

Filter Summary Report: CG,TIA,simple,Z1,Z2

Generated by MacAnalog-Symbolix

January 16, 2025

Contents

1 Examined $H(z)$ for CG TIA simple **Z1 Z2:** $Z_1Z_2g_m + Z_1$

$$H(z) = Z_1Z_2g_m + Z_1$$

2 HP

3 BP

3.1 **BP-1** $Z(s) = \left(\frac{L_1R_1s}{C_1L_1R_1s^2+L_1s+R_1}, \ R_2, \ \infty, \ \infty, \ \infty, \ \infty \right)$

$$H(s) = \frac{s \left(L_1R_1R_2g_m + L_1R_1 \right)}{C_1L_1R_1s^2 + L_1s + R_1}$$

Parameters:

Q: $C_1R_1\sqrt{\frac{1}{C_1L_1}}$
wo: $\sqrt{\frac{1}{C_1L_1}}$
bandwidth: $\frac{1}{C_1R_1}$
K-LP: 0
K-HP: 0
K-BP: $R_1R_2g_m + R_1$
Qz: 0
Wz: None

4 LP

5 BS

5.1 **BS-1** $Z(s) = \left(\frac{R_1(C_1L_1s^2+1)}{C_1L_1s^2+C_1R_1s+1}, \ R_2, \ \infty, \ \infty, \ \infty, \ \infty \right)$

$$H(s) = \frac{R_1R_2g_m + R_1 + s^2 \left(C_1L_1R_1R_2g_m + C_1L_1R_1 \right)}{C_1L_1s^2 + C_1R_1s + 1}$$

Parameters:

Q: $\frac{L_1\sqrt{\frac{1}{C_1L_1}}}{R_1}$
wo: $\sqrt{\frac{1}{C_1L_1}}$
bandwidth: $\frac{R_1}{L_1}$
K-LP: $R_1R_2g_m + R_1$
K-HP: $R_1R_2g_m + R_1$
K-BP: 0
Qz: None
Wz: $\sqrt{\frac{1}{C_1L_1}}$

6 GE

6.1 GE-1 $Z(s) = \left(R_1, \frac{R_2(C_2L_2s^2+1)}{C_2L_2s^2+C_2R_2s+1}, \infty, \infty, \infty, \infty \right)$

$$H(s) = \frac{C_2R_1R_2s + R_1R_2g_m + R_1 + s^2(C_2L_2R_1R_2g_m + C_2L_2R_1)}{C_2L_2s^2 + C_2R_2s + 1}$$

Parameters:

Q: $\frac{L_2\sqrt{\frac{1}{C_2L_2}}}{R_2}$
 wo: $\sqrt{\frac{1}{C_2L_2}}$
 bandwidth: $\frac{R_2}{L_2}$
 K-LP: $R_1R_2g_m + R_1$
 K-HP: $R_1R_2g_m + R_1$
 K-BP: R_1
 Qz: $\frac{L_2R_2g_m\sqrt{\frac{1}{C_2L_2}} + L_2\sqrt{\frac{1}{C_2L_2}}}{R_2}$
 Wz: $\sqrt{\frac{1}{C_2L_2}}$

7 AP

8 INVALID-NUMER

8.1 INVALID-NUMER-1 $Z(s) = \left(\frac{R_1}{C_1R_1s+1}, \frac{R_2}{C_2R_2s+1}, \infty, \infty, \infty, \infty \right)$

$$H(s) = \frac{C_2R_1R_2s + R_1R_2g_m + R_1}{C_1C_2R_1R_2s^2 + s(C_1R_1 + C_2R_2) + 1}$$

Parameters:

Q: $\frac{C_1C_2R_1R_2\sqrt{\frac{1}{C_1C_2R_1R_2}}}{C_1R_1+C_2R_2}$
 wo: $\sqrt{\frac{1}{C_1C_2R_1R_2}}$
 bandwidth: $\frac{C_1R_1+C_2R_2}{C_1C_2R_1R_2}$
 K-LP: $R_1R_2g_m + R_1$
 K-HP: 0
 K-BP: $\frac{C_2R_1R_2}{C_1R_1+C_2R_2}$
 Qz: 0
 Wz: None

8.2 INVALID-NUMER-2 $Z(s) = \left(\frac{L_1R_1s}{C_1L_1R_1s^2+L_1s+R_1}, \frac{1}{C_2s}, \infty, \infty, \infty, \infty \right)$

$$H(s) = \frac{C_2L_1R_1s + L_1R_1g_m}{C_1C_2L_1R_1s^2 + C_2L_1s + C_2R_1}$$

Parameters:

Q: $C_1R_1\sqrt{\frac{1}{C_1L_1}}$
 wo: $\sqrt{\frac{1}{C_1L_1}}$
 bandwidth: $\frac{1}{C_1R_1}$
 K-LP: $\frac{L_1g_m}{C_2}$
 K-HP: 0
 K-BP: R_1
 Qz: 0
 Wz: None

8.3 INVALID-NUMER-3 $Z(s) = \left(\frac{L_1 R_1 s}{C_1 L_1 R_1 s^2 + L_1 s + R_1}, R_2 + \frac{1}{C_2 s}, \infty, \infty, \infty, \infty \right)$

$$H(s) = \frac{L_1 R_1 g_m + s (C_2 L_1 R_1 R_2 g_m + C_2 L_1 R_1)}{C_1 C_2 L_1 R_1 s^2 + C_2 L_1 s + C_2 R_1}$$

Parameters:

Q: $C_1 R_1 \sqrt{\frac{1}{C_1 L_1}}$
 wo: $\sqrt{\frac{1}{C_1 L_1}}$
 bandwidth: $\frac{1}{C_1 R_1}$
 K-LP: $\frac{L_1 g_m}{C_2}$
 K-HP: 0
 K-BP: $R_1 R_2 g_m + R_1$
 Qz: 0
 Wz: None

9 INVALID-WZ

9.1 INVALID-WZ-1 $Z(s) = \left(\frac{L_1 R_1 s}{C_1 L_1 R_1 s^2 + L_1 s + R_1}, L_2 s + \frac{1}{C_2 s}, \infty, \infty, \infty, \infty \right)$

$$H(s) = \frac{C_2 L_1 L_2 R_1 g_m s^2 + C_2 L_1 R_1 s + L_1 R_1 g_m}{C_1 C_2 L_1 R_1 s^2 + C_2 L_1 s + C_2 R_1}$$

Parameters:

Q: $C_1 R_1 \sqrt{\frac{1}{C_1 L_1}}$
 wo: $\sqrt{\frac{1}{C_1 L_1}}$
 bandwidth: $\frac{1}{C_1 R_1}$
 K-LP: $\frac{L_1 g_m}{C_2}$
 K-HP: $\frac{L_2 g_m}{C_1}$
 K-BP: R_1
 Qz: $L_2 g_m \sqrt{\frac{1}{C_1 L_1}}$
 Wz: $\sqrt{\frac{1}{C_2 L_2}}$

9.2 INVALID-WZ-2 $Z(s) = \left(\frac{L_1 R_1 s}{C_1 L_1 R_1 s^2 + L_1 s + R_1}, L_2 s + R_2 + \frac{1}{C_2 s}, \infty, \infty, \infty, \infty \right)$

$$H(s) = \frac{C_2 L_1 L_2 R_1 g_m s^2 + L_1 R_1 g_m + s (C_2 L_1 R_1 R_2 g_m + C_2 L_1 R_1)}{C_1 C_2 L_1 R_1 s^2 + C_2 L_1 s + C_2 R_1}$$

Parameters:

Q: $C_1 R_1 \sqrt{\frac{1}{C_1 L_1}}$
 wo: $\sqrt{\frac{1}{C_1 L_1}}$
 bandwidth: $\frac{1}{C_1 R_1}$
 K-LP: $\frac{L_1 g_m}{C_2}$
 K-HP: $\frac{L_2 g_m}{C_1}$
 K-BP: $R_1 R_2 g_m + R_1$
 Qz: $\frac{L_2 g_m \sqrt{\frac{1}{C_1 L_1}}}{R_2 g_m + 1}$
 Wz: $\sqrt{\frac{1}{C_2 L_2}}$

10 INVALID-ORDER

$$10.1 \quad \text{INVALID-ORDER-1} \quad Z(s) = (R_1, R_2, \infty, \infty, \infty, \infty)$$

$$H(s) = R_1 R_2 g_m + R_1$$

$$10.2 \quad \text{INVALID-ORDER-2} \quad Z(s) = \left(R_1, \frac{1}{C_2 s}, \infty, \infty, \infty, \infty \right)$$

$$H(s) = \frac{C_2 R_1 s + R_1 g_m}{C_2 s}$$

$$10.3 \quad \text{INVALID-ORDER-3} \quad Z(s) = \left(R_1, \frac{R_2}{C_2 R_2 s + 1}, \infty, \infty, \infty, \infty \right)$$

$$H(s) = \frac{C_2 R_1 R_2 s + R_1 R_2 g_m + R_1}{C_2 R_2 s + 1}$$

$$10.4 \quad \text{INVALID-ORDER-4} \quad Z(s) = \left(R_1, R_2 + \frac{1}{C_2 s}, \infty, \infty, \infty, \infty \right)$$

$$H(s) = \frac{R_1 g_m + s (C_2 R_1 R_2 g_m + C_2 R_1)}{C_2 s}$$

$$10.5 \quad \text{INVALID-ORDER-5} \quad Z(s) = \left(R_1, L_2 s + \frac{1}{C_2 s}, \infty, \infty, \infty, \infty \right)$$

$$H(s) = \frac{C_2 L_2 R_1 g_m s^2 + C_2 R_1 s + R_1 g_m}{C_2 s}$$

$$10.6 \quad \text{INVALID-ORDER-6} \quad Z(s) = \left(R_1, L_2 s + R_2 + \frac{1}{C_2 s}, \infty, \infty, \infty, \infty \right)$$

$$H(s) = \frac{C_2 L_2 R_1 g_m s^2 + R_1 g_m + s (C_2 R_1 R_2 g_m + C_2 R_1)}{C_2 s}$$

$$10.7 \quad \text{INVALID-ORDER-7} \quad Z(s) = \left(R_1, \frac{C_2 L_2 R_2 s^2 + L_2 s + R_2}{C_2 L_2 s^2 + 1}, \infty, \infty, \infty, \infty \right)$$

$$H(s) = \frac{L_2 R_1 g_m s + R_1 R_2 g_m + R_1 + s^2 (C_2 L_2 R_1 R_2 g_m + C_2 L_2 R_1)}{C_2 L_2 s^2 + 1}$$

$$10.8 \quad \text{INVALID-ORDER-8} \quad Z(s) = (L_1 s, R_2, \infty, \infty, \infty, \infty)$$

$$H(s) = s (L_1 R_2 g_m + L_1)$$

$$10.9 \quad \text{INVALID-ORDER-9} \quad Z(s) = \left(L_1 s, \frac{1}{C_2 s}, \infty, \infty, \infty, \infty \right)$$

$$H(s) = \frac{C_2 L_1 s + L_1 g_m}{C_2}$$

$$10.10 \quad \text{INVALID-ORDER-10} \quad Z(s) = \left(L_1 s, \frac{R_2}{C_2 R_2 s + 1}, \infty, \infty, \infty, \infty \right)$$

$$H(s) = \frac{C_2 L_1 R_2 s^2 + s (L_1 R_2 g_m + L_1)}{C_2 R_2 s + 1}$$

$$10.11 \quad \text{INVALID-ORDER-11} \quad Z(s) = \left(L_1 s, \quad R_2 + \frac{1}{C_2 s}, \quad \infty, \quad \infty, \quad \infty, \quad \infty \right)$$

$$H(s) = \frac{L_1 g_m + s (C_2 L_1 R_2 g_m + C_2 L_1)}{C_2}$$

$$10.12 \quad \text{INVALID-ORDER-12} \quad Z(s) = \left(L_1 s, \quad L_2 s + \frac{1}{C_2 s}, \quad \infty, \quad \infty, \quad \infty, \quad \infty \right)$$

$$H(s) = \frac{C_2 L_1 L_2 g_m s^2 + C_2 L_1 s + L_1 g_m}{C_2}$$

$$10.13 \quad \text{INVALID-ORDER-13} \quad Z(s) = \left(L_1 s, \quad L_2 s + R_2 + \frac{1}{C_2 s}, \quad \infty, \quad \infty, \quad \infty, \quad \infty \right)$$

$$H(s) = \frac{C_2 L_1 L_2 g_m s^2 + L_1 g_m + s (C_2 L_1 R_2 g_m + C_2 L_1)}{C_2}$$

$$10.14 \quad \text{INVALID-ORDER-14} \quad Z(s) = \left(L_1 s, \quad \frac{C_2 L_2 R_2 s^2 + L_2 s + R_2}{C_2 L_2 s^2 + 1}, \quad \infty, \quad \infty, \quad \infty, \quad \infty \right)$$

$$H(s) = \frac{L_1 L_2 g_m s^2 + s^3 (C_2 L_1 L_2 R_2 g_m + C_2 L_1 L_2) + s (L_1 R_2 g_m + L_1)}{C_2 L_2 s^2 + 1}$$

$$10.15 \quad \text{INVALID-ORDER-15} \quad Z(s) = \left(L_1 s, \quad \frac{R_2 (C_2 L_2 s^2 + 1)}{C_2 L_2 s^2 + C_2 R_2 s + 1}, \quad \infty, \quad \infty, \quad \infty, \quad \infty \right)$$

$$H(s) = \frac{C_2 L_1 R_2 s^2 + s^3 (C_2 L_1 L_2 R_2 g_m + C_2 L_1 L_2) + s (L_1 R_2 g_m + L_1)}{C_2 L_2 s^2 + C_2 R_2 s + 1}$$

$$10.16 \quad \text{INVALID-ORDER-16} \quad Z(s) = \left(\frac{1}{C_1 s}, \quad R_2, \quad \infty, \quad \infty, \quad \infty, \quad \infty \right)$$

$$H(s) = \frac{R_2 g_m + 1}{C_1 s}$$

$$10.17 \quad \text{INVALID-ORDER-17} \quad Z(s) = \left(\frac{1}{C_1 s}, \quad \frac{1}{C_2 s}, \quad \infty, \quad \infty, \quad \infty, \quad \infty \right)$$

$$H(s) = \frac{C_2 s + g_m}{C_1 C_2 s^2}$$

$$10.18 \quad \text{INVALID-ORDER-18} \quad Z(s) = \left(\frac{1}{C_1 s}, \quad \frac{R_2}{C_2 R_2 s + 1}, \quad \infty, \quad \infty, \quad \infty, \quad \infty \right)$$

$$H(s) = \frac{C_2 R_2 s + R_2 g_m + 1}{C_1 C_2 R_2 s^2 + C_1 s}$$

$$10.19 \quad \text{INVALID-ORDER-19} \quad Z(s) = \left(\frac{1}{C_1 s}, \quad R_2 + \frac{1}{C_2 s}, \quad \infty, \quad \infty, \quad \infty, \quad \infty \right)$$

$$H(s) = \frac{g_m + s (C_2 R_2 g_m + C_2)}{C_1 C_2 s^2}$$

$$10.20 \quad \text{INVALID-ORDER-20} \quad Z(s) = \left(\frac{1}{C_1 s}, \quad L_2 s + \frac{1}{C_2 s}, \quad \infty, \quad \infty, \quad \infty, \quad \infty \right)$$

$$H(s) = \frac{C_2 L_2 g_m s^2 + C_2 s + g_m}{C_1 C_2 s^2}$$

$$10.21 \quad \text{INVALID-ORDER-21} \quad Z(s) = \left(\frac{1}{C_1 s}, \quad L_2 s + R_2 + \frac{1}{C_2 s}, \quad \infty, \quad \infty, \quad \infty, \quad \infty \right)$$

$$H(s) = \frac{C_2 L_2 g_m s^2 + g_m + s (C_2 R_2 g_m + C_2)}{C_1 C_2 s^2}$$

$$10.22 \quad \text{INVALID-ORDER-22} \quad Z(s) = \left(\frac{1}{C_1 s}, \quad \frac{C_2 L_2 R_2 s^2 + L_2 s + R_2}{C_2 L_2 s^2 + 1}, \quad \infty, \quad \infty, \quad \infty, \quad \infty \right)$$

$$H(s) = \frac{L_2 g_m s + R_2 g_m + s^2 (C_2 L_2 R_2 g_m + C_2 L_2) + 1}{C_1 C_2 L_2 s^3 + C_1 s}$$

$$10.23 \quad \text{INVALID-ORDER-23} \quad Z(s) = \left(\frac{1}{C_1 s}, \quad \frac{R_2 (C_2 L_2 s^2 + 1)}{C_2 L_2 s^2 + C_2 R_2 s + 1}, \quad \infty, \quad \infty, \quad \infty, \quad \infty \right)$$

$$H(s) = \frac{C_2 R_2 s + R_2 g_m + s^2 (C_2 L_2 R_2 g_m + C_2 L_2) + 1}{C_1 C_2 L_2 s^3 + C_1 C_2 R_2 s^2 + C_1 s}$$

$$10.24 \quad \text{INVALID-ORDER-24} \quad Z(s) = \left(\frac{R_1}{C_1 R_1 s + 1}, \quad R_2, \quad \infty, \quad \infty, \quad \infty, \quad \infty \right)$$

$$H(s) = \frac{R_1 R_2 g_m + R_1}{C_1 R_1 s + 1}$$

$$10.25 \quad \text{INVALID-ORDER-25} \quad Z(s) = \left(\frac{R_1}{C_1 R_1 s + 1}, \quad \frac{1}{C_2 s}, \quad \infty, \quad \infty, \quad \infty, \quad \infty \right)$$

$$H(s) = \frac{C_2 R_1 s + R_1 g_m}{C_1 C_2 R_1 s^2 + C_2 s}$$

$$10.26 \quad \text{INVALID-ORDER-26} \quad Z(s) = \left(\frac{R_1}{C_1 R_1 s + 1}, \quad R_2 + \frac{1}{C_2 s}, \quad \infty, \quad \infty, \quad \infty, \quad \infty \right)$$

$$H(s) = \frac{R_1 g_m + s (C_2 R_1 R_2 g_m + C_2 R_1)}{C_1 C_2 R_1 s^2 + C_2 s}$$

$$10.27 \quad \text{INVALID-ORDER-27} \quad Z(s) = \left(\frac{R_1}{C_1 R_1 s + 1}, \quad L_2 s + \frac{1}{C_2 s}, \quad \infty, \quad \infty, \quad \infty, \quad \infty \right)$$

$$H(s) = \frac{C_2 L_2 R_1 g_m s^2 + C_2 R_1 s + R_1 g_m}{C_1 C_2 R_1 s^2 + C_2 s}$$

$$10.28 \quad \text{INVALID-ORDER-28} \quad Z(s) = \left(\frac{R_1}{C_1 R_1 s + 1}, \quad L_2 s + R_2 + \frac{1}{C_2 s}, \quad \infty, \quad \infty, \quad \infty, \quad \infty \right)$$

$$H(s) = \frac{C_2 L_2 R_1 g_m s^2 + R_1 g_m + s (C_2 R_1 R_2 g_m + C_2 R_1)}{C_1 C_2 R_1 s^2 + C_2 s}$$

$$10.29 \quad \text{INVALID-ORDER-29} \quad Z(s) = \left(\frac{R_1}{C_1 R_1 s + 1}, \quad \frac{C_2 L_2 R_2 s^2 + L_2 s + R_2}{C_2 L_2 s^2 + 1}, \quad \infty, \quad \infty, \quad \infty, \quad \infty \right)$$

$$H(s) = \frac{L_2 R_1 g_m s + R_1 R_2 g_m + R_1 + s^2 (C_2 L_2 R_1 R_2 g_m + C_2 L_2 R_1)}{C_1 C_2 L_2 R_1 s^3 + C_1 R_1 s + C_2 L_2 s^2 + 1}$$

$$10.30 \quad \text{INVALID-ORDER-30} \quad Z(s) = \left(\frac{R_1}{C_1 R_1 s + 1}, \frac{R_2 (C_2 L_2 s^2 + 1)}{C_2 L_2 s^2 + C_2 R_2 s + 1}, \infty, \infty, \infty, \infty \right)$$

$$H(s) = \frac{C_2 R_1 R_2 s + R_1 R_2 g_m + R_1 + s^2 (C_2 L_2 R_1 R_2 g_m + C_2 L_2 R_1)}{C_1 C_2 L_2 R_1 s^3 + s^2 (C_1 C_2 R_1 R_2 + C_2 L_2) + s (C_1 R_1 + C_2 R_2) + 1}$$

$$10.31 \quad \text{INVALID-ORDER-31} \quad Z(s) = \left(R_1 + \frac{1}{C_1 s}, R_2, \infty, \infty, \infty, \infty \right)$$

$$H(s) = \frac{R_2 g_m + s (C_1 R_1 R_2 g_m + C_1 R_1) + 1}{C_1 s}$$

$$10.32 \quad \text{INVALID-ORDER-32} \quad Z(s) = \left(R_1 + \frac{1}{C_1 s}, \frac{1}{C_2 s}, \infty, \infty, \infty, \infty \right)$$

$$H(s) = \frac{C_1 C_2 R_1 s^2 + g_m + s (C_1 R_1 g_m + C_2)}{C_1 C_2 s^2}$$

$$10.33 \quad \text{INVALID-ORDER-33} \quad Z(s) = \left(R_1 + \frac{1}{C_1 s}, \frac{R_2}{C_2 R_2 s + 1}, \infty, \infty, \infty, \infty \right)$$

$$H(s) = \frac{C_1 C_2 R_1 R_2 s^2 + R_2 g_m + s (C_1 R_1 R_2 g_m + C_1 R_1 + C_2 R_2) + 1}{C_1 C_2 R_2 s^2 + C_1 s}$$

$$10.34 \quad \text{INVALID-ORDER-34} \quad Z(s) = \left(R_1 + \frac{1}{C_1 s}, R_2 + \frac{1}{C_2 s}, \infty, \infty, \infty, \infty \right)$$

$$H(s) = \frac{g_m + s^2 (C_1 C_2 R_1 R_2 g_m + C_1 C_2 R_1) + s (C_1 R_1 g_m + C_2 R_2 g_m + C_2)}{C_1 C_2 s^2}$$

$$10.35 \quad \text{INVALID-ORDER-35} \quad Z(s) = \left(R_1 + \frac{1}{C_1 s}, L_2 s + \frac{1}{C_2 s}, \infty, \infty, \infty, \infty \right)$$

$$H(s) = \frac{C_1 C_2 L_2 R_1 g_m s^3 + g_m + s^2 (C_1 C_2 R_1 + C_2 L_2 g_m) + s (C_1 R_1 g_m + C_2)}{C_1 C_2 s^2}$$

$$10.36 \quad \text{INVALID-ORDER-36} \quad Z(s) = \left(R_1 + \frac{1}{C_1 s}, L_2 s + R_2 + \frac{1}{C_2 s}, \infty, \infty, \infty, \infty \right)$$

$$H(s) = \frac{C_1 C_2 L_2 R_1 g_m s^3 + g_m + s^2 (C_1 C_2 R_1 R_2 g_m + C_1 C_2 R_1 + C_2 L_2 g_m) + s (C_1 R_1 g_m + C_2 R_2 g_m + C_2)}{C_1 C_2 s^2}$$

$$10.37 \quad \text{INVALID-ORDER-37} \quad Z(s) = \left(R_1 + \frac{1}{C_1 s}, \frac{C_2 L_2 R_2 s^2 + L_2 s + R_2}{C_2 L_2 s^2 + 1}, \infty, \infty, \infty, \infty \right)$$

$$H(s) = \frac{R_2 g_m + s^3 (C_1 C_2 L_2 R_1 R_2 g_m + C_1 C_2 L_2 R_1) + s^2 (C_1 L_2 R_1 g_m + C_2 L_2 R_2 g_m + C_2 L_2) + s (C_1 R_1 R_2 g_m + C_1 R_1 + L_2 g_m) + 1}{C_1 C_2 L_2 s^3 + C_1 s}$$

$$10.38 \quad \text{INVALID-ORDER-38} \quad Z(s) = \left(R_1 + \frac{1}{C_1 s}, \frac{R_2 (C_2 L_2 s^2 + 1)}{C_2 L_2 s^2 + C_2 R_2 s + 1}, \infty, \infty, \infty, \infty \right)$$

$$H(s) = \frac{R_2 g_m + s^3 (C_1 C_2 L_2 R_1 R_2 g_m + C_1 C_2 L_2 R_1) + s^2 (C_1 C_2 R_1 R_2 + C_2 L_2 R_2 g_m + C_2 L_2) + s (C_1 R_1 R_2 g_m + C_1 R_1 + C_2 R_2) + 1}{C_1 C_2 L_2 s^3 + C_1 C_2 R_2 s^2 + C_1 s}$$

$$10.39 \quad \text{INVALID-ORDER-39} \quad Z(s) = \left(L_1 s + \frac{1}{C_1 s}, \quad R_2, \quad \infty, \quad \infty, \quad \infty, \quad \infty \right)$$

$$H(s) = \frac{R_2 g_m + s^2 (C_1 L_1 R_2 g_m + C_1 L_1) + 1}{C_1 s}$$

$$10.40 \quad \text{INVALID-ORDER-40} \quad Z(s) = \left(L_1 s + \frac{1}{C_1 s}, \quad \frac{1}{C_2 s}, \quad \infty, \quad \infty, \quad \infty, \quad \infty \right)$$

$$H(s) = \frac{C_1 C_2 L_1 s^3 + C_1 L_1 g_m s^2 + C_2 s + g_m}{C_1 C_2 s^2}$$

$$10.41 \quad \text{INVALID-ORDER-41} \quad Z(s) = \left(L_1 s + \frac{1}{C_1 s}, \quad \frac{R_2}{C_2 R_2 s + 1}, \quad \infty, \quad \infty, \quad \infty, \quad \infty \right)$$

$$H(s) = \frac{C_1 C_2 L_1 R_2 s^3 + C_2 R_2 s + R_2 g_m + s^2 (C_1 L_1 R_2 g_m + C_1 L_1) + 1}{C_1 C_2 R_2 s^2 + C_1 s}$$

$$10.42 \quad \text{INVALID-ORDER-42} \quad Z(s) = \left(L_1 s + \frac{1}{C_1 s}, \quad R_2 + \frac{1}{C_2 s}, \quad \infty, \quad \infty, \quad \infty, \quad \infty \right)$$

$$H(s) = \frac{C_1 L_1 g_m s^2 + g_m + s^3 (C_1 C_2 L_1 R_2 g_m + C_1 C_2 L_1) + s (C_2 R_2 g_m + C_2)}{C_1 C_2 s^2}$$

$$10.43 \quad \text{INVALID-ORDER-43} \quad Z(s) = \left(L_1 s + \frac{1}{C_1 s}, \quad L_2 s + \frac{1}{C_2 s}, \quad \infty, \quad \infty, \quad \infty, \quad \infty \right)$$

$$H(s) = \frac{C_1 C_2 L_1 L_2 g_m s^4 + C_1 C_2 L_1 s^3 + C_2 s + g_m + s^2 (C_1 L_1 g_m + C_2 L_2 g_m)}{C_1 C_2 s^2}$$

$$10.44 \quad \text{INVALID-ORDER-44} \quad Z(s) = \left(L_1 s + \frac{1}{C_1 s}, \quad L_2 s + R_2 + \frac{1}{C_2 s}, \quad \infty, \quad \infty, \quad \infty, \quad \infty \right)$$

$$H(s) = \frac{C_1 C_2 L_1 L_2 g_m s^4 + g_m + s^3 (C_1 C_2 L_1 R_2 g_m + C_1 C_2 L_1) + s^2 (C_1 L_1 g_m + C_2 L_2 g_m) + s (C_2 R_2 g_m + C_2)}{C_1 C_2 s^2}$$

$$10.45 \quad \text{INVALID-ORDER-45} \quad Z(s) = \left(L_1 s + \frac{1}{C_1 s}, \quad \frac{C_2 L_2 R_2 s^2 + L_2 s + R_2}{C_2 L_2 s^2 + 1}, \quad \infty, \quad \infty, \quad \infty, \quad \infty \right)$$

$$H(s) = \frac{C_1 L_1 L_2 g_m s^3 + L_2 g_m s + R_2 g_m + s^4 (C_1 C_2 L_1 L_2 R_2 g_m + C_1 C_2 L_1 L_2) + s^2 (C_1 L_1 R_2 g_m + C_1 L_1 + C_2 L_2 R_2 g_m + C_2 L_2) + 1}{C_1 C_2 L_2 s^3 + C_1 s}$$

$$10.46 \quad \text{INVALID-ORDER-46} \quad Z(s) = \left(L_1 s + \frac{1}{C_1 s}, \quad \frac{R_2 (C_2 L_2 s^2 + 1)}{C_2 L_2 s^2 + C_2 R_2 s + 1}, \quad \infty, \quad \infty, \quad \infty, \quad \infty \right)$$

$$H(s) = \frac{C_1 C_2 L_1 R_2 s^3 + C_2 R_2 s + R_2 g_m + s^4 (C_1 C_2 L_1 L_2 R_2 g_m + C_1 C_2 L_1 L_2) + s^2 (C_1 L_1 R_2 g_m + C_1 L_1 + C_2 L_2 R_2 g_m + C_2 L_2) + 1}{C_1 C_2 L_2 s^3 + C_1 C_2 R_2 s^2 + C_1 s}$$

$$10.47 \quad \text{INVALID-ORDER-47} \quad Z(s) = \left(\frac{L_1 s}{C_1 L_1 s^2 + 1}, \quad R_2, \quad \infty, \quad \infty, \quad \infty, \quad \infty \right)$$

$$H(s) = \frac{s (L_1 R_2 g_m + L_1)}{C_1 L_1 s^2 + 1}$$

$$10.48 \quad \text{INVALID-ORDER-48} \quad Z(s) = \left(\frac{L_1 s}{C_1 L_1 s^2 + 1}, \quad \frac{1}{C_2 s}, \quad \infty, \quad \infty, \quad \infty, \quad \infty \right)$$

$$H(s) = \frac{C_2 L_1 s + L_1 g_m}{C_1 C_2 L_1 s^2 + C_2}$$

10.49 INVALID-ORDER-49 $Z(s) = \left(\frac{L_1 s}{C_1 L_1 s^2 + 1}, \frac{R_2}{C_2 R_2 s + 1}, \infty, \infty, \infty, \infty \right)$

$$H(s) = \frac{C_2 L_1 R_2 s^2 + s (L_1 R_2 g_m + L_1)}{C_1 C_2 L_1 R_2 s^3 + C_1 L_1 s^2 + C_2 R_2 s + 1}$$

10.50 INVALID-ORDER-50 $Z(s) = \left(\frac{L_1 s}{C_1 L_1 s^2 + 1}, R_2 + \frac{1}{C_2 s}, \infty, \infty, \infty, \infty \right)$

$$H(s) = \frac{L_1 g_m + s (C_2 L_1 R_2 g_m + C_2 L_1)}{C_1 C_2 L_1 s^2 + C_2}$$

10.51 INVALID-ORDER-51 $Z(s) = \left(\frac{L_1 s}{C_1 L_1 s^2 + 1}, L_2 s + \frac{1}{C_2 s}, \infty, \infty, \infty, \infty \right)$

$$H(s) = \frac{C_2 L_1 L_2 g_m s^2 + C_2 L_1 s + L_1 g_m}{C_1 C_2 L_1 s^2 + C_2}$$

10.52 INVALID-ORDER-52 $Z(s) = \left(\frac{L_1 s}{C_1 L_1 s^2 + 1}, L_2 s + R_2 + \frac{1}{C_2 s}, \infty, \infty, \infty, \infty \right)$

$$H(s) = \frac{C_2 L_1 L_2 g_m s^2 + L_1 g_m + s (C_2 L_1 R_2 g_m + C_2 L_1)}{C_1 C_2 L_1 s^2 + C_2}$$

10.53 INVALID-ORDER-53 $Z(s) = \left(\frac{L_1 s}{C_1 L_1 s^2 + 1}, \frac{C_2 L_2 R_2 s^2 + L_2 s + R_2}{C_2 L_2 s^2 + 1}, \infty, \infty, \infty, \infty \right)$

$$H(s) = \frac{L_1 L_2 g_m s^2 + s^3 (C_2 L_1 L_2 R_2 g_m + C_2 L_1 L_2) + s (L_1 R_2 g_m + L_1)}{C_1 C_2 L_1 L_2 s^4 + s^2 (C_1 L_1 + C_2 L_2) + 1}$$

10.54 INVALID-ORDER-54 $Z(s) = \left(\frac{L_1 s}{C_1 L_1 s^2 + 1}, \frac{R_2 (C_2 L_2 s^2 + 1)}{C_2 L_2 s^2 + C_2 R_2 s + 1}, \infty, \infty, \infty, \infty \right)$

$$H(s) = \frac{C_2 L_1 R_2 s^2 + s^3 (C_2 L_1 L_2 R_2 g_m + C_2 L_1 L_2) + s (L_1 R_2 g_m + L_1)}{C_1 C_2 L_1 L_2 s^4 + C_1 C_2 L_1 R_2 s^3 + C_2 R_2 s + s^2 (C_1 L_1 + C_2 L_2) + 1}$$

10.55 INVALID-ORDER-55 $Z(s) = \left(L_1 s + R_1 + \frac{1}{C_1 s}, R_2, \infty, \infty, \infty, \infty \right)$

$$H(s) = \frac{R_2 g_m + s^2 (C_1 L_1 R_2 g_m + C_1 L_1) + s (C_1 R_1 R_2 g_m + C_1 R_1) + 1}{C_1 s}$$

10.56 INVALID-ORDER-56 $Z(s) = \left(L_1 s + R_1 + \frac{1}{C_1 s}, \frac{1}{C_2 s}, \infty, \infty, \infty, \infty \right)$

$$H(s) = \frac{C_1 C_2 L_1 s^3 + g_m + s^2 (C_1 C_2 R_1 + C_1 L_1 g_m) + s (C_1 R_1 g_m + C_2)}{C_1 C_2 s^2}$$

10.57 INVALID-ORDER-57 $Z(s) = \left(L_1 s + R_1 + \frac{1}{C_1 s}, \frac{R_2}{C_2 R_2 s + 1}, \infty, \infty, \infty, \infty \right)$

$$H(s) = \frac{C_1 C_2 L_1 R_2 s^3 + R_2 g_m + s^2 (C_1 C_2 R_1 R_2 + C_1 L_1 R_2 g_m + C_1 L_1) + s (C_1 R_1 R_2 g_m + C_1 R_1 + C_2 R_2) + 1}{C_1 C_2 R_2 s^2 + C_1 s}$$

10.58 INVALID-ORDER-58 $Z(s) = \left(L_1 s + R_1 + \frac{1}{C_1 s}, R_2 + \frac{1}{C_2 s}, \infty, \infty, \infty, \infty \right)$

$$H(s) = \frac{g_m + s^3 (C_1 C_2 L_1 R_2 g_m + C_1 C_2 L_1) + s^2 (C_1 C_2 R_1 R_2 g_m + C_1 C_2 R_1 + C_1 L_1 g_m) + s (C_1 R_1 g_m + C_2 R_2 g_m + C_2)}{C_1 C_2 s^2}$$

10.59 INVALID-ORDER-59 $Z(s) = \left(L_1 s + R_1 + \frac{1}{C_1 s}, L_2 s + \frac{1}{C_2 s}, \infty, \infty, \infty, \infty \right)$

$$H(s) = \frac{C_1 C_2 L_1 L_2 g_m s^4 + g_m + s^3 (C_1 C_2 L_1 + C_1 C_2 L_2 R_1 g_m) + s^2 (C_1 C_2 R_1 + C_1 L_1 g_m + C_2 L_2 g_m) + s (C_1 R_1 g_m + C_2)}{C_1 C_2 s^2}$$

10.60 INVALID-ORDER-60 $Z(s) = \left(L_1 s + R_1 + \frac{1}{C_1 s}, L_2 s + R_2 + \frac{1}{C_2 s}, \infty, \infty, \infty, \infty \right)$

$$H(s) = \frac{C_1 C_2 L_1 L_2 g_m s^4 + g_m + s^3 (C_1 C_2 L_1 R_2 g_m + C_1 C_2 L_1 + C_1 C_2 L_2 R_1 g_m) + s^2 (C_1 C_2 R_1 R_2 g_m + C_1 C_2 R_1 + C_1 L_1 g_m + C_2 L_2 g_m) + s (C_1 R_1 g_m + C_2 R_2 g_m + C_2)}{C_1 C_2 s^2}$$

10.61 INVALID-ORDER-61 $Z(s) = \left(L_1 s + R_1 + \frac{1}{C_1 s}, \frac{C_2 L_2 R_2 s^2 + L_2 s + R_2}{C_2 L_2 s^2 + 1}, \infty, \infty, \infty, \infty \right)$

$$H(s) = \frac{R_2 g_m + s^4 (C_1 C_2 L_1 L_2 R_2 g_m + C_1 C_2 L_1 L_2) + s^3 (C_1 C_2 L_2 R_1 R_2 g_m + C_1 C_2 L_2 R_1 + C_1 L_1 L_2 g_m) + s^2 (C_1 L_1 R_2 g_m + C_1 L_1 + C_1 L_2 R_1 g_m + C_2 L_2 R_2 g_m + C_2 L_2) + s (C_1 R_1 R_2 g_m + C_1 R_1 + L_2 g_m) + 1}{C_1 C_2 L_2 s^3 + C_1 s}$$

10.62 INVALID-ORDER-62 $Z(s) = \left(L_1 s + R_1 + \frac{1}{C_1 s}, \frac{R_2 (C_2 L_2 s^2 + 1)}{C_2 L_2 s^2 + C_2 R_2 s + 1}, \infty, \infty, \infty, \infty \right)$

$$H(s) = \frac{R_2 g_m + s^4 (C_1 C_2 L_1 L_2 R_2 g_m + C_1 C_2 L_1 L_2) + s^3 (C_1 C_2 L_1 R_2 + C_1 C_2 L_2 R_1 R_2 g_m + C_1 C_2 L_2 R_1) + s^2 (C_1 C_2 R_1 R_2 + C_1 L_1 R_2 g_m + C_1 L_1 + C_2 L_2 R_2 g_m + C_2 L_2) + s (C_1 R_1 R_2 g_m + C_1 R_1 + C_2 R_2) + 1}{C_1 C_2 L_2 s^3 + C_1 C_2 R_2 s^2 + C_1 s}$$

10.63 INVALID-ORDER-63 $Z(s) = \left(\frac{L_1 R_1 s}{C_1 L_1 R_1 s^2 + L_1 s + R_1}, \frac{R_2}{C_2 R_2 s + 1}, \infty, \infty, \infty, \infty \right)$

$$H(s) = \frac{C_2 L_1 R_1 R_2 s^2 + s (L_1 R_1 R_2 g_m + L_1 R_1)}{C_1 C_2 L_1 R_1 R_2 s^3 + R_1 + s^2 (C_1 L_1 R_1 + C_2 L_1 R_2) + s (C_2 R_1 R_2 + L_1)}$$

10.64 INVALID-ORDER-64 $Z(s) = \left(\frac{L_1 R_1 s}{C_1 L_1 R_1 s^2 + L_1 s + R_1}, \frac{C_2 L_2 R_2 s^2 + L_2 s + R_2}{C_2 L_2 s^2 + 1}, \infty, \infty, \infty, \infty \right)$

$$H(s) = \frac{L_1 L_2 R_1 g_m s^2 + s^3 (C_2 L_1 L_2 R_1 R_2 g_m + C_2 L_1 L_2 R_1) + s (L_1 R_1 R_2 g_m + L_1 R_1)}{C_1 C_2 L_1 L_2 R_1 s^4 + C_2 L_1 L_2 s^3 + L_1 s + R_1 + s^2 (C_1 L_1 R_1 + C_2 L_2 R_1)}$$

10.65 INVALID-ORDER-65 $Z(s) = \left(\frac{L_1 R_1 s}{C_1 L_1 R_1 s^2 + L_1 s + R_1}, \frac{R_2 (C_2 L_2 s^2 + 1)}{C_2 L_2 s^2 + C_2 R_2 s + 1}, \infty, \infty, \infty, \infty \right)$

$$H(s) = \frac{C_2 L_1 R_1 R_2 s^2 + s^3 (C_2 L_1 L_2 R_1 R_2 g_m + C_2 L_1 L_2 R_1) + s (L_1 R_1 R_2 g_m + L_1 R_1)}{C_1 C_2 L_1 L_2 R_1 s^4 + R_1 + s^3 (C_1 C_2 L_1 R_1 R_2 + C_2 L_1 L_2) + s^2 (C_1 L_1 R_1 + C_2 L_1 R_2 + C_2 L_2 R_1) + s (C_2 R_1 R_2 + L_1)}$$

10.66 INVALID-ORDER-66 $Z(s) = \left(\frac{C_1 L_1 R_1 s^2 + L_1 s + R_1}{C_1 L_1 s^2 + 1}, R_2, \infty, \infty, \infty, \infty \right)$

$$H(s) = \frac{R_1 R_2 g_m + R_1 + s^2 (C_1 L_1 R_1 R_2 g_m + C_1 L_1 R_1) + s (L_1 R_2 g_m + L_1)}{C_1 L_1 s^2 + 1}$$

$$10.67 \quad \text{INVALID-ORDER-67} \quad Z(s) = \left(\frac{C_1 L_1 R_1 s^2 + L_1 s + R_1}{C_1 L_1 s^2 + 1}, \frac{1}{C_2 s}, \infty, \infty, \infty, \infty \right)$$

$$H(s) = \frac{C_1 C_2 L_1 R_1 s^3 + R_1 g_m + s^2 (C_1 L_1 R_1 g_m + C_2 L_1) + s (C_2 R_1 + L_1 g_m)}{C_1 C_2 L_1 s^3 + C_2 s}$$

$$10.68 \quad \text{INVALID-ORDER-68} \quad Z(s) = \left(\frac{C_1 L_1 R_1 s^2 + L_1 s + R_1}{C_1 L_1 s^2 + 1}, \frac{R_2}{C_2 R_2 s + 1}, \infty, \infty, \infty, \infty \right)$$

$$H(s) = \frac{C_1 C_2 L_1 R_1 R_2 s^3 + R_1 R_2 g_m + R_1 + s^2 (C_1 L_1 R_1 R_2 g_m + C_1 L_1 R_1 + C_2 L_1 R_2) + s (C_2 R_1 R_2 + L_1 R_2 g_m + L_1)}{C_1 C_2 L_1 R_2 s^3 + C_1 L_1 s^2 + C_2 R_2 s + 1}$$

$$10.69 \quad \text{INVALID-ORDER-69} \quad Z(s) = \left(\frac{C_1 L_1 R_1 s^2 + L_1 s + R_1}{C_1 L_1 s^2 + 1}, R_2 + \frac{1}{C_2 s}, \infty, \infty, \infty, \infty \right)$$

$$H(s) = \frac{R_1 g_m + s^3 (C_1 C_2 L_1 R_1 R_2 g_m + C_1 C_2 L_1 R_1) + s^2 (C_1 L_1 R_1 g_m + C_2 L_1 R_2 g_m + C_2 L_1) + s (C_2 R_1 R_2 g_m + C_2 R_1 + L_1 g_m)}{C_1 C_2 L_1 s^3 + C_2 s}$$

$$10.70 \quad \text{INVALID-ORDER-70} \quad Z(s) = \left(\frac{C_1 L_1 R_1 s^2 + L_1 s + R_1}{C_1 L_1 s^2 + 1}, L_2 s + \frac{1}{C_2 s}, \infty, \infty, \infty, \infty \right)$$

$$H(s) = \frac{C_1 C_2 L_1 L_2 R_1 g_m s^4 + R_1 g_m + s^3 (C_1 C_2 L_1 R_1 + C_2 L_1 L_2 g_m) + s^2 (C_1 L_1 R_1 g_m + C_2 L_1 + C_2 L_2 R_1 g_m) + s (C_2 R_1 + L_1 g_m)}{C_1 C_2 L_1 s^3 + C_2 s}$$

$$10.71 \quad \text{INVALID-ORDER-71} \quad Z(s) = \left(\frac{C_1 L_1 R_1 s^2 + L_1 s + R_1}{C_1 L_1 s^2 + 1}, L_2 s + R_2 + \frac{1}{C_2 s}, \infty, \infty, \infty, \infty \right)$$

$$H(s) = \frac{C_1 C_2 L_1 L_2 R_1 g_m s^4 + R_1 g_m + s^3 (C_1 C_2 L_1 R_1 R_2 g_m + C_1 C_2 L_1 R_1 + C_2 L_1 L_2 g_m) + s^2 (C_1 L_1 R_1 g_m + C_2 L_1 R_2 g_m + C_2 L_1 + C_2 L_2 R_1 g_m) + s (C_2 R_1 R_2 g_m + C_2 R_1 + L_1 g_m)}{C_1 C_2 L_1 s^3 + C_2 s}$$

$$10.72 \quad \text{INVALID-ORDER-72} \quad Z(s) = \left(\frac{C_1 L_1 R_1 s^2 + L_1 s + R_1}{C_1 L_1 s^2 + 1}, \frac{C_2 L_2 R_2 s^2 + L_2 s + R_2}{C_2 L_2 s^2 + 1}, \infty, \infty, \infty, \infty \right)$$

$$H(s) = \frac{R_1 R_2 g_m + R_1 + s^4 (C_1 C_2 L_1 L_2 R_1 R_2 g_m + C_1 C_2 L_1 L_2 R_1) + s^3 (C_1 L_1 L_2 R_1 g_m + C_2 L_1 L_2 R_2 g_m + C_2 L_1 L_2) + s^2 (C_1 L_1 R_1 R_2 g_m + C_1 L_1 R_1 + C_2 L_2 R_1 R_2 g_m + C_2 L_2 R_1 + L_1 L_2 g_m) + s (L_1 R_2 g_m + L_1 + L_2 R_1 g_m)}{C_1 C_2 L_1 L_2 s^4 + s^2 (C_1 L_1 + C_2 L_2) + 1}$$

$$10.73 \quad \text{INVALID-ORDER-73} \quad Z(s) = \left(\frac{C_1 L_1 R_1 s^2 + L_1 s + R_1}{C_1 L_1 s^2 + 1}, \frac{R_2 (C_2 L_2 s^2 + 1)}{C_2 L_2 s^2 + C_2 R_2 s + 1}, \infty, \infty, \infty, \infty \right)$$

$$H(s) = \frac{R_1 R_2 g_m + R_1 + s^4 (C_1 C_2 L_1 L_2 R_1 R_2 g_m + C_1 C_2 L_1 L_2 R_1) + s^3 (C_1 C_2 L_1 R_1 R_2 + C_2 L_1 L_2 R_2 g_m + C_2 L_1 L_2) + s^2 (C_1 L_1 R_1 R_2 g_m + C_1 L_1 R_1 + C_2 L_1 R_2 + C_2 L_2 R_1 R_2 g_m + C_2 L_2 R_1) + s (C_2 R_1 R_2 + L_1 R_2 g_m + L_1)}{C_1 C_2 L_1 L_2 s^4 + C_1 C_2 L_1 R_2 s^3 + C_2 R_2 s + s^2 (C_1 L_1 + C_2 L_2) + 1}$$

$$10.74 \quad \text{INVALID-ORDER-74} \quad Z(s) = \left(\frac{R_1 (C_1 L_1 s^2 + 1)}{C_1 L_1 s^2 + C_1 R_1 s + 1}, \frac{1}{C_2 s}, \infty, \infty, \infty, \infty \right)$$

$$H(s) = \frac{C_1 C_2 L_1 R_1 s^3 + C_1 L_1 R_1 g_m s^2 + C_2 R_1 s + R_1 g_m}{C_1 C_2 L_1 s^3 + C_1 C_2 R_1 s^2 + C_2 s}$$

$$10.75 \quad \text{INVALID-ORDER-75} \quad Z(s) = \left(\frac{R_1 (C_1 L_1 s^2 + 1)}{C_1 L_1 s^2 + C_1 R_1 s + 1}, \frac{R_2}{C_2 R_2 s + 1}, \infty, \infty, \infty, \infty \right)$$

$$H(s) = \frac{C_1 C_2 L_1 R_1 R_2 s^3 + C_2 R_1 R_2 s + R_1 R_2 g_m + R_1 + s^2 (C_1 L_1 R_1 R_2 g_m + C_1 L_1 R_1)}{C_1 C_2 L_1 R_2 s^3 + s^2 (C_1 C_2 R_1 R_2 + C_1 L_1) + s (C_1 R_1 + C_2 R_2) + 1}$$

10.76 INVALID-ORDER-76 $Z(s) = \left(\frac{R_1(C_1L_1s^2+1)}{C_1L_1s^2+C_1R_1s+1}, R_2 + \frac{1}{C_2s}, \infty, \infty, \infty, \infty \right)$

$$H(s) = \frac{C_1L_1R_1g_ms^2 + R_1g_m + s^3(C_1C_2L_1R_1R_2g_m + C_1C_2L_1R_1) + s(C_2R_1R_2g_m + C_2R_1)}{C_1C_2L_1s^3 + C_1C_2R_1s^2 + C_2s}$$

10.77 INVALID-ORDER-77 $Z(s) = \left(\frac{R_1(C_1L_1s^2+1)}{C_1L_1s^2+C_1R_1s+1}, L_2s + \frac{1}{C_2s}, \infty, \infty, \infty, \infty \right)$

$$H(s) = \frac{C_1C_2L_1L_2R_1g_ms^4 + C_1C_2L_1R_1s^3 + C_2R_1s + R_1g_m + s^2(C_1L_1R_1g_m + C_2L_2R_1g_m)}{C_1C_2L_1s^3 + C_1C_2R_1s^2 + C_2s}$$

10.78 INVALID-ORDER-78 $Z(s) = \left(\frac{R_1(C_1L_1s^2+1)}{C_1L_1s^2+C_1R_1s+1}, L_2s + R_2 + \frac{1}{C_2s}, \infty, \infty, \infty, \infty \right)$

$$H(s) = \frac{C_1C_2L_1L_2R_1g_ms^4 + R_1g_m + s^3(C_1C_2L_1R_1R_2g_m + C_1C_2L_1R_1) + s^2(C_1L_1R_1g_m + C_2L_2R_1g_m) + s(C_2R_1R_2g_m + C_2R_1)}{C_1C_2L_1s^3 + C_1C_2R_1s^2 + C_2s}$$

10.79 INVALID-ORDER-79 $Z(s) = \left(\frac{R_1(C_1L_1s^2+1)}{C_1L_1s^2+C_1R_1s+1}, \frac{C_2L_2R_2s^2+L_2s+R_2}{C_2L_2s^2+1}, \infty, \infty, \infty, \infty \right)$

$$H(s) = \frac{C_1L_1L_2R_1g_ms^3 + L_2R_1g_ms + R_1R_2g_m + R_1 + s^4(C_1C_2L_1L_2R_1R_2g_m + C_1C_2L_1L_2R_1) + s^2(C_1L_1R_1R_2g_m + C_1L_1R_1 + C_2L_2R_1R_2g_m + C_2L_2R_1)}{C_1C_2L_1L_2s^4 + C_1C_2L_2R_1s^3 + C_1R_1s + s^2(C_1L_1 + C_2L_2) + 1}$$

10.80 INVALID-ORDER-80 $Z(s) = \left(\frac{R_1(C_1L_1s^2+1)}{C_1L_1s^2+C_1R_1s+1}, \frac{R_2(C_2L_2s^2+1)}{C_2L_2s^2+C_2R_2s+1}, \infty, \infty, \infty, \infty \right)$

$$H(s) = \frac{C_1C_2L_1R_1R_2s^3 + C_2R_1R_2s + R_1R_2g_m + R_1 + s^4(C_1C_2L_1L_2R_1R_2g_m + C_1C_2L_1L_2R_1) + s^2(C_1L_1R_1R_2g_m + C_1L_1R_1 + C_2L_2R_1R_2g_m + C_2L_2R_1)}{C_1C_2L_1L_2s^4 + s^3(C_1C_2L_1R_2 + C_1C_2L_2R_1) + s^2(C_1C_2R_1R_2 + C_1L_1 + C_2L_2) + s(C_1R_1 + C_2R_2) + 1}$$

11 PolynomialError