R_L s^3 + 2C_L L_L R_4 R_L s^2 + 2L_4 L_L s^2 + L_4 R_4 s + 2L_4 R_L s + 2L_L R_4 s + 2R_4 R_L}$$

$$10.213 \quad \text{INVALID-ORDER-213} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, \frac{R_L (L_L s + \frac{1}{C_L s})}{L_L s + R_L + \frac{1}{C_L s}} \right)$$

$$H(s) = \frac{L_4 R_4 R_L s (C_L L_L s^2 + 1)}{2C_4 C_L L_4 L_L R_4 R_L s^4 + 2C_4 L_4 R_4 R_L s^2 + C_L L_4 L_L R_4 s^3 + 2C_L L_4 L_L R_L s^3 + C_L L_4 R_4 R_L s^2 + 2C_L L_L R_4 R_L s^2 + L_4 R_4 s + 2L_4 R_L s + 2R_4 R_L}$$

$$10.214 \quad \text{INVALID-ORDER-214} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \infty, \frac{1}{C_L s} \right)$$

$$H(s) = \frac{C_4 L_4 R_4 s^2 + L_4 s + R_4}{C_4 C_L L_4 R_4 s^3 + 2C_4 L_4 s^2 + C_L L_4 s^2 + C_L R_4 s + 2}$$

$$10.215 \quad \text{INVALID-ORDER-215} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \infty, \frac{R_L}{C_L R_L s + 1} \right)$$

$$H(s) = \frac{R_L (C_4 L_4 R_4 s^2 + L_4 s + R_4)}{C_4 C_L L_4 R_4 R_L s^3 + C_4 L_4 R_4 s^2 + 2C_4 L_4 R_L s^2 + C_L L_4 R_L s^2 + C_L R_4 R_L s + L_4 s + R_4 + 2R_L}$$

$$10.216 \quad \text{INVALID-ORDER-216} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \infty, R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{(C_L R_L s + 1) (C_4 L_4 R_4 s^2 + L_4 s + R_4)}{C_4 C_L L_4 R_4 s^3 + 2C_4 C_L L_4 R_L s^3 + 2C_4 L_4 s^2 + C_L L_4 s^2 + C_L R_4 s + 2C_L R_L s + 2}$$

$$10.217 \quad \text{INVALID-ORDER-217} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \infty, L_L s + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{(C_L L_L s^2 + 1) (C_4 L_4 R_4 s^2 + L_4 s + R_4)}{2C_4 C_L L_4 L_L s^4 + C_4 C_L L_4 R_4 s^3 + 2C_4 L_4 s^2 + C_L L_4 s^2 + 2C_L L_L s^2 + C_L R_4 s + 2}$$

$$10.218 \quad \text{INVALID-ORDER-218} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$$

$$H(s) = \frac{L_L s (C_4 L_4 R_4 s^2 + L_4 s + R_4)}{C_4 C_L L_4 L_L R_4 s^4 + 2C_4 L_4 L_L s^3 + C_4 L_4 R_4 s^2 + C_L L_4 L_L s^3 + C_L L_L R_4 s^2 + L_4 s + 2L_L s + R_4}$$

$$10.219 \quad \text{INVALID-ORDER-219} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \infty, L_L s + R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{(C_L L_L s^2 + C_L R_L s + 1) (C_4 L_4 R_4 s^2 + L_4 s + R_4)}{2C_4 C_L L_4 L_L s^4 + C_4 C_L L_4 R_4 s^3 + 2C_4 C_L L_4 R_L s^3 + 2C_4 L_4 s^2 + C_L L_4 s^2 + 2C_L L_L s^2 + C_L R_4 s + 2C_L R_L s + 2}$$

$$10.220 \quad \text{INVALID-ORDER-220} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$$

$$H(s) = \frac{L_L R_L s (C_4 L_4 R_4 s^2 + L_4 s + R_4)}{C_4 C_L L_4 L_L R_4 R_L s^4 + C_4 L_4 L_L R_4 s^3 + 2C_4 L_4 L_L R_L s^3 + C_4 L_4 R_4 R_L s^2 + C_L L_4 L_L R_L s^3 + C_L L_L R_4 R_L s^2 + L_4 L_L s^2 + L_4 R_L s + L_L R_4 s + 2L_L R_L s + R_4 R_L}$$

$$10.221 \quad \text{INVALID-ORDER-221} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$$

$$H(s) = \frac{(C_4 L_4 R_4 s^2 + L_4 s + R_4) (C_L L_L R_L s^2 + L_L s + R_L)}{C_4 C_L L_4 L_L R_4 s^4 + 2C_4 C_L L_4 L_L R_L s^4 + 2C_4 L_4 L_L s^3 + C_4 L_4 R_4 s^2 + 2C_4 L_4 R_L s^2 + C_L L_4 L_L s^3 + C_L L_L R_4 s^2 + 2C_L L_L R_L s^2 + L_4 s + 2L_L s + R_4 + 2R_L}$$

$$10.222 \quad \text{INVALID-ORDER-222} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \infty, \frac{R_L (L_L s + \frac{1}{C_L s})}{L_L s + R_L + \frac{1}{C_L s}} \right)$$

$$H(s) = \frac{R_L (C_L L_L s^2 + 1) (C_4 L_4 R_4 s^2 + L_4 s + R_4)}{C_4 C_L L_4 L_L R_4 s^4 + 2C_4 C_L L_4 L_L R_L s^4 + C_4 C_L L_4 R_4 R_L s^3 + C_4 L_4 R_4 s^2 + 2C_4 L_4 R_L s^2 + C_L L_4 L_L s^3 + C_L L_4 R_L s^2 + C_L L_L R_4 s^2 + 2C_L L_L R_L s^2 + C_L R_4 R_L s + L_4 s + R_4 + 2R_L}$$

$$10.223 \quad \text{INVALID-ORDER-223} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{R_4 \left( L_4 s + \frac{1}{C_4 s} \right)}{L_4 s + R_4 + \frac{1}{C_4 s}}, \infty, \frac{1}{C_L s} \right)$$

$$H(s) = \frac{R_4 (C_4 L_4 s^2 + 1)}{C_4 C_L L_4 R_4 s^3 + 2C_4 L_4 s^2 + 2C_4 R_4 s + C_L R_4 s + 2}$$

$$10.224 \quad \text{INVALID-ORDER-224} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{R_4 \left( L_4 s + \frac{1}{C_4 s} \right)}{L_4 s + R_4 + \frac{1}{C_4 s}}, \infty, \frac{R_L}{C_L R_L s + 1} \right)$$

$$H(s) = \frac{R_4 R_L (C_4 L_4 s^2 + 1)}{C_4 C_L L_4 R_4 R_L s^3 + C_4 L_4 R_4 s^2 + 2C_4 L_4 R_L s^2 + 2C_4 R_4 R_L s + C_L R_4 R_L s + R_4 + 2R_L}$$

$$10.225 \quad \text{INVALID-ORDER-225} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{R_4 \left( L_4 s + \frac{1}{C_4 s} \right)}{L_4 s + R_4 + \frac{1}{C_4 s}}, \infty, R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{R_4 (C_4 L_4 s^2 + 1) (C_L R_L s + 1)}{C_4 C_L L_4 R_4 s^3 + 2C_4 C_L L_4 R_L s^3 + 2C_4 C_L R_4 R_L s^2 + 2C_4 L_4 s^2 + 2C_4 R_4 s + C_L R_4 s + 2C_L R_L s + 2}$$

$$10.226 \quad \text{INVALID-ORDER-226} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{R_4 \left( L_4 s + \frac{1}{C_4 s} \right)}{L_4 s + R_4 + \frac{1}{C_4 s}}, \infty, L_L s + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{R_4 (C_4 L_4 s^2 + 1) (C_L L_L s^2 + 1)}{2C_4 C_L L_4 L_L s^4 + C_4 C_L L_4 R_4 s^3 + 2C_4 C_L L_L R_4 s^3 + 2C_4 L_4 s^2 + 2C_4 R_4 s + 2C_L L_L s^2 + C_L R_4 s + 2}$$

$$10.227 \quad \text{INVALID-ORDER-227} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{R_4 \left( L_4 s + \frac{1}{C_4 s} \right)}{L_4 s + R_4 + \frac{1}{C_4 s}}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$$

$$H(s) = \frac{L_L R_4 s (C_4 L_4 s^2 + 1)}{C_4 C_L L_4 L_L R_4 s^4 + 2C_4 L_4 L_L s^3 + C_4 L_4 R_4 s^2 + 2C_4 L_L R_4 s^2 + C_L L_L R_4 s^2 + 2L_L s + R_4}$$

$$10.228 \quad \text{INVALID-ORDER-228} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{R_4 \left( L_4 s + \frac{1}{C_4 s} \right)}{L_4 s + R_4 + \frac{1}{C_4 s}}, \infty, L_L s + R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{R_4 (C_4 L_4 s^2 + 1) (C_L L_L s^2 + C_L R_L s + 1)}{2C_4 C_L L_4 L_L s^4 + C_4 C_L L_4 R_4 s^3 + 2C_4 C_L L_4 R_L s^3 + 2C_4 C_L L_L R_4 s^3 + 2C_4 C_L R_4 R_L s^2 + 2C_4 L_4 s^2 + 2C_4 R_4 s + 2C_L L_L s^2 + C_L R_4 s + 2C_L R_L s + 2}$$

$$10.229 \quad \text{INVALID-ORDER-229} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{R_4 \left( L_4 s + \frac{1}{C_4 s} \right)}{L_4 s + R_4 + \frac{1}{C_4 s}}, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$$

$$H(s) = \frac{L_L R_4 R_L s (C_4 L_4 s^2 + 1)}{C_4 C_L L_4 L_L R_4 R_L s^4 + C_4 L_4 L_L R_4 s^3 + 2C_4 L_4 L_L R_L s^3 + C_4 L_4 R_4 R_L s^2 + 2C_4 L_L R_4 R_L s^2 + C_L L_L R_4 R_L s^2 + L_L R_4 s + 2L_L R_L s + R_4 R_L}$$

$$10.230 \quad \text{INVALID-ORDER-230} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{R_4 \left( L_4 s + \frac{1}{C_4 s} \right)}{L_4 s + R_4 + \frac{1}{C_4 s}}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$$

$$H(s) = \frac{R_4 (C_4 L_4 s^2 + 1) (C_L L_L R_L s^2 + L_L s + R_L)}{C_4 C_L L_4 L_L R_4 s^4 + 2C_4 C_L L_4 L_L R_L s^4 + 2C_4 C_L L_L R_4 R_L s^3 + 2C_4 L_4 L_L s^3 + C_4 L_4 R_4 s^2 + 2C_4 L_4 R_L s^2 + 2C_4 L_L R_4 s^2 + 2C_4 R_4 R_L s + C_L L_L R_4 s^2 + 2C_L L_L R_L s^2 + 2L_L s + R_4 + 2R_L}$$

$$10.231 \quad \text{INVALID-ORDER-231} \quad Z(s) = \left( \infty, \frac{R_2}{C_2 R_2 s + 1}, \infty, \frac{R_4 \left( L_4 s + \frac{1}{C_4 s} \right)}{L_4 s + R_4 + \frac{1}{C_4 s}}, \infty, \frac{R_L \left( L_L s + \frac{1}{C_L s} \right)}{L_L s + R_L + \frac{1}{C_L s}} \right)$$

$$H(s) = \frac{R_4 R_L (C_4 L_4 s^2 + 1) (C_L L_L s^2 + 1)}{C_4 C_L L_4 L_L R_4 s^4 + 2C_4 C_L L_4 L_L R_L s^4 + C_4 C_L L_4 R_4 R_L s^3 + 2C_4 C_L L_L R_4 R_L s^3 + C_4 L_4 R_4 s^2 + 2C_4 L_4 R_L s^2 + 2C_4 R_4 R_L s + C_L L_L R_4 s^2 + 2C_L L_L R_L s^2 + C_L R_4 R_L s + R_4 + 2R_L}$$

$$10.232 \quad \text{INVALID-ORDER-232} \quad Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, R_4, \infty, R_L \right)$$

$$H(s) = \frac{R_4 R_L}{R_4 + 2R_L}$$

$$10.233 \quad \text{INVALID-ORDER-233} \quad Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, R_4, \infty, \frac{1}{C_L s} \right)$$

$$H(s) = \frac{R_4}{C_L R_4 s + 2}$$

$$10.234 \quad \text{INVALID-ORDER-234} \quad Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, R_4, \infty, \frac{R_L}{C_L R_L s + 1} \right)$$

$$H(s) = \frac{R_4 R_L}{C_L R_4 R_L s + R_4 + 2R_L}$$

$$10.235 \quad \text{INVALID-ORDER-235} \quad Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, R_4, \infty, R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{R_4 (C_L R_L s + 1)}{C_L R_4 s + 2C_L R_L s + 2}$$

$$10.236 \quad \text{INVALID-ORDER-236} \quad Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, \frac{1}{C_4 s}, \infty, R_L \right)$$

$$H(s) = \frac{R_L}{2C_4 R_L s + 1}$$

$$10.237 \quad \text{INVALID-ORDER-237} \quad Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, \frac{1}{C_4 s}, \infty, \frac{1}{C_L s} \right)$$

$$H(s) = \frac{1}{s(2C_4 + C_L)}$$

$$10.238 \quad \text{INVALID-ORDER-238} \quad Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, \frac{1}{C_4 s}, \infty, \frac{R_L}{C_L R_L s + 1} \right)$$

$$H(s) = \frac{R_L}{2C_4 R_L s + C_L R_L s + 1}$$

$$10.239 \quad \text{INVALID-ORDER-239} \quad Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, \frac{1}{C_4 s}, \infty, R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{C_L R_L s + 1}{s(2C_4 C_L R_L s + 2C_4 + C_L)}$$

$$10.240 \quad \text{INVALID-ORDER-240} \quad Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, \frac{1}{C_4 s}, \infty, L_L s + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{C_L L_L s^2 + 1}{s(2C_4 C_L L_L s^2 + 2C_4 + C_L)}$$

$$10.241 \quad \text{INVALID-ORDER-241} \quad Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, \frac{1}{C_4 s}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$$

$$H(s) = \frac{L_L s}{2C_4 L_L s^2 + C_L L_L s^2 + 1}$$

$$10.242 \quad \text{INVALID-ORDER-242} \quad Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, \frac{1}{C_4 s}, \infty, L_L s + R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{C_L L_L s^2 + C_L R_L s + 1}{s(2C_4 C_L L_L s^2 + 2C_4 C_L R_L s + 2C_4 + C_L)}$$

$$10.243 \quad \text{INVALID-ORDER-243} \quad Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, \frac{1}{C_4 s}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$$

$$H(s) = \frac{C_L L_L R_L s^2 + L_L s + R_L}{2C_4 C_L L_L R_L s^3 + 2C_4 L_L s^2 + 2C_4 R_L s + C_L L_L s^2 + 1}$$

$$10.244 \quad \text{INVALID-ORDER-244} \quad Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, \frac{1}{C_4 s}, \infty, \frac{R_L \left( L_L s + \frac{1}{C_L s} \right)}{L_L s + R_L + \frac{1}{C_L s}} \right)$$

$$H(s) = \frac{R_L (C_L L_L s^2 + 1)}{2C_4 C_L L_L R_L s^3 + 2C_4 R_L s + C_L L_L s^2 + C_L R_L s + 1}$$

$$10.245 \quad \text{INVALID-ORDER-245} \quad Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, R_L \right)$$

$$H(s) = \frac{R_4 R_L}{2C_4 R_4 R_L s + R_4 + 2R_L}$$

$$10.246 \quad \text{INVALID-ORDER-246} \quad Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, \frac{1}{C_L s} \right)$$

$$H(s) = \frac{R_4}{2C_4 R_4 s + C_L R_4 s + 2}$$

$$10.247 \quad \text{INVALID-ORDER-247} \quad Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, \frac{R_L}{C_L R_L s + 1} \right)$$

$$H(s) = \frac{R_4 R_L}{2C_4 R_4 R_L s + C_L R_4 R_L s + R_4 + 2R_L}$$

$$10.248 \quad \text{INVALID-ORDER-248} \quad Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, L_L s + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{R_4 (C_L L_L s^2 + 1)}{2C_4 C_L L_L R_4 s^3 + 2C_4 R_4 s + 2C_L L_L s^2 + C_L R_4 s + 2}$$

$$10.249 \quad \text{INVALID-ORDER-249} \quad Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, L_L s + R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{R_4 (C_L L_L s^2 + C_L R_L s + 1)}{2C_4 C_L L_L R_4 s^3 + 2C_4 C_L R_4 R_L s^2 + 2C_4 R_4 s + 2C_L L_L s^2 + C_L R_4 s + 2C_L R_L s + 2}$$

$$10.250 \quad \text{INVALID-ORDER-250} \quad Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$$

$$H(s) = \frac{R_4 (C_L L_L R_L s^2 + L_L s + R_L)}{2C_4 C_L L_L R_4 R_L s^3 + 2C_4 L_L R_4 s^2 + 2C_4 R_4 R_L s + C_L L_L R_4 s^2 + 2C_L L_L R_L s^2 + 2L_L s + R_4 + 2R_L}$$

$$10.251 \quad \text{INVALID-ORDER-251} \quad Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, \frac{R_L (L_L s + \frac{1}{C_L s})}{L_L s + R_L + \frac{1}{C_L s}} \right)$$

$$H(s) = \frac{R_4 R_L (C_L L_L s^2 + 1)}{2C_4 C_L L_L R_4 R_L s^3 + 2C_4 R_4 R_L s + C_L L_L R_4 s^2 + 2C_L L_L R_L s^2 + C_L R_4 R_L s + R_4 + 2R_L}$$

$$10.252 \quad \text{INVALID-ORDER-252} \quad Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, R_4 + \frac{1}{C_4 s}, \infty, R_L \right)$$

$$H(s) = \frac{R_L (C_4 R_4 s + 1)}{C_4 R_4 s + 2C_4 R_L s + 1}$$

$$10.253 \quad \text{INVALID-ORDER-253} \quad Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, R_4 + \frac{1}{C_4 s}, \infty, \frac{1}{C_L s} \right)$$

$$H(s) = \frac{C_4 R_4 s + 1}{s (C_4 C_L R_4 s + 2C_4 + C_L)}$$

$$10.254 \quad \text{INVALID-ORDER-254} \quad Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, R_4 + \frac{1}{C_4 s}, \infty, R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{(C_4 R_4 s + 1) (C_L R_L s + 1)}{s (C_4 C_L R_4 s + 2C_4 C_L R_L s + 2C_4 + C_L)}$$

$$10.255 \quad \text{INVALID-ORDER-255} \quad Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, R_4 + \frac{1}{C_4 s}, \infty, L_L s + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{(C_4 R_4 s + 1) (C_L L_L s^2 + 1)}{s (2C_4 C_L L_L s^2 + C_4 C_L R_4 s + 2C_4 + C_L)}$$

$$10.256 \quad \text{INVALID-ORDER-256} \quad Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, R_4 + \frac{1}{C_4 s}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$$

$$H(s) = \frac{L_L s (C_4 R_4 s + 1)}{C_4 C_L L_L R_4 s^3 + 2C_4 L_L s^2 + C_4 R_4 s + C_L L_L s^2 + 1}$$

$$10.257 \quad \text{INVALID-ORDER-257} \quad Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, R_4 + \frac{1}{C_4 s}, \infty, L_L s + R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{(C_4 R_4 s + 1) (C_L L_L s^2 + C_L R_L s + 1)}{s (2C_4 C_L L_L s^2 + C_4 C_L R_4 s + 2C_4 C_L R_L s + 2C_4 + C_L)}$$

**10.258 INVALID-ORDER-258**  $Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, R_4 + \frac{1}{C_4 s}, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$

$$H(s) = \frac{L_L R_L s (C_4 R_4 s + 1)}{C_4 C_L L_L R_4 R_L s^3 + C_4 L_L R_4 s^2 + 2 C_4 L_L R_L s^2 + C_4 R_4 R_L s + C_L L_L R_L s^2 + L_L s + R_L}$$

**10.259 INVALID-ORDER-259**  $Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, R_4 + \frac{1}{C_4 s}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$

$$H(s) = \frac{(C_4 R_4 s + 1) (C_L L_L R_L s^2 + L_L s + R_L)}{C_4 C_L L_L R_4 s^3 + 2 C_4 C_L L_L R_L s^3 + 2 C_4 L_L s^2 + C_4 R_4 s + 2 C_4 R_L s + C_L L_L s^2 + 1}$$

**10.260 INVALID-ORDER-260**  $Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, R_4 + \frac{1}{C_4 s}, \infty, \frac{R_L (L_L s + \frac{1}{C_L s})}{L_L s + R_L + \frac{1}{C_L s}} \right)$

$$H(s) = \frac{R_L (C_4 R_4 s + 1) (C_L L_L s^2 + 1)}{C_4 C_L L_L R_4 s^3 + 2 C_4 C_L L_L R_L s^3 + C_4 C_L R_4 R_L s^2 + C_4 R_4 s + 2 C_4 R_L s + C_L L_L s^2 + C_L R_L s + 1}$$

**10.261 INVALID-ORDER-261**  $Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, L_4 s + \frac{1}{C_4 s}, \infty, \frac{1}{C_L s} \right)$

$$H(s) = \frac{C_4 L_4 s^2 + 1}{s (C_4 C_L L_4 s^2 + 2 C_4 + C_L)}$$

**10.262 INVALID-ORDER-262**  $Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, L_4 s + \frac{1}{C_4 s}, \infty, \frac{R_L}{C_L R_L s + 1} \right)$

$$H(s) = \frac{R_L (C_4 L_4 s^2 + 1)}{C_4 C_L L_4 R_L s^3 + C_4 L_4 s^2 + 2 C_4 R_L s + C_L R_L s + 1}$$

**10.263 INVALID-ORDER-263**  $Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, L_4 s + \frac{1}{C_4 s}, \infty, R_L + \frac{1}{C_L s} \right)$

$$H(s) = \frac{(C_4 L_4 s^2 + 1) (C_L R_L s + 1)}{s (C_4 C_L L_4 s^2 + 2 C_4 C_L R_L s + 2 C_4 + C_L)}$$

**10.264 INVALID-ORDER-264**  $Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, L_4 s + \frac{1}{C_4 s}, \infty, L_L s + \frac{1}{C_L s} \right)$

$$H(s) = \frac{(C_4 L_4 s^2 + 1) (C_L L_L s^2 + 1)}{s (C_4 C_L L_4 s^2 + 2 C_4 C_L L_L s^2 + 2 C_4 + C_L)}$$

**10.265 INVALID-ORDER-265**  $Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, L_4 s + \frac{1}{C_4 s}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$

$$H(s) = \frac{L_L s (C_4 L_4 s^2 + 1)}{C_4 C_L L_4 L_L s^4 + C_4 L_4 s^2 + 2 C_4 L_L s^2 + C_L L_L s^2 + 1}$$

**10.266 INVALID-ORDER-266**  $Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, L_4 s + \frac{1}{C_4 s}, \infty, L_L s + R_L + \frac{1}{C_L s} \right)$

$$H(s) = \frac{(C_4 L_4 s^2 + 1)(C_L L_L s^2 + C_L R_L s + 1)}{s(C_4 C_L L_4 s^2 + 2C_4 C_L L_L s^2 + 2C_4 C_L R_L s + 2C_4 + C_L)}$$

**10.267 INVALID-ORDER-267**  $Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, L_4 s + \frac{1}{C_4 s}, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$

$$H(s) = \frac{L_L R_L s (C_4 L_4 s^2 + 1)}{C_4 C_L L_4 L_L R_L s^4 + C_4 L_4 L_L s^3 + C_4 L_4 R_L s^2 + 2C_4 L_L R_L s^2 + C_L L_L R_L s^2 + L_L s + R_L}$$

**10.268 INVALID-ORDER-268**  $Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, L_4 s + \frac{1}{C_4 s}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$

$$H(s) = \frac{(C_4 L_4 s^2 + 1)(C_L L_L R_L s^2 + L_L s + R_L)}{C_4 C_L L_4 L_L s^4 + 2C_4 C_L L_L R_L s^3 + C_4 L_4 s^2 + 2C_4 L_L s^2 + 2C_4 R_L s + C_L L_L s^2 + 1}$$

**10.269 INVALID-ORDER-269**  $Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, L_4 s + \frac{1}{C_4 s}, \infty, \frac{R_L (L_L s + \frac{1}{C_L s})}{L_L s + R_L + \frac{1}{C_L s}} \right)$

$$H(s) = \frac{R_L (C_4 L_4 s^2 + 1)(C_L L_L s^2 + 1)}{C_4 C_L L_4 L_L s^4 + C_4 C_L L_4 R_L s^3 + 2C_4 C_L L_L R_L s^3 + C_4 L_4 s^2 + 2C_4 R_L s + C_L L_L s^2 + C_L R_L s + 1}$$

**10.270 INVALID-ORDER-270**  $Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, \frac{1}{C_L s} \right)$

$$H(s) = \frac{L_4 s}{2C_4 L_4 s^2 + C_L L_4 s^2 + 2}$$

**10.271 INVALID-ORDER-271**  $Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, R_L + \frac{1}{C_L s} \right)$

$$H(s) = \frac{L_4 s (C_L R_L s + 1)}{2C_4 C_L L_4 R_L s^3 + 2C_4 L_4 s^2 + C_L L_4 s^2 + 2C_L R_L s + 2}$$

**10.272 INVALID-ORDER-272**  $Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, L_L s + \frac{1}{C_L s} \right)$

$$H(s) = \frac{L_4 s (C_L L_L s^2 + 1)}{2C_4 C_L L_4 L_L s^4 + 2C_4 L_4 s^2 + C_L L_4 s^2 + 2C_L L_L s^2 + 2}$$

**10.273 INVALID-ORDER-273**  $Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$

$$H(s) = \frac{L_4 L_L s}{2C_4 L_4 L_L s^2 + C_L L_4 L_L s^2 + L_4 + 2L_L}$$



$$10.274 \quad \text{INVALID-ORDER-274} \quad Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, L_L s + R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{L_4 s (C_L L_L s^2 + C_L R_L s + 1)}{2C_4 C_L L_4 L_L s^4 + 2C_4 C_L L_4 R_L s^3 + 2C_4 L_4 s^2 + C_L L_4 s^2 + 2C_L L_L s^2 + 2C_L R_L s + 2}$$

$$10.275 \quad \text{INVALID-ORDER-275} \quad Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$$

$$H(s) = \frac{L_4 s (C_L L_L R_L s^2 + L_L s + R_L)}{2C_4 C_L L_4 L_L R_L s^4 + 2C_4 L_4 L_L s^3 + 2C_4 L_4 R_L s^2 + C_L L_4 L_L s^3 + 2C_L L_L R_L s^2 + L_4 s + 2L_L s + 2R_L}$$

$$10.276 \quad \text{INVALID-ORDER-276} \quad Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, \frac{R_L (L_L s + \frac{1}{C_L s})}{L_L s + R_L + \frac{1}{C_L s}} \right)$$

$$H(s) = \frac{L_4 R_L s (C_L L_L s^2 + 1)}{2C_4 C_L L_4 L_L R_L s^4 + 2C_4 L_4 R_L s^2 + C_L L_4 L_L s^3 + C_L L_4 R_L s^2 + 2C_L L_L R_L s^2 + L_4 s + 2R_L}$$

$$10.277 \quad \text{INVALID-ORDER-277} \quad Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, \frac{1}{C_L s} \right)$$

$$H(s) = \frac{C_4 L_4 s^2 + C_4 R_4 s + 1}{s (C_4 C_L L_4 s^2 + C_4 C_L R_4 s + 2C_4 + C_L)}$$

$$10.278 \quad \text{INVALID-ORDER-278} \quad Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, \frac{R_L}{C_L R_L s + 1} \right)$$

$$H(s) = \frac{R_L (C_4 L_4 s^2 + C_4 R_4 s + 1)}{C_4 C_L L_4 R_L s^3 + C_4 C_L R_4 R_L s^2 + C_4 L_4 s^2 + C_4 R_4 s + 2C_4 R_L s + C_L R_L s + 1}$$

$$10.279 \quad \text{INVALID-ORDER-279} \quad Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{(C_L R_L s + 1) (C_4 L_4 s^2 + C_4 R_4 s + 1)}{s (C_4 C_L L_4 s^2 + C_4 C_L R_4 s + 2C_4 C_L R_L s + 2C_4 + C_L)}$$

$$10.280 \quad \text{INVALID-ORDER-280} \quad Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, L_L s + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{(C_L L_L s^2 + 1) (C_4 L_4 s^2 + C_4 R_4 s + 1)}{s (C_4 C_L L_4 s^2 + 2C_4 C_L L_L s^2 + C_4 C_L R_4 s + 2C_4 + C_L)}$$

$$10.281 \quad \text{INVALID-ORDER-281} \quad Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$$

$$H(s) = \frac{L_L s (C_4 L_4 s^2 + C_4 R_4 s + 1)}{C_4 C_L L_4 L_L s^4 + C_4 C_L L_L R_4 s^3 + C_4 L_4 s^2 + 2C_4 L_L s^2 + C_4 R_4 s + C_L L_L s^2 + 1}$$

10.282 INVALID-ORDER-282  $Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, L_L s + R_L + \frac{1}{C_L s} \right)$

$$H(s) = \frac{(C_4 L_4 s^2 + C_4 R_4 s + 1)(C_L L_L s^2 + C_L R_L s + 1)}{s(C_4 C_L L_4 s^2 + 2C_4 C_L L_L s^2 + C_4 C_L R_4 s + 2C_4 C_L R_L s + 2C_4 + C_L)}$$

10.283 INVALID-ORDER-283  $Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$

$$H(s) = \frac{L_L R_L s (C_4 L_4 s^2 + C_4 R_4 s + 1)}{C_4 C_L L_4 L_L R_L s^4 + C_4 C_L L_L R_4 R_L s^3 + C_4 L_4 L_L s^3 + C_4 L_4 R_L s^2 + C_4 L_L R_4 s^2 + 2C_4 L_L R_L s^2 + C_4 R_4 R_L s + C_L L_L R_L s^2 + L_L s + R_L}$$

10.284 INVALID-ORDER-284  $Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$

$$H(s) = \frac{(C_4 L_4 s^2 + C_4 R_4 s + 1)(C_L L_L R_L s^2 + L_L s + R_L)}{C_4 C_L L_4 L_L s^4 + C_4 C_L L_L R_4 s^3 + 2C_4 C_L L_L R_L s^3 + C_4 L_4 s^2 + 2C_4 L_L s^2 + C_4 R_4 s + 2C_4 R_L s + C_L L_L s^2 + 1}$$

10.285 INVALID-ORDER-285  $Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, \frac{R_L (L_L s + \frac{1}{C_L s})}{L_L s + R_L + \frac{1}{C_L s}} \right)$

$$H(s) = \frac{R_L (C_L L_L s^2 + 1)(C_4 L_4 s^2 + C_4 R_4 s + 1)}{C_4 C_L L_4 L_L s^4 + C_4 C_L L_4 R_L s^3 + C_4 C_L L_L R_4 s^3 + 2C_4 C_L L_L R_L s^3 + C_4 C_L R_4 R_L s^2 + C_4 L_4 s^2 + C_4 R_4 s + 2C_4 R_L s + C_L L_L s^2 + C_L R_L s + 1}$$

10.286 INVALID-ORDER-286  $Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, R_L + \frac{1}{C_L s} \right)$

$$H(s) = \frac{L_4 R_4 s (C_L R_L s + 1)}{2C_4 C_L L_4 R_4 R_L s^3 + 2C_4 L_4 R_4 s^2 + C_L L_4 R_4 s^2 + 2C_L L_4 R_L s^2 + 2C_L R_4 R_L s + 2L_4 s + 2R_4}$$

10.287 INVALID-ORDER-287  $Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, L_L s + \frac{1}{C_L s} \right)$

$$H(s) = \frac{L_4 R_4 s (C_L L_L s^2 + 1)}{2C_4 C_L L_4 L_L R_4 s^4 + 2C_4 L_4 R_4 s^2 + 2C_L L_4 L_L s^3 + C_L L_4 R_4 s^2 + 2C_L L_L R_4 s^2 + 2L_4 s + 2R_4}$$

10.288 INVALID-ORDER-288  $Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, L_L s + R_L + \frac{1}{C_L s} \right)$

$$H(s) = \frac{L_4 R_4 s (C_L L_L s^2 + C_L R_L s + 1)}{2C_4 C_L L_4 L_L R_4 s^4 + 2C_4 C_L L_4 R_4 R_L s^3 + 2C_4 L_4 R_4 s^2 + 2C_L L_4 L_L s^3 + C_L L_4 R_4 s^2 + 2C_L L_4 R_L s^2 + 2C_L L_L R_4 s^2 + 2C_L R_4 R_L s + 2L_4 s + 2R_4}$$

10.289 INVALID-ORDER-289  $Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$

$$H(s) = \frac{L_4 R_4 s (C_L L_L R_L s^2 + L_L s + R_L)}{2C_4 C_L L_4 L_L R_4 R_L s^4 + 2C_4 L_4 L_L R_4 s^3 + 2C_4 L_4 R_4 R_L s^2 + C_L L_4 L_L R_4 s^3 + 2C_L L_4 L_L R_L s^3 + 2C_L L_L R_4 R_L s^2 + 2L_4 L_L s^2 + L_4 R_4 s + 2L_4 R_L s + 2L_L R_4 s + 2R_4 R_L}$$

$$10.290 \quad \text{INVALID-ORDER-290} \quad Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, \frac{R_L \left( L_L s + \frac{1}{C_L s} \right)}{L_L s + R_L + \frac{1}{C_L s}} \right)$$

$$H(s) = \frac{L_4 R_4 R_L s (C_L L_L s^2 + 1)}{2C_4 C_L L_4 L_L R_4 R_L s^4 + 2C_4 L_4 R_4 R_L s^2 + C_L L_4 L_L R_4 s^3 + 2C_L L_4 L_L R_L s^3 + C_L L_4 R_4 R_L s^2 + 2C_L L_L R_4 R_L s^2 + L_4 R_4 s + 2L_4 R_L s + 2R_4 R_L}$$

$$10.291 \quad \text{INVALID-ORDER-291} \quad Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \infty, \frac{1}{C_L s} \right)$$

$$H(s) = \frac{C_4 L_4 R_4 s^2 + L_4 s + R_4}{C_4 C_L L_4 R_4 s^3 + 2C_4 L_4 s^2 + C_L L_4 s^2 + C_L R_4 s + 2}$$

$$10.292 \quad \text{INVALID-ORDER-292} \quad Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \infty, \frac{R_L}{C_L R_L s + 1} \right)$$

$$H(s) = \frac{R_L (C_4 L_4 R_4 s^2 + L_4 s + R_4)}{C_4 C_L L_4 R_4 R_L s^3 + C_4 L_4 R_4 s^2 + 2C_4 L_4 R_L s^2 + C_L L_4 R_L s^2 + C_L R_4 R_L s + L_4 s + R_4 + 2R_L}$$

$$10.293 \quad \text{INVALID-ORDER-293} \quad Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \infty, R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{(C_L R_L s + 1) (C_4 L_4 R_4 s^2 + L_4 s + R_4)}{C_4 C_L L_4 R_4 s^3 + 2C_4 C_L L_4 R_L s^3 + 2C_4 L_4 s^2 + C_L L_4 s^2 + C_L R_4 s + 2C_L R_L s + 2}$$

$$10.294 \quad \text{INVALID-ORDER-294} \quad Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \infty, L_L s + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{(C_L L_L s^2 + 1) (C_4 L_4 R_4 s^2 + L_4 s + R_4)}{2C_4 C_L L_4 L_L s^4 + C_4 C_L L_4 R_4 s^3 + 2C_4 L_4 s^2 + C_L L_4 s^2 + 2C_L L_L s^2 + C_L R_4 s + 2}$$

$$10.295 \quad \text{INVALID-ORDER-295} \quad Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$$

$$H(s) = \frac{L_L s (C_4 L_4 R_4 s^2 + L_4 s + R_4)}{C_4 C_L L_4 L_L R_4 s^4 + 2C_4 L_4 L_L s^3 + C_4 L_4 R_4 s^2 + C_L L_4 L_L s^3 + C_L L_L R_4 s^2 + L_4 s + 2L_L s + R_4}$$

$$10.296 \quad \text{INVALID-ORDER-296} \quad Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \infty, L_L s + R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{(C_L L_L s^2 + C_L R_L s + 1) (C_4 L_4 R_4 s^2 + L_4 s + R_4)}{2C_4 C_L L_4 L_L s^4 + C_4 C_L L_4 R_4 s^3 + 2C_4 C_L L_4 R_L s^3 + 2C_4 L_4 s^2 + C_L L_4 s^2 + 2C_L L_L s^2 + C_L R_4 s + 2C_L R_L s + 2}$$

$$10.297 \quad \text{INVALID-ORDER-297} \quad Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$$

$$H(s) = \frac{L_L R_L s (C_4 L_4 R_4 s^2 + L_4 s + R_4)}{C_4 C_L L_4 L_L R_4 R_L s^4 + C_4 L_4 L_L R_4 s^3 + 2C_4 L_4 L_L R_L s^3 + C_4 L_4 R_4 R_L s^2 + C_L L_4 L_L R_L s^3 + C_L L_L R_4 R_L s^2 + L_4 L_L s^2 + L_4 R_L s + L_L R_4 s + 2L_L R_L s + R_4 R_L}$$

$$10.298 \quad \text{INVALID-ORDER-298} \quad Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$$

$$H(s) = \frac{(C_4 L_4 R_4 s^2 + L_4 s + R_4) (C_L L_L R_L s^2 + L_L s + R_L)}{C_4 C_L L_4 L_L R_4 s^4 + 2 C_4 C_L L_4 L_L R_L s^4 + 2 C_4 L_4 L_L s^3 + C_4 L_4 R_4 s^2 + 2 C_4 L_4 R_L s^2 + C_L L_4 L_L s^3 + C_L L_L R_4 s^2 + 2 C_L L_L R_L s^2 + L_4 s + 2 L_L s + R_4 + 2 R_L}$$

$$10.299 \quad \text{INVALID-ORDER-299} \quad Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \infty, \frac{R_L (L_L s + \frac{1}{C_L s})}{L_L s + R_L + \frac{1}{C_L s}} \right)$$

$$H(s) = \frac{R_L (C_L L_L s^2 + 1) (C_4 L_4 R_4 s^2 + L_4 s + R_4)}{C_4 C_L L_4 L_L R_4 s^4 + 2 C_4 C_L L_4 L_L R_L s^4 + C_4 C_L L_4 R_4 R_L s^3 + C_4 L_4 R_4 s^2 + 2 C_4 L_4 R_L s^2 + C_L L_4 L_L s^3 + C_L L_4 R_L s^2 + C_L L_L R_4 s^2 + 2 C_L L_L R_L s^2 + C_L R_4 R_L s + L_4 s + R_4 + 2 R_L}$$

$$10.300 \quad \text{INVALID-ORDER-300} \quad Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, \frac{R_4 (L_4 s + \frac{1}{C_4 s})}{L_4 s + R_4 + \frac{1}{C_4 s}}, \infty, \frac{1}{C_L s} \right)$$

$$H(s) = \frac{R_4 (C_4 L_4 s^2 + 1)}{C_4 C_L L_4 R_4 s^3 + 2 C_4 L_4 s^2 + 2 C_4 R_4 s + C_L R_4 s + 2}$$

$$10.301 \quad \text{INVALID-ORDER-301} \quad Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, \frac{R_4 (L_4 s + \frac{1}{C_4 s})}{L_4 s + R_4 + \frac{1}{C_4 s}}, \infty, \frac{R_L}{C_L R_L s + 1} \right)$$

$$H(s) = \frac{R_4 R_L (C_4 L_4 s^2 + 1)}{C_4 C_L L_4 R_4 R_L s^3 + C_4 L_4 R_4 s^2 + 2 C_4 L_4 R_L s^2 + 2 C_4 R_4 R_L s + C_L R_4 R_L s + R_4 + 2 R_L}$$

$$10.302 \quad \text{INVALID-ORDER-302} \quad Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, \frac{R_4 (L_4 s + \frac{1}{C_4 s})}{L_4 s + R_4 + \frac{1}{C_4 s}}, \infty, R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{R_4 (C_4 L_4 s^2 + 1) (C_L R_L s + 1)}{C_4 C_L L_4 R_4 s^3 + 2 C_4 C_L L_4 R_L s^3 + 2 C_4 C_L R_4 R_L s^2 + 2 C_4 L_4 s^2 + 2 C_4 R_4 s + C_L R_4 s + 2 C_L R_L s + 2}$$

$$10.303 \quad \text{INVALID-ORDER-303} \quad Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, \frac{R_4 (L_4 s + \frac{1}{C_4 s})}{L_4 s + R_4 + \frac{1}{C_4 s}}, \infty, L_L s + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{R_4 (C_4 L_4 s^2 + 1) (C_L L_L s^2 + 1)}{2 C_4 C_L L_4 L_L s^4 + C_4 C_L L_4 R_4 s^3 + 2 C_4 C_L L_L R_4 s^3 + 2 C_4 L_4 s^2 + 2 C_4 R_4 s + 2 C_L L_L s^2 + C_L R_4 s + 2}$$

$$10.304 \quad \text{INVALID-ORDER-304} \quad Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, \frac{R_4 (L_4 s + \frac{1}{C_4 s})}{L_4 s + R_4 + \frac{1}{C_4 s}}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$$

$$H(s) = \frac{L_L R_4 s (C_4 L_4 s^2 + 1)}{C_4 C_L L_4 L_L R_4 s^4 + 2 C_4 L_4 L_L s^3 + C_4 L_4 R_4 s^2 + 2 C_4 L_L R_4 s^2 + C_L L_L R_4 s^2 + 2 L_L s + R_4}$$

$$10.305 \quad \text{INVALID-ORDER-305} \quad Z(s) = \left( \infty, R_2 + \frac{1}{C_2 s}, \infty, \frac{R_4 (L_4 s + \frac{1}{C_4 s})}{L_4 s + R_4 + \frac{1}{C_4 s}}, \infty, L_L s + R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{R_4 (C_4 L_4 s^2 + 1) (C_L L_L s^2 + C_L R_L s + 1)}{2 C_4 C_L L_4 L_L s^4 + C_4 C_L L_4 R_4 s^3 + 2 C_4 C_L L_4 R_L s^3 + 2 C_4 C_L L_L R_4 s^3 + 2 C_4 C_L R_4 R_L s^2 + 2 C_4 L_4 s^2 + 2 C_4 R_4 s + 2 C_L L_L s^2 + C_L R_4 s + 2 C_L R_L s + 2}$$

$$10.306 \quad \text{INVALID-ORDER-306} \quad Z(s) = \left( \infty, \quad R_2 + \frac{1}{C_2 s}, \quad \infty, \quad \frac{R_4 \left( L_4 s + \frac{1}{C_4 s} \right)}{L_4 s + R_4 + \frac{1}{C_4 s}}, \quad \infty, \quad \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$$

$$H(s) = \frac{L_L R_4 R_L s (C_4 L_4 s^2 + 1)}{C_4 C_L L_4 L_L R_4 R_L s^4 + C_4 L_4 L_L R_4 s^3 + 2C_4 L_4 L_L R_L s^3 + C_4 L_4 R_4 R_L s^2 + 2C_4 L_L R_4 R_L s^2 + C_L L_L R_4 R_L s^2 + L_L R_4 s + 2L_L R_L s + R_4 R_L}$$

$$10.307 \quad \text{INVALID-ORDER-307} \quad Z(s) = \left( \infty, \quad R_2 + \frac{1}{C_2 s}, \quad \infty, \quad \frac{R_4 \left( L_4 s + \frac{1}{C_4 s} \right)}{L_4 s + R_4 + \frac{1}{C_4 s}}, \quad \infty, \quad \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$$

$$H(s) = \frac{R_4 (C_4 L_4 s^2 + 1) (C_L L_L R_L s^2 + L_L s + R_L)}{C_4 C_L L_4 L_L R_4 s^4 + 2C_4 C_L L_4 L_L R_L s^4 + 2C_4 C_L L_L R_4 R_L s^3 + 2C_4 L_4 L_L s^3 + C_4 L_4 R_4 s^2 + 2C_4 L_4 R_L s^2 + 2C_4 L_L R_4 s^2 + 2C_4 R_4 R_L s + C_L L_L R_4 s^2 + 2C_L L_L R_L s^2 + 2L_L s + R_4 + 2R_L}$$

$$10.308 \quad \text{INVALID-ORDER-308} \quad Z(s) = \left( \infty, \quad R_2 + \frac{1}{C_2 s}, \quad \infty, \quad \frac{R_4 \left( L_4 s + \frac{1}{C_4 s} \right)}{L_4 s + R_4 + \frac{1}{C_4 s}}, \quad \infty, \quad \frac{R_L \left( L_L s + \frac{1}{C_L s} \right)}{L_L s + R_L + \frac{1}{C_L s}} \right)$$

$$H(s) = \frac{R_4 R_L (C_4 L_4 s^2 + 1) (C_L L_L s^2 + 1)}{C_4 C_L L_4 L_L R_4 s^4 + 2C_4 C_L L_4 L_L R_L s^4 + C_4 C_L L_4 R_4 R_L s^3 + 2C_4 C_L L_L R_4 R_L s^3 + C_4 L_4 R_4 s^2 + 2C_4 L_4 R_L s^2 + 2C_4 R_4 R_L s + C_L L_L R_4 s^2 + 2C_L L_L R_L s^2 + C_L R_4 R_L s + R_4 + 2R_L}$$

$$10.309 \quad \text{INVALID-ORDER-309} \quad Z(s) = \left( \infty, \quad L_2 s + \frac{1}{C_2 s}, \quad \infty, \quad R_4, \quad \infty, \quad R_L \right)$$

$$H(s) = \frac{R_4 R_L}{R_4 + 2R_L}$$

$$10.310 \quad \text{INVALID-ORDER-310} \quad Z(s) = \left( \infty, \quad L_2 s + \frac{1}{C_2 s}, \quad \infty, \quad R_4, \quad \infty, \quad \frac{1}{C_L s} \right)$$

$$H(s) = \frac{R_4}{C_L R_4 s + 2}$$

$$10.311 \quad \text{INVALID-ORDER-311} \quad Z(s) = \left( \infty, \quad L_2 s + \frac{1}{C_2 s}, \quad \infty, \quad R_4, \quad \infty, \quad \frac{R_L}{C_L R_L s + 1} \right)$$

$$H(s) = \frac{R_4 R_L}{C_L R_4 R_L s + R_4 + 2R_L}$$

$$10.312 \quad \text{INVALID-ORDER-312} \quad Z(s) = \left( \infty, \quad L_2 s + \frac{1}{C_2 s}, \quad \infty, \quad R_4, \quad \infty, \quad R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{R_4 (C_L R_L s + 1)}{C_L R_4 s + 2C_L R_L s + 2}$$

$$10.313 \quad \text{INVALID-ORDER-313} \quad Z(s) = \left( \infty, \quad L_2 s + \frac{1}{C_2 s}, \quad \infty, \quad \frac{1}{C_4 s}, \quad \infty, \quad R_L \right)$$

$$H(s) = \frac{R_L}{2C_4 R_L s + 1}$$

$$10.314 \quad \text{INVALID-ORDER-314} \quad Z(s) = \left( \infty, \quad L_2 s + \frac{1}{C_2 s}, \quad \infty, \quad \frac{1}{C_4 s}, \quad \infty, \quad \frac{1}{C_L s} \right)$$

$$H(s) = \frac{1}{s(2C_4 + C_L)}$$

$$10.315 \quad \text{INVALID-ORDER-315} \quad Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{1}{C_4s}, \infty, \frac{R_L}{C_LR_Ls+1} \right)$$

$$H(s) = \frac{R_L}{2C_4R_Ls + C_LR_Ls + 1}$$

$$10.316 \quad \text{INVALID-ORDER-316} \quad Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{1}{C_4s}, \infty, R_L + \frac{1}{C_Ls} \right)$$

$$H(s) = \frac{C_LR_Ls + 1}{s(2C_4C_LR_Ls + 2C_4 + C_L)}$$

$$10.317 \quad \text{INVALID-ORDER-317} \quad Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{1}{C_4s}, \infty, L_Ls + \frac{1}{C_Ls} \right)$$

$$H(s) = \frac{C_LL_Ls^2 + 1}{s(2C_4C_LL_Ls^2 + 2C_4 + C_L)}$$

$$10.318 \quad \text{INVALID-ORDER-318} \quad Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{1}{C_4s}, \infty, \frac{L_Ls}{C_LL_Ls^2+1} \right)$$

$$H(s) = \frac{L_Ls}{2C_4L_Ls^2 + C_LL_Ls^2 + 1}$$

$$10.319 \quad \text{INVALID-ORDER-319} \quad Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{1}{C_4s}, \infty, L_Ls + R_L + \frac{1}{C_Ls} \right)$$

$$H(s) = \frac{C_LL_Ls^2 + C_LR_Ls + 1}{s(2C_4C_LL_Ls^2 + 2C_4C_LR_Ls + 2C_4 + C_L)}$$

$$10.320 \quad \text{INVALID-ORDER-320} \quad Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{1}{C_4s}, \infty, \frac{L_Ls}{C_LL_Ls^2+1} + R_L \right)$$

$$H(s) = \frac{C_LL_LR_Ls^2 + L_Ls + R_L}{2C_4C_LL_LR_Ls^3 + 2C_4L_Ls^2 + 2C_4R_Ls + C_LL_Ls^2 + 1}$$

$$10.321 \quad \text{INVALID-ORDER-321} \quad Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{1}{C_4s}, \infty, \frac{R_L(L_Ls + \frac{1}{C_Ls})}{L_Ls + R_L + \frac{1}{C_Ls}} \right)$$

$$H(s) = \frac{R_L(C_LL_Ls^2 + 1)}{2C_4C_LL_LR_Ls^3 + 2C_4R_Ls + C_LL_Ls^2 + C_LR_Ls + 1}$$

$$10.322 \quad \text{INVALID-ORDER-322} \quad Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{R_4}{C_4R_4s+1}, \infty, R_L \right)$$

$$H(s) = \frac{R_4R_L}{2C_4R_4R_Ls + R_4 + 2R_L}$$

$$10.323 \quad \text{INVALID-ORDER-323} \quad Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{R_4}{C_4R_4s+1}, \infty, \frac{1}{C_Ls} \right)$$

$$H(s) = \frac{R_4}{2C_4R_4s + C_LR_4s + 2}$$

$$10.324 \quad \text{INVALID-ORDER-324} \quad Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{R_4}{C_4R_4s+1}, \infty, \frac{R_L}{C_LR_Ls+1} \right)$$

$$H(s) = \frac{R_4R_L}{2C_4R_4R_Ls + C_LR_4R_Ls + R_4 + 2R_L}$$

$$10.325 \quad \text{INVALID-ORDER-325} \quad Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{R_4}{C_4R_4s+1}, \infty, L_Ls + \frac{1}{C_Ls} \right)$$

$$H(s) = \frac{R_4(C_LL_Ls^2 + 1)}{2C_4C_LL_LR_4s^3 + 2C_4R_4s + 2C_LL_Ls^2 + C_LR_4s + 2}$$

$$10.326 \quad \text{INVALID-ORDER-326} \quad Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{R_4}{C_4R_4s+1}, \infty, L_Ls + R_L + \frac{1}{C_Ls} \right)$$

$$H(s) = \frac{R_4(C_LL_Ls^2 + C_LR_Ls + 1)}{2C_4C_LL_LR_4s^3 + 2C_4C_LR_4R_Ls^2 + 2C_4R_4s + 2C_LL_Ls^2 + C_LR_4s + 2C_LR_Ls + 2}$$

$$10.327 \quad \text{INVALID-ORDER-327} \quad Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{R_4}{C_4R_4s+1}, \infty, \frac{L_Ls}{C_LL_Ls^2+1} + R_L \right)$$

$$H(s) = \frac{R_4(C_LL_LR_Ls^2 + L_Ls + R_L)}{2C_4C_LL_LR_4R_Ls^3 + 2C_4L_LR_4s^2 + 2C_4R_4R_Ls + C_LL_LR_4s^2 + 2C_LL_LR_Ls^2 + 2L_Ls + R_4 + 2R_L}$$

$$10.328 \quad \text{INVALID-ORDER-328} \quad Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{R_4}{C_4R_4s+1}, \infty, \frac{R_L(L_Ls + \frac{1}{C_Ls})}{L_Ls + R_L + \frac{1}{C_Ls}} \right)$$

$$H(s) = \frac{R_4R_L(C_LL_Ls^2 + 1)}{2C_4C_LL_LR_4R_Ls^3 + 2C_4R_4R_Ls + C_LL_LR_4s^2 + 2C_LL_LR_Ls^2 + C_LR_4R_Ls + R_4 + 2R_L}$$

$$10.329 \quad \text{INVALID-ORDER-329} \quad Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, R_4 + \frac{1}{C_4s}, \infty, R_L \right)$$

$$H(s) = \frac{R_L(C_4R_4s + 1)}{C_4R_4s + 2C_4R_Ls + 1}$$

$$10.330 \quad \text{INVALID-ORDER-330} \quad Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, R_4 + \frac{1}{C_4s}, \infty, \frac{1}{C_Ls} \right)$$

$$H(s) = \frac{C_4R_4s + 1}{s(C_4C_LR_4s + 2C_4 + C_L)}$$

$$10.331 \quad \text{INVALID-ORDER-331} \quad Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, R_4 + \frac{1}{C_4s}, \infty, R_L + \frac{1}{C_Ls} \right)$$

$$H(s) = \frac{(C_4R_4s + 1)(C_LR_Ls + 1)}{s(C_4C_LR_4s + 2C_4C_LR_Ls + 2C_4 + C_L)}$$

$$10.332 \quad \text{INVALID-ORDER-332} \quad Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, R_4 + \frac{1}{C_4s}, \infty, L_Ls + \frac{1}{C_Ls} \right)$$

$$H(s) = \frac{(C_4R_4s + 1)(C_LL_Ls^2 + 1)}{s(2C_4C_LL_Ls^2 + C_4C_LR_4s + 2C_4 + C_L)}$$

$$10.333 \quad \text{INVALID-ORDER-333} \quad Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, R_4 + \frac{1}{C_4s}, \infty, \frac{L_Ls}{C_LL_Ls^2+1} \right)$$

$$H(s) = \frac{L_Ls (C_4R_4s + 1)}{C_4C_LL_LR_4s^3 + 2C_4L_Ls^2 + C_4R_4s + C_LL_Ls^2 + 1}$$

$$10.334 \quad \text{INVALID-ORDER-334} \quad Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, R_4 + \frac{1}{C_4s}, \infty, L_Ls + R_L + \frac{1}{C_Ls} \right)$$

$$H(s) = \frac{(C_4R_4s + 1) (C_LL_Ls^2 + C_LR_Ls + 1)}{s (2C_4C_LL_Ls^2 + C_4C_LR_4s + 2C_4C_LR_Ls + 2C_4 + C_L)}$$

$$10.335 \quad \text{INVALID-ORDER-335} \quad Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, R_4 + \frac{1}{C_4s}, \infty, \frac{1}{C_Ls + \frac{1}{R_L} + \frac{1}{L_Ls}} \right)$$

$$H(s) = \frac{L_LR_Ls (C_4R_4s + 1)}{C_4C_LL_LR_4R_Ls^3 + C_4L_LR_4s^2 + 2C_4L_LR_Ls^2 + C_4R_4R_Ls + C_LL_LR_Ls^2 + L_Ls + R_L}$$

$$10.336 \quad \text{INVALID-ORDER-336} \quad Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, R_4 + \frac{1}{C_4s}, \infty, \frac{L_Ls}{C_LL_Ls^2+1} + R_L \right)$$

$$H(s) = \frac{(C_4R_4s + 1) (C_LL_LR_Ls^2 + L_Ls + R_L)}{C_4C_LL_LR_4s^3 + 2C_4C_LL_LR_Ls^3 + 2C_4L_Ls^2 + C_4R_4s + 2C_4R_Ls + C_LL_Ls^2 + 1}$$

$$10.337 \quad \text{INVALID-ORDER-337} \quad Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, R_4 + \frac{1}{C_4s}, \infty, \frac{R_L \left( L_Ls + \frac{1}{C_Ls} \right)}{L_Ls + R_L + \frac{1}{C_Ls}} \right)$$

$$H(s) = \frac{R_L (C_4R_4s + 1) (C_LL_Ls^2 + 1)}{C_4C_LL_LR_4s^3 + 2C_4C_LL_LR_Ls^3 + C_4C_LR_4R_Ls^2 + C_4R_4s + 2C_4R_Ls + C_LL_Ls^2 + C_LR_Ls + 1}$$

$$10.338 \quad \text{INVALID-ORDER-338} \quad Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, L_4s + \frac{1}{C_4s}, \infty, \frac{1}{C_Ls} \right)$$

$$H(s) = \frac{C_4L_4s^2 + 1}{s (C_4C_LL_4s^2 + 2C_4 + C_L)}$$

$$10.339 \quad \text{INVALID-ORDER-339} \quad Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, L_4s + \frac{1}{C_4s}, \infty, \frac{R_L}{C_LR_Ls+1} \right)$$

$$H(s) = \frac{R_L (C_4L_4s^2 + 1)}{C_4C_LL_4R_Ls^3 + C_4L_4s^2 + 2C_4R_Ls + C_LR_Ls + 1}$$

$$10.340 \quad \text{INVALID-ORDER-340} \quad Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, L_4s + \frac{1}{C_4s}, \infty, R_L + \frac{1}{C_Ls} \right)$$

$$H(s) = \frac{(C_4L_4s^2 + 1) (C_LR_Ls + 1)}{s (C_4C_LL_4s^2 + 2C_4C_LR_Ls + 2C_4 + C_L)}$$



**10.341 INVALID-ORDER-341**  $Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, L_4s + \frac{1}{C_4s}, \infty, L_Ls + \frac{1}{C_Ls} \right)$

$$H(s) = \frac{(C_4L_4s^2 + 1)(C_LL_Ls^2 + 1)}{s(C_4C_LL_4s^2 + 2C_4C_LL_Ls^2 + 2C_4 + C_L)}$$

**10.342 INVALID-ORDER-342**  $Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, L_4s + \frac{1}{C_4s}, \infty, \frac{L_Ls}{C_LL_Ls^2 + 1} \right)$

$$H(s) = \frac{L_Ls(C_4L_4s^2 + 1)}{C_4C_LL_4L_Ls^4 + C_4L_4s^2 + 2C_4L_Ls^2 + C_LL_Ls^2 + 1}$$

**10.343 INVALID-ORDER-343**  $Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, L_4s + \frac{1}{C_4s}, \infty, L_Ls + R_L + \frac{1}{C_Ls} \right)$

$$H(s) = \frac{(C_4L_4s^2 + 1)(C_LL_Ls^2 + C_LR_Ls + 1)}{s(C_4C_LL_4s^2 + 2C_4C_LL_Ls^2 + 2C_4C_LR_Ls + 2C_4 + C_L)}$$

**10.344 INVALID-ORDER-344**  $Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, L_4s + \frac{1}{C_4s}, \infty, \frac{1}{C_Ls + \frac{1}{R_L} + \frac{1}{L_Ls}} \right)$

$$H(s) = \frac{L_LR_Ls(C_4L_4s^2 + 1)}{C_4C_LL_4L_LR_Ls^4 + C_4L_4L_Ls^3 + C_4L_4R_Ls^2 + 2C_4L_LR_Ls^2 + C_LL_LR_Ls^2 + L_Ls + R_L}$$

**10.345 INVALID-ORDER-345**  $Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, L_4s + \frac{1}{C_4s}, \infty, \frac{L_Ls}{C_LL_Ls^2 + 1} + R_L \right)$

$$H(s) = \frac{(C_4L_4s^2 + 1)(C_LL_LR_Ls^2 + L_Ls + R_L)}{C_4C_LL_4L_Ls^4 + 2C_4C_LL_LR_Ls^3 + C_4L_4s^2 + 2C_4L_Ls^2 + 2C_4R_Ls + C_LL_Ls^2 + 1}$$

**10.346 INVALID-ORDER-346**  $Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, L_4s + \frac{1}{C_4s}, \infty, \frac{R_L(L_Ls + \frac{1}{C_Ls})}{L_Ls + R_L + \frac{1}{C_Ls}} \right)$

$$H(s) = \frac{R_L(C_4L_4s^2 + 1)(C_LL_Ls^2 + 1)}{C_4C_LL_4L_Ls^4 + C_4C_LL_4R_Ls^3 + 2C_4C_LL_LR_Ls^3 + C_4L_4s^2 + 2C_4R_Ls + C_LL_Ls^2 + C_LR_Ls + 1}$$

**10.347 INVALID-ORDER-347**  $Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{L_4s}{C_4L_4s^2 + 1}, \infty, \frac{1}{C_Ls} \right)$

$$H(s) = \frac{L_4s}{2C_4L_4s^2 + C_LL_4s^2 + 2}$$

**10.348 INVALID-ORDER-348**  $Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{L_4s}{C_4L_4s^2 + 1}, \infty, R_L + \frac{1}{C_Ls} \right)$

$$H(s) = \frac{L_4s(C_LR_Ls + 1)}{2C_4C_LL_4R_Ls^3 + 2C_4L_4s^2 + C_LL_4s^2 + 2C_LR_Ls + 2}$$

$$10.349 \quad \text{INVALID-ORDER-349} \quad Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{L_4s}{C_4L_4s^2+1}, \infty, L_Ls + \frac{1}{C_Ls} \right)$$

$$H(s) = \frac{L_4s (C_LL_Ls^2 + 1)}{2C_4C_LL_4L_Ls^4 + 2C_4L_4s^2 + C_LL_4s^2 + 2C_LL_Ls^2 + 2}$$

$$10.350 \quad \text{INVALID-ORDER-350} \quad Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{L_4s}{C_4L_4s^2+1}, \infty, \frac{L_Ls}{C_LL_Ls^2+1} \right)$$

$$H(s) = \frac{L_4L_Ls}{2C_4L_4L_Ls^2 + C_LL_4L_Ls^2 + L_4 + 2L_L}$$

$$10.351 \quad \text{INVALID-ORDER-351} \quad Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{L_4s}{C_4L_4s^2+1}, \infty, L_Ls + R_L + \frac{1}{C_Ls} \right)$$

$$H(s) = \frac{L_4s (C_LL_Ls^2 + C_LR_Ls + 1)}{2C_4C_LL_4L_Ls^4 + 2C_4C_LL_4R_Ls^3 + 2C_4L_4s^2 + C_LL_4s^2 + 2C_LL_Ls^2 + 2C_LR_Ls + 2}$$

$$10.352 \quad \text{INVALID-ORDER-352} \quad Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{L_4s}{C_4L_4s^2+1}, \infty, \frac{L_Ls}{C_LL_Ls^2+1} + R_L \right)$$

$$H(s) = \frac{L_4s (C_LL_LR_Ls^2 + L_Ls + R_L)}{2C_4C_LL_4L_LR_Ls^4 + 2C_4L_4L_Ls^3 + 2C_4L_4R_Ls^2 + C_LL_4L_Ls^3 + 2C_LL_LR_Ls^2 + L_4s + 2L_Ls + 2R_L}$$

$$10.353 \quad \text{INVALID-ORDER-353} \quad Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{L_4s}{C_4L_4s^2+1}, \infty, \frac{R_L(L_Ls + \frac{1}{C_Ls})}{L_Ls + R_L + \frac{1}{C_Ls}} \right)$$

$$H(s) = \frac{L_4R_Ls (C_LL_Ls^2 + 1)}{2C_4C_LL_4L_LR_Ls^4 + 2C_4L_4R_Ls^2 + C_LL_4L_Ls^3 + C_LL_4R_Ls^2 + 2C_LL_LR_Ls^2 + L_4s + 2R_L}$$

$$10.354 \quad \text{INVALID-ORDER-354} \quad Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, L_4s + R_4 + \frac{1}{C_4s}, \infty, \frac{1}{C_Ls} \right)$$

$$H(s) = \frac{C_4L_4s^2 + C_4R_4s + 1}{s(C_4C_LL_4s^2 + C_4C_LR_4s + 2C_4 + C_L)}$$

$$10.355 \quad \text{INVALID-ORDER-355} \quad Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, L_4s + R_4 + \frac{1}{C_4s}, \infty, \frac{R_L}{C_LR_Ls+1} \right)$$

$$H(s) = \frac{R_L (C_4L_4s^2 + C_4R_4s + 1)}{C_4C_LL_4R_Ls^3 + C_4C_LR_4R_Ls^2 + C_4L_4s^2 + C_4R_4s + 2C_4R_Ls + C_LR_Ls + 1}$$

$$10.356 \quad \text{INVALID-ORDER-356} \quad Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, L_4s + R_4 + \frac{1}{C_4s}, \infty, R_L + \frac{1}{C_Ls} \right)$$

$$H(s) = \frac{(C_LR_Ls + 1) (C_4L_4s^2 + C_4R_4s + 1)}{s(C_4C_LL_4s^2 + C_4C_LR_4s + 2C_4C_LR_Ls + 2C_4 + C_L)}$$

$$10.357 \quad \text{INVALID-ORDER-357} \quad Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, L_4s + R_4 + \frac{1}{C_4s}, \infty, L_Ls + \frac{1}{C_Ls} \right)$$

$$H(s) = \frac{(C_LL_Ls^2 + 1) (C_4L_4s^2 + C_4R_4s + 1)}{s(C_4C_LL_4s^2 + 2C_4C_LL_Ls^2 + C_4C_LR_4s + 2C_4 + C_L)}$$

$$10.358 \quad \text{INVALID-ORDER-358} \quad Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, L_4s + R_4 + \frac{1}{C_4s}, \infty, \frac{L_Ls}{C_LL_Ls^2+1} \right)$$

$$H(s) = \frac{L_Ls (C_4L_4s^2 + C_4R_4s + 1)}{C_4C_LL_4L_Ls^4 + C_4C_LL_LR_4s^3 + C_4L_4s^2 + 2C_4L_Ls^2 + C_4R_4s + C_LL_Ls^2 + 1}$$

$$10.359 \quad \text{INVALID-ORDER-359} \quad Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, L_4s + R_4 + \frac{1}{C_4s}, \infty, L_Ls + R_L + \frac{1}{C_Ls} \right)$$

$$H(s) = \frac{(C_4L_4s^2 + C_4R_4s + 1) (C_LL_Ls^2 + C_LR_Ls + 1)}{s (C_4C_LL_4s^2 + 2C_4C_LL_Ls^2 + C_4C_LR_4s + 2C_4C_LR_Ls + 2C_4 + C_L)}$$

$$10.360 \quad \text{INVALID-ORDER-360} \quad Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, L_4s + R_4 + \frac{1}{C_4s}, \infty, \frac{1}{C_Ls + \frac{1}{R_L} + \frac{1}{L_Ls}} \right)$$

$$H(s) = \frac{L_LR_Ls (C_4L_4s^2 + C_4R_4s + 1)}{C_4C_LL_4L_LR_Ls^4 + C_4C_LL_LR_4R_Ls^3 + C_4L_4L_Ls^3 + C_4L_4R_Ls^2 + C_4L_LR_4s^2 + 2C_4L_LR_Ls^2 + C_4R_4R_Ls + C_LL_LR_Ls^2 + L_Ls + R_L}$$

$$10.361 \quad \text{INVALID-ORDER-361} \quad Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, L_4s + R_4 + \frac{1}{C_4s}, \infty, \frac{L_Ls}{C_LL_Ls^2+1} + R_L \right)$$

$$H(s) = \frac{(C_4L_4s^2 + C_4R_4s + 1) (C_LL_LR_Ls^2 + L_Ls + R_L)}{C_4C_LL_4L_Ls^4 + C_4C_LL_LR_4s^3 + 2C_4C_LL_LR_Ls^3 + C_4L_4s^2 + 2C_4L_Ls^2 + C_4R_4s + 2C_4R_Ls + C_LL_Ls^2 + 1}$$

$$10.362 \quad \text{INVALID-ORDER-362} \quad Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, L_4s + R_4 + \frac{1}{C_4s}, \infty, \frac{R_L(L_Ls + \frac{1}{C_Ls})}{L_Ls + R_L + \frac{1}{C_Ls}} \right)$$

$$H(s) = \frac{R_L (C_LL_Ls^2 + 1) (C_4L_4s^2 + C_4R_4s + 1)}{C_4C_LL_4L_Ls^4 + C_4C_LL_4R_Ls^3 + C_4C_LL_LR_4s^3 + 2C_4C_LL_LR_Ls^3 + C_4C_LR_4R_Ls^2 + C_4L_4s^2 + C_4R_4s + 2C_4R_Ls + C_LL_Ls^2 + C_LR_Ls + 1}$$

$$10.363 \quad \text{INVALID-ORDER-363} \quad Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{1}{C_4s + \frac{1}{R_4} + \frac{1}{L_4s}}, \infty, R_L + \frac{1}{C_Ls} \right)$$

$$H(s) = \frac{L_4R_4s (C_LR_Ls + 1)}{2C_4C_LL_4R_4R_Ls^3 + 2C_4L_4R_4s^2 + C_LL_4R_4s^2 + 2C_LL_4R_Ls^2 + 2C_LR_4R_Ls + 2L_4s + 2R_4}$$

$$10.364 \quad \text{INVALID-ORDER-364} \quad Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{1}{C_4s + \frac{1}{R_4} + \frac{1}{L_4s}}, \infty, L_Ls + \frac{1}{C_Ls} \right)$$

$$H(s) = \frac{L_4R_4s (C_LL_Ls^2 + 1)}{2C_4C_LL_4L_LR_4s^4 + 2C_4L_4R_4s^2 + 2C_LL_4L_Ls^3 + C_LL_4R_4s^2 + 2C_LL_4R_4s^2 + 2L_4s + 2R_4}$$

$$10.365 \quad \text{INVALID-ORDER-365} \quad Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{1}{C_4s + \frac{1}{R_4} + \frac{1}{L_4s}}, \infty, L_Ls + R_L + \frac{1}{C_Ls} \right)$$

$$H(s) = \frac{L_4R_4s (C_LL_Ls^2 + C_LR_Ls + 1)}{2C_4C_LL_4L_LR_4s^4 + 2C_4C_LL_4R_4R_Ls^3 + 2C_4L_4R_4s^2 + 2C_LL_4L_Ls^3 + C_LL_4R_4s^2 + 2C_LL_4R_Ls^2 + 2C_LR_4R_Ls + 2L_4s + 2R_4}$$

**10.366 INVALID-ORDER-366**  $Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{1}{C_4s + \frac{1}{R_4} + \frac{1}{L_4s}}, \infty, \frac{L_Ls}{C_LL_Ls^2 + 1} + R_L \right)$

$$H(s) = \frac{L_4R_4s(C_LL_LR_Ls^2 + L_Ls + R_L)}{2C_4C_LL_4L_LR_4R_Ls^4 + 2C_4L_4L_LR_4s^3 + 2C_4L_4R_4R_Ls^2 + C_LL_4L_LR_4s^3 + 2C_LL_4L_LR_Ls^3 + 2C_LL_LR_4R_Ls^2 + 2L_4L_Ls^2 + L_4R_4s + 2L_4R_Ls + 2L_LR_4s + 2R_4R_L}$$

**10.367 INVALID-ORDER-367**  $Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{1}{C_4s + \frac{1}{R_4} + \frac{1}{L_4s}}, \infty, \frac{R_L(L_Ls + \frac{1}{C_Ls})}{L_Ls + R_L + \frac{1}{C_Ls}} \right)$

$$H(s) = \frac{L_4R_4R_Ls(C_LL_Ls^2 + 1)}{2C_4C_LL_4L_LR_4R_Ls^4 + 2C_4L_4R_4R_Ls^2 + C_LL_4L_LR_4s^3 + 2C_LL_4L_LR_Ls^3 + C_LL_4R_4R_Ls^2 + 2C_LL_LR_4R_Ls^2 + L_4R_4s + 2L_4R_Ls + 2R_4R_L}$$

**10.368 INVALID-ORDER-368**  $Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{L_4s}{C_4L_4s^2 + 1} + R_4, \infty, \frac{1}{C_Ls} \right)$

$$H(s) = \frac{C_4L_4R_4s^2 + L_4s + R_4}{C_4C_LL_4R_4s^3 + 2C_4L_4s^2 + C_LL_4s^2 + C_LR_4s + 2}$$

**10.369 INVALID-ORDER-369**  $Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{L_4s}{C_4L_4s^2 + 1} + R_4, \infty, \frac{R_L}{C_LR_Ls + 1} \right)$

$$H(s) = \frac{R_L(C_4L_4R_4s^2 + L_4s + R_4)}{C_4C_LL_4R_4R_Ls^3 + C_4L_4R_4s^2 + 2C_4L_4R_Ls^2 + C_LL_4R_Ls^2 + C_LR_4R_Ls + L_4s + R_4 + 2R_L}$$

**10.370 INVALID-ORDER-370**  $Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{L_4s}{C_4L_4s^2 + 1} + R_4, \infty, R_L + \frac{1}{C_Ls} \right)$

$$H(s) = \frac{(C_LR_Ls + 1)(C_4L_4R_4s^2 + L_4s + R_4)}{C_4C_LL_4R_4s^3 + 2C_4C_LL_4R_Ls^3 + 2C_4L_4s^2 + C_LL_4s^2 + C_LR_4s + 2C_LR_Ls + 2}$$

**10.371 INVALID-ORDER-371**  $Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{L_4s}{C_4L_4s^2 + 1} + R_4, \infty, L_Ls + \frac{1}{C_Ls} \right)$

$$H(s) = \frac{(C_LL_Ls^2 + 1)(C_4L_4R_4s^2 + L_4s + R_4)}{2C_4C_LL_4L_Ls^4 + C_4C_LL_4R_4s^3 + 2C_4L_4s^2 + C_LL_4s^2 + 2C_LL_Ls^2 + C_LR_4s + 2}$$

**10.372 INVALID-ORDER-372**  $Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{L_4s}{C_4L_4s^2 + 1} + R_4, \infty, \frac{L_Ls}{C_LL_Ls^2 + 1} \right)$

$$H(s) = \frac{L_Ls(C_4L_4R_4s^2 + L_4s + R_4)}{C_4C_LL_4L_LR_4s^4 + 2C_4L_4L_Ls^3 + C_4L_4R_4s^2 + C_LL_4L_Ls^3 + C_LL_LR_4s^2 + L_4s + 2L_Ls + R_4}$$

**10.373 INVALID-ORDER-373**  $Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{L_4s}{C_4L_4s^2 + 1} + R_4, \infty, L_Ls + R_L + \frac{1}{C_Ls} \right)$

$$H(s) = \frac{(C_LL_Ls^2 + C_LR_Ls + 1)(C_4L_4R_4s^2 + L_4s + R_4)}{2C_4C_LL_4L_Ls^4 + C_4C_LL_4R_4s^3 + 2C_4C_LL_4R_Ls^3 + 2C_4L_4s^2 + C_LL_4s^2 + 2C_LL_Ls^2 + C_LR_4s + 2C_LR_Ls + 2}$$

**10.374 INVALID-ORDER-374**  $Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{L_4s}{C_4L_4s^2+1} + R_4, \infty, \frac{1}{C_Ls + \frac{1}{R_L} + \frac{1}{L_Ls}} \right)$

$$H(s) = \frac{L_LR_Ls(C_4L_4R_4s^2 + L_4s + R_4)}{C_4C_LL_4L_LR_4R_Ls^4 + C_4L_4L_LR_4s^3 + 2C_4L_4L_LR_Ls^3 + C_4L_4R_4R_Ls^2 + C_LL_4L_LR_Ls^3 + C_LL_LR_4R_Ls^2 + L_4L_Ls^2 + L_4R_Ls + L_LR_4s + 2L_LR_Ls + R_4R_L}$$

**10.375 INVALID-ORDER-375**  $Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{L_4s}{C_4L_4s^2+1} + R_4, \infty, \frac{L_Ls}{C_LL_Ls^2+1} + R_L \right)$

$$H(s) = \frac{(C_4L_4R_4s^2 + L_4s + R_4)(C_LL_LR_Ls^2 + L_Ls + R_L)}{C_4C_LL_4L_LR_4s^4 + 2C_4C_LL_4L_LR_Ls^4 + 2C_4L_4L_Ls^3 + C_4L_4R_4s^2 + 2C_4L_4R_Ls^2 + C_LL_4L_Ls^3 + C_LL_LR_4s^2 + 2C_LL_LR_Ls^2 + L_4s + 2L_Ls + R_4 + 2R_L}$$

**10.376 INVALID-ORDER-376**  $Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{L_4s}{C_4L_4s^2+1} + R_4, \infty, \frac{R_L(L_Ls + \frac{1}{C_Ls})}{L_Ls + R_L + \frac{1}{C_Ls}} \right)$

$$H(s) = \frac{R_L(C_LL_Ls^2 + 1)(C_4L_4R_4s^2 + L_4s + R_4)}{C_4C_LL_4L_LR_4s^4 + 2C_4C_LL_4L_LR_Ls^4 + C_4C_LL_4R_4R_Ls^3 + C_4L_4R_4s^2 + 2C_4L_4R_Ls^2 + C_LL_4L_Ls^3 + C_LL_LR_4s^2 + 2C_LL_LR_Ls^2 + C_LR_4R_Ls + L_4s + R_4 + 2R_L}$$

**10.377 INVALID-ORDER-377**  $Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{R_4(L_4s + \frac{1}{C_4s})}{L_4s + R_4 + \frac{1}{C_4s}}, \infty, \frac{1}{C_Ls} \right)$

$$H(s) = \frac{R_4(C_4L_4s^2 + 1)}{C_4C_LL_4R_4s^3 + 2C_4L_4s^2 + 2C_4R_4s + C_LR_4s + 2}$$

**10.378 INVALID-ORDER-378**  $Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{R_4(L_4s + \frac{1}{C_4s})}{L_4s + R_4 + \frac{1}{C_4s}}, \infty, \frac{R_L}{C_LR_Ls + 1} \right)$

$$H(s) = \frac{R_4R_L(C_4L_4s^2 + 1)}{C_4C_LL_4R_4R_Ls^3 + C_4L_4R_4s^2 + 2C_4L_4R_Ls^2 + 2C_4R_4R_Ls + C_LR_4R_Ls + R_4 + 2R_L}$$

**10.379 INVALID-ORDER-379**  $Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{R_4(L_4s + \frac{1}{C_4s})}{L_4s + R_4 + \frac{1}{C_4s}}, \infty, R_L + \frac{1}{C_Ls} \right)$

$$H(s) = \frac{R_4(C_4L_4s^2 + 1)(C_LR_Ls + 1)}{C_4C_LL_4R_4s^3 + 2C_4C_LL_4R_Ls^3 + 2C_4C_LR_4R_Ls^2 + 2C_4L_4s^2 + 2C_4R_4s + C_LR_4s + 2C_LR_Ls + 2}$$

**10.380 INVALID-ORDER-380**  $Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{R_4(L_4s + \frac{1}{C_4s})}{L_4s + R_4 + \frac{1}{C_4s}}, \infty, L_Ls + \frac{1}{C_Ls} \right)$

$$H(s) = \frac{R_4(C_4L_4s^2 + 1)(C_LL_Ls^2 + 1)}{2C_4C_LL_4L_Ls^4 + C_4C_LL_4R_4s^3 + 2C_4C_LL_LR_4s^3 + 2C_4L_4s^2 + 2C_4R_4s + 2C_LL_Ls^2 + C_LR_4s + 2}$$

**10.381 INVALID-ORDER-381**  $Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{R_4(L_4s + \frac{1}{C_4s})}{L_4s + R_4 + \frac{1}{C_4s}}, \infty, \frac{L_Ls}{C_LL_Ls^2+1} \right)$

$$H(s) = \frac{L_LR_4s(C_4L_4s^2 + 1)}{C_4C_LL_4L_LR_4s^4 + 2C_4L_4L_Ls^3 + C_4L_4R_4s^2 + 2C_4L_LR_4s^2 + C_LL_LR_4s^2 + 2L_Ls + R_4}$$

**10.382 INVALID-ORDER-382**  $Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{R_4 \left( L_4s + \frac{1}{C_4s} \right)}{L_4s + R_4 + \frac{1}{C_4s}}, \infty, L_Ls + R_L + \frac{1}{C_Ls} \right)$

$$H(s) = \frac{R_4 (C_4L_4s^2 + 1) (C_LL_Ls^2 + C_LR_Ls + 1)}{2C_4C_LL_4L_Ls^4 + C_4C_LL_4R_4s^3 + 2C_4C_LL_4R_Ls^3 + 2C_4C_LL_R_4s^3 + 2C_4C_LR_4R_Ls^2 + 2C_4L_4s^2 + 2C_4R_4s + 2C_LL_Ls^2 + C_LR_4s + 2C_LR_Ls + 2}$$

**10.383 INVALID-ORDER-383**  $Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{R_4 \left( L_4s + \frac{1}{C_4s} \right)}{L_4s + R_4 + \frac{1}{C_4s}}, \infty, \frac{1}{C_Ls + \frac{1}{R_L} + \frac{1}{L_Ls}} \right)$

$$H(s) = \frac{L_LR_4R_Ls (C_4L_4s^2 + 1)}{C_4C_LL_4L_LR_4R_Ls^4 + C_4L_4L_LR_4s^3 + 2C_4L_4L_LR_Ls^3 + C_4L_4R_4R_Ls^2 + 2C_4L_LR_4R_Ls^2 + C_LL_LR_4R_Ls^2 + L_LR_4s + 2L_LR_Ls + R_4R_L}$$

**10.384 INVALID-ORDER-384**  $Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{R_4 \left( L_4s + \frac{1}{C_4s} \right)}{L_4s + R_4 + \frac{1}{C_4s}}, \infty, \frac{L_Ls}{C_LL_Ls^2 + 1} + R_L \right)$

$$H(s) = \frac{R_4 (C_4L_4s^2 + 1) (C_LL_LR_Ls^2 + L_Ls + R_L)}{C_4C_LL_4L_LR_4s^4 + 2C_4C_LL_4L_LR_Ls^4 + 2C_4C_LL_R_4R_Ls^3 + 2C_4L_4L_Ls^3 + C_4L_4R_4s^2 + 2C_4L_4R_Ls^2 + 2C_4L_LR_4s^2 + 2C_4R_4R_Ls + C_LL_LR_4s^2 + 2C_LL_LR_Ls^2 + 2L_Ls + R_4 + 2R_L}$$

**10.385 INVALID-ORDER-385**  $Z(s) = \left( \infty, L_2s + \frac{1}{C_2s}, \infty, \frac{R_4 \left( L_4s + \frac{1}{C_4s} \right)}{L_4s + R_4 + \frac{1}{C_4s}}, \infty, \frac{R_L \left( L_Ls + \frac{1}{C_Ls} \right)}{L_Ls + R_L + \frac{1}{C_Ls}} \right)$

$$H(s) = \frac{R_4R_L (C_4L_4s^2 + 1) (C_LL_Ls^2 + 1)}{C_4C_LL_4L_LR_4s^4 + 2C_4C_LL_4L_LR_Ls^4 + C_4C_LL_4R_4R_Ls^3 + 2C_4C_LL_R_4R_Ls^3 + C_4L_4R_4s^2 + 2C_4L_4R_Ls^2 + 2C_4R_4R_Ls + C_LL_LR_4s^2 + 2C_LL_LR_Ls^2 + C_LR_4R_Ls + R_4 + 2R_L}$$

**10.386 INVALID-ORDER-386**  $Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, R_4, \infty, R_L \right)$

$$H(s) = \frac{R_4R_L}{R_4 + 2R_L}$$

**10.387 INVALID-ORDER-387**  $Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, R_4, \infty, \frac{1}{C_Ls} \right)$

$$H(s) = \frac{R_4}{C_LR_4s + 2}$$

**10.388 INVALID-ORDER-388**  $Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, R_4, \infty, \frac{R_L}{C_LR_Ls + 1} \right)$

$$H(s) = \frac{R_4R_L}{C_LR_4R_Ls + R_4 + 2R_L}$$

**10.389 INVALID-ORDER-389**  $Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, R_4, \infty, R_L + \frac{1}{C_Ls} \right)$

$$H(s) = \frac{R_4 (C_LR_Ls + 1)}{C_LR_4s + 2C_LR_Ls + 2}$$

$$10.390 \quad \text{INVALID-ORDER-390} \quad Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{1}{C_4s}, \infty, R_L \right)$$

$$H(s) = \frac{R_L}{2C_4R_Ls + 1}$$

$$10.391 \quad \text{INVALID-ORDER-391} \quad Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{1}{C_4s}, \infty, \frac{1}{C_Ls} \right)$$

$$H(s) = \frac{1}{s(2C_4 + C_L)}$$

$$10.392 \quad \text{INVALID-ORDER-392} \quad Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{1}{C_4s}, \infty, \frac{R_L}{C_LR_Ls+1} \right)$$

$$H(s) = \frac{R_L}{2C_4R_Ls + C_LR_Ls + 1}$$

$$10.393 \quad \text{INVALID-ORDER-393} \quad Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{1}{C_4s}, \infty, R_L + \frac{1}{C_Ls} \right)$$

$$H(s) = \frac{C_LR_Ls + 1}{s(2C_4C_LR_Ls + 2C_4 + C_L)}$$

$$10.394 \quad \text{INVALID-ORDER-394} \quad Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{1}{C_4s}, \infty, L_Ls + \frac{1}{C_Ls} \right)$$

$$H(s) = \frac{C_LL_Ls^2 + 1}{s(2C_4C_LL_Ls^2 + 2C_4 + C_L)}$$

$$10.395 \quad \text{INVALID-ORDER-395} \quad Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{1}{C_4s}, \infty, \frac{L_Ls}{C_LL_Ls^2+1} \right)$$

$$H(s) = \frac{L_Ls}{2C_4L_Ls^2 + C_LL_Ls^2 + 1}$$

$$10.396 \quad \text{INVALID-ORDER-396} \quad Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{1}{C_4s}, \infty, L_Ls + R_L + \frac{1}{C_Ls} \right)$$

$$H(s) = \frac{C_LL_Ls^2 + C_LR_Ls + 1}{s(2C_4C_LL_Ls^2 + 2C_4C_LR_Ls + 2C_4 + C_L)}$$

$$10.397 \quad \text{INVALID-ORDER-397} \quad Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{1}{C_4s}, \infty, \frac{L_Ls}{C_LL_Ls^2+1} + R_L \right)$$

$$H(s) = \frac{C_LL_LR_Ls^2 + L_Ls + R_L}{2C_4C_LL_LR_Ls^3 + 2C_4L_Ls^2 + 2C_4R_Ls + C_LL_Ls^2 + 1}$$

$$10.398 \quad \text{INVALID-ORDER-398} \quad Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{1}{C_4s}, \infty, \frac{R_L \left( L_Ls + \frac{1}{C_Ls} \right)}{L_Ls + R_L + \frac{1}{C_Ls}} \right)$$

$$H(s) = \frac{R_L (C_LL_Ls^2 + 1)}{2C_4C_LL_LR_Ls^3 + 2C_4R_Ls + C_LL_Ls^2 + C_LR_Ls + 1}$$

$$10.399 \quad \text{INVALID-ORDER-399} \quad Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{R_4}{C_4R_4s+1}, \infty, R_L \right)$$

$$H(s) = \frac{R_4R_L}{2C_4R_4R_Ls + R_4 + 2R_L}$$

$$10.400 \quad \text{INVALID-ORDER-400} \quad Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{R_4}{C_4R_4s+1}, \infty, \frac{1}{C_Ls} \right)$$

$$H(s) = \frac{R_4}{2C_4R_4s + C_LR_4s + 2}$$

$$10.401 \quad \text{INVALID-ORDER-401} \quad Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{R_4}{C_4R_4s+1}, \infty, \frac{R_L}{C_LR_Ls+1} \right)$$

$$H(s) = \frac{R_4R_L}{2C_4R_4R_Ls + C_LR_4R_Ls + R_4 + 2R_L}$$

$$10.402 \quad \text{INVALID-ORDER-402} \quad Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{R_4}{C_4R_4s+1}, \infty, L_Ls + \frac{1}{C_Ls} \right)$$

$$H(s) = \frac{R_4(C_LL_Ls^2 + 1)}{2C_4C_LL_LR_4s^3 + 2C_4R_4s + 2C_LL_Ls^2 + C_LR_4s + 2}$$

$$10.403 \quad \text{INVALID-ORDER-403} \quad Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{R_4}{C_4R_4s+1}, \infty, L_Ls + R_L + \frac{1}{C_Ls} \right)$$

$$H(s) = \frac{R_4(C_LL_Ls^2 + C_LR_Ls + 1)}{2C_4C_LL_LR_4s^3 + 2C_4C_LR_4R_Ls^2 + 2C_4R_4s + 2C_LL_Ls^2 + C_LR_4s + 2C_LR_Ls + 2}$$

$$10.404 \quad \text{INVALID-ORDER-404} \quad Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{R_4}{C_4R_4s+1}, \infty, \frac{L_Ls}{C_LL_Ls^2+1} + R_L \right)$$

$$H(s) = \frac{R_4(C_LL_LR_Ls^2 + L_Ls + R_L)}{2C_4C_LL_LR_4R_Ls^3 + 2C_4L_LR_4s^2 + 2C_4R_4R_Ls + C_LL_LR_4s^2 + 2C_LL_LR_Ls^2 + 2L_Ls + R_4 + 2R_L}$$

$$10.405 \quad \text{INVALID-ORDER-405} \quad Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{R_4}{C_4R_4s+1}, \infty, \frac{R_L(L_Ls + \frac{1}{C_Ls})}{L_Ls + R_L + \frac{1}{C_Ls}} \right)$$

$$H(s) = \frac{R_4R_L(C_LL_Ls^2 + 1)}{2C_4C_LL_LR_4R_Ls^3 + 2C_4R_4R_Ls + C_LL_LR_4s^2 + 2C_LL_LR_Ls^2 + C_LR_4R_Ls + R_4 + 2R_L}$$

$$10.406 \quad \text{INVALID-ORDER-406} \quad Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, R_4 + \frac{1}{C_4s}, \infty, R_L \right)$$

$$H(s) = \frac{R_L(C_4R_4s + 1)}{C_4R_4s + 2C_4R_Ls + 1}$$

$$10.407 \quad \text{INVALID-ORDER-407} \quad Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, R_4 + \frac{1}{C_4s}, \infty, \frac{1}{C_Ls} \right)$$

$$H(s) = \frac{C_4R_4s + 1}{s(C_4C_LR_4s + 2C_4 + C_L)}$$



10.408 INVALID-ORDER-408  $Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, R_4 + \frac{1}{C_4s}, \infty, R_L + \frac{1}{C_Ls} \right)$

$$H(s) = \frac{(C_4R_4s + 1)(C_LR_Ls + 1)}{s(C_4C_LR_4s + 2C_4C_LR_Ls + 2C_4 + C_L)}$$

10.409 INVALID-ORDER-409  $Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, R_4 + \frac{1}{C_4s}, \infty, L_Ls + \frac{1}{C_Ls} \right)$

$$H(s) = \frac{(C_4R_4s + 1)(C_LL_Ls^2 + 1)}{s(2C_4C_LL_Ls^2 + C_4C_LR_4s + 2C_4 + C_L)}$$

10.410 INVALID-ORDER-410  $Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, R_4 + \frac{1}{C_4s}, \infty, \frac{L_Ls}{C_LL_Ls^2 + 1} \right)$

$$H(s) = \frac{L_Ls(C_4R_4s + 1)}{C_4C_LL_LR_4s^3 + 2C_4L_Ls^2 + C_4R_4s + C_LL_Ls^2 + 1}$$

10.411 INVALID-ORDER-411  $Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, R_4 + \frac{1}{C_4s}, \infty, L_Ls + R_L + \frac{1}{C_Ls} \right)$

$$H(s) = \frac{(C_4R_4s + 1)(C_LL_Ls^2 + C_LR_Ls + 1)}{s(2C_4C_LL_Ls^2 + C_4C_LR_4s + 2C_4C_LR_Ls + 2C_4 + C_L)}$$

10.412 INVALID-ORDER-412  $Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, R_4 + \frac{1}{C_4s}, \infty, \frac{1}{C_Ls + \frac{1}{R_L} + \frac{1}{L_Ls}} \right)$

$$H(s) = \frac{L_LR_Ls(C_4R_4s + 1)}{C_4C_LL_LR_4R_Ls^3 + C_4L_LR_4s^2 + 2C_4L_LR_Ls^2 + C_4R_4R_Ls + C_LL_LR_Ls^2 + L_Ls + R_L}$$

10.413 INVALID-ORDER-413  $Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, R_4 + \frac{1}{C_4s}, \infty, \frac{L_Ls}{C_LL_Ls^2 + 1} + R_L \right)$

$$H(s) = \frac{(C_4R_4s + 1)(C_LL_LR_Ls^2 + L_Ls + R_L)}{C_4C_LL_LR_4s^3 + 2C_4C_LL_LR_Ls^3 + 2C_4L_Ls^2 + C_4R_4s + 2C_4R_Ls + C_LL_Ls^2 + 1}$$

10.414 INVALID-ORDER-414  $Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, R_4 + \frac{1}{C_4s}, \infty, \frac{R_L(L_Ls + \frac{1}{C_Ls})}{L_Ls + R_L + \frac{1}{C_Ls}} \right)$

$$H(s) = \frac{R_L(C_4R_4s + 1)(C_LL_Ls^2 + 1)}{C_4C_LL_LR_4s^3 + 2C_4C_LL_LR_Ls^3 + C_4C_LR_4R_Ls^2 + C_4R_4s + 2C_4R_Ls + C_LL_Ls^2 + C_LR_Ls + 1}$$

10.415 INVALID-ORDER-415  $Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, L_4s + \frac{1}{C_4s}, \infty, \frac{1}{C_Ls} \right)$

$$H(s) = \frac{C_4L_4s^2 + 1}{s(C_4C_LL_4s^2 + 2C_4 + C_L)}$$

$$10.416 \quad \text{INVALID-ORDER-416} \quad Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, L_4s + \frac{1}{C_4s}, \infty, \frac{R_L}{C_LR_Ls+1} \right)$$

$$H(s) = \frac{R_L (C_4L_4s^2 + 1)}{C_4C_LL_4R_Ls^3 + C_4L_4s^2 + 2C_4R_Ls + C_LR_Ls + 1}$$

$$10.417 \quad \text{INVALID-ORDER-417} \quad Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, L_4s + \frac{1}{C_4s}, \infty, R_L + \frac{1}{C_Ls} \right)$$

$$H(s) = \frac{(C_4L_4s^2 + 1)(C_LR_Ls + 1)}{s(C_4C_LL_4s^2 + 2C_4C_LR_Ls + 2C_4 + C_L)}$$

$$10.418 \quad \text{INVALID-ORDER-418} \quad Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, L_4s + \frac{1}{C_4s}, \infty, L_Ls + \frac{1}{C_Ls} \right)$$

$$H(s) = \frac{(C_4L_4s^2 + 1)(C_LL_Ls^2 + 1)}{s(C_4C_LL_4s^2 + 2C_4C_LL_Ls^2 + 2C_4 + C_L)}$$

$$10.419 \quad \text{INVALID-ORDER-419} \quad Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, L_4s + \frac{1}{C_4s}, \infty, \frac{L_Ls}{C_LL_Ls^2+1} \right)$$

$$H(s) = \frac{L_Ls (C_4L_4s^2 + 1)}{C_4C_LL_4L_Ls^4 + C_4L_4s^2 + 2C_4L_Ls^2 + C_LL_Ls^2 + 1}$$

$$10.420 \quad \text{INVALID-ORDER-420} \quad Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, L_4s + \frac{1}{C_4s}, \infty, L_Ls + R_L + \frac{1}{C_Ls} \right)$$

$$H(s) = \frac{(C_4L_4s^2 + 1)(C_LL_Ls^2 + C_LR_Ls + 1)}{s(C_4C_LL_4s^2 + 2C_4C_LL_Ls^2 + 2C_4C_LR_Ls + 2C_4 + C_L)}$$

$$10.421 \quad \text{INVALID-ORDER-421} \quad Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, L_4s + \frac{1}{C_4s}, \infty, \frac{1}{C_Ls + \frac{1}{R_L} + \frac{1}{L_Ls}} \right)$$

$$H(s) = \frac{L_LR_Ls (C_4L_4s^2 + 1)}{C_4C_LL_4L_LR_Ls^4 + C_4L_4L_Ls^3 + C_4L_4R_Ls^2 + 2C_4L_LR_Ls^2 + C_LL_LR_Ls^2 + L_Ls + R_L}$$

$$10.422 \quad \text{INVALID-ORDER-422} \quad Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, L_4s + \frac{1}{C_4s}, \infty, \frac{L_Ls}{C_LL_Ls^2+1} + R_L \right)$$

$$H(s) = \frac{(C_4L_4s^2 + 1)(C_LL_LR_Ls^2 + L_Ls + R_L)}{C_4C_LL_4L_Ls^4 + 2C_4C_LL_LR_Ls^3 + C_4L_4s^2 + 2C_4L_Ls^2 + 2C_4R_Ls + C_LL_Ls^2 + 1}$$

$$10.423 \quad \text{INVALID-ORDER-423} \quad Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, L_4s + \frac{1}{C_4s}, \infty, \frac{R_L(L_Ls + \frac{1}{C_Ls})}{L_Ls + R_L + \frac{1}{C_Ls}} \right)$$

$$H(s) = \frac{R_L (C_4L_4s^2 + 1)(C_LL_Ls^2 + 1)}{C_4C_LL_4L_Ls^4 + C_4C_LL_4R_Ls^3 + 2C_4C_LL_LR_Ls^3 + C_4L_4s^2 + 2C_4R_Ls + C_LL_Ls^2 + C_LR_Ls + 1}$$

$$10.424 \quad \text{INVALID-ORDER-424} \quad Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{L_4s}{C_4L_4s^2+1}, \infty, \frac{1}{C_Ls} \right)$$

$$H(s) = \frac{L_4s}{2C_4L_4s^2 + C_LL_4s^2 + 2}$$

$$10.425 \quad \text{INVALID-ORDER-425} \quad Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{L_4s}{C_4L_4s^2+1}, \infty, R_L + \frac{1}{C_Ls} \right)$$

$$H(s) = \frac{L_4s(C_LR_Ls + 1)}{2C_4C_LL_4R_Ls^3 + 2C_4L_4s^2 + C_LL_4s^2 + 2C_LR_Ls + 2}$$

$$10.426 \quad \text{INVALID-ORDER-426} \quad Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{L_4s}{C_4L_4s^2+1}, \infty, L_Ls + \frac{1}{C_Ls} \right)$$

$$H(s) = \frac{L_4s(C_LL_Ls^2 + 1)}{2C_4C_LL_4L_Ls^4 + 2C_4L_4s^2 + C_LL_4s^2 + 2C_LL_Ls^2 + 2}$$

$$10.427 \quad \text{INVALID-ORDER-427} \quad Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{L_4s}{C_4L_4s^2+1}, \infty, \frac{L_Ls}{C_LL_Ls^2+1} \right)$$

$$H(s) = \frac{L_4L_Ls}{2C_4L_4L_Ls^2 + C_LL_4L_Ls^2 + L_4 + 2L_L}$$

$$10.428 \quad \text{INVALID-ORDER-428} \quad Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{L_4s}{C_4L_4s^2+1}, \infty, L_Ls + R_L + \frac{1}{C_Ls} \right)$$

$$H(s) = \frac{L_4s(C_LL_Ls^2 + C_LR_Ls + 1)}{2C_4C_LL_4L_Ls^4 + 2C_4C_LL_4R_Ls^3 + 2C_4L_4s^2 + C_LL_4s^2 + 2C_LL_Ls^2 + 2C_LR_Ls + 2}$$

$$10.429 \quad \text{INVALID-ORDER-429} \quad Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{L_4s}{C_4L_4s^2+1}, \infty, \frac{L_Ls}{C_LL_Ls^2+1} + R_L \right)$$

$$H(s) = \frac{L_4s(C_LL_LR_Ls^2 + L_Ls + R_L)}{2C_4C_LL_4L_LR_Ls^4 + 2C_4L_4L_Ls^3 + 2C_4L_4R_Ls^2 + C_LL_4L_Ls^3 + 2C_LL_LR_Ls^2 + L_4s + 2L_Ls + 2R_L}$$

$$10.430 \quad \text{INVALID-ORDER-430} \quad Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{L_4s}{C_4L_4s^2+1}, \infty, \frac{R_L(L_Ls + \frac{1}{C_Ls})}{L_Ls + R_L + \frac{1}{C_Ls}} \right)$$

$$H(s) = \frac{L_4R_Ls(C_LL_Ls^2 + 1)}{2C_4C_LL_4L_LR_Ls^4 + 2C_4L_4R_Ls^2 + C_LL_4L_Ls^3 + C_LL_4R_Ls^2 + 2C_LL_LR_Ls^2 + L_4s + 2R_L}$$

$$10.431 \quad \text{INVALID-ORDER-431} \quad Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, L_4s + R_4 + \frac{1}{C_4s}, \infty, \frac{1}{C_Ls} \right)$$

$$H(s) = \frac{C_4L_4s^2 + C_4R_4s + 1}{s(C_4C_LL_4s^2 + C_4C_LR_4s + 2C_4 + C_L)}$$

$$10.432 \quad \text{INVALID-ORDER-432} \quad Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, L_4s + R_4 + \frac{1}{C_4s}, \infty, \frac{R_L}{C_LR_Ls+1} \right)$$

$$H(s) = \frac{R_L(C_4L_4s^2 + C_4R_4s + 1)}{C_4C_LL_4R_Ls^3 + C_4C_LR_4R_Ls^2 + C_4L_4s^2 + C_4R_4s + 2C_4R_Ls + C_LR_Ls + 1}$$

**10.433 INVALID-ORDER-433**  $Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, L_4s + R_4 + \frac{1}{C_4s}, \infty, R_L + \frac{1}{C_Ls} \right)$

$$H(s) = \frac{(C_LR_Ls + 1)(C_4L_4s^2 + C_4R_4s + 1)}{s(C_4C_LL_4s^2 + C_4C_LR_4s + 2C_4C_LR_Ls + 2C_4 + C_L)}$$

**10.434 INVALID-ORDER-434**  $Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, L_4s + R_4 + \frac{1}{C_4s}, \infty, L_Ls + \frac{1}{C_Ls} \right)$

$$H(s) = \frac{(C_LL_Ls^2 + 1)(C_4L_4s^2 + C_4R_4s + 1)}{s(C_4C_LL_4s^2 + 2C_4C_LL_Ls^2 + C_4C_LR_4s + 2C_4 + C_L)}$$

**10.435 INVALID-ORDER-435**  $Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, L_4s + R_4 + \frac{1}{C_4s}, \infty, \frac{L_Ls}{C_LL_Ls^2 + 1} \right)$

$$H(s) = \frac{L_Ls(C_4L_4s^2 + C_4R_4s + 1)}{C_4C_LL_4L_Ls^4 + C_4C_LL_LR_4s^3 + C_4L_4s^2 + 2C_4L_Ls^2 + C_4R_4s + C_LL_Ls^2 + 1}$$

**10.436 INVALID-ORDER-436**  $Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, L_4s + R_4 + \frac{1}{C_4s}, \infty, L_Ls + R_L + \frac{1}{C_Ls} \right)$

$$H(s) = \frac{(C_4L_4s^2 + C_4R_4s + 1)(C_LL_Ls^2 + C_LR_Ls + 1)}{s(C_4C_LL_4s^2 + 2C_4C_LL_Ls^2 + C_4C_LR_4s + 2C_4C_LR_Ls + 2C_4 + C_L)}$$

**10.437 INVALID-ORDER-437**  $Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, L_4s + R_4 + \frac{1}{C_4s}, \infty, \frac{1}{C_Ls + \frac{1}{R_L} + \frac{1}{L_Ls}} \right)$

$$H(s) = \frac{L_LR_Ls(C_4L_4s^2 + C_4R_4s + 1)}{C_4C_LL_4L_LR_Ls^4 + C_4C_LL_LR_4s^3 + C_4L_4L_Ls^3 + C_4L_4R_Ls^2 + C_4L_LR_4s^2 + 2C_4L_LR_Ls^2 + C_4R_4R_Ls + C_LL_LR_Ls^2 + L_Ls + R_L}$$

**10.438 INVALID-ORDER-438**  $Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, L_4s + R_4 + \frac{1}{C_4s}, \infty, \frac{L_Ls}{C_LL_Ls^2 + 1} + R_L \right)$

$$H(s) = \frac{(C_4L_4s^2 + C_4R_4s + 1)(C_LL_LR_Ls^2 + L_Ls + R_L)}{C_4C_LL_4L_Ls^4 + C_4C_LL_LR_4s^3 + 2C_4C_LL_LR_Ls^3 + C_4L_4s^2 + 2C_4L_Ls^2 + C_4R_4s + 2C_4R_Ls + C_LL_Ls^2 + 1}$$

**10.439 INVALID-ORDER-439**  $Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, L_4s + R_4 + \frac{1}{C_4s}, \infty, \frac{R_L(L_Ls + \frac{1}{C_Ls})}{L_Ls + R_L + \frac{1}{C_Ls}} \right)$

$$H(s) = \frac{R_L(C_LL_Ls^2 + 1)(C_4L_4s^2 + C_4R_4s + 1)}{C_4C_LL_4L_Ls^4 + C_4C_LL_4R_Ls^3 + C_4C_LL_R_4s^3 + 2C_4C_LL_R_Ls^3 + C_4C_LR_4R_Ls^2 + C_4L_4s^2 + C_4R_4s + 2C_4R_Ls + C_LL_Ls^2 + C_LR_Ls + 1}$$

**10.440 INVALID-ORDER-440**  $Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{1}{C_4s + \frac{1}{R_4} + \frac{1}{L_4s}}, \infty, R_L + \frac{1}{C_Ls} \right)$

$$H(s) = \frac{L_4R_4s(C_LR_Ls + 1)}{2C_4C_LL_4R_4R_Ls^3 + 2C_4L_4R_4s^2 + C_LL_4R_4s^2 + 2C_LL_4R_Ls^2 + 2C_LR_4R_Ls + 2L_4s + 2R_4}$$

**10.441 INVALID-ORDER-441**  $Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{1}{C_4s + \frac{1}{R_4} + \frac{1}{L_4s}}, \infty, L_Ls + \frac{1}{C_Ls} \right)$

$$H(s) = \frac{L_4R_4s(C_LL_Ls^2 + 1)}{2C_4C_LL_4L_LR_4s^4 + 2C_4L_4R_4s^2 + 2C_LL_4L_Ls^3 + C_LL_4R_4s^2 + 2C_LL_LR_4s^2 + 2L_4s + 2R_4}$$

**10.442 INVALID-ORDER-442**  $Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{1}{C_4s + \frac{1}{R_4} + \frac{1}{L_4s}}, \infty, L_Ls + R_L + \frac{1}{C_Ls} \right)$

$$H(s) = \frac{L_4R_4s(C_LL_Ls^2 + C_LR_Ls + 1)}{2C_4C_LL_4L_LR_4s^4 + 2C_4C_LL_4R_4R_Ls^3 + 2C_4L_4R_4s^2 + 2C_LL_4L_Ls^3 + C_LL_4R_4s^2 + 2C_LL_LR_4s^2 + 2C_LL_LR_4s^2 + 2C_LR_4R_Ls + 2L_4s + 2R_4}$$

**10.443 INVALID-ORDER-443**  $Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{1}{C_4s + \frac{1}{R_4} + \frac{1}{L_4s}}, \infty, \frac{L_Ls}{C_LL_Ls^2 + 1} + R_L \right)$

$$H(s) = \frac{L_4R_4s(C_LL_LR_Ls^2 + L_Ls + R_L)}{2C_4C_LL_4L_LR_4R_Ls^4 + 2C_4L_4L_LR_4s^3 + 2C_4L_4R_4R_Ls^2 + C_LL_4L_LR_4s^3 + 2C_LL_4L_LR_Ls^3 + 2C_LL_LR_4R_Ls^2 + 2L_4L_Ls^2 + L_4R_4s + 2L_4R_Ls + 2L_LR_4s + 2R_4R_L}$$

**10.444 INVALID-ORDER-444**  $Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{1}{C_4s + \frac{1}{R_4} + \frac{1}{L_4s}}, \infty, \frac{R_L(L_Ls + \frac{1}{C_Ls})}{L_Ls + R_L + \frac{1}{C_Ls}} \right)$

$$H(s) = \frac{L_4R_4R_Ls(C_LL_Ls^2 + 1)}{2C_4C_LL_4L_LR_4R_Ls^4 + 2C_4L_4R_4R_Ls^2 + C_LL_4L_LR_4s^3 + 2C_LL_4L_LR_Ls^3 + C_LL_4R_4R_Ls^2 + 2C_LL_LR_4R_Ls^2 + L_4R_4s + 2L_4R_Ls + 2R_4R_L}$$

**10.445 INVALID-ORDER-445**  $Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{L_4s}{C_4L_4s^2 + 1} + R_4, \infty, \frac{1}{C_Ls} \right)$

$$H(s) = \frac{C_4L_4R_4s^2 + L_4s + R_4}{C_4C_LL_4R_4s^3 + 2C_4L_4s^2 + C_LL_4s^2 + C_LR_4s + 2}$$

**10.446 INVALID-ORDER-446**  $Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{L_4s}{C_4L_4s^2 + 1} + R_4, \infty, \frac{R_L}{C_LR_Ls + 1} \right)$

$$H(s) = \frac{R_L(C_4L_4R_4s^2 + L_4s + R_4)}{C_4C_LL_4R_4R_Ls^3 + C_4L_4R_4s^2 + 2C_4L_4R_Ls^2 + C_LL_4R_Ls^2 + C_LR_4R_Ls + L_4s + R_4 + 2R_L}$$

**10.447 INVALID-ORDER-447**  $Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{L_4s}{C_4L_4s^2 + 1} + R_4, \infty, R_L + \frac{1}{C_Ls} \right)$

$$H(s) = \frac{(C_LR_Ls + 1)(C_4L_4R_4s^2 + L_4s + R_4)}{C_4C_LL_4R_4s^3 + 2C_4C_LL_4R_Ls^3 + 2C_4L_4s^2 + C_LL_4s^2 + C_LR_4s + 2C_LR_Ls + 2}$$

**10.448 INVALID-ORDER-448**  $Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{L_4s}{C_4L_4s^2 + 1} + R_4, \infty, L_Ls + \frac{1}{C_Ls} \right)$

$$H(s) = \frac{(C_LL_Ls^2 + 1)(C_4L_4R_4s^2 + L_4s + R_4)}{2C_4C_LL_4L_LR_4s^4 + C_4C_LL_4R_4s^3 + 2C_4L_4s^2 + C_LL_4s^2 + 2C_LL_Ls^2 + C_LR_4s + 2}$$

10.449 INVALID-ORDER-449  $Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{L_4s}{C_4L_4s^2+1} + R_4, \infty, \frac{L_Ls}{C_LL_Ls^2+1} \right)$

$$H(s) = \frac{L_Ls (C_4L_4R_4s^2 + L_4s + R_4)}{C_4C_LL_LL_R4s^4 + 2C_4L_4L_Ls^3 + C_4L_4R_4s^2 + C_LL_4L_Ls^3 + C_LL_LR_4s^2 + L_4s + 2L_Ls + R_4}$$

10.450 INVALID-ORDER-450  $Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{L_4s}{C_4L_4s^2+1} + R_4, \infty, L_Ls + R_L + \frac{1}{C_Ls} \right)$

$$H(s) = \frac{(C_LL_Ls^2 + C_LR_Ls + 1) (C_4L_4R_4s^2 + L_4s + R_4)}{2C_4C_LL_LL_R4s^4 + C_4C_LL_4R_4s^3 + 2C_4C_LL_4R_Ls^3 + 2C_4L_4s^2 + C_LL_4s^2 + 2C_LL_Ls^2 + C_LR_4s + 2C_LR_Ls + 2}$$

10.451 INVALID-ORDER-451  $Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{L_4s}{C_4L_4s^2+1} + R_4, \infty, \frac{1}{C_Ls + \frac{1}{R_L} + \frac{1}{L_Ls}} \right)$

$$H(s) = \frac{L_LR_Ls (C_4L_4R_4s^2 + L_4s + R_4)}{C_4C_LL_LL_R4R_Ls^4 + C_4L_4L_LR_4s^3 + 2C_4L_4L_LR_Ls^3 + C_4L_4R_4R_Ls^2 + C_LL_4L_LR_Ls^3 + C_LL_LR_4R_Ls^2 + L_4L_Ls^2 + L_4R_Ls + L_LR_4s + 2L_LR_Ls + R_4R_L}$$

10.452 INVALID-ORDER-452  $Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{L_4s}{C_4L_4s^2+1} + R_4, \infty, \frac{L_Ls}{C_LL_Ls^2+1} + R_L \right)$

$$H(s) = \frac{(C_4L_4R_4s^2 + L_4s + R_4) (C_LL_LR_Ls^2 + L_Ls + R_L)}{C_4C_LL_LL_R4s^4 + 2C_4C_LL_4L_LR_Ls^4 + 2C_4L_4L_Ls^3 + C_4L_4R_4s^2 + 2C_4L_4R_Ls^2 + C_LL_4L_Ls^3 + C_LL_LR_4s^2 + 2C_LL_LR_Ls^2 + L_4s + 2L_Ls + R_4 + 2R_L}$$

10.453 INVALID-ORDER-453  $Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{L_4s}{C_4L_4s^2+1} + R_4, \infty, \frac{R_L (L_Ls + \frac{1}{C_Ls})}{L_Ls + R_L + \frac{1}{C_Ls}} \right)$

$$H(s) = \frac{R_L (C_LL_Ls^2 + 1) (C_4L_4R_4s^2 + L_4s + R_4)}{C_4C_LL_LL_R4s^4 + 2C_4C_LL_4L_LR_Ls^4 + C_4C_LL_4R_4R_Ls^3 + C_4L_4R_4s^2 + 2C_4L_4R_Ls^2 + C_LL_4L_Ls^3 + C_LL_LR_4s^2 + C_LL_LR_Ls^2 + C_LR_4R_Ls + L_4s + R_4 + 2R_L}$$

10.454 INVALID-ORDER-454  $Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{R_4 (L_4s + \frac{1}{C_4s})}{L_4s + R_4 + \frac{1}{C_4s}}, \infty, \frac{1}{C_Ls} \right)$

$$H(s) = \frac{R_4 (C_4L_4s^2 + 1)}{C_4C_LL_4R_4s^3 + 2C_4L_4s^2 + 2C_4R_4s + C_LR_4s + 2}$$

10.455 INVALID-ORDER-455  $Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{R_4 (L_4s + \frac{1}{C_4s})}{L_4s + R_4 + \frac{1}{C_4s}}, \infty, \frac{R_L}{C_LR_Ls + 1} \right)$

$$H(s) = \frac{R_4R_L (C_4L_4s^2 + 1)}{C_4C_LL_4R_4R_Ls^3 + C_4L_4R_4s^2 + 2C_4L_4R_Ls^2 + 2C_4R_4R_Ls + C_LR_4R_Ls + R_4 + 2R_L}$$

10.456 INVALID-ORDER-456  $Z(s) = \left( \infty, L_2s + R_2 + \frac{1}{C_2s}, \infty, \frac{R_4 (L_4s + \frac{1}{C_4s})}{L_4s + R_4 + \frac{1}{C_4s}}, \infty, R_L + \frac{1}{C_Ls} \right)$

$$H(s) = \frac{R_4 (C_4L_4s^2 + 1) (C_LR_Ls + 1)}{C_4C_LL_4R_4s^3 + 2C_4C_LL_4R_Ls^3 + 2C_4C_LL_4R_Ls^2 + 2C_4L_4s^2 + 2C_4R_4s + C_LR_4s + 2C_LR_Ls + 2}$$

$$10.457 \quad \text{INVALID-ORDER-457} \quad Z(s) = \left( \infty, \quad L_2 s + R_2 + \frac{1}{C_2 s}, \quad \infty, \quad \frac{R_4 \left( L_4 s + \frac{1}{C_4 s} \right)}{L_4 s + R_4 + \frac{1}{C_4 s}}, \quad \infty, \quad L_L s + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{R_4 (C_4 L_4 s^2 + 1) (C_L L_L s^2 + 1)}{2C_4 C_L L_4 L_L s^4 + C_4 C_L L_4 R_4 s^3 + 2C_4 C_L L_L R_4 s^3 + 2C_4 L_4 s^2 + 2C_4 R_4 s + 2C_L L_L s^2 + C_L R_4 s + 2}$$

$$10.458 \quad \text{INVALID-ORDER-458} \quad Z(s) = \left( \infty, \quad L_2 s + R_2 + \frac{1}{C_2 s}, \quad \infty, \quad \frac{R_4 \left( L_4 s + \frac{1}{C_4 s} \right)}{L_4 s + R_4 + \frac{1}{C_4 s}}, \quad \infty, \quad \frac{L_L s}{C_L L_L s^2 + 1} \right)$$

$$H(s) = \frac{L_L R_4 s (C_4 L_4 s^2 + 1)}{C_4 C_L L_4 L_L R_4 s^4 + 2C_4 L_4 L_L s^3 + C_4 L_4 R_4 s^2 + 2C_4 L_L R_4 s^2 + C_L L_L R_4 s^2 + 2L_L s + R_4}$$

$$10.459 \quad \text{INVALID-ORDER-459} \quad Z(s) = \left( \infty, \quad L_2 s + R_2 + \frac{1}{C_2 s}, \quad \infty, \quad \frac{R_4 \left( L_4 s + \frac{1}{C_4 s} \right)}{L_4 s + R_4 + \frac{1}{C_4 s}}, \quad \infty, \quad L_L s + R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{R_4 (C_4 L_4 s^2 + 1) (C_L L_L s^2 + C_L R_L s + 1)}{2C_4 C_L L_4 L_L s^4 + C_4 C_L L_4 R_4 s^3 + 2C_4 C_L L_L R_4 s^3 + 2C_4 C_L L_L R_4 s^3 + 2C_4 C_L R_4 R_L s^2 + 2C_4 L_4 s^2 + 2C_4 R_4 s + 2C_L L_L s^2 + C_L R_4 s + 2C_L R_L s + 2}$$

$$10.460 \quad \text{INVALID-ORDER-460} \quad Z(s) = \left( \infty, \quad L_2 s + R_2 + \frac{1}{C_2 s}, \quad \infty, \quad \frac{R_4 \left( L_4 s + \frac{1}{C_4 s} \right)}{L_4 s + R_4 + \frac{1}{C_4 s}}, \quad \infty, \quad \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$$

$$H(s) = \frac{L_L R_4 R_L s (C_4 L_4 s^2 + 1)}{C_4 C_L L_4 L_L R_4 R_L s^4 + C_4 L_4 L_L R_4 s^3 + 2C_4 L_4 L_L R_L s^3 + C_4 L_4 R_4 R_L s^2 + 2C_4 L_L R_4 R_L s^2 + C_L L_L R_4 R_L s^2 + L_L R_4 s + 2L_L R_L s + R_4 R_L}$$

$$10.461 \quad \text{INVALID-ORDER-461} \quad Z(s) = \left( \infty, \quad L_2 s + R_2 + \frac{1}{C_2 s}, \quad \infty, \quad \frac{R_4 \left( L_4 s + \frac{1}{C_4 s} \right)}{L_4 s + R_4 + \frac{1}{C_4 s}}, \quad \infty, \quad \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$$

$$H(s) = \frac{R_4 (C_4 L_4 s^2 + 1) (C_L L_L R_L s^2 + L_L s + R_L)}{C_4 C_L L_4 L_L R_4 s^4 + 2C_4 C_L L_4 L_L R_L s^4 + 2C_4 C_L L_L R_4 R_L s^3 + 2C_4 L_4 L_L s^3 + C_4 L_4 R_4 s^2 + 2C_4 L_4 R_L s^2 + 2C_4 L_L R_4 s^2 + 2C_4 R_4 R_L s + C_L L_L R_4 s^2 + 2C_L L_L R_L s^2 + 2L_L s + R_4 + 2R_L}$$

$$10.462 \quad \text{INVALID-ORDER-462} \quad Z(s) = \left( \infty, \quad L_2 s + R_2 + \frac{1}{C_2 s}, \quad \infty, \quad \frac{R_4 \left( L_4 s + \frac{1}{C_4 s} \right)}{L_4 s + R_4 + \frac{1}{C_4 s}}, \quad \infty, \quad \frac{R_L \left( L_L s + \frac{1}{C_L s} \right)}{L_L s + R_L + \frac{1}{C_L s}} \right)$$

$$H(s) = \frac{R_4 R_L (C_4 L_4 s^2 + 1) (C_L L_L s^2 + 1)}{C_4 C_L L_4 L_L R_4 s^4 + 2C_4 C_L L_4 L_L R_L s^4 + C_4 C_L L_4 R_4 R_L s^3 + 2C_4 C_L L_L R_4 R_L s^3 + C_4 L_4 R_4 s^2 + 2C_4 L_4 R_L s^2 + 2C_4 R_4 R_L s + C_L L_L R_4 s^2 + 2C_L L_L R_L s^2 + C_L R_4 R_L s + R_4 + 2R_L}$$

$$10.463 \quad \text{INVALID-ORDER-463} \quad Z(s) = \left( \infty, \quad \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \quad \infty, \quad R_4, \quad \infty, \quad R_L \right)$$

$$H(s) = \frac{R_4 R_L}{R_4 + 2R_L}$$

$$10.464 \quad \text{INVALID-ORDER-464} \quad Z(s) = \left( \infty, \quad \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \quad \infty, \quad R_4, \quad \infty, \quad \frac{1}{C_L s} \right)$$

$$H(s) = \frac{R_4}{C_L R_4 s + 2}$$

$$10.465 \quad \text{INVALID-ORDER-465} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, R_4, \infty, \frac{R_L}{C_L R_L s + 1} \right)$$

$$H(s) = \frac{R_4 R_L}{C_L R_4 R_L s + R_4 + 2 R_L}$$

$$10.466 \quad \text{INVALID-ORDER-466} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, R_4, \infty, R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{R_4 (C_L R_L s + 1)}{C_L R_4 s + 2 C_L R_L s + 2}$$

$$10.467 \quad \text{INVALID-ORDER-467} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{1}{C_4 s}, \infty, R_L \right)$$

$$H(s) = \frac{R_L}{2 C_4 R_L s + 1}$$

$$10.468 \quad \text{INVALID-ORDER-468} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{1}{C_4 s}, \infty, \frac{1}{C_L s} \right)$$

$$H(s) = \frac{1}{s (2 C_4 + C_L)}$$

$$10.469 \quad \text{INVALID-ORDER-469} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{1}{C_4 s}, \infty, \frac{R_L}{C_L R_L s + 1} \right)$$

$$H(s) = \frac{R_L}{2 C_4 R_L s + C_L R_L s + 1}$$

$$10.470 \quad \text{INVALID-ORDER-470} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{1}{C_4 s}, \infty, R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{C_L R_L s + 1}{s (2 C_4 C_L R_L s + 2 C_4 + C_L)}$$

$$10.471 \quad \text{INVALID-ORDER-471} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{1}{C_4 s}, \infty, L_L s + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{C_L L_L s^2 + 1}{s (2 C_4 C_L L_L s^2 + 2 C_4 + C_L)}$$

$$10.472 \quad \text{INVALID-ORDER-472} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{1}{C_4 s}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$$

$$H(s) = \frac{L_L s}{2 C_4 L_L s^2 + C_L L_L s^2 + 1}$$

$$10.473 \quad \text{INVALID-ORDER-473} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{1}{C_4 s}, \infty, L_L s + R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{C_L L_L s^2 + C_L R_L s + 1}{s (2 C_4 C_L L_L s^2 + 2 C_4 C_L R_L s + 2 C_4 + C_L)}$$



$$10.474 \quad \text{INVALID-ORDER-474} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{1}{C_4 s}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$$

$$H(s) = \frac{C_L L_L R_L s^2 + L_L s + R_L}{2C_4 C_L L_L R_L s^3 + 2C_4 L_L s^2 + 2C_4 R_L s + C_L L_L s^2 + 1}$$

$$10.475 \quad \text{INVALID-ORDER-475} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{1}{C_4 s}, \infty, \frac{R_L \left( L_L s + \frac{1}{C_L s} \right)}{L_L s + R_L + \frac{1}{C_L s}} \right)$$

$$H(s) = \frac{R_L (C_L L_L s^2 + 1)}{2C_4 C_L L_L R_L s^3 + 2C_4 R_L s + C_L L_L s^2 + C_L R_L s + 1}$$

$$10.476 \quad \text{INVALID-ORDER-476} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, R_L \right)$$

$$H(s) = \frac{R_4 R_L}{2C_4 R_4 R_L s + R_4 + 2R_L}$$

$$10.477 \quad \text{INVALID-ORDER-477} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, \frac{1}{C_L s} \right)$$

$$H(s) = \frac{R_4}{2C_4 R_4 s + C_L R_4 s + 2}$$

$$10.478 \quad \text{INVALID-ORDER-478} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, \frac{R_L}{C_L R_L s + 1} \right)$$

$$H(s) = \frac{R_4 R_L}{2C_4 R_4 R_L s + C_L R_4 R_L s + R_4 + 2R_L}$$

$$10.479 \quad \text{INVALID-ORDER-479} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, L_L s + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{R_4 (C_L L_L s^2 + 1)}{2C_4 C_L L_L R_4 s^3 + 2C_4 R_4 s + 2C_L L_L s^2 + C_L R_4 s + 2}$$

$$10.480 \quad \text{INVALID-ORDER-480} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, L_L s + R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{R_4 (C_L L_L s^2 + C_L R_L s + 1)}{2C_4 C_L L_L R_4 s^3 + 2C_4 C_L R_4 R_L s^2 + 2C_4 R_4 s + 2C_L L_L s^2 + C_L R_4 s + 2C_L R_L s + 2}$$

$$10.481 \quad \text{INVALID-ORDER-481} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$$

$$H(s) = \frac{R_4 (C_L L_L R_L s^2 + L_L s + R_L)}{2C_4 C_L L_L R_4 R_L s^3 + 2C_4 L_L R_4 s^2 + 2C_4 R_4 R_L s + C_L L_L R_4 s^2 + 2C_L L_L R_L s^2 + 2L_L s + R_4 + 2R_L}$$

$$10.482 \quad \text{INVALID-ORDER-482} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, \frac{R_L \left( L_L s + \frac{1}{C_L s} \right)}{L_L s + R_L + \frac{1}{C_L s}} \right)$$

$$H(s) = \frac{R_4 R_L (C_L L_L s^2 + 1)}{2C_4 C_L L_L R_4 R_L s^3 + 2C_4 R_4 R_L s + C_L L_L R_4 s^2 + 2C_L L_L R_L s^2 + C_L R_4 R_L s + R_4 + 2R_L}$$

$$10.483 \quad \text{INVALID-ORDER-483} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, R_4 + \frac{1}{C_4 s}, \infty, R_L \right)$$

$$H(s) = \frac{R_L (C_4 R_4 s + 1)}{C_4 R_4 s + 2 C_4 R_L s + 1}$$

$$10.484 \quad \text{INVALID-ORDER-484} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, R_4 + \frac{1}{C_4 s}, \infty, \frac{1}{C_L s} \right)$$

$$H(s) = \frac{C_4 R_4 s + 1}{s (C_4 C_L R_4 s + 2 C_4 + C_L)}$$

$$10.485 \quad \text{INVALID-ORDER-485} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, R_4 + \frac{1}{C_4 s}, \infty, R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{(C_4 R_4 s + 1) (C_L R_L s + 1)}{s (C_4 C_L R_4 s + 2 C_4 C_L R_L s + 2 C_4 + C_L)}$$

$$10.486 \quad \text{INVALID-ORDER-486} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, R_4 + \frac{1}{C_4 s}, \infty, L_L s + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{(C_4 R_4 s + 1) (C_L L_L s^2 + 1)}{s (2 C_4 C_L L_L s^2 + C_4 C_L R_4 s + 2 C_4 + C_L)}$$

$$10.487 \quad \text{INVALID-ORDER-487} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, R_4 + \frac{1}{C_4 s}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$$

$$H(s) = \frac{L_L s (C_4 R_4 s + 1)}{C_4 C_L L_L R_4 s^3 + 2 C_4 L_L s^2 + C_4 R_4 s + C_L L_L s^2 + 1}$$

$$10.488 \quad \text{INVALID-ORDER-488} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, R_4 + \frac{1}{C_4 s}, \infty, L_L s + R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{(C_4 R_4 s + 1) (C_L L_L s^2 + C_L R_L s + 1)}{s (2 C_4 C_L L_L s^2 + C_4 C_L R_4 s + 2 C_4 C_L R_L s + 2 C_4 + C_L)}$$

$$10.489 \quad \text{INVALID-ORDER-489} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, R_4 + \frac{1}{C_4 s}, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$$

$$H(s) = \frac{L_L R_L s (C_4 R_4 s + 1)}{C_4 C_L L_L R_4 R_L s^3 + C_4 L_L R_4 s^2 + 2 C_4 L_L R_L s^2 + C_4 R_4 R_L s + C_L L_L R_L s^2 + L_L s + R_L}$$

$$10.490 \quad \text{INVALID-ORDER-490} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, R_4 + \frac{1}{C_4 s}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$$

$$H(s) = \frac{(C_4 R_4 s + 1) (C_L L_L R_L s^2 + L_L s + R_L)}{C_4 C_L L_L R_4 s^3 + 2 C_4 C_L L_L R_L s^3 + 2 C_4 L_L s^2 + C_4 R_4 s + 2 C_4 R_L s + C_L L_L s^2 + 1}$$

$$10.491 \quad \text{INVALID-ORDER-491} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, R_4 + \frac{1}{C_4 s}, \infty, \frac{R_L (L_L s + \frac{1}{C_L s})}{L_L s + R_L + \frac{1}{C_L s}} \right)$$

$$H(s) = \frac{R_L (C_4 R_4 s + 1) (C_L L_L s^2 + 1)}{C_4 C_L L_L R_4 s^3 + 2 C_4 C_L L_L R_L s^3 + C_4 C_L R_4 R_L s^2 + C_4 R_4 s + 2 C_4 R_L s + C_L L_L s^2 + C_L R_L s + 1}$$

**10.492 INVALID-ORDER-492**  $Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, L_4 s + \frac{1}{C_4 s}, \infty, \frac{1}{C_L s} \right)$

$$H(s) = \frac{C_4 L_4 s^2 + 1}{s (C_4 C_L L_4 s^2 + 2C_4 + C_L)}$$

**10.493 INVALID-ORDER-493**  $Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, L_4 s + \frac{1}{C_4 s}, \infty, \frac{R_L}{C_L R_L s + 1} \right)$

$$H(s) = \frac{R_L (C_4 L_4 s^2 + 1)}{C_4 C_L L_4 R_L s^3 + C_4 L_4 s^2 + 2C_4 R_L s + C_L R_L s + 1}$$

**10.494 INVALID-ORDER-494**  $Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, L_4 s + \frac{1}{C_4 s}, \infty, R_L + \frac{1}{C_L s} \right)$

$$H(s) = \frac{(C_4 L_4 s^2 + 1) (C_L R_L s + 1)}{s (C_4 C_L L_4 s^2 + 2C_4 C_L R_L s + 2C_4 + C_L)}$$

**10.495 INVALID-ORDER-495**  $Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, L_4 s + \frac{1}{C_4 s}, \infty, L_L s + \frac{1}{C_L s} \right)$

$$H(s) = \frac{(C_4 L_4 s^2 + 1) (C_L L_L s^2 + 1)}{s (C_4 C_L L_4 s^2 + 2C_4 C_L L_L s^2 + 2C_4 + C_L)}$$

**10.496 INVALID-ORDER-496**  $Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, L_4 s + \frac{1}{C_4 s}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$

$$H(s) = \frac{L_L s (C_4 L_4 s^2 + 1)}{C_4 C_L L_4 L_L s^4 + C_4 L_4 s^2 + 2C_4 L_L s^2 + C_L L_L s^2 + 1}$$

**10.497 INVALID-ORDER-497**  $Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, L_4 s + \frac{1}{C_4 s}, \infty, L_L s + R_L + \frac{1}{C_L s} \right)$

$$H(s) = \frac{(C_4 L_4 s^2 + 1) (C_L L_L s^2 + C_L R_L s + 1)}{s (C_4 C_L L_4 s^2 + 2C_4 C_L L_L s^2 + 2C_4 C_L R_L s + 2C_4 + C_L)}$$

**10.498 INVALID-ORDER-498**  $Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, L_4 s + \frac{1}{C_4 s}, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$

$$H(s) = \frac{L_L R_L s (C_4 L_4 s^2 + 1)}{C_4 C_L L_4 L_L R_L s^4 + C_4 L_4 L_L s^3 + C_4 L_4 R_L s^2 + 2C_4 L_L R_L s^2 + C_L L_L R_L s^2 + L_L s + R_L}$$

**10.499 INVALID-ORDER-499**  $Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, L_4 s + \frac{1}{C_4 s}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$

$$H(s) = \frac{(C_4 L_4 s^2 + 1) (C_L L_L R_L s^2 + L_L s + R_L)}{C_4 C_L L_4 L_L s^4 + 2C_4 C_L L_L R_L s^3 + C_4 L_4 s^2 + 2C_4 L_L s^2 + 2C_4 R_L s + C_L L_L s^2 + 1}$$

$$10.500 \quad \text{INVALID-ORDER-500} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, L_4 s + \frac{1}{C_4 s}, \infty, \frac{R_L \left( L_L s + \frac{1}{C_L s} \right)}{L_L s + R_L + \frac{1}{C_L s}} \right)$$

$$H(s) = \frac{R_L (C_4 L_4 s^2 + 1) (C_L L_L s^2 + 1)}{C_4 C_L L_4 L_L s^4 + C_4 C_L L_4 R_L s^3 + 2C_4 C_L L_L R_L s^3 + C_4 L_4 s^2 + 2C_4 R_L s + C_L L_L s^2 + C_L R_L s + 1}$$

$$10.501 \quad \text{INVALID-ORDER-501} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, \frac{1}{C_L s} \right)$$

$$H(s) = \frac{L_4 s}{2C_4 L_4 s^2 + C_L L_4 s^2 + 2}$$

$$10.502 \quad \text{INVALID-ORDER-502} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{L_4 s (C_L R_L s + 1)}{2C_4 C_L L_4 R_L s^3 + 2C_4 L_4 s^2 + C_L L_4 s^2 + 2C_L R_L s + 2}$$

$$10.503 \quad \text{INVALID-ORDER-503} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, L_L s + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{L_4 s (C_L L_L s^2 + 1)}{2C_4 C_L L_4 L_L s^4 + 2C_4 L_4 s^2 + C_L L_4 s^2 + 2C_L L_L s^2 + 2}$$

$$10.504 \quad \text{INVALID-ORDER-504} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$$

$$H(s) = \frac{L_4 L_L s}{2C_4 L_4 L_L s^2 + C_L L_4 L_L s^2 + L_4 + 2L_L}$$

$$10.505 \quad \text{INVALID-ORDER-505} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, L_L s + R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{L_4 s (C_L L_L s^2 + C_L R_L s + 1)}{2C_4 C_L L_4 L_L s^4 + 2C_4 C_L L_4 R_L s^3 + 2C_4 L_4 s^2 + C_L L_4 s^2 + 2C_L L_L s^2 + 2C_L R_L s + 2}$$

$$10.506 \quad \text{INVALID-ORDER-506} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$$

$$H(s) = \frac{L_4 s (C_L L_L R_L s^2 + L_L s + R_L)}{2C_4 C_L L_4 L_L R_L s^4 + 2C_4 L_4 L_L s^3 + 2C_4 L_4 R_L s^2 + C_L L_4 L_L s^3 + 2C_L L_L R_L s^2 + L_4 s + 2L_L s + 2R_L}$$

$$10.507 \quad \text{INVALID-ORDER-507} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, \frac{R_L \left( L_L s + \frac{1}{C_L s} \right)}{L_L s + R_L + \frac{1}{C_L s}} \right)$$

$$H(s) = \frac{L_4 R_L s (C_L L_L s^2 + 1)}{2C_4 C_L L_4 L_L R_L s^4 + 2C_4 L_4 R_L s^2 + C_L L_4 L_L s^3 + C_L L_4 R_L s^2 + 2C_L L_L R_L s^2 + L_4 s + 2R_L}$$

$$10.508 \quad \text{INVALID-ORDER-508} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, \frac{1}{C_L s} \right)$$

$$H(s) = \frac{C_4 L_4 s^2 + C_4 R_4 s + 1}{s (C_4 C_L L_4 s^2 + C_4 C_L R_4 s + 2C_4 + C_L)}$$

$$10.509 \quad \text{INVALID-ORDER-509} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, \frac{R_L}{C_L R_L s + 1} \right)$$

$$H(s) = \frac{R_L (C_4 L_4 s^2 + C_4 R_4 s + 1)}{C_4 C_L L_4 R_L s^3 + C_4 C_L R_4 R_L s^2 + C_4 L_4 s^2 + C_4 R_4 s + 2 C_4 R_L s + C_L R_L s + 1}$$

$$10.510 \quad \text{INVALID-ORDER-510} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{(C_L R_L s + 1) (C_4 L_4 s^2 + C_4 R_4 s + 1)}{s (C_4 C_L L_4 s^2 + C_4 C_L R_4 s + 2 C_4 C_L R_L s + 2 C_4 + C_L)}$$

$$10.511 \quad \text{INVALID-ORDER-511} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, L_L s + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{(C_L L_L s^2 + 1) (C_4 L_4 s^2 + C_4 R_4 s + 1)}{s (C_4 C_L L_4 s^2 + 2 C_4 C_L L_L s^2 + C_4 C_L R_4 s + 2 C_4 + C_L)}$$

$$10.512 \quad \text{INVALID-ORDER-512} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$$

$$H(s) = \frac{L_L s (C_4 L_4 s^2 + C_4 R_4 s + 1)}{C_4 C_L L_4 L_L s^4 + C_4 C_L L_L R_4 s^3 + C_4 L_4 s^2 + 2 C_4 L_L s^2 + C_4 R_4 s + C_L L_L s^2 + 1}$$

$$10.513 \quad \text{INVALID-ORDER-513} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, L_L s + R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{(C_4 L_4 s^2 + C_4 R_4 s + 1) (C_L L_L s^2 + C_L R_L s + 1)}{s (C_4 C_L L_4 s^2 + 2 C_4 C_L L_L s^2 + C_4 C_L R_4 s + 2 C_4 C_L R_L s + 2 C_4 + C_L)}$$

$$10.514 \quad \text{INVALID-ORDER-514} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$$

$$H(s) = \frac{L_L R_L s (C_4 L_4 s^2 + C_4 R_4 s + 1)}{C_4 C_L L_4 L_L R_L s^4 + C_4 C_L L_L R_4 R_L s^3 + C_4 L_4 L_L s^3 + C_4 L_4 R_L s^2 + C_4 L_L R_4 s^2 + 2 C_4 L_L R_L s^2 + C_4 R_4 R_L s + C_L L_L R_L s^2 + L_L s + R_L}$$

$$10.515 \quad \text{INVALID-ORDER-515} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$$

$$H(s) = \frac{(C_4 L_4 s^2 + C_4 R_4 s + 1) (C_L L_L R_L s^2 + L_L s + R_L)}{C_4 C_L L_4 L_L s^4 + C_4 C_L L_L R_4 s^3 + 2 C_4 C_L L_L R_L s^3 + C_4 L_4 s^2 + 2 C_4 L_L s^2 + C_4 R_4 s + 2 C_4 R_L s + C_L L_L s^2 + 1}$$

$$10.516 \quad \text{INVALID-ORDER-516} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, \frac{R_L (L_L s + \frac{1}{C_L s})}{L_L s + R_L + \frac{1}{C_L s}} \right)$$

$$H(s) = \frac{R_L (C_L L_L s^2 + 1) (C_4 L_4 s^2 + C_4 R_4 s + 1)}{C_4 C_L L_4 L_L s^4 + C_4 C_L L_4 R_L s^3 + C_4 C_L L_L R_4 s^3 + 2 C_4 C_L L_L R_L s^3 + C_4 C_L R_4 R_L s^2 + C_4 L_4 s^2 + C_4 R_4 s + 2 C_4 R_L s + C_L L_L s^2 + C_L R_L s + 1}$$

$$10.517 \quad \text{INVALID-ORDER-517} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{L_4 R_4 s (C_L R_L s + 1)}{2C_4 C_L L_4 R_4 R_L s^3 + 2C_4 L_4 R_4 s^2 + C_L L_4 R_4 s^2 + 2C_L L_4 R_L s^2 + 2C_L R_4 R_L s + 2L_4 s + 2R_4}$$

$$10.518 \quad \text{INVALID-ORDER-518} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, L_L s + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{L_4 R_4 s (C_L L_L s^2 + 1)}{2C_4 C_L L_4 L_L R_4 s^4 + 2C_4 L_4 R_4 s^2 + 2C_L L_4 L_L s^3 + C_L L_4 R_4 s^2 + 2C_L L_L R_4 s^2 + 2L_4 s + 2R_4}$$

$$10.519 \quad \text{INVALID-ORDER-519} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, L_L s + R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{L_4 R_4 s (C_L L_L s^2 + C_L R_L s + 1)}{2C_4 C_L L_4 L_L R_4 s^4 + 2C_4 C_L L_4 R_4 R_L s^3 + 2C_4 L_4 R_4 s^2 + 2C_L L_4 L_L s^3 + C_L L_4 R_4 s^2 + 2C_L L_4 R_L s^2 + 2C_L L_L R_4 s^2 + 2C_L R_4 R_L s + 2L_4 s + 2R_4}$$

$$10.520 \quad \text{INVALID-ORDER-520} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$$

$$H(s) = \frac{L_4 R_4 s (C_L L_L R_L s^2 + L_L s + R_L)}{2C_4 C_L L_4 L_L R_4 R_L s^4 + 2C_4 L_4 L_L R_4 s^3 + 2C_4 L_4 R_4 R_L s^2 + C_L L_4 L_L R_4 s^3 + 2C_L L_4 L_L R_L s^3 + 2C_L L_L R_4 R_L s^2 + 2L_4 L_L s^2 + L_4 R_4 s + 2L_4 R_L s + 2L_L R_4 s + 2R_4 R_L}$$

$$10.521 \quad \text{INVALID-ORDER-521} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, \frac{R_L (L_L s + \frac{1}{C_L s})}{L_L s + R_L + \frac{1}{C_L s}} \right)$$

$$H(s) = \frac{L_4 R_4 R_L s (C_L L_L s^2 + 1)}{2C_4 C_L L_4 L_L R_4 R_L s^4 + 2C_4 L_4 R_4 R_L s^2 + C_L L_4 L_L R_4 s^3 + 2C_L L_4 L_L R_L s^3 + C_L L_4 R_4 R_L s^2 + 2C_L L_L R_4 R_L s^2 + L_4 R_4 s + 2L_4 R_L s + 2R_4 R_L}$$

$$10.522 \quad \text{INVALID-ORDER-522} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \infty, \frac{1}{C_L s} \right)$$

$$H(s) = \frac{C_4 L_4 R_4 s^2 + L_4 s + R_4}{C_4 C_L L_4 R_4 s^3 + 2C_4 L_4 s^2 + C_L L_4 s^2 + C_L R_4 s + 2}$$

$$10.523 \quad \text{INVALID-ORDER-523} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \infty, \frac{R_L}{C_L R_L s + 1} \right)$$

$$H(s) = \frac{R_L (C_4 L_4 R_4 s^2 + L_4 s + R_4)}{C_4 C_L L_4 R_4 R_L s^3 + C_4 L_4 R_4 s^2 + 2C_4 L_4 R_L s^2 + C_L L_4 R_L s^2 + C_L R_4 R_L s + L_4 s + R_4 + 2R_L}$$

$$10.524 \quad \text{INVALID-ORDER-524} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \infty, R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{(C_L R_L s + 1) (C_4 L_4 R_4 s^2 + L_4 s + R_4)}{C_4 C_L L_4 R_4 s^3 + 2C_4 C_L L_4 R_L s^3 + 2C_4 L_4 s^2 + C_L L_4 s^2 + C_L R_4 s + 2C_L R_L s + 2}$$

$$10.525 \quad \text{INVALID-ORDER-525} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \infty, L_L s + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{(C_L L_L s^2 + 1)(C_4 L_4 R_4 s^2 + L_4 s + R_4)}{2C_4 C_L L_4 L_L s^4 + C_4 C_L L_4 R_4 s^3 + 2C_4 L_4 s^2 + C_L L_4 s^2 + 2C_L L_L s^2 + C_L R_4 s + 2}$$

$$10.526 \quad \text{INVALID-ORDER-526} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$$

$$H(s) = \frac{L_L s (C_4 L_4 R_4 s^2 + L_4 s + R_4)}{C_4 C_L L_4 L_L R_4 s^4 + 2C_4 L_4 L_L s^3 + C_4 L_4 R_4 s^2 + C_L L_4 L_L s^3 + C_L L_L R_4 s^2 + L_4 s + 2L_L s + R_4}$$

$$10.527 \quad \text{INVALID-ORDER-527} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \infty, L_L s + R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{(C_L L_L s^2 + C_L R_L s + 1)(C_4 L_4 R_4 s^2 + L_4 s + R_4)}{2C_4 C_L L_4 L_L s^4 + C_4 C_L L_4 R_4 s^3 + 2C_4 C_L L_4 R_L s^3 + 2C_4 L_4 s^2 + C_L L_4 s^2 + 2C_L L_L s^2 + C_L R_4 s + 2C_L R_L s + 2}$$

$$10.528 \quad \text{INVALID-ORDER-528} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$$

$$H(s) = \frac{L_L R_L s (C_4 L_4 R_4 s^2 + L_4 s + R_4)}{C_4 C_L L_4 L_L R_4 R_L s^4 + C_4 L_4 L_L R_4 s^3 + 2C_4 L_4 L_L R_L s^3 + C_4 L_4 R_4 R_L s^2 + C_L L_4 L_L R_L s^3 + C_L L_L R_4 R_L s^2 + L_4 L_L s^2 + L_4 R_L s + L_L R_4 s + 2L_L R_L s + R_4 R_L}$$

$$10.529 \quad \text{INVALID-ORDER-529} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$$

$$H(s) = \frac{(C_4 L_4 R_4 s^2 + L_4 s + R_4)(C_L L_L R_L s^2 + L_L s + R_L)}{C_4 C_L L_4 L_L R_4 s^4 + 2C_4 C_L L_4 L_L R_L s^4 + 2C_4 L_4 L_L s^3 + C_4 L_4 R_4 s^2 + 2C_4 L_4 R_L s^2 + C_L L_4 L_L s^3 + C_L L_L R_4 s^2 + 2C_L L_L R_L s^2 + L_4 s + 2L_L s + R_4 + 2R_L}$$

$$10.530 \quad \text{INVALID-ORDER-530} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \infty, \frac{R_L (L_L s + \frac{1}{C_L s})}{L_L s + R_L + \frac{1}{C_L s}} \right)$$

$$H(s) = \frac{R_L (C_L L_L s^2 + 1)(C_4 L_4 R_4 s^2 + L_4 s + R_4)}{C_4 C_L L_4 L_L R_4 s^4 + 2C_4 C_L L_4 L_L R_L s^4 + C_4 C_L L_4 R_4 R_L s^3 + C_4 L_4 R_4 s^2 + 2C_4 L_4 R_L s^2 + C_L L_4 L_L s^3 + C_L L_4 R_L s^2 + C_L L_L R_4 s^2 + 2C_L L_L R_L s^2 + C_L R_4 R_L s + L_4 s + R_4 + 2R_L}$$

$$10.531 \quad \text{INVALID-ORDER-531} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{R_4 (L_4 s + \frac{1}{C_4 s})}{L_4 s + R_4 + \frac{1}{C_4 s}}, \infty, \frac{1}{C_L s} \right)$$

$$H(s) = \frac{R_4 (C_4 L_4 s^2 + 1)}{C_4 C_L L_4 R_4 s^3 + 2C_4 L_4 s^2 + 2C_4 R_4 s + C_L R_4 s + 2}$$

$$10.532 \quad \text{INVALID-ORDER-532} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{R_4 (L_4 s + \frac{1}{C_4 s})}{L_4 s + R_4 + \frac{1}{C_4 s}}, \infty, \frac{R_L}{C_L R_L s + 1} \right)$$

$$H(s) = \frac{R_4 R_L (C_4 L_4 s^2 + 1)}{C_4 C_L L_4 R_4 R_L s^3 + C_4 L_4 R_4 s^2 + 2C_4 L_4 R_L s^2 + 2C_4 R_4 R_L s + C_L R_4 R_L s + R_4 + 2R_L}$$

$$10.533 \quad \text{INVALID-ORDER-533} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{R_4 \left( L_4 s + \frac{1}{C_4 s} \right)}{L_4 s + R_4 + \frac{1}{C_4 s}}, \infty, R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{R_4 (C_4 L_4 s^2 + 1) (C_L R_L s + 1)}{C_4 C_L L_4 R_4 s^3 + 2C_4 C_L L_4 R_L s^3 + 2C_4 C_L R_4 R_L s^2 + 2C_4 L_4 s^2 + 2C_4 R_4 s + C_L R_4 s + 2C_L R_L s + 2}$$

$$10.534 \quad \text{INVALID-ORDER-534} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{R_4 \left( L_4 s + \frac{1}{C_4 s} \right)}{L_4 s + R_4 + \frac{1}{C_4 s}}, \infty, L_L s + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{R_4 (C_4 L_4 s^2 + 1) (C_L L_L s^2 + 1)}{2C_4 C_L L_4 L_L s^4 + C_4 C_L L_4 R_4 s^3 + 2C_4 C_L L_L R_4 s^3 + 2C_4 L_4 s^2 + 2C_4 R_4 s + 2C_L L_L s^2 + C_L R_4 s + 2}$$

$$10.535 \quad \text{INVALID-ORDER-535} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{R_4 \left( L_4 s + \frac{1}{C_4 s} \right)}{L_4 s + R_4 + \frac{1}{C_4 s}}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$$

$$H(s) = \frac{L_L R_4 s (C_4 L_4 s^2 + 1)}{C_4 C_L L_4 L_L R_4 s^4 + 2C_4 L_4 L_L s^3 + C_4 L_4 R_4 s^2 + 2C_4 L_L R_4 s^2 + C_L L_L R_4 s^2 + 2L_L s + R_4}$$

$$10.536 \quad \text{INVALID-ORDER-536} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{R_4 \left( L_4 s + \frac{1}{C_4 s} \right)}{L_4 s + R_4 + \frac{1}{C_4 s}}, \infty, L_L s + R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{R_4 (C_4 L_4 s^2 + 1) (C_L L_L s^2 + C_L R_L s + 1)}{2C_4 C_L L_4 L_L s^4 + C_4 C_L L_4 R_4 s^3 + 2C_4 C_L L_4 R_L s^3 + 2C_4 C_L L_L R_4 s^3 + 2C_4 C_L R_4 R_L s^2 + 2C_4 L_4 s^2 + 2C_4 R_4 s + 2C_L L_L s^2 + C_L R_4 s + 2C_L R_L s + 2}$$

$$10.537 \quad \text{INVALID-ORDER-537} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{R_4 \left( L_4 s + \frac{1}{C_4 s} \right)}{L_4 s + R_4 + \frac{1}{C_4 s}}, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$$

$$H(s) = \frac{L_L R_4 R_L s (C_4 L_4 s^2 + 1)}{C_4 C_L L_4 L_L R_4 R_L s^4 + C_4 L_4 L_L R_4 s^3 + 2C_4 L_4 L_L R_L s^3 + C_4 L_4 R_4 R_L s^2 + 2C_4 L_L R_4 R_L s^2 + C_L L_L R_4 R_L s^2 + L_L R_4 s + 2L_L R_L s + R_4 R_L}$$

$$10.538 \quad \text{INVALID-ORDER-538} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{R_4 \left( L_4 s + \frac{1}{C_4 s} \right)}{L_4 s + R_4 + \frac{1}{C_4 s}}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$$

$$H(s) = \frac{R_4 (C_4 L_4 s^2 + 1) (C_L L_L R_L s^2 + L_L s + R_L)}{C_4 C_L L_4 L_L R_4 s^4 + 2C_4 C_L L_4 L_L R_L s^4 + 2C_4 C_L L_L R_4 R_L s^3 + 2C_4 L_4 L_L s^3 + C_4 L_4 R_4 s^2 + 2C_4 L_4 R_L s^2 + 2C_4 L_L R_4 s^2 + 2C_4 R_4 R_L s + C_L L_L R_4 s^2 + 2C_L L_L R_L s^2 + 2L_L s + R_4 + 2R_L}$$

$$10.539 \quad \text{INVALID-ORDER-539} \quad Z(s) = \left( \infty, \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2, \infty, \frac{R_4 \left( L_4 s + \frac{1}{C_4 s} \right)}{L_4 s + R_4 + \frac{1}{C_4 s}}, \infty, \frac{R_L \left( L_L s + \frac{1}{C_L s} \right)}{L_L s + R_L + \frac{1}{C_L s}} \right)$$

$$H(s) = \frac{R_4 R_L (C_4 L_4 s^2 + 1) (C_L L_L s^2 + 1)}{C_4 C_L L_4 L_L R_4 s^4 + 2C_4 C_L L_4 L_L R_L s^4 + C_4 C_L L_4 R_4 R_L s^3 + 2C_4 C_L L_L R_4 R_L s^3 + C_4 L_4 R_4 s^2 + 2C_4 L_4 R_L s^2 + 2C_4 R_4 R_L s + C_L L_L R_4 s^2 + 2C_L L_L R_L s^2 + C_L R_4 R_L s + R_4 + 2R_L}$$

$$10.540 \quad \text{INVALID-ORDER-540} \quad Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, R_4, \infty, R_L \right)$$

$$H(s) = \frac{R_4 R_L}{R_4 + 2R_L}$$



$$10.541 \quad \text{INVALID-ORDER-541} \quad Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, R_4, \infty, \frac{1}{C_L s} \right)$$

$$H(s) = \frac{R_4}{C_L R_4 s + 2}$$

$$10.542 \quad \text{INVALID-ORDER-542} \quad Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, R_4, \infty, \frac{R_L}{C_L R_L s + 1} \right)$$

$$H(s) = \frac{R_4 R_L}{C_L R_4 R_L s + R_4 + 2 R_L}$$

$$10.543 \quad \text{INVALID-ORDER-543} \quad Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, R_4, \infty, R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{R_4 (C_L R_L s + 1)}{C_L R_4 s + 2 C_L R_L s + 2}$$

$$10.544 \quad \text{INVALID-ORDER-544} \quad Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{1}{C_4 s}, \infty, R_L \right)$$

$$H(s) = \frac{R_L}{2 C_4 R_L s + 1}$$

$$10.545 \quad \text{INVALID-ORDER-545} \quad Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{1}{C_4 s}, \infty, \frac{1}{C_L s} \right)$$

$$H(s) = \frac{1}{s (2 C_4 + C_L)}$$

$$10.546 \quad \text{INVALID-ORDER-546} \quad Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{1}{C_4 s}, \infty, \frac{R_L}{C_L R_L s + 1} \right)$$

$$H(s) = \frac{R_L}{2 C_4 R_L s + C_L R_L s + 1}$$

$$10.547 \quad \text{INVALID-ORDER-547} \quad Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{1}{C_4 s}, \infty, R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{C_L R_L s + 1}{s (2 C_4 C_L R_L s + 2 C_4 + C_L)}$$

$$10.548 \quad \text{INVALID-ORDER-548} \quad Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{1}{C_4 s}, \infty, L_L s + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{C_L L_L s^2 + 1}{s (2 C_4 C_L L_L s^2 + 2 C_4 + C_L)}$$

$$\begin{aligned}
10.549 \quad \text{INVALID-ORDER-549} \quad Z(s) &= \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{1}{C_4 s}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right) \\
H(s) &= \frac{L_L s}{2C_4 L_L s^2 + C_L L_L s^2 + 1} \\
10.550 \quad \text{INVALID-ORDER-550} \quad Z(s) &= \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{1}{C_4 s}, \infty, L_L s + R_L + \frac{1}{C_L s} \right) \\
H(s) &= \frac{C_L L_L s^2 + C_L R_L s + 1}{s(2C_4 C_L L_L s^2 + 2C_4 C_L R_L s + 2C_4 + C_L)} \\
10.551 \quad \text{INVALID-ORDER-551} \quad Z(s) &= \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{1}{C_4 s}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right) \\
H(s) &= \frac{C_L L_L R_L s^2 + L_L s + R_L}{2C_4 C_L L_L R_L s^3 + 2C_4 L_L s^2 + 2C_4 R_L s + C_L L_L s^2 + 1} \\
10.552 \quad \text{INVALID-ORDER-552} \quad Z(s) &= \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{1}{C_4 s}, \infty, \frac{R_L \left( L_L s + \frac{1}{C_L s} \right)}{L_L s + R_L + \frac{1}{C_L s}} \right) \\
H(s) &= \frac{R_L (C_L L_L s^2 + 1)}{2C_4 C_L L_L R_L s^3 + 2C_4 R_L s + C_L L_L s^2 + C_L R_L s + 1} \\
10.553 \quad \text{INVALID-ORDER-553} \quad Z(s) &= \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, R_L \right) \\
H(s) &= \frac{R_4 R_L}{2C_4 R_4 R_L s + R_4 + 2R_L} \\
10.554 \quad \text{INVALID-ORDER-554} \quad Z(s) &= \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, \frac{1}{C_L s} \right) \\
H(s) &= \frac{R_4}{2C_4 R_4 s + C_L R_4 s + 2} \\
10.555 \quad \text{INVALID-ORDER-555} \quad Z(s) &= \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, \frac{R_L}{C_L R_L s + 1} \right) \\
H(s) &= \frac{R_4 R_L}{2C_4 R_4 R_L s + C_L R_4 R_L s + R_4 + 2R_L} \\
10.556 \quad \text{INVALID-ORDER-556} \quad Z(s) &= \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, L_L s + \frac{1}{C_L s} \right) \\
H(s) &= \frac{R_4 (C_L L_L s^2 + 1)}{2C_4 C_L L_L R_4 s^3 + 2C_4 R_4 s + 2C_L L_L s^2 + C_L R_4 s + 2}
\end{aligned}$$

$$\begin{aligned}
10.557 \quad \text{INVALID-ORDER-557} \quad Z(s) &= \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, L_L s + R_L + \frac{1}{C_L s} \right) \\
H(s) &= \frac{R_4 (C_L L_L s^2 + C_L R_L s + 1)}{2C_4 C_L L_L R_4 s^3 + 2C_4 C_L R_4 R_L s^2 + 2C_4 R_4 s + 2C_L L_L s^2 + C_L R_4 s + 2C_L R_L s + 2} \\
10.558 \quad \text{INVALID-ORDER-558} \quad Z(s) &= \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right) \\
H(s) &= \frac{R_4 (C_L L_L R_L s^2 + L_L s + R_L)}{2C_4 C_L L_L R_4 R_L s^3 + 2C_4 L_L R_4 s^2 + 2C_4 R_4 R_L s + C_L L_L R_4 s^2 + 2C_L L_L R_L s^2 + 2L_L s + R_4 + 2R_L} \\
10.559 \quad \text{INVALID-ORDER-559} \quad Z(s) &= \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{R_4}{C_4 R_4 s + 1}, \infty, \frac{R_L \left( L_L s + \frac{1}{C_L s} \right)}{L_L s + R_L + \frac{1}{C_L s}} \right) \\
H(s) &= \frac{R_4 R_L (C_L L_L s^2 + 1)}{2C_4 C_L L_L R_4 R_L s^3 + 2C_4 R_4 R_L s + C_L L_L R_4 s^2 + 2C_L L_L R_L s^2 + C_L R_4 R_L s + R_4 + 2R_L} \\
10.560 \quad \text{INVALID-ORDER-560} \quad Z(s) &= \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, R_4 + \frac{1}{C_4 s}, \infty, R_L \right) \\
H(s) &= \frac{R_L (C_4 R_4 s + 1)}{C_4 R_4 s + 2C_4 R_L s + 1} \\
10.561 \quad \text{INVALID-ORDER-561} \quad Z(s) &= \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, R_4 + \frac{1}{C_4 s}, \infty, \frac{1}{C_L s} \right) \\
H(s) &= \frac{C_4 R_4 s + 1}{s (C_4 C_L R_4 s + 2C_4 + C_L)} \\
10.562 \quad \text{INVALID-ORDER-562} \quad Z(s) &= \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, R_4 + \frac{1}{C_4 s}, \infty, R_L + \frac{1}{C_L s} \right) \\
H(s) &= \frac{(C_4 R_4 s + 1) (C_L R_L s + 1)}{s (C_4 C_L R_4 s + 2C_4 C_L R_L s + 2C_4 + C_L)} \\
10.563 \quad \text{INVALID-ORDER-563} \quad Z(s) &= \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, R_4 + \frac{1}{C_4 s}, \infty, L_L s + \frac{1}{C_L s} \right) \\
H(s) &= \frac{(C_4 R_4 s + 1) (C_L L_L s^2 + 1)}{s (2C_4 C_L L_L s^2 + C_4 C_L R_4 s + 2C_4 + C_L)} \\
10.564 \quad \text{INVALID-ORDER-564} \quad Z(s) &= \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, R_4 + \frac{1}{C_4 s}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right) \\
H(s) &= \frac{L_L s (C_4 R_4 s + 1)}{C_4 C_L L_L R_4 s^3 + 2C_4 L_L s^2 + C_4 R_4 s + C_L L_L s^2 + 1}
\end{aligned}$$

**10.565 INVALID-ORDER-565**  $Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, R_4 + \frac{1}{C_4 s}, \infty, L_L s + R_L + \frac{1}{C_L s} \right)$

$$H(s) = \frac{(C_4 R_4 s + 1) (C_L L_L s^2 + C_L R_L s + 1)}{s (2 C_4 C_L L_L s^2 + C_4 C_L R_4 s + 2 C_4 C_L R_L s + 2 C_4 + C_L)}$$

**10.566 INVALID-ORDER-566**  $Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, R_4 + \frac{1}{C_4 s}, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$

$$H(s) = \frac{L_L R_L s (C_4 R_4 s + 1)}{C_4 C_L L_L R_4 R_L s^3 + C_4 L_L R_4 s^2 + 2 C_4 L_L R_L s^2 + C_4 R_4 R_L s + C_L L_L R_L s^2 + L_L s + R_L}$$

**10.567 INVALID-ORDER-567**  $Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, R_4 + \frac{1}{C_4 s}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$

$$H(s) = \frac{(C_4 R_4 s + 1) (C_L L_L R_L s^2 + L_L s + R_L)}{C_4 C_L L_L R_4 s^3 + 2 C_4 C_L L_L R_L s^3 + 2 C_4 L_L s^2 + C_4 R_4 s + 2 C_4 R_L s + C_L L_L s^2 + 1}$$

**10.568 INVALID-ORDER-568**  $Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, R_4 + \frac{1}{C_4 s}, \infty, \frac{R_L \left( L_L s + \frac{1}{C_L s} \right)}{L_L s + R_L + \frac{1}{C_L s}} \right)$

$$H(s) = \frac{R_L (C_4 R_4 s + 1) (C_L L_L s^2 + 1)}{C_4 C_L L_L R_4 s^3 + 2 C_4 C_L L_L R_L s^3 + C_4 C_L R_4 R_L s^2 + C_4 R_4 s + 2 C_4 R_L s + C_L L_L s^2 + C_L R_L s + 1}$$

**10.569 INVALID-ORDER-569**  $Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, L_4 s + \frac{1}{C_4 s}, \infty, \frac{1}{C_L s} \right)$

$$H(s) = \frac{C_4 L_4 s^2 + 1}{s (C_4 C_L L_4 s^2 + 2 C_4 + C_L)}$$

**10.570 INVALID-ORDER-570**  $Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, L_4 s + \frac{1}{C_4 s}, \infty, \frac{R_L}{C_L R_L s + 1} \right)$

$$H(s) = \frac{R_L (C_4 L_4 s^2 + 1)}{C_4 C_L L_4 R_L s^3 + C_4 L_4 s^2 + 2 C_4 R_L s + C_L R_L s + 1}$$

**10.571 INVALID-ORDER-571**  $Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, L_4 s + \frac{1}{C_4 s}, \infty, R_L + \frac{1}{C_L s} \right)$

$$H(s) = \frac{(C_4 L_4 s^2 + 1) (C_L R_L s + 1)}{s (C_4 C_L L_4 s^2 + 2 C_4 C_L R_L s + 2 C_4 + C_L)}$$

**10.572 INVALID-ORDER-572**  $Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, L_4 s + \frac{1}{C_4 s}, \infty, L_L s + \frac{1}{C_L s} \right)$

$$H(s) = \frac{(C_4 L_4 s^2 + 1) (C_L L_L s^2 + 1)}{s (C_4 C_L L_4 s^2 + 2 C_4 C_L L_L s^2 + 2 C_4 + C_L)}$$

**10.573 INVALID-ORDER-573**  $Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, L_4 s + \frac{1}{C_4 s}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$

$$H(s) = \frac{L_L s (C_4 L_4 s^2 + 1)}{C_4 C_L L_4 L_L s^4 + C_4 L_4 s^2 + 2 C_4 L_L s^2 + C_L L_L s^2 + 1}$$

**10.574 INVALID-ORDER-574**  $Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, L_4 s + \frac{1}{C_4 s}, \infty, L_L s + R_L + \frac{1}{C_L s} \right)$

$$H(s) = \frac{(C_4 L_4 s^2 + 1) (C_L L_L s^2 + C_L R_L s + 1)}{s (C_4 C_L L_4 s^2 + 2 C_4 C_L L_L s^2 + 2 C_4 C_L R_L s + 2 C_4 + C_L)}$$

**10.575 INVALID-ORDER-575**  $Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, L_4 s + \frac{1}{C_4 s}, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$

$$H(s) = \frac{L_L R_L s (C_4 L_4 s^2 + 1)}{C_4 C_L L_4 L_L R_L s^4 + C_4 L_4 L_L s^3 + C_4 L_4 R_L s^2 + 2 C_4 L_L R_L s^2 + C_L L_L R_L s^2 + L_L s + R_L}$$

**10.576 INVALID-ORDER-576**  $Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, L_4 s + \frac{1}{C_4 s}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$

$$H(s) = \frac{(C_4 L_4 s^2 + 1) (C_L L_L R_L s^2 + L_L s + R_L)}{C_4 C_L L_4 L_L s^4 + 2 C_4 C_L L_L R_L s^3 + C_4 L_4 s^2 + 2 C_4 L_L s^2 + 2 C_4 R_L s + C_L L_L s^2 + 1}$$

**10.577 INVALID-ORDER-577**  $Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, L_4 s + \frac{1}{C_4 s}, \infty, \frac{R_L \left( L_L s + \frac{1}{C_L s} \right)}{L_L s + R_L + \frac{1}{C_L s}} \right)$

$$H(s) = \frac{R_L (C_4 L_4 s^2 + 1) (C_L L_L s^2 + 1)}{C_4 C_L L_4 L_L s^4 + C_4 C_L L_4 R_L s^3 + 2 C_4 C_L L_L R_L s^3 + C_4 L_4 s^2 + 2 C_4 R_L s + C_L L_L s^2 + C_L R_L s + 1}$$

**10.578 INVALID-ORDER-578**  $Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, \frac{1}{C_L s} \right)$

$$H(s) = \frac{L_4 s}{2 C_4 L_4 s^2 + C_L L_4 s^2 + 2}$$

**10.579 INVALID-ORDER-579**  $Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, R_L + \frac{1}{C_L s} \right)$

$$H(s) = \frac{L_4 s (C_L R_L s + 1)}{2 C_4 C_L L_4 R_L s^3 + 2 C_4 L_4 s^2 + C_L L_4 s^2 + 2 C_L R_L s + 2}$$

**10.580 INVALID-ORDER-580**  $Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, L_L s + \frac{1}{C_L s} \right)$

$$H(s) = \frac{L_4 s (C_L L_L s^2 + 1)}{2 C_4 C_L L_4 L_L s^4 + 2 C_4 L_4 s^2 + C_L L_4 s^2 + 2 C_L L_L s^2 + 2}$$

$$\begin{aligned}
10.581 \quad \text{INVALID-ORDER-581} \quad Z(s) &= \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right) \\
H(s) &= \frac{L_4 L_L s}{2 C_4 L_4 L_L s^2 + C_L L_4 L_L s^2 + L_4 + 2 L_L} \\
10.582 \quad \text{INVALID-ORDER-582} \quad Z(s) &= \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, L_L s + R_L + \frac{1}{C_L s} \right) \\
H(s) &= \frac{L_4 s (C_L L_L s^2 + C_L R_L s + 1)}{2 C_4 C_L L_4 L_L s^4 + 2 C_4 C_L L_4 R_L s^3 + 2 C_4 L_4 s^2 + C_L L_4 s^2 + 2 C_L L_L s^2 + 2 C_L R_L s + 2} \\
10.583 \quad \text{INVALID-ORDER-583} \quad Z(s) &= \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right) \\
H(s) &= \frac{L_4 s (C_L L_L R_L s^2 + L_L s + R_L)}{2 C_4 C_L L_4 L_L R_L s^4 + 2 C_4 L_4 L_L s^3 + 2 C_4 L_4 R_L s^2 + C_L L_4 L_L s^3 + 2 C_L L_L R_L s^2 + L_4 s + 2 L_L s + 2 R_L} \\
10.584 \quad \text{INVALID-ORDER-584} \quad Z(s) &= \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, \frac{R_L \left( L_L s + \frac{1}{C_L s} \right)}{L_L s + R_L + \frac{1}{C_L s}} \right) \\
H(s) &= \frac{L_4 R_L s (C_L L_L s^2 + 1)}{2 C_4 C_L L_4 L_L R_L s^4 + 2 C_4 L_4 R_L s^2 + C_L L_4 L_L s^3 + C_L L_4 R_L s^2 + 2 C_L L_L R_L s^2 + L_4 s + 2 R_L} \\
10.585 \quad \text{INVALID-ORDER-585} \quad Z(s) &= \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, \frac{1}{C_L s} \right) \\
H(s) &= \frac{C_4 L_4 s^2 + C_4 R_4 s + 1}{s (C_4 C_L L_4 s^2 + C_4 C_L R_4 s + 2 C_4 + C_L)} \\
10.586 \quad \text{INVALID-ORDER-586} \quad Z(s) &= \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, \frac{R_L}{C_L R_L s + 1} \right) \\
H(s) &= \frac{R_L (C_4 L_4 s^2 + C_4 R_4 s + 1)}{C_4 C_L L_4 R_L s^3 + C_4 C_L R_4 R_L s^2 + C_4 L_4 s^2 + C_4 R_4 s + 2 C_4 R_L s + C_L R_L s + 1} \\
10.587 \quad \text{INVALID-ORDER-587} \quad Z(s) &= \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, R_L + \frac{1}{C_L s} \right) \\
H(s) &= \frac{(C_L R_L s + 1) (C_4 L_4 s^2 + C_4 R_4 s + 1)}{s (C_4 C_L L_4 s^2 + C_4 C_L R_4 s + 2 C_4 C_L R_L s + 2 C_4 + C_L)} \\
10.588 \quad \text{INVALID-ORDER-588} \quad Z(s) &= \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, L_L s + \frac{1}{C_L s} \right) \\
H(s) &= \frac{(C_L L_L s^2 + 1) (C_4 L_4 s^2 + C_4 R_4 s + 1)}{s (C_4 C_L L_4 s^2 + 2 C_4 C_L L_L s^2 + C_4 C_L R_4 s + 2 C_4 + C_L)}
\end{aligned}$$

**10.589 INVALID-ORDER-589**  $Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$

$$H(s) = \frac{L_L s (C_4 L_4 s^2 + C_4 R_4 s + 1)}{C_4 C_L L_4 L_L s^4 + C_4 C_L L_L R_4 s^3 + C_4 L_4 s^2 + 2 C_4 L_L s^2 + C_4 R_4 s + C_L L_L s^2 + 1}$$

**10.590 INVALID-ORDER-590**  $Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, L_L s + R_L + \frac{1}{C_L s} \right)$

$$H(s) = \frac{(C_4 L_4 s^2 + C_4 R_4 s + 1) (C_L L_L s^2 + C_L R_L s + 1)}{s (C_4 C_L L_4 s^2 + 2 C_4 C_L L_L s^2 + C_4 C_L R_4 s + 2 C_4 C_L R_L s + 2 C_4 + C_L)}$$

**10.591 INVALID-ORDER-591**  $Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$

$$H(s) = \frac{L_L R_L s (C_4 L_4 s^2 + C_4 R_4 s + 1)}{C_4 C_L L_4 L_L R_L s^4 + C_4 C_L L_L R_4 R_L s^3 + C_4 L_4 L_L s^3 + C_4 L_4 R_L s^2 + C_4 L_L R_4 s^2 + 2 C_4 L_L R_L s^2 + C_4 R_4 R_L s + C_L L_L R_L s^2 + L_L s + R_L}$$

**10.592 INVALID-ORDER-592**  $Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$

$$H(s) = \frac{(C_4 L_4 s^2 + C_4 R_4 s + 1) (C_L L_L R_L s^2 + L_L s + R_L)}{C_4 C_L L_4 L_L s^4 + C_4 C_L L_L R_4 s^3 + 2 C_4 C_L L_L R_L s^3 + C_4 L_4 s^2 + 2 C_4 L_L s^2 + C_4 R_4 s + 2 C_4 R_L s + C_L L_L s^2 + 1}$$

**10.593 INVALID-ORDER-593**  $Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, \frac{R_L \left( L_L s + \frac{1}{C_L s} \right)}{L_L s + R_L + \frac{1}{C_L s}} \right)$

$$H(s) = \frac{R_L (C_L L_L s^2 + 1) (C_4 L_4 s^2 + C_4 R_4 s + 1)}{C_4 C_L L_4 L_L s^4 + C_4 C_L L_4 R_L s^3 + C_4 C_L L_L R_4 s^3 + 2 C_4 C_L L_L R_L s^3 + C_4 C_L R_4 R_L s^2 + C_4 L_4 s^2 + C_4 R_4 s + 2 C_4 R_L s + C_L L_L s^2 + C_L R_L s + 1}$$

**10.594 INVALID-ORDER-594**  $Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, R_L + \frac{1}{C_L s} \right)$

$$H(s) = \frac{L_4 R_4 s (C_L R_L s + 1)}{2 C_4 C_L L_4 R_4 R_L s^3 + 2 C_4 L_4 R_4 s^2 + C_L L_4 R_4 s^2 + 2 C_L L_4 R_L s^2 + 2 C_L R_4 R_L s + 2 L_4 s + 2 R_4}$$

**10.595 INVALID-ORDER-595**  $Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, L_L s + \frac{1}{C_L s} \right)$

$$H(s) = \frac{L_4 R_4 s (C_L L_L s^2 + 1)}{2 C_4 C_L L_4 L_L R_4 s^4 + 2 C_4 L_4 R_4 s^2 + 2 C_L L_4 L_L s^3 + C_L L_4 R_4 s^2 + 2 C_L L_L R_4 s^2 + 2 L_4 s + 2 R_4}$$

**10.596 INVALID-ORDER-596**  $Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, L_L s + R_L + \frac{1}{C_L s} \right)$

$$H(s) = \frac{L_4 R_4 s (C_L L_L s^2 + C_L R_L s + 1)}{2 C_4 C_L L_4 L_L R_4 s^4 + 2 C_4 C_L L_4 R_4 R_L s^3 + 2 C_4 L_4 R_4 s^2 + 2 C_L L_4 L_L s^3 + C_L L_4 R_4 s^2 + 2 C_L L_4 R_L s^2 + 2 C_L L_L R_4 s^2 + 2 C_L R_4 R_L s + 2 L_4 s + 2 R_4}$$

**10.597 INVALID-ORDER-597**  $Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$

$$H(s) = \frac{L_4 R_4 s (C_L L_L R_L s^2 + L_L s + R_L)}{2C_4 C_L L_4 L_L R_4 R_L s^4 + 2C_4 L_4 L_L R_4 s^3 + 2C_4 L_4 R_4 R_L s^2 + C_L L_4 L_L R_4 s^3 + 2C_L L_4 L_L R_L s^3 + 2C_L L_L R_4 R_L s^2 + 2L_4 L_L s^2 + L_4 R_4 s + 2L_4 R_L s + 2L_L R_4 s + 2R_4 R_L}$$

**10.598 INVALID-ORDER-598**  $Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, \frac{R_L \left( L_L s + \frac{1}{C_L s} \right)}{L_L s + R_L + \frac{1}{C_L s}} \right)$

$$H(s) = \frac{L_4 R_4 R_L s (C_L L_L s^2 + 1)}{2C_4 C_L L_4 L_L R_4 R_L s^4 + 2C_4 L_4 R_4 R_L s^2 + C_L L_4 L_L R_4 s^3 + 2C_L L_4 L_L R_L s^3 + C_L L_4 R_4 R_L s^2 + 2C_L L_L R_4 R_L s^2 + L_4 R_4 s + 2L_4 R_L s + 2R_4 R_L}$$

**10.599 INVALID-ORDER-599**  $Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \infty, \frac{1}{C_L s} \right)$

$$H(s) = \frac{C_4 L_4 R_4 s^2 + L_4 s + R_4}{C_4 C_L L_4 R_4 s^3 + 2C_4 L_4 s^2 + C_L L_4 s^2 + C_L R_4 s + 2}$$

**10.600 INVALID-ORDER-600**  $Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \infty, \frac{R_L}{C_L R_L s + 1} \right)$

$$H(s) = \frac{R_L (C_4 L_4 R_4 s^2 + L_4 s + R_4)}{C_4 C_L L_4 R_4 R_L s^3 + C_4 L_4 R_4 s^2 + 2C_4 L_4 R_L s^2 + C_L L_4 R_L s^2 + C_L R_4 R_L s + L_4 s + R_4 + 2R_L}$$

**10.601 INVALID-ORDER-601**  $Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \infty, R_L + \frac{1}{C_L s} \right)$

$$H(s) = \frac{(C_L R_L s + 1) (C_4 L_4 R_4 s^2 + L_4 s + R_4)}{C_4 C_L L_4 R_4 s^3 + 2C_4 C_L L_4 R_L s^3 + 2C_4 L_4 s^2 + C_L L_4 s^2 + C_L R_4 s + 2C_L R_L s + 2}$$

**10.602 INVALID-ORDER-602**  $Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \infty, L_L s + \frac{1}{C_L s} \right)$

$$H(s) = \frac{(C_L L_L s^2 + 1) (C_4 L_4 R_4 s^2 + L_4 s + R_4)}{2C_4 C_L L_4 L_L s^4 + C_4 C_L L_4 R_4 s^3 + 2C_4 L_4 s^2 + C_L L_4 s^2 + 2C_L L_L s^2 + C_L R_4 s + 2}$$

**10.603 INVALID-ORDER-603**  $Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$

$$H(s) = \frac{L_L s (C_4 L_4 R_4 s^2 + L_4 s + R_4)}{C_4 C_L L_4 L_L R_4 s^4 + 2C_4 L_4 L_L s^3 + C_4 L_4 R_4 s^2 + C_L L_4 L_L s^3 + C_L L_L R_4 s^2 + L_4 s + 2L_L s + R_4}$$

**10.604 INVALID-ORDER-604**  $Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \infty, L_L s + R_L + \frac{1}{C_L s} \right)$

$$H(s) = \frac{(C_L L_L s^2 + C_L R_L s + 1) (C_4 L_4 R_4 s^2 + L_4 s + R_4)}{2C_4 C_L L_4 L_L s^4 + C_4 C_L L_4 R_4 s^3 + 2C_4 C_L L_4 R_L s^3 + 2C_4 L_4 s^2 + C_L L_4 s^2 + 2C_L L_L s^2 + C_L R_4 s + 2C_L R_L s + 2}$$



**10.605 INVALID-ORDER-605**  $Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$

$$H(s) = \frac{L_L R_L s (C_4 L_4 R_4 s^2 + L_4 s + R_4)}{C_4 C_L L_4 L_L R_4 R_L s^4 + C_4 L_4 L_L R_4 s^3 + 2 C_4 L_4 L_L R_L s^3 + C_4 L_4 R_4 R_L s^2 + C_L L_4 L_L R_L s^3 + C_L L_L R_4 R_L s^2 + L_4 L_L s^2 + L_4 R_L s + L_L R_4 s + 2 L_L R_L s + R_4 R_L}$$

**10.606 INVALID-ORDER-606**  $Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$

$$H(s) = \frac{(C_4 L_4 R_4 s^2 + L_4 s + R_4) (C_L L_L R_L s^2 + L_L s + R_L)}{C_4 C_L L_4 L_L R_4 s^4 + 2 C_4 C_L L_4 L_L R_L s^4 + 2 C_4 L_4 L_L s^3 + C_4 L_4 R_4 s^2 + 2 C_4 L_4 R_L s^2 + C_L L_4 L_L s^3 + C_L L_L R_4 s^2 + 2 C_L L_L R_L s^2 + L_4 s + 2 L_L s + R_4 + 2 R_L}$$

**10.607 INVALID-ORDER-607**  $Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \infty, \frac{R_L \left( L_L s + \frac{1}{C_L s} \right)}{L_L s + R_L + \frac{1}{C_L s}} \right)$

$$H(s) = \frac{R_L (C_L L_L s^2 + 1) (C_4 L_4 R_4 s^2 + L_4 s + R_4)}{C_4 C_L L_4 L_L R_4 s^4 + 2 C_4 C_L L_4 L_L R_L s^4 + C_4 C_L L_4 R_4 R_L s^3 + C_4 L_4 R_4 s^2 + 2 C_4 L_4 R_L s^2 + C_L L_4 L_L s^3 + C_L L_4 R_L s^2 + C_L L_L R_4 s^2 + 2 C_L L_L R_L s^2 + C_L R_4 R_L s + L_4 s + R_4 + 2 R_L}$$

**10.608 INVALID-ORDER-608**  $Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{R_4 \left( L_4 s + \frac{1}{C_4 s} \right)}{L_4 s + R_4 + \frac{1}{C_4 s}}, \infty, \frac{1}{C_L s} \right)$

$$H(s) = \frac{R_4 (C_4 L_4 s^2 + 1)}{C_4 C_L L_4 R_4 s^3 + 2 C_4 L_4 s^2 + 2 C_4 R_4 s + C_L R_4 s + 2}$$

**10.609 INVALID-ORDER-609**  $Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{R_4 \left( L_4 s + \frac{1}{C_4 s} \right)}{L_4 s + R_4 + \frac{1}{C_4 s}}, \infty, \frac{R_L}{C_L R_L s + 1} \right)$

$$H(s) = \frac{R_4 R_L (C_4 L_4 s^2 + 1)}{C_4 C_L L_4 R_4 R_L s^3 + C_4 L_4 R_4 s^2 + 2 C_4 L_4 R_L s^2 + 2 C_4 R_4 R_L s + C_L R_4 R_L s + R_4 + 2 R_L}$$

**10.610 INVALID-ORDER-610**  $Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{R_4 \left( L_4 s + \frac{1}{C_4 s} \right)}{L_4 s + R_4 + \frac{1}{C_4 s}}, \infty, R_L + \frac{1}{C_L s} \right)$

$$H(s) = \frac{R_4 (C_4 L_4 s^2 + 1) (C_L R_L s + 1)}{C_4 C_L L_4 R_4 s^3 + 2 C_4 C_L L_4 R_L s^3 + 2 C_4 C_L R_4 R_L s^2 + 2 C_4 L_4 s^2 + 2 C_4 R_4 s + C_L R_4 s + 2 C_L R_L s + 2}$$

**10.611 INVALID-ORDER-611**  $Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{R_4 \left( L_4 s + \frac{1}{C_4 s} \right)}{L_4 s + R_4 + \frac{1}{C_4 s}}, \infty, L_L s + \frac{1}{C_L s} \right)$

$$H(s) = \frac{R_4 (C_4 L_4 s^2 + 1) (C_L L_L s^2 + 1)}{2 C_4 C_L L_4 L_L s^4 + C_4 C_L L_4 R_4 s^3 + 2 C_4 C_L L_L R_4 s^3 + 2 C_4 L_4 s^2 + 2 C_4 R_4 s + 2 C_L L_L s^2 + C_L R_4 s + 2}$$

**10.612 INVALID-ORDER-612**  $Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{R_4 \left( L_4 s + \frac{1}{C_4 s} \right)}{L_4 s + R_4 + \frac{1}{C_4 s}}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$

$$H(s) = \frac{L_L R_4 s (C_4 L_4 s^2 + 1)}{C_4 C_L L_4 L_L R_4 s^4 + 2 C_4 L_4 L_L s^3 + C_4 L_4 R_4 s^2 + 2 C_4 L_L R_4 s^2 + C_L L_L R_4 s^2 + 2 L_L s + R_4}$$

$$10.613 \quad \text{INVALID-ORDER-613} \quad Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{R_4 \left( L_4 s + \frac{1}{C_4 s} \right)}{L_4 s + R_4 + \frac{1}{C_4 s}}, \infty, L_L s + R_L + \frac{1}{C_L s} \right)$$

$$H(s) = \frac{R_4 (C_4 L_4 s^2 + 1) (C_L L_L s^2 + C_L R_L s + 1)}{2C_4 C_L L_4 L_L s^4 + C_4 C_L L_4 R_4 s^3 + 2C_4 C_L L_4 R_L s^3 + 2C_4 C_L L_L R_4 s^3 + 2C_4 C_L R_4 R_L s^2 + 2C_4 L_4 s^2 + 2C_4 R_4 s + 2C_L L_L s^2 + C_L R_4 s + 2C_L R_L s + 2}$$

$$10.614 \quad \text{INVALID-ORDER-614} \quad Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{R_4 \left( L_4 s + \frac{1}{C_4 s} \right)}{L_4 s + R_4 + \frac{1}{C_4 s}}, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}} \right)$$

$$H(s) = \frac{L_L R_4 R_L s (C_4 L_4 s^2 + 1)}{C_4 C_L L_4 L_L R_4 R_L s^4 + C_4 L_4 L_L R_4 s^3 + 2C_4 L_4 L_L R_L s^3 + C_4 L_4 R_4 R_L s^2 + 2C_4 L_L R_4 R_L s^2 + C_L L_L R_4 R_L s^2 + L_L R_4 s + 2L_L R_L s + R_4 R_L}$$

$$10.615 \quad \text{INVALID-ORDER-615} \quad Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{R_4 \left( L_4 s + \frac{1}{C_4 s} \right)}{L_4 s + R_4 + \frac{1}{C_4 s}}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$$

$$H(s) = \frac{R_4 (C_4 L_4 s^2 + 1) (C_L L_L R_L s^2 + L_L s + R_L)}{C_4 C_L L_4 L_L R_4 s^4 + 2C_4 C_L L_4 L_L R_L s^4 + 2C_4 C_L L_L R_4 R_L s^3 + 2C_4 L_4 L_L s^3 + C_4 L_4 R_4 s^2 + 2C_4 L_4 R_L s^2 + 2C_4 L_L R_4 s^2 + 2C_4 R_4 R_L s + C_L L_L R_4 s^2 + 2C_L L_L R_L s^2 + 2L_L s + R_4 + 2R_L}$$

$$10.616 \quad \text{INVALID-ORDER-616} \quad Z(s) = \left( \infty, \frac{R_2 \left( L_2 s + \frac{1}{C_2 s} \right)}{L_2 s + R_2 + \frac{1}{C_2 s}}, \infty, \frac{R_4 \left( L_4 s + \frac{1}{C_4 s} \right)}{L_4 s + R_4 + \frac{1}{C_4 s}}, \infty, \frac{R_L \left( L_L s + \frac{1}{C_L s} \right)}{L_L s + R_L + \frac{1}{C_L s}} \right)$$

$$H(s) = \frac{R_4 R_L (C_4 L_4 s^2 + 1) (C_L L_L s^2 + 1)}{C_4 C_L L_4 L_L R_4 s^4 + 2C_4 C_L L_4 L_L R_L s^4 + C_4 C_L L_4 R_4 R_L s^3 + 2C_4 C_L L_L R_4 R_L s^3 + C_4 L_4 R_4 s^2 + 2C_4 L_4 R_L s^2 + 2C_4 R_4 R_L s + C_L L_L R_4 s^2 + 2C_L L_L R_L s^2 + C_L R_4 R_L s + R_4 + 2R_L}$$