Filter Summary Report: TIA,simple,Z4,Z5

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1 Examined $H(z)$ for TIA simple Z4 Z5: $\frac{Z_4(Z_5 g_m - 1)}{2Z_4 g_m + 2Z_5 g_m + 2}$

$$H(z) = \frac{Z_4\,(Z_5 g_m - 1)}{2Z_4 g_m + 2Z_5 g_m + 2}$$

2 HP

3 BP

3.1 BP-1 $Z(s) = \left(\infty,\ \infty,\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2 + 1},\ R_5,\ \infty\right)$

$$H(s) = \frac{s\,(L_4 R_5 g_m - L_4)}{2L_4 g_m s + 2R_5 g_m + s^2\,(2C_4 L_4 R_5 g_m + 2C_4 L_4) + 2}$$

Parameters:

Q: $\frac{C_4 \sqrt{\frac{1}{C_4 L_4}}(R_5 g_m + 1)}{g_m}$

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

bandwidth: $\frac{g_m}{C_4(R_5 g_m + 1)}$

K-LP: 0

K-HP: 0

K-BP: $\frac{R_5 g_m - 1}{2g_m}$

Qz: 0

Wz: None

3.2 BP-2 $Z(s) = \left(\infty,\ \infty,\ \infty,\ \frac{L_4 R_4 s}{C_4 L_4 R_4 s^2 + L_4 s + R_4},\ R_5,\ \infty\right)$

$$H(s) = \frac{s\,(L_4 R_4 R_5 g_m - L_4 R_4)}{2R_4 R_5 g_m + 2R_4 + s^2\,(2C_4 L_4 R_4 R_5 g_m + 2C_4 L_4 R_4) + s\,(2L_4 R_4 g_m + 2L_4 R_5 g_m + 2L_4)}$$

Parameters:

Q: $\frac{C_4 R_4 \sqrt{\frac{1}{C_4 L_4}}(R_5 g_m + 1)}{R_4 g_m + R_5 g_m + 1}$

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

bandwidth: $\frac{R_4 g_m + R_5 g_m + 1}{C_4 R_4(R_5 g_m + 1)}$

K-LP: 0

K-HP: 0

K-BP: $\frac{R_4(R_5 g_m - 1)}{2(R_4 g_m + R_5 g_m + 1)}$

Qz: 0

Wz: None

4 LP

5 BS

5.1 BS-1 $Z(s) = \left(\infty, \ \infty, \ \infty, \ L_4 s + \frac{1}{C_4 s}, \ R_5, \ \infty \right)$

$$H(s) = \frac{R_5 g_m + s^2 \left(C_4 L_4 R_5 g_m - C_4 L_4 \right) - 1}{2 C_4 L_4 g_m s^2 + 2 g_m + s \left(2 C_4 R_5 g_m + 2 C_4 \right)}$$

Parameters:

Q: $\frac{L_4 g_m \sqrt{\frac{1}{C_4 L_4}}}{R_5 g_m + 1}$

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

bandwidth: $\frac{R_5 g_m + 1}{L_4 g_m}$

K-LP: $\frac{R_5 g_m - 1}{2 g_m}$

K-HP: $\frac{R_5 g_m - 1}{2 g_m}$

K-BP: 0

Qz: None

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

5.2 BS-2 $Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{R_4 \left(C_4 L_4 s^2 + 1 \right)}{C_4 L_4 s^2 + C_4 R_4 s + 1}, \ R_5, \ \infty \right)$

$$H(s) = \frac{R_4 R_5 g_m - R_4 + s^2 \left(C_4 L_4 R_4 R_5 g_m - C_4 L_4 R_4 \right)}{2 R_4 g_m + 2 R_5 g_m + s^2 \left(2 C_4 L_4 R_4 g_m + 2 C_4 L_4 R_5 g_m + 2 C_4 L_4 \right) + s \left(2 C_4 R_4 R_5 g_m + 2 C_4 R_4 \right) + 2}$$

Parameters:

Q: $\frac{L_4 \sqrt{\frac{1}{C_4 L_4}} \left(R_4 g_m + R_5 g_m + 1 \right)}{R_4 \left(R_5 g_m + 1 \right)}$

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

bandwidth: $\frac{R_4 \left(R_5 g_m + 1 \right)}{L_4 \left(R_4 g_m + R_5 g_m + 1 \right)}$

K-LP: $\frac{R_4 \left(R_5 g_m - 1 \right)}{2 \left(R_4 g_m + R_5 g_m + 1 \right)}$

K-HP: $\frac{R_4 \left(R_5 g_m - 1 \right)}{2 \left(R_4 g_m + R_5 g_m + 1 \right)}$

K-BP: 0

Qz: None

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

6 GE

6.1 GE-1 $Z(s) = \left(\infty, \ \infty, \ \infty, \ R_4, \ L_5 s + \frac{1}{C_5 s}, \ \infty \right)$

$$H(s) = \frac{C_5 L_5 R_4 g_m s^2 - C_5 R_4 s + R_4 g_m}{2 C_5 L_5 g_m s^2 + 2 g_m + s \left(2 C_5 R_4 g_m + 2 C_5 \right)}$$

Parameters:

Q: $\frac{L_5 g_m \sqrt{\frac{1}{C_5 L_5}}}{R_4 g_m + 1}$

wo: $\sqrt{\frac{1}{C_5 L_5}}$

bandwidth: $\frac{R_4 g_m + 1}{L_5 g_m}$

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

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

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

Qz: $-L_5 g_m \sqrt{\frac{1}{C_5 L_5}}$

Wz: $\sqrt{\frac{1}{C_5 L_5}}$

6.2 GE-2 $Z(s) = \left(\infty,\ \infty,\ \infty,\ R_4,\ \frac{L_5 s}{C_5 L_5 s^2 + 1},\ \infty\right)$

$$H(s) = \frac{-C_5 L_5 R_4 s^2 + L_5 R_4 g_m s - R_4}{2 L_5 g_m s + 2 R_4 g_m + s^2 \left(2 C_5 L_5 R_4 g_m + 2 C_5 L_5\right) + 2}$$

Parameters:

Q: $\dfrac{C_5 \sqrt{\frac{1}{C_5 L_5}} (R_4 g_m + 1)}{g_m}$

wo: $\sqrt{\frac{1}{C_5 L_5}}$

bandwidth: $\dfrac{g_m}{C_5 (R_4 g_m + 1)}$

K-LP: $-\dfrac{R_4}{2 R_4 g_m + 2}$

K-HP: $-\dfrac{R_4}{2 R_4 g_m + 2}$

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

Qz: $-\dfrac{C_5 \sqrt{\frac{1}{C_5 L_5}}}{g_m}$

Wz: $\sqrt{\frac{1}{C_5 L_5}}$

6.3 GE-3 $Z(s) = \left(\infty,\ \infty,\ \infty,\ R_4,\ L_5 s + R_5 + \frac{1}{C_5 s},\ \infty\right)$

$$H(s) = \frac{C_5 L_5 R_4 g_m s^2 + R_4 g_m + s \left(C_5 R_4 R_5 g_m - C_5 R_4\right)}{2 C_5 L_5 g_m s^2 + 2 g_m + s \left(2 C_5 R_4 g_m + 2 C_5 R_5 g_m + 2 C_5\right)}$$

Parameters:

Q: $\dfrac{L_5 g_m \sqrt{\frac{1}{C_5 L_5}}}{R_4 g_m + R_5 g_m + 1}$

wo: $\sqrt{\frac{1}{C_5 L_5}}$

bandwidth: $\dfrac{R_4 g_m + R_5 g_m + 1}{L_5 g_m}$

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

K-HP: $\dfrac{R_4}{2}$

K-BP: $\dfrac{R_4 (R_5 g_m - 1)}{2 (R_4 g_m + R_5 g_m + 1)}$

Qz: $\dfrac{L_5 g_m \sqrt{\frac{1}{C_5 L_5}}}{R_5 g_m - 1}$

Wz: $\sqrt{\frac{1}{C_5 L_5}}$

6.4 GE-4 $Z(s) = \left(\infty,\ \infty,\ \infty,\ R_4,\ \frac{L_5 R_5 s}{C_5 L_5 R_5 s^2 + L_5 s + R_5},\ \infty\right)$

$$H(s) = \frac{-C_5 L_5 R_4 R_5 s^2 - R_4 R_5 + s \left(L_5 R_4 R_5 g_m - L_5 R_4\right)}{2 R_4 R_5 g_m + 2 R_5 + s^2 \left(2 C_5 L_5 R_4 R_5 g_m + 2 C_5 L_5 R_5\right) + s \left(2 L_5 R_4 g_m + 2 L_5 R_5 g_m + 2 L_5\right)}$$

Parameters:

Q: $\dfrac{C_5 R_5 \sqrt{\frac{1}{C_5 L_5}} (R_4 g_m + 1)}{R_4 g_m + R_5 g_m + 1}$

wo: $\sqrt{\frac{1}{C_5 L_5}}$

bandwidth: $\dfrac{R_4 g_m + R_5 g_m + 1}{C_5 R_5 (R_4 g_m + 1)}$

K-LP: $-\dfrac{R_4}{2 R_4 g_m + 2}$

K-HP: $-\dfrac{R_4}{2 R_4 g_m + 2}$

K-BP: $\dfrac{R_4 (R_5 g_m - 1)}{2 (R_4 g_m + R_5 g_m + 1)}$

Qz: $-\dfrac{C_5 R_5 \sqrt{\frac{1}{C_5 L_5}}}{R_5 g_m - 1}$

Wz: $\sqrt{\frac{1}{C_5 L_5}}$

6.5 GE-5 $Z(s) = \left(\infty, \ \infty, \ \infty, \ R_4, \ \frac{L_5 s}{C_5 L_5 s^2 + 1} + R_5, \ \infty \right)$

$$H(s) = \frac{L_5 R_4 g_m s + R_4 R_5 g_m - R_4 + s^2 \left(C_5 L_5 R_4 R_5 g_m - C_5 L_5 R_4 \right)}{2 L_5 g_m s + 2 R_4 g_m + 2 R_5 g_m + s^2 \left(2 C_5 L_5 R_4 g_m + 2 C_5 L_5 R_5 g_m + 2 C_5 L_5 \right) + 2}$$

Parameters:

Q: $\frac{C_5 \sqrt{\frac{1}{C_5 L_5}} (R_4 g_m + R_5 g_m + 1)}{g_m}$

wo: $\sqrt{\frac{1}{C_5 L_5}}$

bandwidth: $\frac{g_m}{C_5 (R_4 g_m + R_5 g_m + 1)}$

K-LP: $\frac{R_4 (R_5 g_m - 1)}{2 (R_4 g_m + R_5 g_m + 1)}$

K-HP: $\frac{R_4 (R_5 g_m - 1)}{2 (R_4 g_m + R_5 g_m + 1)}$

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

Qz: $\frac{C_5 \sqrt{\frac{1}{C_5 L_5}} (R_5 g_m - 1)}{g_m}$

Wz: $\sqrt{\frac{1}{C_5 L_5}}$

6.6 GE-6 $Z(s) = \left(\infty, \ \infty, \ \infty, \ R_4, \ \frac{R_5 \left(C_5 L_5 s^2 + 1 \right)}{C_5 L_5 s^2 + C_5 R_5 s + 1}, \ \infty \right)$

$$H(s) = \frac{-C_5 R_4 R_5 s + R_4 R_5 g_m - R_4 + s^2 \left(C_5 L_5 R_4 R_5 g_m - C_5 L_5 R_4 \right)}{2 R_4 g_m + 2 R_5 g_m + s^2 \left(2 C_5 L_5 R_4 g_m + 2 C_5 L_5 R_5 g_m + 2 C_5 L_5 \right) + s \left(2 C_5 R_4 R_5 g_m + 2 C_5 R_5 \right) + 2}$$

Parameters:

Q: $\frac{L_5 \sqrt{\frac{1}{C_5 L_5}} (R_4 g_m + R_5 g_m + 1)}{R_5 (R_4 g_m + 1)}$

wo: $\sqrt{\frac{1}{C_5 L_5}}$

bandwidth: $\frac{R_5 (R_4 g_m + 1)}{L_5 (R_4 g_m + R_5 g_m + 1)}$

K-LP: $\frac{R_4 (R_5 g_m - 1)}{2 (R_4 g_m + R_5 g_m + 1)}$

K-HP: $\frac{R_4 (R_5 g_m - 1)}{2 (R_4 g_m + R_5 g_m + 1)}$

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

Qz: $\frac{L_5 \sqrt{\frac{1}{C_5 L_5}} (-R_5 g_m + 1)}{R_5}$

Wz: $\sqrt{\frac{1}{C_5 L_5}}$

6.7 GE-7 $Z(s) = \left(\infty, \ \infty, \ \infty, \ L_4 s + R_4 + \frac{1}{C_4 s}, \ R_5, \ \infty \right)$

$$H(s) = \frac{R_5 g_m + s^2 \left(C_4 L_4 R_5 g_m - C_4 L_4 \right) + s \left(C_4 R_4 R_5 g_m - C_4 R_4 \right) - 1}{2 C_4 L_4 g_m s^2 + 2 g_m + s \left(2 C_4 R_4 g_m + 2 C_4 R_5 g_m + 2 C_4 \right)}$$

Parameters:

Q: $\frac{L_4 g_m \sqrt{\frac{1}{C_4 L_4}}}{R_4 g_m + R_5 g_m + 1}$

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

bandwidth: $\frac{R_4 g_m + R_5 g_m + 1}{L_4 g_m}$

K-LP: $\frac{R_5 g_m - 1}{2 g_m}$

K-HP: $\frac{R_5 g_m - 1}{2 g_m}$

K-BP: $\frac{R_4 (R_5 g_m - 1)}{2 (R_4 g_m + R_5 g_m + 1)}$

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

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

6.8 GE-8 $Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \ R_5, \ \infty\right)$

$$H(s) = \frac{R_4 R_5 g_m - R_4 + s^2 \left(C_4 L_4 R_4 R_5 g_m - C_4 L_4 R_4\right) + s \left(L_4 R_5 g_m - L_4\right)}{2 L_4 g_m s + 2 R_4 g_m + 2 R_5 g_m + s^2 \left(2 C_4 L_4 R_4 g_m + 2 C_4 L_4 R_5 g_m + 2 C_4 L_4\right) + 2}$$

Parameters:

Q: $\frac{C_4 \sqrt{\frac{1}{C_4 L_4}} (R_4 g_m + R_5 g_m + 1)}{g_m}$

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

bandwidth: $\frac{g_m}{C_4 (R_4 g_m + R_5 g_m + 1)}$

K-LP: $\frac{R_4 (R_5 g_m - 1)}{2 (R_4 g_m + R_5 g_m + 1)}$

K-HP: $\frac{R_4 (R_5 g_m - 1)}{2 (R_4 g_m + R_5 g_m + 1)}$

K-BP: $\frac{R_5 g_m - 1}{2 g_m}$

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 $Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{1}{C_4 s}, \ \frac{R_5}{C_5 R_5 s + 1}, \ \infty\right)$

$$H(s) = \frac{-C_5 R_5 s + R_5 g_m - 1}{2 C_4 C_5 R_5 s^2 + 2 g_m + s \left(2 C_4 R_5 g_m + 2 C_4 + 2 C_5 R_5 g_m\right)}$$

Parameters:

Q: $\frac{C_4 C_5 R_5 \sqrt{\frac{g_m}{C_4 C_5 R_5}}}{C_4 R_5 g_m + C_4 + C_5 R_5 g_m}$

wo: $\sqrt{\frac{g_m}{C_4 C_5 R_5}}$

bandwidth: $\frac{C_4 R_5 g_m + C_4 + C_5 R_5 g_m}{C_4 C_5 R_5}$

K-LP: $\frac{R_5 g_m - 1}{2 g_m}$

K-HP: 0

K-BP: $-\frac{C_5 R_5}{2 C_4 R_5 g_m + 2 C_4 + 2 C_5 R_5 g_m}$

Qz: 0

Wz: None

8.2 INVALID-NUMER-2 $Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{R_4}{C_4 R_4 s + 1}, \ \frac{1}{C_5 s}, \ \infty\right)$

$$H(s) = \frac{-C_5 R_4 s + R_4 g_m}{2 C_4 C_5 R_4 s^2 + 2 g_m + s \left(2 C_4 R_4 g_m + 2 C_5 R_4 g_m + 2 C_5\right)}$$

Parameters:

Q: $\frac{C_4 C_5 R_4 \sqrt{\frac{g_m}{C_4 C_5 R_4}}}{C_4 R_4 g_m + C_5 R_4 g_m + C_5}$

wo: $\sqrt{\frac{g_m}{C_4 C_5 R_4}}$

bandwidth: $\frac{C_4 R_4 g_m + C_5 R_4 g_m + C_5}{C_4 C_5 R_4}$

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

K-HP: 0

K-BP: $-\frac{C_5 R_4}{2 C_4 R_4 g_m + 2 C_5 R_4 g_m + 2 C_5}$

Qz: 0

Wz: None

8.3 INVALID-NUMER-3 $Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{R_4}{C_4R_4s+1}, \ \frac{R_5}{C_5R_5s+1}, \ \infty \right)$

$$H(s) = \frac{-C_5R_4R_5s + R_4R_5g_m - R_4}{2C_4C_5R_4R_5s^2 + 2R_4g_m + 2R_5g_m + s\left(2C_4R_4R_5g_m + 2C_4R_4 + 2C_5R_4R_5g_m + 2C_5R_5\right) + 2}$$

Parameters:

Q: $\frac{C_4C_5R_4R_5\sqrt{\frac{R_4g_m+R_5g_m+1}{C_4C_5R_4R_5}}}{C_4R_4R_5g_m+C_4R_4+C_5R_4R_5g_m+C_5R_5}$

wo: $\sqrt{\frac{R_4g_m+R_5g_m+1}{C_4C_5R_4R_5}}$

bandwidth: $\frac{C_4R_4R_5g_m+C_4R_4+C_5R_4R_5g_m+C_5R_5}{C_4C_5R_4R_5}$

K-LP: $\frac{R_4(R_5g_m-1)}{2(R_4g_m+R_5g_m+1)}$

K-HP: 0

K-BP: $-\frac{C_5R_4R_5}{2C_4R_4R_5g_m+2C_4R_4+2C_5R_4R_5g_m+2C_5R_5}$

Qz: 0

Wz: None

8.4 INVALID-NUMER-4 $Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{R_4}{C_4R_4s+1}, \ R_5 + \frac{1}{C_5s}, \ \infty \right)$

$$H(s) = \frac{R_4g_m + s\left(C_5R_4R_5g_m - C_5R_4\right)}{2g_m + s^2\left(2C_4C_5R_4R_5g_m + 2C_4C_5R_4\right) + s\left(2C_4R_4g_m + 2C_5R_4g_m + 2C_5R_5g_m + 2C_5\right)}$$

Parameters:

Q: $\frac{C_4C_5R_4\sqrt{\frac{g_m}{C_4C_5R_4(R_5g_m+1)}}(R_5g_m+1)}{C_4R_4g_m+C_5R_4g_m+C_5R_5g_m+C_5}$

wo: $\sqrt{\frac{g_m}{C_4C_5R_4(R_5g_m+1)}}$

bandwidth: $\frac{C_4R_4g_m+C_5R_4g_m+C_5R_5g_m+C_5}{C_4C_5R_4(R_5g_m+1)}$

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

K-HP: 0

K-BP: $\frac{C_5R_4(R_5g_m-1)}{2(C_4R_4g_m+C_5R_4g_m+C_5R_5g_m+C_5)}$

Qz: 0

Wz: None

9 INVALID-WZ

9.1 INVALID-WZ-1 $Z(s) = \left(\infty, \ \infty, \ \infty, \ R_4 + \frac{1}{C_4s}, \ \frac{R_5}{C_5R_5s+1}, \ \infty \right)$

$$H(s) = \frac{-C_4C_5R_4R_5s^2 + R_5g_m + s\left(C_4R_4R_5g_m - C_4R_4 - C_5R_5\right) - 1}{2g_m + s^2\left(2C_4C_5R_4R_5g_m + 2C_4C_5R_5\right) + s\left(2C_4R_4g_m + 2C_4R_5g_m + 2C_4 + 2C_5R_5g_m\right)}$$

Parameters:

Q: $\frac{C_4C_5R_5\sqrt{\frac{g_m}{C_4C_5R_5(R_4g_m+1)}}(R_4g_m+1)}{C_4R_4g_m+C_4R_5g_m+C_4+C_5R_5g_m}$

wo: $\sqrt{\frac{g_m}{C_4C_5R_5(R_4g_m+1)}}$

bandwidth: $\frac{C_4R_4g_m+C_4R_5g_m+C_4+C_5R_5g_m}{C_4C_5R_5(R_4g_m+1)}$

K-LP: $\frac{R_5g_m-1}{2g_m}$

K-HP: $-\frac{R_4}{2R_4g_m+2}$

K-BP: $\frac{\frac{C_4R_4R_5g_m}{2}-\frac{C_4R_4}{2}-\frac{C_5R_5}{2}}{C_4R_4g_m+C_4R_5g_m+C_4+C_5R_5g_m}$

Qz: $\frac{C_4C_5R_4R_5\sqrt{\frac{g_m}{C_4C_5R_5(R_4g_m+1)}}}{-C_4R_4R_5g_m+C_4R_4+C_5R_5}$

Wz: $\sqrt{\frac{-R_5g_m+1}{C_4C_5R_4R_5}}$

10 INVALID-ORDER

10.1 INVALID-ORDER-1 $Z(s) = (\infty, \ \infty, \ \infty, \ R_4, \ R_5, \ \infty)$

$$H(s) = \frac{R_4 R_5 g_m - R_4}{2R_4 g_m + 2R_5 g_m + 2}$$

10.2 INVALID-ORDER-2 $Z(s) = \left(\infty, \ \infty, \ \infty, \ R_4, \ \frac{1}{C_5 s}, \ \infty\right)$

$$H(s) = \frac{-C_5 R_4 s + R_4 g_m}{2g_m + s\left(2C_5 R_4 g_m + 2C_5\right)}$$

10.3 INVALID-ORDER-3 $Z(s) = \left(\infty, \ \infty, \ \infty, \ R_4, \ \frac{R_5}{C_5 R_5 s + 1}, \ \infty\right)$

$$H(s) = \frac{-C_5 R_4 R_5 s + R_4 R_5 g_m - R_4}{2R_4 g_m + 2R_5 g_m + s\left(2C_5 R_4 R_5 g_m + 2C_5 R_5\right) + 2}$$

10.4 INVALID-ORDER-4 $Z(s) = \left(\infty, \ \infty, \ \infty, \ R_4, \ R_5 + \frac{1}{C_5 s}, \ \infty\right)$

$$H(s) = \frac{R_4 g_m + s\left(C_5 R_4 R_5 g_m - C_5 R_4\right)}{2g_m + s\left(2C_5 R_4 g_m + 2C_5 R_5 g_m + 2C_5\right)}$$

10.5 INVALID-ORDER-5 $Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{1}{C_4 s}, \ R_5, \ \infty\right)$

$$H(s) = \frac{R_5 g_m - 1}{2g_m + s\left(2C_4 R_5 g_m + 2C_4\right)}$$

10.6 INVALID-ORDER-6 $Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{1}{C_4 s}, \ \frac{1}{C_5 s}, \ \infty\right)$

$$H(s) = \frac{-C_5 s + g_m}{2C_4 C_5 s^2 + s\left(2C_4 g_m + 2C_5 g_m\right)}$$

10.7 INVALID-ORDER-7 $Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{1}{C_4 s}, \ R_5 + \frac{1}{C_5 s}, \ \infty\right)$

$$H(s) = \frac{g_m + s\left(C_5 R_5 g_m - C_5\right)}{s^2\left(2C_4 C_5 R_5 g_m + 2C_4 C_5\right) + s\left(2C_4 g_m + 2C_5 g_m\right)}$$

10.8 INVALID-ORDER-8 $Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{1}{C_4 s}, \ L_5 s + \frac{1}{C_5 s}, \ \infty\right)$

$$H(s) = \frac{C_5 L_5 g_m s^2 - C_5 s + g_m}{2C_4 C_5 L_5 g_m s^3 + 2C_4 C_5 s^2 + s\left(2C_4 g_m + 2C_5 g_m\right)}$$

10.9 INVALID-ORDER-9 $Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{1}{C_4 s}, \ \frac{L_5 s}{C_5 L_5 s^2 + 1}, \ \infty\right)$

$$H(s) = \frac{-C_5 L_5 s^2 + L_5 g_m s - 1}{2C_4 C_5 L_5 s^3 + 2C_4 s + 2g_m + s^2\left(2C_4 L_5 g_m + 2C_5 L_5 g_m\right)}$$

10.10 INVALID-ORDER-10 $Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{1}{C_4 s}, \ L_5 s + R_5 + \frac{1}{C_5 s}, \ \infty\right)$

$$H(s) = \frac{C_5 L_5 g_m s^2 + g_m + s\left(C_5 R_5 g_m - C_5\right)}{2C_4 C_5 L_5 g_m s^3 + s^2\left(2C_4 C_5 R_5 g_m + 2C_4 C_5\right) + s\left(2C_4 g_m + 2C_5 g_m\right)}$$

10.11 INVALID-ORDER-11 $Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{1}{C_4 s}, \ \frac{L_5 R_5 s}{C_5 L_5 R_5 s^2 + L_5 s + R_5}, \ \infty\right)$

$$H(s) = \frac{-C_5 L_5 R_5 s^2 - R_5 + s\left(L_5 R_5 g_m - L_5\right)}{2 C_4 C_5 L_5 R_5 s^3 + 2 R_5 g_m + s^2\left(2 C_4 L_5 R_5 g_m + 2 C_4 L_5 + 2 C_5 L_5 R_5 g_m\right) + s\left(2 C_4 R_5 + 2 L_5 g_m\right)}$$

10.12 INVALID-ORDER-12 $Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{1}{C_4 s}, \ \frac{L_5 s}{C_5 L_5 s^2 + 1} + R_5, \ \infty\right)$

$$H(s) = \frac{L_5 g_m s + R_5 g_m + s^2\left(C_5 L_5 R_5 g_m - C_5 L_5\right) - 1}{2 g_m + s^3\left(2 C_4 C_5 L_5 R_5 g_m + 2 C_4 C_5 L_5\right) + s^2\left(2 C_4 L_5 g_m + 2 C_5 L_5 g_m\right) + s\left(2 C_4 R_5 g_m + 2 C_4\right)}$$

10.13 INVALID-ORDER-13 $Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{1}{C_4 s}, \ \frac{R_5\left(C_5 L_5 s^2 + 1\right)}{C_5 L_5 s^2 + C_5 R_5 s + 1}, \ \infty\right)$

$$H(s) = \frac{-C_5 R_5 s + R_5 g_m + s^2\left(C_5 L_5 R_5 g_m - C_5 L_5\right) - 1}{2 g_m + s^3\left(2 C_4 C_5 L_5 R_5 g_m + 2 C_4 C_5 L_5\right) + s^2\left(2 C_4 C_5 R_5 + 2 C_5 L_5 g_m\right) + s\left(2 C_4 R_5 g_m + 2 C_4 + 2 C_5 R_5 g_m\right)}$$

10.14 INVALID-ORDER-14 $Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{R_4}{C_4 R_4 s + 1}, \ R_5, \ \infty\right)$

$$H(s) = \frac{R_4 R_5 g_m - R_4}{2 R_4 g_m + 2 R_5 g_m + s\left(2 C_4 R_4 R_5 g_m + 2 C_4 R_4\right) + 2}$$

10.15 INVALID-ORDER-15 $Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{R_4}{C_4 R_4 s + 1}, \ L_5 s + \frac{1}{C_5 s}, \ \infty\right)$

$$H(s) = \frac{C_5 L_5 R_4 g_m s^2 - C_5 R_4 s + R_4 g_m}{2 C_4 C_5 L_5 R_4 g_m s^3 + 2 g_m + s^2\left(2 C_4 C_5 R_4 + 2 C_5 L_5 g_m\right) + s\left(2 C_4 R_4 g_m + 2 C_5 R_4 g_m + 2 C_5\right)}$$

10.16 INVALID-ORDER-16 $Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{R_4}{C_4 R_4 s + 1}, \ \frac{L_5 s}{C_5 L_5 s^2 + 1}, \ \infty\right)$

$$H(s) = \frac{-C_5 L_5 R_4 s^2 + L_5 R_4 g_m s - R_4}{2 C_4 C_5 L_5 R_4 s^3 + 2 R_4 g_m + s^2\left(2 C_4 L_5 R_4 g_m + 2 C_5 L_5 R_4 g_m + 2 C_5 L_5\right) + s\left(2 C_4 R_4 + 2 L_5 g_m\right) + 2}$$

10.17 INVALID-ORDER-17 $Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{R_4}{C_4 R_4 s + 1}, \ L_5 s + R_5 + \frac{1}{C_5 s}, \ \infty\right)$

$$H(s) = \frac{C_5 L_5 R_4 g_m s^2 + R_4 g_m + s\left(C_5 R_4 R_5 g_m - C_5 R_4\right)}{2 C_4 C_5 L_5 R_4 g_m s^3 + 2 g_m + s^2\left(2 C_4 C_5 R_4 R_5 g_m + 2 C_4 C_5 R_4 + 2 C_5 L_5 g_m\right) + s\left(2 C_4 R_4 g_m + 2 C_5 R_4 g_m + 2 C_5 R_5 g_m + 2 C_5\right)}$$

10.18 INVALID-ORDER-18 $Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{R_4}{C_4 R_4 s + 1}, \ \frac{L_5 R_5 s}{C_5 L_5 R_5 s^2 + L_5 s + R_5}, \ \infty\right)$

$$H(s) = \frac{-C_5 L_5 R_4 R_5 s^2 - R_4 R_5 + s\left(L_5 R_4 R_5 g_m - L_5 R_4\right)}{2 C_4 C_5 L_5 R_4 R_5 s^3 + 2 R_4 R_5 g_m + 2 R_5 + s^2\left(2 C_4 L_5 R_4 R_5 g_m + 2 C_4 L_5 R_4 + 2 C_5 L_5 R_4 R_5 g_m + 2 C_5 L_5 R_5\right) + s\left(2 C_4 R_4 R_5 + 2 L_5 R_4 g_m + 2 L_5 R_5 g_m + 2 L_5\right)}$$

10.19 INVALID-ORDER-19 $Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{R_4}{C_4 R_4 s + 1}, \ \frac{L_5 s}{C_5 L_5 s^2 + 1} + R_5, \ \infty\right)$

$$H(s) = \frac{L_5 R_4 g_m s + R_4 R_5 g_m - R_4 + s^2\left(C_5 L_5 R_4 R_5 g_m - C_5 L_5 R_4\right)}{2 R_4 g_m + 2 R_5 g_m + s^3\left(2 C_4 C_5 L_5 R_4 R_5 g_m + 2 C_4 C_5 L_5 R_4\right) + s^2\left(2 C_4 L_5 R_4 g_m + 2 C_5 L_5 R_4 g_m + 2 C_5 L_5 R_5 g_m + 2 C_5 L_5\right) + s\left(2 C_4 R_4 R_5 g_m + 2 C_4 R_4 + 2 L_5 g_m\right) + 2}$$

10.20 INVALID-ORDER-20 $Z(s) = \left(\infty,\ \infty,\ \infty,\ \frac{R_4}{C_4R_4s+1},\ \frac{R_5\left(C_5L_5s^2+1\right)}{C_5L_5s^2+C_5R_5s+1},\ \infty\right)$

$$H(s) = \frac{-C_5R_4R_5s + R_4R_5g_m - R_4 + s^2\left(C_5L_5R_4R_5g_m - C_5L_5R_4\right)}{2R_4g_m + 2R_5g_m + s^3\left(2C_4C_5L_5R_4R_5g_m + 2C_4C_5L_5R_4\right) + s^2\left(2C_4C_5R_4R_5 + 2C_5L_5R_4g_m + 2C_5L_5R_5g_m + 2C_5L_5\right) + s\left(2C_4R_4R_5g_m + 2C_4R_4 + 2C_5R_4R_5g_m + 2C_5R_5\right) + 2}$$

10.21 INVALID-ORDER-21 $Z(s) = \left(\infty,\ \infty,\ \infty,\ R_4 + \frac{1}{C_4s},\ R_5,\ \infty\right)$

$$H(s) = \frac{R_5g_m + s\left(C_4R_4R_5g_m - C_4R_4\right) - 1}{2g_m + s\left(2C_4R_4g_m + 2C_4R_5g_m + 2C_4\right)}$$

10.22 INVALID-ORDER-22 $Z(s) = \left(\infty,\ \infty,\ \infty,\ R_4 + \frac{1}{C_4s},\ \frac{1}{C_5s},\ \infty\right)$

$$H(s) = \frac{-C_4C_5R_4s^2 + g_m + s\left(C_4R_4g_m - C_5\right)}{s^2\left(2C_4C_5R_4g_m + 2C_4C_5\right) + s\left(2C_4g_m + 2C_5g_m\right)}$$

10.23 INVALID-ORDER-23 $Z(s) = \left(\infty,\ \infty,\ \infty,\ R_4 + \frac{1}{C_4s},\ R_5 + \frac{1}{C_5s},\ \infty\right)$

$$H(s) = \frac{g_m + s^2\left(C_4C_5R_4R_5g_m - C_4C_5R_4\right) + s\left(C_4R_4g_m + C_5R_5g_m - C_5\right)}{s^2\left(2C_4C_5R_4g_m + 2C_4C_5R_5g_m + 2C_4C_5\right) + s\left(2C_4g_m + 2C_5g_m\right)}$$

10.24 INVALID-ORDER-24 $Z(s) = \left(\infty,\ \infty,\ \infty,\ R_4 + \frac{1}{C_4s},\ L_5s + \frac{1}{C_5s},\ \infty\right)$

$$H(s) = \frac{C_4C_5L_5R_4g_ms^3 + g_m + s^2\left(-C_4C_5R_4 + C_5L_5g_m\right) + s\left(C_4R_4g_m - C_5\right)}{2C_4C_5L_5g_ms^3 + s^2\left(2C_4C_5R_4g_m + 2C_4C_5\right) + s\left(2C_4g_m + 2C_5g_m\right)}$$

10.25 INVALID-ORDER-25 $Z(s) = \left(\infty,\ \infty,\ \infty,\ R_4 + \frac{1}{C_4s},\ \frac{L_5s}{C_5L_5s^2+1},\ \infty\right)$

$$H(s) = \frac{-C_4C_5L_5R_4s^3 + s^2\left(C_4L_5R_4g_m - C_5L_5\right) + s\left(-C_4R_4 + L_5g_m\right) - 1}{2g_m + s^3\left(2C_4C_5L_5R_4g_m + 2C_4C_5L_5\right) + s^2\left(2C_4L_5g_m + 2C_5L_5g_m\right) + s\left(2C_4R_4g_m + 2C_4\right)}$$

10.26 INVALID-ORDER-26 $Z(s) = \left(\infty,\ \infty,\ \infty,\ R_4 + \frac{1}{C_4s},\ L_5s + R_5 + \frac{1}{C_5s},\ \infty\right)$

$$H(s) = \frac{C_4C_5L_5R_4g_ms^3 + g_m + s^2\left(C_4C_5R_4R_5g_m - C_4C_5R_4 + C_5L_5g_m\right) + s\left(C_4R_4g_m + C_5R_5g_m - C_5\right)}{2C_4C_5L_5g_ms^3 + s^2\left(2C_4C_5R_4g_m + 2C_4C_5R_5g_m + 2C_4C_5\right) + s\left(2C_4g_m + 2C_5g_m\right)}$$

10.27 INVALID-ORDER-27 $Z(s) = \left(\infty,\ \infty,\ \infty,\ R_4 + \frac{1}{C_4s},\ \frac{L_5R_5s}{C_5L_5R_5s^2+L_5s+R_5},\ \infty\right)$

$$H(s) = \frac{-C_4C_5L_5R_4R_5s^3 - R_5 + s^2\left(C_4L_5R_4R_5g_m - C_4L_5R_4 - C_5L_5R_5\right) + s\left(-C_4R_4R_5 + L_5R_5g_m - L_5\right)}{2R_5g_m + s^3\left(2C_4C_5L_5R_4R_5g_m + 2C_4C_5L_5R_5\right) + s^2\left(2C_4L_5R_4g_m + 2C_4L_5R_5g_m + 2C_4L_5 + 2C_5L_5R_5g_m\right) + s\left(2C_4R_4R_5g_m + 2C_4R_5 + 2L_5g_m\right)}$$

10.28 INVALID-ORDER-28 $Z(s) = \left(\infty,\ \infty,\ \infty,\ R_4 + \frac{1}{C_4s},\ \frac{L_5s}{C_5L_5s^2+1} + R_5,\ \infty\right)$

$$H(s) = \frac{R_5g_m + s^3\left(C_4C_5L_5R_4R_5g_m - C_4C_5L_5R_4\right) + s^2\left(C_4L_5R_4g_m + C_5L_5R_5g_m - C_5L_5\right) + s\left(C_4R_4R_5g_m - C_4R_4 + L_5g_m\right) - 1}{2g_m + s^3\left(2C_4C_5L_5R_4g_m + 2C_4C_5L_5R_5g_m + 2C_4C_5L_5\right) + s^2\left(2C_4L_5g_m + 2C_5L_5g_m\right) + s\left(2C_4R_4g_m + 2C_4R_5g_m + 2C_4\right)}$$

10.29 **INVALID-ORDER-29** $Z(s) = \left(\infty,\ \infty,\ \infty,\ R_4 + \frac{1}{C_4 s},\ \frac{R_5\left(C_5 L_5 s^2 + 1\right)}{C_5 L_5 s^2 + C_5 R_5 s + 1},\ \infty \right)$

$$H(s) = \frac{R_5 g_m + s^3\left(C_4 C_5 L_5 R_4 R_5 g_m - C_4 C_5 L_5 R_4\right) + s^2\left(-C_4 C_5 R_4 R_5 + C_5 L_5 R_5 g_m - C_5 L_5\right) + s\left(C_4 R_4 R_5 g_m - C_4 R_4 - C_5 R_5\right) - 1}{2 g_m + s^3\left(2 C_4 C_5 L_5 R_4 g_m + 2 C_4 C_5 L_5 R_5 g_m + 2 C_4 C_5 L_5\right) + s^2\left(2 C_4 C_5 R_4 R_5 g_m + 2 C_4 C_5 R_5 + 2 C_5 L_5 g_m\right) + s\left(2 C_4 R_4 g_m + 2 C_4 R_5 g_m + 2 C_4 + 2 C_5 R_5 g_m\right)}$$

10.30 **INVALID-ORDER-30** $Z(s) = \left(\infty,\ \infty,\ \infty,\ L_4 s + \frac{1}{C_4 s},\ \frac{1}{C_5 s},\ \infty \right)$

$$H(s) = \frac{-C_4 C_5 L_4 s^3 + C_4 L_4 g_m s^2 - C_5 s + g_m}{2 C_4 C_5 L_4 g_m s^3 + 2 C_4 C_5 s^2 + s\left(2 C_4 g_m + 2 C_5 g_m\right)}$$

10.31 **INVALID-ORDER-31** $Z(s) = \left(\infty,\ \infty,\ \infty,\ L_4 s + \frac{1}{C_4 s},\ \frac{R_5}{C_5 R_5 s + 1},\ \infty \right)$

$$H(s) = \frac{-C_4 C_5 L_4 R_5 s^3 - C_5 R_5 s + R_5 g_m + s^2\left(C_4 L_4 R_5 g_m - C_4 L_4\right) - 1}{2 C_4 C_5 L_4 R_5 g_m s^3 + 2 g_m + s^2\left(2 C_4 C_5 R_5 + 2 C_4 L_4 g_m\right) + s\left(2 C_4 R_5 g_m + 2 C_4 + 2 C_5 R_5 g_m\right)}$$

10.32 **INVALID-ORDER-32** $Z(s) = \left(\infty,\ \infty,\ \infty,\ L_4 s + \frac{1}{C_4 s},\ R_5 + \frac{1}{C_5 s},\ \infty \right)$

$$H(s) = \frac{C_4 L_4 g_m s^2 + g_m + s^3\left(C_4 C_5 L_4 R_5 g_m - C_4 C_5 L_4\right) + s\left(C_5 R_5 g_m - C_5\right)}{2 C_4 C_5 L_4 g_m s^3 + s^2\left(2 C_4 C_5 R_5 g_m + 2 C_4 C_5\right) + s\left(2 C_4 g_m + 2 C_5 g_m\right)}$$

10.33 **INVALID-ORDER-33** $Z(s) = \left(\infty,\ \infty,\ \infty,\ L_4 s + \frac{1}{C_4 s},\ L_5 s + \frac{1}{C_5 s},\ \infty \right)$

$$H(s) = \frac{C_4 C_5 L_4 L_5 g_m s^4 - C_4 C_5 L_4 s^3 - C_5 s + g_m + s^2\left(C_4 L_4 g_m + C_5 L_5 g_m\right)}{2 C_4 C_5 s^2 + s^3\left(2 C_4 C_5 L_4 g_m + 2 C_4 C_5 L_5 g_m\right) + s\left(2 C_4 g_m + 2 C_5 g_m\right)}$$

10.34 **INVALID-ORDER-34** $Z(s) = \left(\infty,\ \infty,\ \infty,\ L_4 s + \frac{1}{C_4 s},\ \frac{L_5 s}{C_5 L_5 s^2 + 1},\ \infty \right)$

$$H(s) = \frac{-C_4 C_5 L_4 L_5 s^4 + C_4 L_4 L_5 g_m s^3 + L_5 g_m s + s^2\left(-C_4 L_4 - C_5 L_5\right) - 1}{2 C_4 C_5 L_4 L_5 g_m s^4 + 2 C_4 C_5 L_5 s^3 + 2 C_4 s + 2 g_m + s^2\left(2 C_4 L_4 g_m + 2 C_4 L_5 g_m + 2 C_5 L_5 g_m\right)}$$

10.35 **INVALID-ORDER-35** $Z(s) = \left(\infty,\ \infty,\ \infty,\ L_4 s + \frac{1}{C_4 s},\ L_5 s + R_5 + \frac{1}{C_5 s},\ \infty \right)$

$$H(s) = \frac{C_4 C_5 L_4 L_5 g_m s^4 + g_m + s^3\left(C_4 C_5 L_4 R_5 g_m - C_4 C_5 L_4\right) + s^2\left(C_4 L_4 g_m + C_5 L_5 g_m\right) + s\left(C_5 R_5 g_m - C_5\right)}{s^3\left(2 C_4 C_5 L_4 g_m + 2 C_4 C_5 L_5 g_m\right) + s^2\left(2 C_4 C_5 R_5 g_m + 2 C_4 C_5\right) + s\left(2 C_4 g_m + 2 C_5 g_m\right)}$$

10.36 **INVALID-ORDER-36** $Z(s) = \left(\infty,\ \infty,\ \infty,\ L_4 s + \frac{1}{C_4 s},\ \frac{L_5 R_5 s}{C_5 L_5 R_5 s^2 + L_5 s + R_5},\ \infty \right)$

$$H(s) = \frac{-C_4 C_5 L_4 L_5 R_5 s^4 - R_5 + s^3\left(C_4 L_4 L_5 R_5 g_m - C_4 L_4 L_5\right) + s^2\left(-C_4 L_4 R_5 - C_5 L_5 R_5\right) + s\left(L_5 R_5 g_m - L_5\right)}{2 C_4 C_5 L_4 L_5 R_5 g_m s^4 + 2 R_5 g_m + s^3\left(2 C_4 C_5 L_5 R_5 + 2 C_4 L_4 L_5 g_m\right) + s^2\left(2 C_4 L_4 R_5 g_m + 2 C_4 L_5 R_5 g_m + 2 C_4 L_5 + 2 C_5 L_5 R_5 g_m\right) + s\left(2 C_4 R_5 + 2 L_5 g_m\right)}$$

10.37 **INVALID-ORDER-37** $Z(s) = \left(\infty,\ \infty,\ \infty,\ L_4 s + \frac{1}{C_4 s},\ \frac{L_5 s}{C_5 L_5 s^2 + 1} + R_5,\ \infty \right)$

$$H(s) = \frac{C_4 L_4 L_5 g_m s^3 + L_5 g_m s + R_5 g_m + s^4\left(C_4 C_5 L_4 L_5 R_5 g_m - C_4 C_5 L_4 L_5\right) + s^2\left(C_4 L_4 R_5 g_m - C_4 L_4 + C_5 L_5 R_5 g_m - C_5 L_5\right) - 1}{2 C_4 C_5 L_4 L_5 g_m s^4 + 2 g_m + s^3\left(2 C_4 C_5 L_5 R_5 g_m + 2 C_4 C_5 L_5\right) + s^2\left(2 C_4 L_4 g_m + 2 C_4 L_5 g_m + 2 C_5 L_5 g_m\right) + s\left(2 C_4 R_5 g_m + 2 C_4\right)}$$

10.38 INVALID-ORDER-38 $Z(s) = \left(\infty, \ \infty, \ \infty, \ L_4 s + \frac{1}{C_4 s}, \ \frac{R_5 \left(C_5 L_5 s^2 + 1 \right)}{C_5 L_5 s^2 + C_5 R_5 s + 1}, \ \infty \right)$

$$H(s) = \frac{-C_4 C_5 L_4 R_5 s^3 - C_5 R_5 s + R_5 g_m + s^4 \left(C_4 C_5 L_4 L_5 R_5 g_m - C_4 C_5 L_4 L_5 \right) + s^2 \left(C_4 L_4 R_5 g_m - C_4 L_4 + C_5 L_5 R_5 g_m - C_5 L_5 \right) - 1}{2 C_4 C_5 L_4 L_5 g_m s^4 + 2 g_m + s^3 \left(2 C_4 C_5 L_4 R_5 g_m + 2 C_4 C_5 L_5 R_5 g_m + 2 C_4 C_5 L_5 \right) + s^2 \left(2 C_4 C_5 R_5 + 2 C_4 L_4 g_m + 2 C_5 L_5 g_m \right) + s \left(2 C_4 R_5 g_m + 2 C_4 + 2 C_5 R_5 g_m \right)}$$

10.39 INVALID-ORDER-39 $Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{L_4 s}{C_4 L_4 s^2 + 1}, \ \frac{1}{C_5 s}, \ \infty \right)$

$$H(s) = \frac{-C_5 L_4 s^2 + L_4 g_m s}{2 C_4 C_5 L_4 s^3 + 2 C_5 s + 2 g_m + s^2 \left(2 C_4 L_4 g_m + 2 C_5 L_4 g_m \right)}$$

10.40 INVALID-ORDER-40 $Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{L_4 s}{C_4 L_4 s^2 + 1}, \ \frac{R_5}{C_5 R_5 s + 1}, \ \infty \right)$

$$H(s) = \frac{-C_5 L_4 R_5 s^2 + s \left(L_4 R_5 g_m - L_4 \right)}{2 C_4 C_5 L_4 R_5 s^3 + 2 R_5 g_m + s^2 \left(2 C_4 L_4 R_5 g_m + 2 C_4 L_4 + 2 C_5 L_4 R_5 g_m \right) + s \left(2 C_5 R_5 + 2 L_4 g_m \right) + 2}$$

10.41 INVALID-ORDER-41 $Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{L_4 s}{C_4 L_4 s^2 + 1}, \ R_5 + \frac{1}{C_5 s}, \ \infty \right)$

$$H(s) = \frac{L_4 g_m s + s^2 \left(C_5 L_4 R_5 g_m - C_5 L_4 \right)}{2 g_m + s^3 \left(2 C_4 C_5 L_4 R_5 g_m + 2 C_4 C_5 L_4 \right) + s^2 \left(2 C_4 L_4 g_m + 2 C_5 L_4 g_m \right) + s \left(2 C_5 R_5 g_m + 2 C_5 \right)}$$

10.42 INVALID-ORDER-42 $Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{L_4 s}{C_4 L_4 s^2 + 1}, \ L_5 s + \frac{1}{C_5 s}, \ \infty \right)$

$$H(s) = \frac{C_5 L_4 L_5 g_m s^3 - C_5 L_4 s^2 + L_4 g_m s}{2 C_4 C_5 L_4 L_5 g_m s^4 + 2 C_4 C_5 L_4 s^3 + 2 C_5 s + 2 g_m + s^2 \left(2 C_4 L_4 g_m + 2 C_5 L_4 g_m + 2 C_5 L_5 g_m \right)}$$

10.43 INVALID-ORDER-43 $Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{L_4 s}{C_4 L_4 s^2 + 1}, \ \frac{L_5 s}{C_5 L_5 s^2 + 1}, \ \infty \right)$

$$H(s) = \frac{-C_5 L_4 L_5 s^3 + L_4 L_5 g_m s^2 - L_4 s}{2 C_4 C_5 L_4 L_5 s^4 + s^3 \left(2 C_4 L_4 L_5 g_m + 2 C_5 L_4 L_5 g_m \right) + s^2 \left(2 C_4 L_4 + 2 C_5 L_5 \right) + s \left(2 L_4 g_m + 2 L_5 g_m \right) + 2}$$

10.44 INVALID-ORDER-44 $Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{L_4 s}{C_4 L_4 s^2 + 1}, \ L_5 s + R_5 + \frac{1}{C_5 s}, \ \infty \right)$

$$H(s) = \frac{C_5 L_4 L_5 g_m s^3 + L_4 g_m s + s^2 \left(C_5 L_4 R_5 g_m - C_5 L_4 \right)}{2 C_4 C_5 L_4 L_5 g_m s^4 + 2 g_m + s^3 \left(2 C_4 C_5 L_4 R_5 g_m + 2 C_4 C_5 L_4 \right) + s^2 \left(2 C_4 L_4 g_m + 2 C_5 L_4 g_m + 2 C_5 L_5 g_m \right) + s \left(2 C_5 R_5 g_m + 2 C_5 \right)}$$

10.45 INVALID-ORDER-45 $Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{L_4 s}{C_4 L_4 s^2 + 1}, \ \frac{L_5 R_5 s}{C_5 L_5 R_5 s^2 + L_5 s + R_5}, \ \infty \right)$

$$H(s) = \frac{-C_5 L_4 L_5 R_5 s^3 - L_4 R_5 s + s^2 \left(L_4 L_5 R_5 g_m - L_4 L_5 \right)}{2 C_4 C_5 L_4 L_5 R_5 s^4 + 2 R_5 + s^3 \left(2 C_4 L_4 L_5 R_5 g_m + 2 C_4 L_4 L_5 + 2 C_5 L_4 L_5 R_5 g_m \right) + s^2 \left(2 C_4 L_4 R_5 + 2 C_5 L_5 R_5 + 2 L_4 L_5 g_m \right) + s \left(2 L_4 R_5 g_m + 2 L_5 R_5 g_m + 2 L_5 \right)}$$

10.46 INVALID-ORDER-46 $Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{L_4 s}{C_4 L_4 s^2 + 1}, \ \frac{L_5 s}{C_5 L_5 s^2 + 1} + R_5, \ \infty \right)$

$$H(s) = \frac{L_4 L_5 g_m s^2 + s^3 \left(C_5 L_4 L_5 R_5 g_m - C_5 L_4 L_5 \right) + s \left(L_4 R_5 g_m - L_4 \right)}{2 R_5 g_m + s^4 \left(2 C_4 C_5 L_4 L_5 R_5 g_m + 2 C_4 C_5 L_4 L_5 \right) + s^3 \left(2 C_4 L_4 L_5 g_m + 2 C_5 L_4 L_5 g_m \right) + s^2 \left(2 C_4 L_4 R_5 g_m + 2 C_4 L_4 + 2 C_5 L_5 R_5 g_m + 2 C_5 L_5 \right) + s \left(2 L_4 g_m + 2 L_5 g_m \right) + 2}$$

10.47 INVALID-ORDER-47 $Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{L_4 s}{C_4 L_4 s^2 + 1}, \ \frac{R_5 \left(C_5 L_5 s^2 + 1 \right)}{C_5 L_5 s^2 + C_5 R_5 s + 1}, \ \infty \right)$

$$H(s) = \frac{-C_5 L_4 R_5 s^2 + s^3 \left(C_5 L_4 L_5 R_5 g_m - C_5 L_4 L_5 \right) + s \left(L_4 R_5 g_m - L_4 \right)}{2 R_5 g_m + s^4 \left(2 C_4 C_5 L_4 L_5 R_5 g_m + 2 C_4 C_5 L_4 L_5 \right) + s^3 \left(2 C_4 C_5 L_4 R_5 + 2 C_5 L_4 L_5 g_m \right) + s^2 \left(2 C_4 L_4 R_5 g_m + 2 C_4 L_4 + 2 C_5 L_4 R_5 g_m + 2 C_5 L_5 R_5 g_m + 2 C_5 L_5 \right) + s \left(2 C_5 R_5 + 2 L_4 g_m \right) + 2}$$

10.48 INVALID-ORDER-48 $Z(s) = \left(\infty, \ \infty, \ \infty, \ L_4 s + R_4 + \frac{1}{C_4 s}, \ \frac{1}{C_5 s}, \ \infty \right)$

$$H(s) = \frac{-C_4 C_5 L_4 s^3 + g_m + s^2 \left(-C_4 C_5 R_4 + C_4 L_4 g_m \right) + s \left(C_4 R_4 g_m - C_5 \right)}{2 C_4 C_5 L_4 g_m s^3 + s^2 \left(2 C_4 C_5 R_4 g_m + 2 C_4 C_5 \right) + s \left(2 C_4 g_m + 2 C_5 g_m \right)}$$

10.49 INVALID-ORDER-49 $Z(s) = \left(\infty, \ \infty, \ \infty, \ L_4 s + R_4 + \frac{1}{C_4 s}, \ \frac{R_5}{C_5 R_5 s + 1}, \ \infty \right)$

$$H(s) = \frac{-C_4 C_5 L_4 R_5 s^3 + R_5 g_m + s^2 \left(-C_4 C_5 R_4 R_5 + C_4 L_4 R_5 g_m - C_4 L_4 \right) + s \left(C_4 R_4 R_5 g_m - C_4 R_4 - C_5 R_5 \right) - 1}{2 C_4 C_5 L_4 R_5 g_m s^3 + 2 g_m + s^2 \left(2 C_4 C_5 R_4 R_5 g_m + 2 C_4 C_5 R_5 + 2 C_4 L_4 g_m \right) + s \left(2 C_4 R_4 g_m + 2 C_4 R_5 g_m + 2 C_4 + 2 C_5 R_5 g_m \right)}$$

10.50 INVALID-ORDER-50 $Z(s) = \left(\infty, \ \infty, \ \infty, \ L_4 s + R_4 + \frac{1}{C_4 s}, \ R_5 + \frac{1}{C_5 s}, \ \infty \right)$

$$H(s) = \frac{g_m + s^3 \left(C_4 C_5 L_4 R_5 g_m - C_4 C_5 L_4 \right) + s^2 \left(C_4 C_5 R_4 R_5 g_m - C_4 C_5 R_4 + C_4 L_4 g_m \right) + s \left(C_4 R_4 g_m + C_5 R_5 g_m - C_5 \right)}{2 C_4 C_5 L_4 g_m s^3 + s^2 \left(2 C_4 C_5 R_4 g_m + 2 C_4 C_5 R_5 g_m + 2 C_4 C_5 \right) + s \left(2 C_4 g_m + 2 C_5 g_m \right)}$$

10.51 INVALID-ORDER-51 $Z(s) = \left(\infty, \ \infty, \ \infty, \ L_4 s + R_4 + \frac{1}{C_4 s}, \ L_5 s + \frac{1}{C_5 s}, \ \infty \right)$

$$H(s) = \frac{C_4 C_5 L_4 L_5 g_m s^4 + g_m + s^3 \left(-C_4 C_5 L_4 + C_4 C_5 L_5 R_4 g_m \right) + s^2 \left(-C_4 C_5 R_4 + C_4 L_4 g_m + C_5 L_5 g_m \right) + s \left(C_4 R_4 g_m - C_5 \right)}{s^3 \left(2 C_4 C_5 L_4 g_m + 2 C_4 C_5 L_5 g_m \right) + s^2 \left(2 C_4 C_5 R_4 g_m + 2 C_4 C_5 \right) + s \left(2 C_4 g_m + 2 C_5 g_m \right)}$$

10.52 INVALID-ORDER-52 $Z(s) = \left(\infty, \ \infty, \ \infty, \ L_4 s + R_4 + \frac{1}{C_4 s}, \ \frac{L_5 s}{C_5 L_5 s^2 + 1}, \ \infty \right)$

$$H(s) = \frac{-C_4 C_5 L_4 L_5 s^4 + s^3 \left(-C_4 C_5 L_5 R_4 + C_4 L_4 L_5 g_m \right) + s^2 \left(-C_4 L_4 + C_4 L_5 R_4 g_m - C_5 L_5 \right) + s \left(-C_4 R_4 + L_5 g_m \right) - 1}{2 C_4 C_5 L_4 L_5 g_m s^4 + 2 g_m + s^3 \left(2 C_4 C_5 L_5 R_4 g_m + 2 C_4 C_5 L_5 \right) + s^2 \left(2 C_4 L_4 g_m + 2 C_4 L_5 g_m + 2 C_5 L_5 g_m \right) + s \left(2 C_4 R_4 g_m + 2 C_4 \right)}$$

10.53 INVALID-ORDER-53 $Z(s) = \left(\infty, \ \infty, \ \infty, \ L_4 s + R_4 + \frac{1}{C_4 s}, \ L_5 s + R_5 + \frac{1}{C_5 s}, \ \infty \right)$

$$H(s) = \frac{C_4 C_5 L_4 L_5 g_m s^4 + g_m + s^3 \left(C_4 C_5 L_4 R_5 g_m - C_4 C_5 L_4 + C_4 C_5 L_5 R_4 g_m \right) + s^2 \left(C_4 C_5 R_4 R_5 g_m - C_4 C_5 R_4 + C_4 L_4 g_m + C_5 L_5 g_m \right) + s \left(C_4 R_4 g_m + C_5 R_5 g_m - C_5 \right)}{s^3 \left(2 C_4 C_5 L_4 g_m + 2 C_4 C_5 L_5 g_m \right) + s^2 \left(2 C_4 C_5 R_4 g_m + 2 C_4 C_5 R_5 g_m + 2 C_4 C_5 \right) + s \left(2 C_4 g_m + 2 C_5 g_m \right)}$$

10.54 INVALID-ORDER-54 $Z(s) = \left(\infty, \ \infty, \ \infty, \ L_4 s + R_4 + \frac{1}{C_4 s}, \ \frac{L_5 R_5 s}{C_5 L_5 R_5 s^2 + L_5 s + R_5}, \ \infty \right)$

$$H(s) = \frac{-C_4 C_5 L_4 L_5 R_5 s^4 - R_5 + s^3 \left(-C_4 C_5 L_5 R_4 R_5 + C_4 L_4 L_5 R_5 g_m - C_4 L_4 L_5 \right) + s^2 \left(-C_4 L_4 R_5 + C_4 L_5 R_4 R_5 g_m - C_4 L_5 R_4 - C_5 L_5 R_5 \right) + s \left(-C_4 R_4 R_5 + L_5 R_5 g_m - L_5 \right)}{2 C_4 C_5 L_4 L_5 R_5 g_m s^4 + 2 R_5 g_m + s^3 \left(2 C_4 C_5 L_5 R_4 R_5 g_m + 2 C_4 C_5 L_5 R_5 + 2 C_4 L_4 L_5 g_m \right) + s^2 \left(2 C_4 L_4 R_5 g_m + 2 C_4 L_5 R_4 g_m + 2 C_4 L_5 R_5 g_m + 2 C_4 L_5 + 2 C_5 L_5 R_5 g_m \right) + s \left(2 C_4 R_4 R_5 g_m + 2 C_4 R_5 + 2 L_5 g_m \right)}$$

10.55 INVALID-ORDER-55 $Z(s) = \left(\infty, \ \infty, \ \infty, \ L_4 s + R_4 + \frac{1}{C_4 s}, \ \frac{L_5 s}{C_5 L_5 s^2 + 1} + R_5, \ \infty \right)$

$$H(s) = \frac{R_5 g_m + s^4 \left(C_4 C_5 L_4 L_5 R_5 g_m - C_4 C_5 L_4 L_5 \right) + s^3 \left(C_4 C_5 L_5 R_4 R_5 g_m - C_4 C_5 L_5 R_4 + C_4 L_4 L_5 g_m \right) + s^2 \left(C_4 L_4 R_5 g_m - C_4 L_4 + C_4 L_5 R_4 g_m + C_5 L_5 R_5 g_m - C_5 L_5 \right) + s \left(C_4 R_4 R_5 g_m - C_4 R_4 + L_5 g_m \right) - 1}{2 C_4 C_5 L_4 L_5 g_m s^4 + 2 g_m + s^3 \left(2 C_4 C_5 L_5 R_4 g_m + 2 C_4 C_5 L_5 R_5 g_m + 2 C_4 C_5 L_5 \right) + s^2 \left(2 C_4 L_4 g_m + 2 C_4 L_5 g_m + 2 C_5 L_5 g_m \right) + s \left(2 C_4 R_4 g_m + 2 C_4 R_5 g_m + 2 C_4 \right)}$$

10.56 INVALID-ORDER-56 $Z(s) = \left(\infty, \ \infty, \ \infty, \ L_4 s + R_4 + \frac{1}{C_4 s}, \ \frac{R_5\left(C_5 L_5 s^2 + 1\right)}{C_5 L_5 s^2 + C_5 R_5 s + 1}, \ \infty \right)$

$$H(s) = \frac{R_5 g_m + s^4\left(C_4 C_5 L_4 L_5 R_5 g_m - C_4 C_5 L_4 L_5\right) + s^3\left(-C_4 C_5 L_4 R_5 + C_4 C_5 L_5 R_4 R_5 g_m - C_4 C_5 L_5 R_4\right) + s^2\left(-C_4 C_5 R_4 R_5 + C_4 L_4 R_5 g_m - C_4 L_4 + C_5 L_5 R_5 g_m - C_5 L_5\right) + s\left(C_4 R_4 R_5 g_m - C_4 R_4 - C_5 R_5\right) - 1}{2 C_4 C_5 L_4 L_5 g_m s^4 + 2 g_m + s^3\left(2 C_4 C_5 L_4 R_5 g_m + 2 C_4 C_5 L_5 R_4 g_m + 2 C_4 C_5 L_5 R_5 g_m + 2 C_4 C_5 L_5\right) + s^2\left(2 C_4 C_5 R_4 R_5 g_m + 2 C_4 C_5 R_5 + 2 C_4 L_4 g_m + 2 C_5 L_5 g_m\right) + s\left(2 C_4 R_4 g_m + 2 C_4 R_5 g_m + 2 C_4 + 2 C_5 R_5 g_m\right)}$$

10.57 INVALID-ORDER-57 $Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{L_4 R_4 s}{C_4 L_4 R_4 s^2 + L_4 s + R_4}, \ \frac{1}{C_5 s}, \ \infty \right)$

$$H(s) = \frac{-C_5 L_4 R_4 s^2 + L_4 R_4 g_m s}{2 C_4 C_5 L_4 R_4 s^3 + 2 R_4 g_m + s^2\left(2 C_4 L_4 R_4 g_m + 2 C_5 L_4 R_4 g_m + 2 C_5 L_4\right) + s\left(2 C_5 R_4 + 2 L_4 g_m\right)}$$

10.58 INVALID-ORDER-58 $Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{L_4 R_4 s}{C_4 L_4 R_4 s^2 + L_4 s + R_4}, \ \frac{R_5}{C_5 R_5 s + 1}, \ \infty \right)$

$$H(s) = \frac{-C_5 L_4 R_4 R_5 s^2 + s\left(L_4 R_4 R_5 g_m - L_4 R_4\right)}{2 C_4 C_5 L_4 R_4 R_5 s^3 + 2 R_4 R_5 g_m + 2 R_4 + s^2\left(2 C_4 L_4 R_4 R_5 g_m + 2 C_4 L_4 R_4 + 2 C_5 L_4 R_4 R_5 g_m + 2 C_5 L_4 R_5\right) + s\left(2 C_5 R_4 R_5 + 2 L_4 R_4 g_m + 2 L_4 R_5 g_m + 2 L_4\right)}$$

10.59 INVALID-ORDER-59 $Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{L_4 R_4 s}{C_4 L_4 R_4 s^2 + L_4 s + R_4}, \ R_5 + \frac{1}{C_5 s}, \ \infty \right)$

$$H(s) = \frac{L_4 R_4 g_m s + s^2\left(C_5 L_4 R_4 R_5 g_m - C_5 L_4 R_4\right)}{2 R_4 g_m + s^3\left(2 C_4 C_5 L_4 R_4 R_5 g_m + 2 C_4 C_5 L_4 R_4\right) + s^2\left(2 C_4 L_4 R_4 g_m + 2 C_5 L_4 R_4 g_m + 2 C_5 L_4 R_5 g_m + 2 C_5 L_4\right) + s\left(2 C_5 R_4 R_5 g_m + 2 C_5 R_4 + 2 L_4 g_m\right)}$$

10.60 INVALID-ORDER-60 $Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{L_4 R_4 s}{C_4 L_4 R_4 s^2 + L_4 s + R_4}, \ L_5 s + \frac{1}{C_5 s}, \ \infty \right)$

$$H(s) = \frac{C_5 L_4 L_5 R_4 g_m s^3 - C_5 L_4 R_4 s^2 + L_4 R_4 g_m s}{2 C_4 C_5 L_4 L_5 R_4 g_m s^4 + 2 R_4 g_m + s^3\left(2 C_4 C_5 L_4 R_4 + 2 C_5 L_4 L_5 g_m\right) + s^2\left(2 C_4 L_4 R_4 g_m + 2 C_5 L_4 R_4 g_m + 2 C_5 L_4 + 2 C_5 L_5 R_4 g_m\right) + s\left(2 C_5 R_4 + 2 L_4 g_m\right)}$$

10.61 INVALID-ORDER-61 $Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{L_4 R_4 s}{C_4 L_4 R_4 s^2 + L_4 s + R_4}, \ \frac{L_5 s}{C_5 L_5 s^2 + 1}, \ \infty \right)$

$$H(s) = \frac{-C_5 L_4 L_5 R_4 s^3 + L_4 L_5 R_4 g_m s^2 - L_4 R_4 s}{2 C_4 C_5 L_4 L_5 R_4 s^4 + 2 R_4 + s^3\left(2 C_4 L_4 L_5 R_4 g_m + 2 C_5 L_4 L_5 R_4 g_m + 2 C_5 L_4 L_5\right) + s^2\left(2 C_4 L_4 R_4 + 2 C_5 L_5 R_4 + 2 L_4 L_5 g_m\right) + s\left(2 L_4 R_4 g_m + 2 L_4 + 2 L_5 R_4 g_m\right)}$$

10.62 INVALID-ORDER-62 $Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{L_4 R_4 s}{C_4 L_4 R_4 s^2 + L_4 s + R_4}, \ L_5 s + R_5 + \frac{1}{C_5 s}, \ \infty \right)$

$$H(s) = \frac{C_5 L_4 L_5 R_4 g_m s^3 + L_4 R_4 g_m s + s^2\left(C_5 L_4 R_4 R_5 g_m - C_5 L_4 R_4\right)}{2 C_4 C_5 L_4 L_5 R_4 g_m s^4 + 2 R_4 g_m + s^3\left(2 C_4 C_5 L_4 R_4 R_5 g_m + 2 C_4 C_5 L_4 R_4 + 2 C_5 L_4 L_5 g_m\right) + s^2\left(2 C_4 L_4 R_4 g_m + 2 C_5 L_4 R_4 g_m + 2 C_5 L_4 R_5 g_m + 2 C_5 L_4 + 2 C_5 L_5 R_4 g_m\right) + s\left(2 C_5 R_4 R_5 g_m + 2 C_5 R_4 + 2 L_4 g_m\right)}$$

10.63 INVALID-ORDER-63 $Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{L_4 R_4 s}{C_4 L_4 R_4 s^2 + L_4 s + R_4}, \ \frac{L_5 R_5 s}{C_5 L_5 R_5 s^2 + L_5 s + R_5}, \ \infty \right)$

$$H(s) = \frac{-C_5 L_4 L_5 R_4 R_5 s^3 - L_4 R_4 R_5 s + s^2\left(L_4 L_5 R_4 R_5 g_m - L_4 L_5 R_4\right)}{2 C_4 C_5 L_4 L_5 R_4 R_5 s^4 + 2 R_4 R_5 + s^3\left(2 C_4 L_4 L_5 R_4 R_5 g_m + 2 C_4 L_4 L_5 R_4 + 2 C_5 L_4 L_5 R_4 R_5 g_m + 2 C_5 L_4 L_5 R_5\right) + s^2\left(2 C_4 L_4 R_4 R_5 + 2 C_5 L_5 R_4 R_5 + 2 L_4 L_5 R_4 g_m + 2 L_4 L_5 R_5 g_m + 2 L_4 L_5\right) + s\left(2 L_4 R_4 R_5 g_m + 2 L_4 R_5 + 2 L_5 R_4 R_5 g_m + 2 L_5 R_4\right)}$$

10.64 INVALID-ORDER-64 $Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{L_4 R_4 s}{C_4 L_4 R_4 s^2 + L_4 s + R_4}, \ \frac{L_5 s}{C_5 L_5 s^2 + 1} + R_5, \ \infty \right)$

$$H(s) = \frac{L_4 L_5 R_4 g_m s^2 + s^3\left(C_5 L_4 L_5 R_4 R_5 g_m - C_5 L_4 L_5 R_4\right) + s\left(L_4 R_4 R_5 g_m - L_4 R_4\right)}{2 R_4 R_5 g_m + 2 R_4 + s^4\left(2 C_4 C_5 L_4 L_5 R_4 R_5 g_m + 2 C_4 C_5 L_4 L_5 R_4\right) + s^3\left(2 C_4 L_4 L_5 R_4 g_m + 2 C_5 L_4 L_5 R_4 g_m + 2 C_5 L_4 L_5 R_5 g_m + 2 C_5 L_4 L_5\right) + s^2\left(2 C_4 L_4 R_4 R_5 g_m + 2 C_4 L_4 R_4 + 2 C_5 L_5 R_4 R_5 g_m + 2 C_5 L_5 R_4 + 2 L_4 L_5 g_m\right) + s\left(2 L_4 R_4 g_m + 2 L_4 R_5 g_m + 2 L_4 + 2 L_5 R_4 g_m\right)}$$

10.65 INVALID-ORDER-65 $Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{L_4 R_4 s}{C_4 L_4 R_4 s^2 + L_4 s + R_4}, \ \frac{R_5\left(C_5 L_5 s^2 + 1\right)}{C_5 L_5 s^2 + C_5 R_5 s + 1}, \ \infty\right)$

$$H(s) = \frac{-C_5 L_4 R_4 R_5 s^2 + s^3\left(C_5 L_4 L_5 R_4 R_5 g_m - C_5 L_4 L_5 R_4\right) + s\left(L_4 R_4 R_5 g_m - L_4 R_4\right)}{2R_4 R_5 g_m + 2R_4 + s^4\left(2C_4 C_5 L_4 L_5 R_4 R_5 g_m + 2C_4 C_5 L_4 L_5 R_4\right) + s^3\left(2C_4 C_5 L_4 R_4 R_5 + 2C_5 L_4 L_5 R_4 g_m + 2C_5 L_4 L_5 R_5 g_m + 2C_5 L_4 L_5\right) + s^2\left(2C_4 L_4 R_4 R_5 g_m + 2C_4 L_4 R_4 + 2C_5 L_4 R_4 R_5 g_m + 2C_5 L_4 R_5 + 2C_5 L_5 R_4 R_5 g_m + 2C_5 L_5 R_4\right) + s\left(2C_5 R_4 R_5 + 2L_4 R_4 g_m + 2L_4 R_5\right)}$$

10.66 INVALID-ORDER-66 $Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \ \frac{1}{C_5 s}, \ \infty\right)$

$$H(s) = \frac{-C_4 C_5 L_4 R_4 s^3 + R_4 g_m + s^2\left(C_4 L_4 R_4 g_m - C_5 L_4\right) + s\left(-C_5 R_4 + L_4 g_m\right)}{2g_m + s^3\left(2C_4 C_5 L_4 R_4 g_m + 2C_4 C_5 L_4\right) + s^2\left(2C_4 L_4 g_m + 2C_5 L_4 g_m\right) + s\left(2C_5 R_4 g_m + 2C_5\right)}$$

10.67 INVALID-ORDER-67 $Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \ \frac{R_5}{C_5 R_5 s + 1}, \ \infty\right)$

$$H(s) = \frac{-C_4 C_5 L_4 R_4 R_5 s^3 + R_4 R_5 g_m - R_4 + s^2\left(C_4 L_4 R_4 R_5 g_m - C_4 L_4 R_4 - C_5 L_4 R_5\right) + s\left(-C_5 R_4 R_5 + L_4 R_5 g_m - L_4\right)}{2R_4 g_m + 2R_5 g_m + s^3\left(2C_4 C_5 L_4 R_4 R_5 g_m + 2C_4 C_5 L_4 R_5\right) + s^2\left(2C_4 L_4 R_4 g_m + 2C_4 L_4 R_5 g_m + 2C_4 L_4 + 2C_5 L_4 R_5 g_m\right) + s\left(2C_5 R_4 R_5 g_m + 2C_5 R_5 + 2L_4 g_m\right) + 2}$$

10.68 INVALID-ORDER-68 $Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \ R_5 + \frac{1}{C_5 s}, \ \infty\right)$

$$H(s) = \frac{R_4 g_m + s^3\left(C_4 C_5 L_4 R_4 R_5 g_m - C_4 C_5 L_4 R_4\right) + s^2\left(C_4 L_4 R_4 g_m + C_5 L_4 R_5 g_m - C_5 L_4\right) + s\left(C_5 R_4 R_5 g_m - C_5 R_4 + L_4 g_m\right)}{2g_m + s^3\left(2C_4 C_5 L_4 R_4 g_m + 2C_4 C_5 L_4 R_5 g_m + 2C_4 C_5 L_4\right) + s^2\left(2C_4 L_4 g_m + 2C_5 L_4 g_m\right) + s\left(2C_5 R_4 g_m + 2C_5 R_5 g_m + 2C_5\right)}$$

10.69 INVALID-ORDER-69 $Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \ L_5 s + \frac{1}{C_5 s}, \ \infty\right)$

$$H(s) = \frac{C_4 C_5 L_4 L_5 R_4 g_m s^4 + R_4 g_m + s^3\left(-C_4 C_5 L_4 R_4 + C_5 L_4 L_5 g_m\right) + s^2\left(C_4 L_4 R_4 g_m - C_5 L_4 + C_5 L_5 R_4 g_m\right) + s\left(-C_5 R_4 + L_4 g_m\right)}{2C_4 C_5 L_4 L_5 g_m s^4 + 2g_m + s^3\left(2C_4 C_5 L_4 R_4 g_m + 2C_4 C_5 L_4\right) + s^2\left(2C_4 L_4 g_m + 2C_5 L_4 g_m + 2C_5 L_5 g_m\right) + s\left(2C_5 R_4 g_m + 2C_5\right)}$$

10.70 INVALID-ORDER-70 $Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \ \frac{L_5 s}{C_5 L_5 s^2 + 1}, \ \infty\right)$

$$H(s) = \frac{-C_4 C_5 L_4 L_5 R_4 s^4 - R_4 + s^3\left(C_4 L_4 L_5 R_4 g_m - C_5 L_4 L_5\right) + s^2\left(-C_4 L_4 R_4 - C_5 L_5 R_4 + L_4 L_5 g_m\right) + s\left(-L_4 + L_5 R_4 g_m\right)}{2R_4 g_m + s^4\left(2C_4 C_5 L_4 L_5 R_4 g_m + 2C_4 C_5 L_4 L_5\right) + s^3\left(2C_4 L_4 L_5 g_m + 2C_5 L_4 L_5 g_m\right) + s^2\left(2C_4 L_4 R_4 g_m + 2C_4 L_4 + 2C_5 L_5 R_4 g_m + 2C_5 L_5\right) + s\left(2L_4 g_m + 2L_5 g_m\right) + 2}$$

10.71 INVALID-ORDER-71 $Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \ L_5 s + R_5 + \frac{1}{C_5 s}, \ \infty\right)$

$$H(s) = \frac{C_4 C_5 L_4 L_5 R_4 g_m s^4 + R_4 g_m + s^3\left(C_4 C_5 L_4 R_4 R_5 g_m - C_4 C_5 L_4 R_4 + C_5 L_4 L_5 g_m\right) + s^2\left(C_4 L_4 R_4 g_m + C_5 L_4 R_5 g_m - C_5 L_4 + C_5 L_5 R_4 g_m\right) + s\left(C_5 R_4 R_5 g_m - C_5 R_4 + L_4 g_m\right)}{2C_4 C_5 L_4 L_5 g_m s^4 + 2g_m + s^3\left(2C_4 C_5 L_4 R_4 g_m + 2C_4 C_5 L_4 R_5 g_m + 2C_4 C_5 L_4\right) + s^2\left(2C_4 L_4 g_m + 2C_5 L_4 g_m + 2C_5 L_5 g_m\right) + s\left(2C_5 R_4 g_m + 2C_5 R_5 g_m + 2C_5\right)}$$

10.72 INVALID-ORDER-72 $Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \ \frac{L_5 R_5 s}{C_5 L_5 R_5 s^2 + L_5 s + R_5}, \ \infty\right)$

$$H(s) = \frac{-C_4 C_5 L_4 L_5 R_4 R_5 s^4 - R_4 R_5 + s^3\left(C_4 L_4 L_5 R_4 R_5 g_m - C_4 L_4 L_5 R_4 - C_5 L_4 L_5 R_5\right) + s^2\left(-C_4 L_4 R_4 R_5 - C_5 L_5 R_4 R_5 + L_4 L_5 R_5 g_m - L_4 L_5\right) + s\left(-L_4 R_5 + L_5 R_4 R_5 g_m - L_5 R_4\right)}{2R_4 R_5 g_m + 2R_5 + s^4\left(2C_4 C_5 L_4 L_5 R_4 R_5 g_m + 2C_4 C_5 L_4 L_5 R_5\right) + s^3\left(2C_4 L_4 L_5 R_4 g_m + 2C_4 L_4 L_5 R_5 g_m + 2C_4 L_4 L_5 + 2C_5 L_4 L_5 R_5 g_m\right) + s^2\left(2C_4 L_4 R_4 R_5 g_m + 2C_4 L_4 R_5 + 2C_5 L_5 R_4 R_5 g_m + 2C_5 L_5 R_5 + 2L_4 L_5 g_m\right) + s\left(2L_4 R_5 g_m + 2L_5 R_4 g_m + 2L_5 R_5 g_m + 2L_5\right)}$$

10.73 INVALID-ORDER-73 $Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \ \frac{L_5 s}{C_5 L_5 s^2 + 1} + R_5, \ \infty\right)$

$$H(s) = \frac{R_4 R_5 g_m - R_4 + s^4\left(C_4 C_5 L_4 L_5 R_4 R_5 g_m - C_4 C_5 L_4 L_5 R_4\right) + s^3\left(C_4 L_4 L_5 R_4 g_m + C_5 L_4 L_5 R_5 g_m - C_5 L_4 L_5\right) + s^2\left(C_4 L_4 R_4 R_5 g_m - C_4 L_4 R_4 + C_5 L_5 R_4 R_5 g_m - C_5 L_5 R_4 + L_4 L_5 g_m\right) + s\left(L_4 R_5 g_m - L_4 + L_5 R_4 g_m\right)}{2R_4 g_m + 2R_5 g_m + s^4\left(2C_4 C_5 L_4 L_5 R_4 g_m + 2C_4 C_5 L_4 L_5 R_5 g_m + 2C_4 C_5 L_4 L_5\right) + s^3\left(2C_4 L_4 L_5 g_m + 2C_5 L_4 L_5 g_m\right) + s^2\left(2C_4 L_4 R_4 g_m + 2C_4 L_4 R_5 g_m + 2C_4 L_4 + 2C_5 L_5 R_4 g_m + 2C_5 L_5 R_5 g_m + 2C_5 L_5\right) + s\left(2L_4 g_m + 2L_5 g_m\right) + 2}$$

10.74 INVALID-ORDER-74 $Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4, \ \frac{R_5\left(C_5 L_5 s^2 + 1\right)}{C_5 L_5 s^2 + C_5 R_5 s + 1}, \ \infty\right)$

$$H(s) = \frac{R_4 R_5 g_m - R_4 + s^4\left(C_4 C_5 L_4 L_5 R_4 R_5 g_m - C_4 C_5 L_4 L_5 R_4\right) + s^3\left(-C_4 C_5 L_4 R_4 R_5 + C_5 L_4 L_5 R_5 g_m - C_5 L_4 L_5\right) + s^2\left(C_4 L_4 R_4 R_5 g_m - C_4 L_4 R_4 - C_5 L_4 R_5 + C_5 L_5 R_4 R_5 g_m - C_5 L_5 R_4\right) + s\left(-C_5 R_4 R_5 + L_4 R_5 g_m - L_4\right)}{2R_4 g_m + 2R_5 g_m + s^4\left(2C_4 C_5 L_4 L_5 R_4 g_m + 2C_4 C_5 L_4 L_5 R_5 g_m + 2C_4 C_5 L_4 L_5\right) + s^3\left(2C_4 C_5 L_4 R_4 R_5 g_m + 2C_4 C_5 L_4 R_5 + 2C_5 L_4 L_5 g_m\right) + s^2\left(2C_4 L_4 R_4 g_m + 2C_4 L_4 R_5 g_m + 2C_4 L_4 + 2C_5 L_4 R_5 g_m + 2C_5 L_5 R_4 g_m + 2C_5 L_5 R_5 g_m + 2C_5 L_5\right) + s\left(2C_5 R_4 R_5 g_m + 2C_5 R_5 + 2L_4 \dots\right)}$$

10.75 INVALID-ORDER-75 $Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{R_4\left(C_4 L_4 s^2 + 1\right)}{C_4 L_4 s^2 + C_4 R_4 s + 1}, \ \frac{1}{C_5 s}, \ \infty\right)$

$$H(s) = \frac{-C_4 C_5 L_4 R_4 s^3 + C_4 L_4 R_4 g_m s^2 - C_5 R_4 s + R_4 g_m}{2g_m + s^3\left(2C_4 C_5 L_4 R_4 g_m + 2C_4 C_5 L_4\right) + s^2\left(2C_4 C_5 R_4 + 2C_4 L_4 g_m\right) + s\left(2C_4 R_4 g_m + 2C_5 R_4 g_m + 2C_5\right)}$$

10.76 INVALID-ORDER-76 $Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{R_4\left(C_4 L_4 s^2 + 1\right)}{C_4 L_4 s^2 + C_4 R_4 s + 1}, \ \frac{R_5}{C_5 R_5 s + 1}, \ \infty\right)$

$$H(s) = \frac{-C_4 C_5 L_4 R_4 R_5 s^3 - C_5 R_4 R_5 s + R_4 R_5 g_m - R_4 + s^2\left(C_4 L_4 R_4 R_5 g_m - C_4 L_4 R_4\right)}{2R_4 g_m + 2R_5 g_m + s^3\left(2C_4 C_5 L_4 R_4 R_5 g_m + 2C_4 C_5 L_4 R_5\right) + s^2\left(2C_4 C_5 R_4 R_5 + 2C_4 L_4 R_4 g_m + 2C_4 L_4 R_5 g_m + 2C_4 L_4\right) + s\left(2C_4 R_4 R_5 g_m + 2C_4 R_4 + 2C_5 R_4 R_5 g_m + 2C_5 R_5\right) + 2}$$

10.77 INVALID-ORDER-77 $Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{R_4\left(C_4 L_4 s^2 + 1\right)}{C_4 L_4 s^2 + C_4 R_4 s + 1}, \ R_5 + \frac{1}{C_5 s}, \ \infty\right)$

$$H(s) = \frac{C_4 L_4 R_4 g_m s^2 + R_4 g_m + s^3\left(C_4 C_5 L_4 R_4 R_5 g_m - C_4 C_5 L_4 R_4\right) + s\left(C_5 R_4 R_5 g_m - C_5 R_4\right)}{2g_m + s^3\left(2C_4 C_5 L_4 R_4 g_m + 2C_4 C_5 L_4 R_5 g_m + 2C_4 C_5 L_4\right) + s^2\left(2C_4 C_5 R_4 R_5 g_m + 2C_4 C_5 R_4 + 2C_4 L_4 g_m\right) + s\left(2C_4 R_4 g_m + 2C_5 R_4 g_m + 2C_5 R_5 g_m + 2C_5\right)}$$

10.78 INVALID-ORDER-78 $Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{R_4\left(C_4 L_4 s^2 + 1\right)}{C_4 L_4 s^2 + C_4 R_4 s + 1}, \ L_5 s + \frac{1}{C_5 s}, \ \infty\right)$

$$H(s) = \frac{C_4 C_5 L_4 L_5 R_4 g_m s^4 - C_4 C_5 L_4 R_4 s^3 - C_5 R_4 s + R_4 g_m + s^2\left(C_4 L_4 R_4 g_m + C_5 L_5 R_4 g_m\right)}{2C_4 C_5 L_4 L_5 g_m s^4 + 2g_m + s^3\left(2C_4 C_5 L_4 R_4 g_m + 2C_4 C_5 L_4 + 2C_4 C_5 L_5 R_4 g_m\right) + s^2\left(2C_4 C_5 R_4 + 2C_4 L_4 g_m + 2C_5 L_5 g_m\right) + s\left(2C_4 R_4 g_m + 2C_5 R_4 g_m + 2C_5\right)}$$

10.79 INVALID-ORDER-79 $Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{R_4\left(C_4 L_4 s^2 + 1\right)}{C_4 L_4 s^2 + C_4 R_4 s + 1}, \ \frac{L_5 s}{C_5 L_5 s^2 + 1}, \ \infty\right)$

$$H(s) = \frac{-C_4 C_5 L_4 L_5 R_4 s^4 + C_4 L_4 L_5 R_4 g_m s^3 + L_5 R_4 g_m s - R_4 + s^2\left(-C_4 L_4 R_4 - C_5 L_5 R_4\right)}{2R_4 g_m + s^4\left(2C_4 C_5 L_4 L_5 R_4 g_m + 2C_4 C_5 L_4 L_5\right) + s^3\left(2C_4 C_5 L_5 R_4 + 2C_4 L_4 L_5 g_m\right) + s^2\left(2C_4 L_4 R_4 g_m + 2C_4 L_4 + 2C_4 L_5 R_4 g_m + 2C_5 L_5 R_4 g_m + 2C_5 L_5\right) + s\left(2C_4 R_4 + 2L_5 g_m\right) + 2}$$

10.80 INVALID-ORDER-80 $Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{R_4\left(C_4 L_4 s^2 + 1\right)}{C_4 L_4 s^2 + C_4 R_4 s + 1}, \ L_5 s + R_5 + \frac{1}{C_5 s}, \ \infty\right)$

$$H(s) = \frac{C_4 C_5 L_4 L_5 R_4 g_m s^4 + R_4 g_m + s^3\left(C_4 C_5 L_4 R_4 R_5 g_m - C_4 C_5 L_4 R_4\right) + s^2\left(C_4 L_4 R_4 g_m + C_5 L_5 R_4 g_m\right) + s\left(C_5 R_4 R_5 g_m - C_5 R_4\right)}{2C_4 C_5 L_4 L_5 g_m s^4 + 2g_m + s^3\left(2C_4 C_5 L_4 R_4 g_m + 2C_4 C_5 L_4 R_5 g_m + 2C_4 C_5 L_4 + 2C_4 C_5 L_5 R_4 g_m\right) + s^2\left(2C_4 C_5 R_4 R_5 g_m + 2C_4 C_5 R_4 + 2C_4 L_4 g_m + 2C_5 L_5 g_m\right) + s\left(2C_4 R_4 g_m + 2C_5 R_4 g_m + 2C_5 R_5 g_m + 2C_5\right)}$$

10.81 INVALID-ORDER-81 $Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{R_4\left(C_4 L_4 s^2 + 1\right)}{C_4 L_4 s^2 + C_4 R_4 s + 1}, \ \frac{L_5 R_5 s}{C_5 L_5 R_5 s^2 + L_5 s + R_5}, \ \infty\right)$

$$H(s) = \frac{-C_4 C_5 L_4 L_5 R_4 R_5 s^4 - R_4 R_5 + s^3\left(C_4 L_4 L_5 R_4 R_5 g_m - C_4 L_4 L_5 R_4\right) + s^2\left(-C_4 L_4 R_4 R_5 - C_5 L_5 R_4 R_5\right) + s\left(L_5 R_4 R_5 g_m - L_5 R_4\right)}{2R_4 R_5 g_m + 2R_5 + s^4\left(2C_4 C_5 L_4 L_5 R_4 R_5 g_m + 2C_4 C_5 L_4 L_5 R_5\right) + s^3\left(2C_4 C_5 L_5 R_4 R_5 + 2C_4 L_4 L_5 R_4 g_m + 2C_4 L_4 L_5 R_5 g_m + 2C_4 L_4 L_5\right) + s^2\left(2C_4 L_4 R_4 R_5 g_m + 2C_4 L_4 R_5 + 2C_4 L_5 R_4 R_5 g_m + 2C_4 L_5 R_4 + 2C_5 L_5 R_4 R_5 g_m + 2C_5 L_5 R_5\right) + s\left(2C_4 R_4 R_5 + 2L_5 R_4 g_m + 2L_5 \dots\right)}$$

10.82 INVALID-ORDER-82 $Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{R_4\left(C_4 L_4 s^2 + 1\right)}{C_4 L_4 s^2 + C_4 R_4 s + 1}, \ \frac{L_5 s}{C_5 L_5 s^2 + 1} + R_5, \ \infty\right)$

$$H(s) = \frac{C_4 L_4 L_5 R_4 g_m s^3 + L_5 R_4 g_m s + R_4 R_5 g_m - R_4 + s^4\left(C_4 C_5 L_4 L_5 R_4 R_5 g_m - C_4 C_5 L_4 L_5 R_4\right) + s^2\left(C_4 L_4 R_4 R_5 g_m - C_4 L_4 R_4 + C_5 L_5 R_4 R_5 g_m - C_5 L_5 R_4\right)}{2R_4 g_m + 2R_5 g_m + s^4\left(2C_4 C_5 L_4 L_5 R_4 g_m + 2C_4 C_5 L_4 L_5 R_5 g_m + 2C_4 C_5 L_4 L_5\right) + s^3\left(2C_4 C_5 L_5 R_4 R_5 g_m + 2C_4 C_5 L_5 R_4 + 2C_4 L_4 L_5 g_m\right) + s^2\left(2C_4 L_4 R_4 g_m + 2C_4 L_4 R_5 g_m + 2C_4 L_4 + 2C_4 L_5 R_4 g_m + 2C_5 L_5 R_4 g_m + 2C_5 L_5 R_5 g_m + 2C_5 L_5\right) + s\left(2C_4 R_4 R_5 g_m + 2C_4 R_4 + 2L \dots\right)}$$

10.83 INVALID-ORDER-83 $Z(s) = \left(\infty, \ \infty, \ \infty, \ \frac{R_4\left(C_4 L_4 s^2 + 1\right)}{C_4 L_4 s^2 + C_4 R_4 s + 1}, \ \frac{R_5\left(C_5 L_5 s^2 + 1\right)}{C_5 L_5 s^2 + C_5 R_5 s + 1}, \ \infty \right)$

$H(s) = \frac{-C_4 C_5 L_4 R_4 R_5 s^3 - C_5 R_4 R_5 s + R_4 R_5 g_m - R_4 + s^4\left(C_4 C_5 L_4 L_5 R_4 R_5 g_m - C_4 C_5 L_4 L_5 R_4\right) + s^2\left(C_4 L_4 R_4 R_5 g_m - C_4 L_4 R_4 + C_5 L_5 R_4 R_5 g_m - C_5 L_5 R_4\right)}{2R_4 g_m + 2R_5 g_m + s^4\left(2C_4 C_5 L_4 L_5 R_4 g_m + 2C_4 C_5 L_4 L_5 R_5 g_m + 2C_4 C_5 L_4 L_5\right) + s^3\left(2C_4 C_5 L_4 R_4 R_5 g_m + 2C_4 C_5 L_4 R_5 + 2C_4 C_5 L_5 R_4 R_5 g_m + 2C_4 C_5 L_5 R_4\right) + s^2\left(2C_4 C_5 R_4 R_5 + 2C_4 L_4 R_4 g_m + 2C_4 L_4 R_5 g_m + 2C_4 L_4 + 2C_5 L_5 R_4 g_m + 2C_5 L_5 R_5 g_m + 2C_5 L_5\right) + s\left(2C_4 R_4\right.}$

11 PolynomialError