Filter Summary Report: TIA,simple,Z2,ZL

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Contents

1 Examined $H(z)$ for TIA simple Z2 ZL: Z_L **4**

2 HP **4**

3 BP **4**

3.1 BP-1 $Z(s) = \left(\infty,\ R_2,\ \infty,\ \infty,\ \infty,\ \frac{1}{C_L s+\frac{1}{R_L}+\frac{1}{L_L s}}\right)$ . . . 4

3.2 BP-2 $Z(s) = \left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ \frac{1}{C_L s+\frac{1}{R_L}+\frac{1}{L_L s}}\right)$ . . . 4

3.3 BP-3 $Z(s) = \left(\infty,\ \frac{R_2}{C_2 R_2 s+1},\ \infty,\ \infty,\ \infty,\ \frac{1}{C_L s+\frac{1}{R_L}+\frac{1}{L_L s}}\right)$ . . . 4

3.4 BP-4 $Z(s) = \left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ \frac{1}{C_L s+\frac{1}{R_L}+\frac{1}{L_L s}}\right)$ . . . 5

3.5 BP-5 $Z(s) = \left(\infty,\ L_2 s+\frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ \frac{1}{C_L s+\frac{1}{R_L}+\frac{1}{L_L s}}\right)$ . . . 5

3.6 BP-6 $Z(s) = \left(\infty,\ L_2 s+R_2+\frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ \frac{1}{C_L s+\frac{1}{R_L}+\frac{1}{L_L s}}\right)$ . . . 5

3.7 BP-7 $Z(s) = \left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ \infty,\ \infty,\ \frac{1}{C_L s+\frac{1}{R_L}+\frac{1}{L_L s}}\right)$ . . . 6

3.8 BP-8 $Z(s) = \left(\infty,\ \frac{R_2\left(L_2 s+\frac{1}{C_2 s}\right)}{L_2 s+R_2+\frac{1}{C_2 s}},\ \infty,\ \infty,\ \infty,\ \frac{1}{C_L s+\frac{1}{R_L}+\frac{1}{L_L s}}\right)$ . . . 6

4 LP **6**

5 BS **6**

5.1 BS-1 $Z(s) = \left(\infty,\ R_2,\ \infty,\ \infty,\ \infty,\ \frac{R_L\left(L_L s+\frac{1}{C_L s}\right)}{L_L s+R_L+\frac{1}{C_L s}}\right)$ . . . 6

5.2 BS-2 $Z(s) = \left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ \frac{R_L\left(L_L s+\frac{1}{C_L s}\right)}{L_L s+R_L+\frac{1}{C_L s}}\right)$ . . . 7

5.3 BS-3 $Z(s) = \left(\infty,\ \frac{R_2}{C_2 R_2 s+1},\ \infty,\ \infty,\ \infty,\ \frac{R_L\left(L_L s+\frac{1}{C_L s}\right)}{L_L s+R_L+\frac{1}{C_L s}}\right)$ . . . 7

5.4 BS-4 $Z(s) = \left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ \frac{R_L\left(L_L s+\frac{1}{C_L s}\right)}{L_L s+R_L+\frac{1}{C_L s}}\right)$ . . . 7

5.5 BS-5 $Z(s) = \left(\infty,\ L_2 s+\frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ \frac{R_L\left(L_L s+\frac{1}{C_L s}\right)}{L_L s+R_L+\frac{1}{C_L s}}\right)$ . . . 7

5.6 BS-6 $Z(s) = \left(\infty,\ L_2 s+R_2+\frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ \frac{R_L\left(L_L s+\frac{1}{C_L s}\right)}{L_L s+R_L+\frac{1}{C_L s}}\right)$ . . . 8

5.7 BS-7 $Z(s) = \left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ \infty,\ \infty,\ \frac{R_L\left(L_L s+\frac{1}{C_L s}\right)}{L_L s+R_L+\frac{1}{C_L s}}\right)$ . . . 8

5.8 BS-8 $Z(s) = \left(\infty,\ \frac{R_2\left(L_2 s+\frac{1}{C_2 s}\right)}{L_2 s+R_2+\frac{1}{C_2 s}},\ \infty,\ \infty,\ \infty,\ \frac{R_L\left(L_L s+\frac{1}{C_L s}\right)}{L_L s+R_L+\frac{1}{C_L s}}\right)$ . . . 8

6 GE **9**

7 AP **9**

8 INVALID-NUMER **9**

9 INVALID-WZ **9**

10 INVALID-ORDER **9**

10.1 INVALID-ORDER-1 $Z(s) = (\infty,\ R_2,\ \infty,\ \infty,\ \infty,\ R_L)$ . . . 9

10.2 INVALID-ORDER-2 $Z(s) = \left(\infty,\ R_2,\ \infty,\ \infty,\ \infty,\ \frac{1}{C_L s}\right)$ . . . 9

10.3 INVALID-ORDER-3 $Z(s) = \left(\infty,\ R_2,\ \infty,\ \infty,\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$ . . . 9

10.4 INVALID-ORDER-4 $Z(s) = \left(\infty,\ R_2,\ \infty,\ \infty,\ \infty,\ R_L + \frac{1}{C_L s}\right)$ . . . 9

10.5 INVALID-ORDER-5 $Z(s) = \left(\infty,\ R_2,\ \infty,\ \infty,\ \infty,\ L_L s + \frac{1}{C_L s}\right)$ . . . 9

10.6 INVALID-ORDER-6 $Z(s) = \left(\infty,\ R_2,\ \infty,\ \infty,\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$ . . . 9

10.7 INVALID-ORDER-7 $Z(s) = \left(\infty,\ R_2,\ \infty,\ \infty,\ \infty,\ L_L s + R_L + \frac{1}{C_L s}\right)$ . . . 10

10.8 INVALID-ORDER-8 $Z(s) = \left(\infty,\ R_2,\ \infty,\ \infty,\ \infty,\ \frac{L_L s}{C_L L_L s^2+1} + R_L\right)$ . . . 10

10.9 INVALID-ORDER-9 $Z(s) = \left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ R_L\right)$ . . . 10

10.10INVALID-ORDER-10 $Z(s) = \left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ \frac{1}{C_L s}\right)$ . . . 10

10.11INVALID-ORDER-11 $Z(s) = \left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$ . . . 10

10.12INVALID-ORDER-12 $Z(s) = \left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ R_L + \frac{1}{C_L s}\right)$ . . . 10

10.13INVALID-ORDER-13 $Z(s) = \left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ L_L s + \frac{1}{C_L s}\right)$ . . . 10

10.14INVALID-ORDER-14 $Z(s) = \left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$ . . . 10

10.15INVALID-ORDER-15 $Z(s) = \left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ L_L s + R_L + \frac{1}{C_L s}\right)$ . . . 10

10.16INVALID-ORDER-16 $Z(s) = \left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ \frac{L_L s}{C_L L_L s^2+1} + R_L\right)$ . . . 10

10.17INVALID-ORDER-17 $Z(s) = \left(\infty,\ \frac{R_2}{C_2 R_2 s+1},\ \infty,\ \infty,\ \infty,\ R_L\right)$ . . . 11

10.18INVALID-ORDER-18 $Z(s) = \left(\infty,\ \frac{R_2}{C_2 R_2 s+1},\ \infty,\ \infty,\ \infty,\ \frac{1}{C_L s}\right)$ . . . 11

10.19INVALID-ORDER-19 $Z(s) = \left(\infty,\ \frac{R_2}{C_2 R_2 s+1},\ \infty,\ \infty,\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$ . . . 11

10.20INVALID-ORDER-20 $Z(s) = \left(\infty,\ \frac{R_2}{C_2 R_2 s+1},\ \infty,\ \infty,\ \infty,\ R_L + \frac{1}{C_L s}\right)$ . . . 11

10.21INVALID-ORDER-21 $Z(s) = \left(\infty,\ \frac{R_2}{C_2 R_2 s+1},\ \infty,\ \infty,\ \infty,\ L_L s + \frac{1}{C_L s}\right)$ . . . 11

10.22INVALID-ORDER-22 $Z(s) = \left(\infty,\ \frac{R_2}{C_2 R_2 s+1},\ \infty,\ \infty,\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$ . . . 11

10.23INVALID-ORDER-23 $Z(s) = \left(\infty,\ \frac{R_2}{C_2 R_2 s+1},\ \infty,\ \infty,\ \infty,\ L_L s + R_L + \frac{1}{C_L s}\right)$ . . . 11

10.24INVALID-ORDER-24 $Z(s) = \left(\infty,\ \frac{R_2}{C_2 R_2 s+1},\ \infty,\ \infty,\ \infty,\ \frac{L_L s}{C_L L_L s^2+1} + R_L\right)$ . . . 11

10.25INVALID-ORDER-25 $Z(s) = \left(\infty,\ R_2 + \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ R_L\right)$ . . . 11

10.26INVALID-ORDER-26 $Z(s) = \left(\infty,\ R_2 + \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ \frac{1}{C_L s}\right)$ . . . 11

10.27INVALID-ORDER-27 $Z(s) = \left(\infty,\ R_2 + \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$ . . . 12

10.28INVALID-ORDER-28 $Z(s) = \left(\infty,\ R_2 + \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ R_L + \frac{1}{C_L s}\right)$ . . . 12

10.29INVALID-ORDER-29 $Z(s) = \left(\infty,\ R_2 + \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ L_L s + \frac{1}{C_L s}\right)$ . . . 12

10.30INVALID-ORDER-30 $Z(s) = \left(\infty,\ R_2 + \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$ . . . 12

10.31INVALID-ORDER-31 $Z(s) = \left(\infty,\ R_2 + \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ L_L s + R_L + \frac{1}{C_L s}\right)$ . . . 12

10.32INVALID-ORDER-32 $Z(s) = \left(\infty,\ R_2 + \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ \frac{L_L s}{C_L L_L s^2+1} + R_L\right)$ . . . 12

10.33INVALID-ORDER-33 $Z(s) = \left(\infty,\ L_2 s + \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ R_L\right)$ . . . 12

10.34INVALID-ORDER-34 $Z(s) = \left(\infty,\ L_2 s + \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ \frac{1}{C_L s}\right)$ . . . 12

10.35INVALID-ORDER-35 $Z(s) = \left(\infty,\ L_2 s + \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$ . . . 12

10.36INVALID-ORDER-36 $Z(s) = \left(\infty,\ L_2 s + \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ R_L + \frac{1}{C_L s}\right)$ . . . 12

10.37INVALID-ORDER-37 $Z(s) = \left(\infty,\ L_2 s + \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ L_L s + \frac{1}{C_L s}\right)$ . . . 13

10.38INVALID-ORDER-38 $Z(s) = \left(\infty,\ L_2 s + \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$ . . . 13

10.39INVALID-ORDER-39 $Z(s) = \left(\infty,\ L_2 s + \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ L_L s + R_L + \frac{1}{C_L s}\right)$ . . . 13

10.40INVALID-ORDER-40 $Z(s) = \left(\infty,\ L_2 s + \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ \frac{L_L s}{C_L L_L s^2+1} + R_L\right)$ . . . 13

10.41INVALID-ORDER-41 $Z(s) = \left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ R_L\right)$ 13
10.42INVALID-ORDER-42 $Z(s) = \left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ \frac{1}{C_L s}\right)$ 13
10.43INVALID-ORDER-43 $Z(s) = \left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$ 13
10.44INVALID-ORDER-44 $Z(s) = \left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ R_L + \frac{1}{C_L s}\right)$ 13
10.45INVALID-ORDER-45 $Z(s) = \left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ L_L s + \frac{1}{C_L s}\right)$ 13
10.46INVALID-ORDER-46 $Z(s) = \left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$ 13
10.47INVALID-ORDER-47 $Z(s) = \left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ L_L s + R_L + \frac{1}{C_L s}\right)$ 14
10.48INVALID-ORDER-48 $Z(s) = \left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ \frac{L_L s}{C_L L_L s^2+1} + R_L\right)$ 14
10.49INVALID-ORDER-49 $Z(s) = \left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1} + R_2,\ \infty,\ \infty,\ \infty,\ R_L\right)$ 14
10.50INVALID-ORDER-50 $Z(s) = \left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1} + R_2,\ \infty,\ \infty,\ \infty,\ \frac{1}{C_L s}\right)$ 14
10.51INVALID-ORDER-51 $Z(s) = \left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1} + R_2,\ \infty,\ \infty,\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$ 14
10.52INVALID-ORDER-52 $Z(s) = \left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1} + R_2,\ \infty,\ \infty,\ \infty,\ R_L + \frac{1}{C_L s}\right)$ 14
10.53INVALID-ORDER-53 $Z(s) = \left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1} + R_2,\ \infty,\ \infty,\ \infty,\ L_L s + \frac{1}{C_L s}\right)$ 14
10.54INVALID-ORDER-54 $Z(s) = \left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1} + R_2,\ \infty,\ \infty,\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$ 14
10.55INVALID-ORDER-55 $Z(s) = \left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1} + R_2,\ \infty,\ \infty,\ \infty,\ L_L s + R_L + \frac{1}{C_L s}\right)$ 14
10.56INVALID-ORDER-56 $Z(s) = \left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1} + R_2,\ \infty,\ \infty,\ \infty,\ \frac{L_L s}{C_L L_L s^2+1} + R_L\right)$ 14
10.57INVALID-ORDER-57 $Z(s) = \left(\infty,\ \frac{R_2\left(L_2 s + \frac{1}{C_2 s}\right)}{L_2 s + R_2 + \frac{1}{C_2 s}},\ \infty,\ \infty,\ \infty,\ R_L\right)$ 15
10.58INVALID-ORDER-58 $Z(s) = \left(\infty,\ \frac{R_2\left(L_2 s + \frac{1}{C_2 s}\right)}{L_2 s + R_2 + \frac{1}{C_2 s}},\ \infty,\ \infty,\ \infty,\ \frac{1}{C_L s}\right)$ 15
10.59INVALID-ORDER-59 $Z(s) = \left(\infty,\ \frac{R_2\left(L_2 s + \frac{1}{C_2 s}\right)}{L_2 s + R_2 + \frac{1}{C_2 s}},\ \infty,\ \infty,\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$ 15
10.60INVALID-ORDER-60 $Z(s) = \left(\infty,\ \frac{R_2\left(L_2 s + \frac{1}{C_2 s}\right)}{L_2 s + R_2 + \frac{1}{C_2 s}},\ \infty,\ \infty,\ \infty,\ R_L + \frac{1}{C_L s}\right)$ 15
10.61INVALID-ORDER-61 $Z(s) = \left(\infty,\ \frac{R_2\left(L_2 s + \frac{1}{C_2 s}\right)}{L_2 s + R_2 + \frac{1}{C_2 s}},\ \infty,\ \infty,\ \infty,\ L_L s + \frac{1}{C_L s}\right)$ 15
10.62INVALID-ORDER-62 $Z(s) = \left(\infty,\ \frac{R_2\left(L_2 s + \frac{1}{C_2 s}\right)}{L_2 s + R_2 + \frac{1}{C_2 s}},\ \infty,\ \infty,\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$ 15
10.63INVALID-ORDER-63 $Z(s) = \left(\infty,\ \frac{R_2\left(L_2 s + \frac{1}{C_2 s}\right)}{L_2 s + R_2 + \frac{1}{C_2 s}},\ \infty,\ \infty,\ \infty,\ L_L s + R_L + \frac{1}{C_L s}\right)$ 15
10.64INVALID-ORDER-64 $Z(s) = \left(\infty,\ \frac{R_2\left(L_2 s + \frac{1}{C_2 s}\right)}{L_2 s + R_2 + \frac{1}{C_2 s}},\ \infty,\ \infty,\ \infty,\ \frac{L_L s}{C_L L_L s^2+1} + R_L\right)$ 15

1 Examined $H(z)$ for TIA simple Z2 ZL: Z_L

$$H(z) = Z_L$$

2 HP

3 BP

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

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

Parameters:

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

3.2 BP-2 $Z(s) = \left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}}\right)$

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

Parameters:

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

3.3 BP-3 $Z(s) = \left(\infty,\ \frac{R_2}{C_2 R_2 s + 1},\ \infty,\ \infty,\ \infty,\ \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}}\right)$

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

Parameters:

Q: $C_L R_L \sqrt{\frac{1}{C_L L_L}}$
wo: $\sqrt{\frac{1}{C_L L_L}}$
bandwidth: $\frac{1}{C_L R_L}$
K-LP: 0
K-HP: 0
K-BP: R_L
Qz: 0

Wz: None

3.4 BP-4 $Z(s) = \left(\infty,\ R_2 + \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}}\right)$

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

Parameters:

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

3.5 BP-5 $Z(s) = \left(\infty,\ L_2 s + \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}}\right)$

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

Parameters:

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

3.6 BP-6 $Z(s) = \left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}}\right)$

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

Parameters:

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

3.7 BP-7 $Z(s) = \left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1} + R_2,\ \infty,\ \infty,\ \infty,\ \frac{1}{C_L s+\frac{1}{R_L}+\frac{1}{L_L s}}\right)$

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

Parameters:

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

3.8 BP-8 $Z(s) = \left(\infty,\ \frac{R_2\left(L_2 s+\frac{1}{C_2 s}\right)}{L_2 s+R_2+\frac{1}{C_2 s}},\ \infty,\ \infty,\ \infty,\ \frac{1}{C_L s+\frac{1}{R_L}+\frac{1}{L_L s}}\right)$

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

Parameters:

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

4 LP

5 BS

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

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

Parameters:

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

5.2 BS-2 $Z(s) = \left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ \frac{R_L\left(L_L s+\frac{1}{C_L s}\right)}{L_L s+R_L+\frac{1}{C_L s}}\right)$

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

Parameters:

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

5.3 BS-3 $Z(s) = \left(\infty,\ \frac{R_2}{C_2 R_2 s+1},\ \infty,\ \infty,\ \infty,\ \frac{R_L\left(L_L s+\frac{1}{C_L s}\right)}{L_L s+R_L+\frac{1}{C_L s}}\right)$

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

Parameters:

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

5.4 BS-4 $Z(s) = \left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ \frac{R_L\left(L_L s+\frac{1}{C_L s}\right)}{L_L s+R_L+\frac{1}{C_L s}}\right)$

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

Parameters:

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

5.5 BS-5 $Z(s) = \left(\infty,\ L_2 s+\frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ \frac{R_L\left(L_L s+\frac{1}{C_L s}\right)}{L_L s+R_L+\frac{1}{C_L s}}\right)$

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

Parameters:

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

5.6 BS-6 $Z(s) = \left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ \frac{R_L\left(L_L s + \frac{1}{C_L s}\right)}{L_L s + R_L + \frac{1}{C_L s}}\right)$

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

Parameters:

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

5.7 BS-7 $Z(s) = \left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2,\ \infty,\ \infty,\ \infty,\ \frac{R_L\left(L_L s + \frac{1}{C_L s}\right)}{L_L s + R_L + \frac{1}{C_L s}}\right)$

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

Parameters:

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

5.8 BS-8 $Z(s) = \left(\infty,\ \frac{R_2\left(L_2 s + \frac{1}{C_2 s}\right)}{L_2 s + R_2 + \frac{1}{C_2 s}},\ \infty,\ \infty,\ \infty,\ \frac{R_L\left(L_L s + \frac{1}{C_L s}\right)}{L_L s + R_L + \frac{1}{C_L s}}\right)$

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

Parameters:

Q: $\frac{L_L\sqrt{\frac{1}{C_L L_L}}}{R_L}$
wo: $\sqrt{\frac{1}{C_L L_L}}$
bandwidth: $\frac{R_L}{L_L}$
K-LP: R_L
K-HP: R_L
K-BP: 0

Qz: None
Wz: $\sqrt{\frac{1}{C_L L_L}}$

6 GE

7 AP

8 INVALID-NUMER

9 INVALID-WZ

10 INVALID-ORDER

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

$$H(s) = R_L$$

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

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

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

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

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

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

10.5 INVALID-ORDER-5 $Z(s) = \left(\infty,\ R_2,\ \infty,\ \infty,\ \infty,\ L_L s + \frac{1}{C_L s}\right)$

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

10.6 INVALID-ORDER-6 $Z(s) = \left(\infty,\ R_2,\ \infty,\ \infty,\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$

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

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

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

10.8 INVALID-ORDER-8 $Z(s) = \left(\infty,\ R_2,\ \infty,\ \infty,\ \infty,\ \frac{L_L s}{C_L L_L s^2 + 1} + R_L\right)$

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

10.9 INVALID-ORDER-9 $Z(s) = \left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ R_L\right)$

$$H(s) = R_L$$

10.10 INVALID-ORDER-10 $Z(s) = \left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ \frac{1}{C_L s}\right)$

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

10.11 INVALID-ORDER-11 $Z(s) = \left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ \frac{R_L}{C_L R_L s + 1}\right)$

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

10.12 INVALID-ORDER-12 $Z(s) = \left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ R_L + \frac{1}{C_L s}\right)$

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

10.13 INVALID-ORDER-13 $Z(s) = \left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ L_L s + \frac{1}{C_L s}\right)$

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

10.14 INVALID-ORDER-14 $Z(s) = \left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ \frac{L_L s}{C_L L_L s^2 + 1}\right)$

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

10.15 INVALID-ORDER-15 $Z(s) = \left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ L_L s + R_L + \frac{1}{C_L s}\right)$

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

10.16 INVALID-ORDER-16 $Z(s) = \left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ \frac{L_L s}{C_L L_L s^2 + 1} + R_L\right)$

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

10.17 INVALID-ORDER-17 $Z(s) = \left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ \infty,\ \infty,\ R_L\right)$

$$H(s) = R_L$$

10.18 INVALID-ORDER-18 $Z(s) = \left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ \infty,\ \infty,\ \frac{1}{C_Ls}\right)$

$$H(s) = \frac{1}{C_Ls}$$

10.19 INVALID-ORDER-19 $Z(s) = \left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ \infty,\ \infty,\ \frac{R_L}{C_LR_Ls+1}\right)$

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

10.20 INVALID-ORDER-20 $Z(s) = \left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ \infty,\ \infty,\ R_L + \frac{1}{C_Ls}\right)$

$$H(s) = \frac{C_LR_Ls+1}{C_Ls}$$

10.21 INVALID-ORDER-21 $Z(s) = \left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ \infty,\ \infty,\ L_Ls + \frac{1}{C_Ls}\right)$

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

10.22 INVALID-ORDER-22 $Z(s) = \left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ \infty,\ \infty,\ \frac{L_Ls}{C_LL_Ls^2+1}\right)$

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

10.23 INVALID-ORDER-23 $Z(s) = \left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ \infty,\ \infty,\ L_Ls + R_L + \frac{1}{C_Ls}\right)$

$$H(s) = \frac{C_LL_Ls^2 + C_LR_Ls + 1}{C_Ls}$$

10.24 INVALID-ORDER-24 $Z(s) = \left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ \infty,\ \infty,\ \frac{L_Ls}{C_LL_Ls^2+1} + R_L\right)$

$$H(s) = \frac{C_LL_LR_Ls^2 + L_Ls + R_L}{C_LL_Ls^2+1}$$

10.25 INVALID-ORDER-25 $Z(s) = \left(\infty,\ R_2 + \frac{1}{C_2s},\ \infty,\ \infty,\ \infty,\ R_L\right)$

$$H(s) = R_L$$

10.26 INVALID-ORDER-26 $Z(s) = \left(\infty,\ R_2 + \frac{1}{C_2s},\ \infty,\ \infty,\ \infty,\ \frac{1}{C_Ls}\right)$

$$H(s) = \frac{1}{C_Ls}$$

10.27 INVALID-ORDER-27 $Z(s) = \left(\infty,\ R_2 + \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$

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

10.28 INVALID-ORDER-28 $Z(s) = \left(\infty,\ R_2 + \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ R_L + \frac{1}{C_L s}\right)$

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

10.29 INVALID-ORDER-29 $Z(s) = \left(\infty,\ R_2 + \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ L_L s + \frac{1}{C_L s}\right)$

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

10.30 INVALID-ORDER-30 $Z(s) = \left(\infty,\ R_2 + \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$

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

10.31 INVALID-ORDER-31 $Z(s) = \left(\infty,\ R_2 + \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ L_L s + R_L + \frac{1}{C_L s}\right)$

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

10.32 INVALID-ORDER-32 $Z(s) = \left(\infty,\ R_2 + \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ \frac{L_L s}{C_L L_L s^2+1} + R_L\right)$

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

10.33 INVALID-ORDER-33 $Z(s) = \left(\infty,\ L_2 s + \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ R_L\right)$

$$H(s) = R_L$$

10.34 INVALID-ORDER-34 $Z(s) = \left(\infty,\ L_2 s + \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ \frac{1}{C_L s}\right)$

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

10.35 INVALID-ORDER-35 $Z(s) = \left(\infty,\ L_2 s + \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$

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

10.36 INVALID-ORDER-36 $Z(s) = \left(\infty,\ L_2 s + \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ R_L + \frac{1}{C_L s}\right)$

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

10.37 INVALID-ORDER-37 $Z(s) = \left(\infty,\ L_2 s + \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ L_L s + \frac{1}{C_L s}\right)$

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

10.38 INVALID-ORDER-38 $Z(s) = \left(\infty,\ L_2 s + \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ \frac{L_L s}{C_L L_L s^2 + 1}\right)$

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

10.39 INVALID-ORDER-39 $Z(s) = \left(\infty,\ L_2 s + \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ L_L s + R_L + \frac{1}{C_L s}\right)$

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

10.40 INVALID-ORDER-40 $Z(s) = \left(\infty,\ L_2 s + \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ \frac{L_L s}{C_L L_L s^2 + 1} + R_L\right)$

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

10.41 INVALID-ORDER-41 $Z(s) = \left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ R_L\right)$

$$H(s) = R_L$$

10.42 INVALID-ORDER-42 $Z(s) = \left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ \frac{1}{C_L s}\right)$

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

10.43 INVALID-ORDER-43 $Z(s) = \left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ \frac{R_L}{C_L R_L s + 1}\right)$

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

10.44 INVALID-ORDER-44 $Z(s) = \left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ R_L + \frac{1}{C_L s}\right)$

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

10.45 INVALID-ORDER-45 $Z(s) = \left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ L_L s + \frac{1}{C_L s}\right)$

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

10.46 INVALID-ORDER-46 $Z(s) = \left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ \frac{L_L s}{C_L L_L s^2 + 1}\right)$

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

10.47 INVALID-ORDER-47 $Z(s) = \left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ L_L s + R_L + \frac{1}{C_L s}\right)$

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

10.48 INVALID-ORDER-48 $Z(s) = \left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \infty,\ \infty,\ \frac{L_L s}{C_L L_L s^2 + 1} + R_L\right)$

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

10.49 INVALID-ORDER-49 $Z(s) = \left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2,\ \infty,\ \infty,\ \infty,\ R_L\right)$

$$H(s) = R_L$$

10.50 INVALID-ORDER-50 $Z(s) = \left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2,\ \infty,\ \infty,\ \infty,\ \frac{1}{C_L s}\right)$

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

10.51 INVALID-ORDER-51 $Z(s) = \left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2,\ \infty,\ \infty,\ \infty,\ \frac{R_L}{C_L R_L s + 1}\right)$

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

10.52 INVALID-ORDER-52 $Z(s) = \left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2,\ \infty,\ \infty,\ \infty,\ R_L + \frac{1}{C_L s}\right)$

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

10.53 INVALID-ORDER-53 $Z(s) = \left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2,\ \infty,\ \infty,\ \infty,\ L_L s + \frac{1}{C_L s}\right)$

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

10.54 INVALID-ORDER-54 $Z(s) = \left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2,\ \infty,\ \infty,\ \infty,\ \frac{L_L s}{C_L L_L s^2 + 1}\right)$

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

10.55 INVALID-ORDER-55 $Z(s) = \left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2,\ \infty,\ \infty,\ \infty,\ L_L s + R_L + \frac{1}{C_L s}\right)$

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

10.56 INVALID-ORDER-56 $Z(s) = \left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2 + 1} + R_2,\ \infty,\ \infty,\ \infty,\ \frac{L_L s}{C_L L_L s^2 + 1} + R_L\right)$

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

10.57 INVALID-ORDER-57 $Z(s) = \left(\infty,\ \frac{R_2\left(L_2 s + \frac{1}{C_2 s}\right)}{L_2 s + R_2 + \frac{1}{C_2 s}},\ \infty,\ \infty,\ \infty,\ R_L\right)$

$$H(s) = R_L$$

10.58 INVALID-ORDER-58 $Z(s) = \left(\infty,\ \frac{R_2\left(L_2 s + \frac{1}{C_2 s}\right)}{L_2 s + R_2 + \frac{1}{C_2 s}},\ \infty,\ \infty,\ \infty,\ \frac{1}{C_L s}\right)$

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

10.59 INVALID-ORDER-59 $Z(s) = \left(\infty,\ \frac{R_2\left(L_2 s + \frac{1}{C_2 s}\right)}{L_2 s + R_2 + \frac{1}{C_2 s}},\ \infty,\ \infty,\ \infty,\ \frac{R_L}{C_L R_L s + 1}\right)$

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

10.60 INVALID-ORDER-60 $Z(s) = \left(\infty,\ \frac{R_2\left(L_2 s + \frac{1}{C_2 s}\right)}{L_2 s + R_2 + \frac{1}{C_2 s}},\ \infty,\ \infty,\ \infty,\ R_L + \frac{1}{C_L s}\right)$

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

10.61 INVALID-ORDER-61 $Z(s) = \left(\infty,\ \frac{R_2\left(L_2 s + \frac{1}{C_2 s}\right)}{L_2 s + R_2 + \frac{1}{C_2 s}},\ \infty,\ \infty,\ \infty,\ L_L s + \frac{1}{C_L s}\right)$

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

10.62 INVALID-ORDER-62 $Z(s) = \left(\infty,\ \frac{R_2\left(L_2 s + \frac{1}{C_2 s}\right)}{L_2 s + R_2 + \frac{1}{C_2 s}},\ \infty,\ \infty,\ \infty,\ \frac{L_L s}{C_L L_L s^2 + 1}\right)$

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

10.63 INVALID-ORDER-63 $Z(s) = \left(\infty,\ \frac{R_2\left(L_2 s + \frac{1}{C_2 s}\right)}{L_2 s + R_2 + \frac{1}{C_2 s}},\ \infty,\ \infty,\ \infty,\ L_L s + R_L + \frac{1}{C_L s}\right)$

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

10.64 INVALID-ORDER-64 $Z(s) = \left(\infty,\ \frac{R_2\left(L_2 s + \frac{1}{C_2 s}\right)}{L_2 s + R_2 + \frac{1}{C_2 s}},\ \infty,\ \infty,\ \infty,\ \frac{L_L s}{C_L L_L s^2 + 1} + R_L\right)$

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