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1 Examined $H(z)$ for DIVIDER Test simple Z1 Z2 ZL: $\frac{Z_L}{Z_1+Z_2+Z_L}$

$$H(z) = \frac{Z_L}{Z_1 + Z_2 + Z_L}$$

2 HP

2.1 HP-1 $Z(s) = \left(R_1, \frac{1}{C_2 s}, L_L s \right)$

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

Parameters:

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

2.2 HP-2 $Z(s) = \left(\frac{1}{C_1 s}, R_2, L_L s \right)$

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

Parameters:

Q: $\frac{L_L \sqrt{\frac{1}{C_1 L_L}}}{R_2}$
 wo: $\sqrt{\frac{1}{C_1 L_L}}$
 bandwidth: $\frac{R_2}{L_L}$
 K-LP: 0
 K-HP: 1
 K-BP: 0
 Qz: None
 Wz: None

3 BP

3.1 BP-1 $Z(s) = \left(L_1 s, \frac{1}{C_2 s}, R_L \right)$

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

Parameters:

Q: $\frac{L_1 \sqrt{\frac{1}{C_2 L_1}}}{R_L}$
 wo: $\sqrt{\frac{1}{C_2 L_1}}$
 bandwidth: $\frac{R_L}{L_1}$
 K-LP: 0
 K-HP: 0
 K-BP: 1
 Qz: 0

Wz: None

3.2 BP-2 $Z(s) = \left(\frac{1}{C_1 s}, L_2 s, R_L \right)$

Parameters:

Q: $\frac{L_2 \sqrt{\frac{1}{C_1 L_2}}}{R_L}$
 wo: $\sqrt{\frac{1}{C_1 L_2}}$
 bandwidth: $\frac{R_L}{L_2}$
 K-LP: 0
 K-HP: 0
 K-BP: 1
 Qz: 0
 Wz: None

$$H(s) = \frac{C_1 R_L s}{C_1 L_2 s^2 + C_1 R_L s + 1}$$

4 LP

4.1 LP-1 $Z(s) = \left(R_1, L_2 s, \frac{1}{C_L s} \right)$

Parameters:

Q: $\frac{L_2 \sqrt{\frac{1}{C_L L_2}}}{R_1}$
 wo: $\sqrt{\frac{1}{C_L L_2}}$
 bandwidth: $\frac{R_1}{L_2}$
 K-LP: 1
 K-HP: 0
 K-BP: 0
 Qz: None
 Wz: None

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

4.2 LP-2 $Z(s) = \left(L_1 s, R_2, \frac{1}{C_L s} \right)$

Parameters:

Q: $\frac{L_1 \sqrt{\frac{1}{C_L L_1}}}{R_2}$
 wo: $\sqrt{\frac{1}{C_L L_1}}$
 bandwidth: $\frac{R_2}{L_1}$
 K-LP: 1
 K-HP: 0
 K-BP: 0
 Qz: None
 Wz: None

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

5 BS

6 GE

7 AP

8 INVALID-NUMER

9 INVALID-WZ

10 INVALID-ORDER

10.1 INVALID-ORDER-1 $Z(s) = (R_1, R_2, R_L)$

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

10.2 INVALID-ORDER-2 $Z(s) = (R_1, R_2, L_L s)$

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

10.3 INVALID-ORDER-3 $Z(s) = \left(R_1, R_2, \frac{1}{C_L s}\right)$

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

10.4 INVALID-ORDER-4 $Z(s) = (R_1, L_2 s, R_L)$

$$H(s) = \frac{R_L}{L_2 s + R_1 + R_L}$$

10.5 INVALID-ORDER-5 $Z(s) = (R_1, L_2 s, L_L s)$

$$H(s) = \frac{L_L s}{R_1 + s(L_2 + L_L)}$$

10.6 INVALID-ORDER-6 $Z(s) = \left(R_1, \frac{1}{C_2 s}, R_L\right)$

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

10.7 INVALID-ORDER-7 $Z(s) = \left(R_1, \frac{1}{C_2 s}, \frac{1}{C_L s}\right)$

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

$$\textbf{10.8} \quad \textbf{INVALID-ORDER-8} \quad Z(s) = (L_1s, \quad R_2, \quad R_L)$$

$$H(s) = \frac{R_L}{L_1s + R_2 + R_L}$$

$$\textbf{10.9} \quad \textbf{INVALID-ORDER-9} \quad Z(s) = (L_1s, \quad R_2, \quad L_Ls)$$

$$H(s) = \frac{L_Ls}{R_2 + s(L_1 + L_L)}$$

$$\textbf{10.10} \quad \textbf{INVALID-ORDER-10} \quad Z(s) = (L_1s, \quad L_2s, \quad R_L)$$

$$H(s) = \frac{R_L}{R_L + s(L_1 + L_2)}$$

$$\textbf{10.11} \quad \textbf{INVALID-ORDER-11} \quad Z(s) = (L_1s, \quad L_2s, \quad L_Ls)$$

$$H(s) = \frac{L_L}{L_1 + L_2 + L_L}$$

$$\textbf{10.12} \quad \textbf{INVALID-ORDER-12} \quad Z(s) = \left(L_1s, \quad L_2s, \quad \frac{1}{C_Ls} \right)$$

$$H(s) = \frac{1}{s^2(C_LL_1 + C_LL_2) + 1}$$

$$\textbf{10.13} \quad \textbf{INVALID-ORDER-13} \quad Z(s) = \left(L_1s, \quad \frac{1}{C_2s}, \quad L_Ls \right)$$

$$H(s) = \frac{C_2L_Ls^2}{s^2(C_2L_1 + C_2L_L) + 1}$$

$$\textbf{10.14} \quad \textbf{INVALID-ORDER-14} \quad Z(s) = \left(L_1s, \quad \frac{1}{C_2s}, \quad \frac{1}{C_Ls} \right)$$

$$H(s) = \frac{C_2}{C_2C_LL_1s^2 + C_2 + C_L}$$

$$\textbf{10.15} \quad \textbf{INVALID-ORDER-15} \quad Z(s) = \left(\frac{1}{C_1s}, \quad R_2, \quad R_L \right)$$

$$H(s) = \frac{C_1R_Ls}{s(C_1R_2 + C_1R_L) + 1}$$

$$\textbf{10.16} \quad \textbf{INVALID-ORDER-16} \quad Z(s) = \left(\frac{1}{C_1s}, \quad R_2, \quad \frac{1}{C_Ls} \right)$$

$$H(s) = \frac{C_1}{C_1C_LR_2s + C_1 + C_L}$$

$$\textbf{10.17} \quad \textbf{INVALID-ORDER-17} \quad Z(s) = \left(\frac{1}{C_1s}, \quad L_2s, \quad L_Ls \right)$$

$$H(s) = \frac{C_1L_Ls^2}{s^2(C_1L_2 + C_1L_L) + 1}$$

10.18 INVALID-ORDER-18

$$Z(s) = \left(\frac{1}{C_1 s}, \; L_2 s, \; \frac{1}{C_L s} \right)$$

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

10.19 INVALID-ORDER-19

$$Z(s) = \left(\frac{1}{C_1 s}, \; \frac{1}{C_2 s}, \; R_L \right)$$

$$H(s) = \frac{C_1 C_2 R_L s}{C_1 C_2 R_L s + C_1 + C_2}$$

10.20 INVALID-ORDER-20

$$Z(s) = \left(\frac{1}{C_1 s}, \; \frac{1}{C_2 s}, \; L_L s \right)$$

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

10.21 INVALID-ORDER-21

$$Z(s) = \left(\frac{1}{C_1 s}, \; \frac{1}{C_2 s}, \; \frac{1}{C_L s} \right)$$

$$H(s) = \frac{C_1 C_2}{C_1 C_2 + C_1 C_L + C_2 C_L}$$

11 PolynomialError