Experiment: TIA simple Z3 ZL

Filter 1

Filter Type: GE
$Z(s)$: $\left(\infty,\ \infty,\ R_3,\ \infty,\ \infty,\ L_L s + R_L + \frac{1}{C_L s}\right)$
$H(s)$: $\frac{R_3(C_L L_L s^2 + C_L R_L s + 1)}{C_L L_L R_3 s^2 + C_L R_3 s + C_L R_L s + 1}$
Q: $\frac{L_L \sqrt{\frac{1}{C_L L_L}}}{R_3 + R_L}$
ω_0: $\sqrt{\frac{1}{C_L L_L}}$
Bandwidth: $\frac{R_3 + R_L}{L_L}$
Qz: $\frac{L_L \sqrt{\frac{1}{C_L L_L}}}{R_L}$

Filter 2

Filter Type: GE
$Z(s)$: $\left(\infty,\ \infty,\ R_3,\ \infty,\ \infty,\ \frac{L_L s}{C_L L_L s^2 + 1} + R_L\right)$
$H(s)$: $\frac{R_3(C_L L_L R_L s^2 + L_L s + R_L)}{C_L L_L R_3 s^2 + C_L L_L R_L s^2 + L_L s + R_3 + R_L}$
Q: $C_L \sqrt{\frac{1}{C_L L_L}} (R_3 + R_L)$
ω_0: $\sqrt{\frac{1}{C_L L_L}}$
Bandwidth: $\frac{1}{C_L (R_3 + R_L)}$
Qz: $C_L R_L \sqrt{\frac{1}{C_L L_L}}$

Filter 3

Filter Type: GE
$Z(s)$: $\left(\infty,\ \infty,\ L_3 s + R_3 + \frac{1}{C_3 s},\ \infty,\ \infty,\ R_L\right)$
$H(s)$: $\frac{R_L(C_3 L_3 s^2 + C_3 R_3 s + 1)}{C_3 L_3 s^2 + C_3 R_3 s + C_3 R_L s + 1}$
Q: $\frac{L_3 \sqrt{\frac{1}{C_3 L_3}}}{R_3 + R_L}$
ω_0: $\sqrt{\frac{1}{C_3 L_3}}$
Bandwidth: $\frac{R_3 + R_L}{L_3}$
Qz: $\frac{L_3 \sqrt{\frac{1}{C_3 L_3}}}{R_3}$

Filter 4

Filter Type: GE
$Z(s)$: $\left(\infty,\ \infty,\ \frac{L_3 s}{C_3 L_3 s^2 + 1} + R_3,\ \infty,\ \infty,\ R_L\right)$
$H(s)$: $\frac{R_L(C_3 L_3 R_3 s^2 + L_3 s + R_3)}{C_3 L_3 R_3 s^2 + C_3 L_3 R_L s^2 + L_3 s + R_3 + R_L}$
Q: $C_3 \sqrt{\frac{1}{C_3 L_3}} (R_3 + R_L)$
ω_0: $\sqrt{\frac{1}{C_3 L_3}}$
Bandwidth: $\frac{1}{C_3 (R_3 + R_L)}$
Qz: $C_3 R_3 \sqrt{\frac{1}{C_3 L_3}}$