Experiment: TIA simple Z4 ZL

Filter 1

Invalid filter
$Z(s)$: $(\infty,\ \infty,\ R_3,\ \infty,\ \infty,\ R_L)$
$H(s)$: $\frac{\infty R_L g_m}{\infty g_m+1}$

Filter 2

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ R_3,\ \infty,\ \infty,\ \frac{1}{C_L s}\right)$
$H(s)$: $\frac{\infty g_m}{C_L s(\infty g_m+1)}$

Filter 3

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ R_3,\ \infty,\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$
$H(s)$: $\frac{\infty R_L g_m}{(\infty g_m+1)(C_L R_L s+1)}$

Filter 4

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ R_3,\ \infty,\ \infty,\ R_L+\frac{1}{C_L s}\right)$
$H(s)$: $\frac{\infty g_m(C_L R_L s+1)}{C_L s(\infty g_m+1)}$

Filter 5

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ R_3,\ \infty,\ \infty,\ L_L s+\frac{1}{C_L s}\right)$
$H(s)$: $\frac{\infty g_m\left(C_L L_L s^2+1\right)}{C_L s(\infty g_m+1)}$

Filter 6

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ R_3,\ \infty,\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$
$H(s)$: $\frac{\infty L_L g_m s}{(\infty g_m+1)(C_L L_L s^2+1)}$

Filter 7

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ R_3,\ \infty,\ \infty,\ L_L s+R_L+\frac{1}{C_L s}\right)$
$H(s)$: $\frac{\infty g_m\left(C_L L_L s^2+C_L R_L s+1\right)}{C_L s(\infty g_m+1)}$

Filter 8

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

Filter 9

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ R_3,\ \infty,\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}+R_L\right)$
$H(s)$: $\frac{\infty g_m\left(C_L L_L R_L s^2+L_L s+R_L\right)}{(\infty g_m+1)(C_L L_L s^2+1)}$

Filter 10

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ R_3,\ \infty,\ \infty,\ \frac{R_L\left(L_L s+\frac{1}{C_L s}\right)}{L_L s+R_L+\frac{1}{C_L s}}\right)$
$H(s)$: $\frac{\infty R_L g_m\left(C_L L_L s^2+1\right)}{(\infty g_m+1)(C_L L_L s^2+C_L R_L s+1)}$

Filter 11

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ \frac{1}{C_3 s},\ \infty,\ \infty,\ R_L\right)$
$H(s)$: $\frac{\infty R_L g_m}{\infty g_m+1}$

Filter 12

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ \frac{1}{C_3 s},\ \infty,\ \infty,\ \frac{1}{C_L s}\right)$
$H(s)$: $\frac{\infty g_m}{C_L s(\infty g_m+1)}$

Filter 13

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ \frac{1}{C_3 s},\ \infty,\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$
$H(s)$: $\frac{\infty R_L g_m}{(\infty g_m+1)(C_L R_L s+1)}$

Filter 14

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ \frac{1}{C_3 s},\ \infty,\ \infty,\ R_L+\frac{1}{C_L s}\right)$
$H(s)$: $\frac{\infty g_m(C_L R_L s+1)}{C_L s(\infty g_m+1)}$

Filter 15

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ \frac{1}{C_3 s},\ \infty,\ \infty,\ L_L s+\frac{1}{C_L s}\right)$
$H(s)$: $\frac{\infty g_m\left(C_L L_L s^2+1\right)}{C_L s(\infty g_m+1)}$

Filter 16

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ \frac{1}{C_3 s},\ \infty,\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$
$H(s)$: $\frac{\infty L_L g_m s}{(\infty g_m+1)(C_L L_L s^2+1)}$

Filter 17

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ \frac{1}{C_3 s},\ \infty,\ \infty,\ L_L s + R_L + \frac{1}{C_L s}\right)$
$H(s)$: $\frac{\infty g_m (C_L L_L s^2 + C_L R_L s + 1)}{C_L s(\infty g_m + 1)}$

Filter 18

Filter Type: BP
$Z(s)$: $\left(\infty,\ \infty,\ \frac{1}{C_3 s},\ \infty,\ \infty,\ \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}}\right)$
$H(s)$: $\frac{\infty L_L R_L g_m s}{(\infty g_m + 1)(C_L L_L R_L s^2 + L_L s + R_L)}$
Q: $C_L R_L \sqrt{\frac{1}{C_L L_L}}$
ω_0: $\sqrt{\frac{1}{C_L L_L}}$
Bandwidth: $\frac{1}{C_L R_L}$

Filter 19

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ \frac{1}{C_3 s},\ \infty,\ \infty,\ \frac{L_L s}{C_L L_L s^2 + 1} + R_L\right)$
$H(s)$: $\frac{\infty g_m (C_L L_L R_L s^2 + L_L s + R_L)}{(\infty g_m + 1)(C_L L_L s^2 + 1)}$

Filter 20

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ \frac{1}{C_3 s},\ \infty,\ \infty,\ \frac{R_L\left(L_L s + \frac{1}{C_L s}\right)}{L_L s + R_L + \frac{1}{C_L s}}\right)$
$H(s)$: $\frac{\infty R_L g_m (C_L L_L s^2 + 1)}{(\infty g_m + 1)(C_L L_L s^2 + C_L R_L s + 1)}$

Filter 21

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ \frac{R_3}{C_3 R_3 s + 1},\ \infty,\ \infty,\ R_L\right)$
$H(s)$: $\frac{\infty R_L g_m}{\infty g_m + 1}$

Filter 22

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ \frac{R_3}{C_3 R_3 s + 1},\ \infty,\ \infty,\ \frac{1}{C_L s}\right)$
$H(s)$: $\frac{\infty g_m}{C_L s(\infty g_m + 1)}$

Filter 23

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ \frac{R_3}{C_3 R_3 s + 1},\ \infty,\ \infty,\ \frac{R_L}{C_L R_L s + 1}\right)$
$H(s)$: $\frac{\infty R_L g_m}{(\infty g_m + 1)(C_L R_L s + 1)}$

Filter 24

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ \frac{R_3}{C_3 R_3 s + 1},\ \infty,\ \infty,\ R_L + \frac{1}{C_L s}\right)$
$H(s)$: $\frac{\infty g_m (C_L R_L s + 1)}{C_L s(\infty g_m + 1)}$

Filter 25

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ \frac{R_3}{C_3 R_3 s + 1},\ \infty,\ \infty,\ L_L s + \frac{1}{C_L s}\right)$
$H(s)$: $\frac{\infty g_m (C_L L_L s^2 + 1)}{C_L s(\infty g_m + 1)}$

Filter 26

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ \frac{R_3}{C_3 R_3 s + 1},\ \infty,\ \infty,\ \frac{L_L s}{C_L L_L s^2 + 1}\right)$
$H(s)$: $\frac{\infty L_L g_m s}{(\infty g_m + 1)(C_L L_L s^2 + 1)}$

Filter 27

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ \frac{R_3}{C_3 R_3 s + 1},\ \infty,\ \infty,\ L_L s + R_L + \frac{1}{C_L s}\right)$
$H(s)$: $\frac{\infty g_m (C_L L_L s^2 + C_L R_L s + 1)}{C_L s(\infty g_m + 1)}$

Filter 28

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

Filter 29

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ \frac{R_3}{C_3 R_3 s + 1},\ \infty,\ \infty,\ \frac{L_L s}{C_L L_L s^2 + 1} + R_L\right)$
$H(s)$: $\frac{\infty g_m (C_L L_L R_L s^2 + L_L s + R_L)}{(\infty g_m + 1)(C_L L_L s^2 + 1)}$

Filter 30

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ \frac{R_3}{C_3 R_3 s + 1},\ \infty,\ \infty,\ \frac{R_L\left(L_L s + \frac{1}{C_L s}\right)}{L_L s + R_L + \frac{1}{C_L s}}\right)$
$H(s)$: $\frac{\infty R_L g_m (C_L L_L s^2 + 1)}{(\infty g_m + 1)(C_L L_L s^2 + C_L R_L s + 1)}$

Filter 31

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ R_3 + \frac{1}{C_3 s},\ \infty,\ \infty,\ R_L\right)$
$H(s)$: $\frac{\infty R_L g_m}{\infty g_m + 1}$

Filter 32

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ R_3 + \frac{1}{C_3 s},\ \infty,\ \infty,\ \frac{1}{C_L s}\right)$
$H(s)$: $\frac{\infty g_m}{C_L s(\infty g_m + 1)}$

Filter 33

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ R_3+\frac{1}{C_3 s},\ \infty,\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$
$H(s)$: $\frac{\infty R_3 g_m}{(\infty g_m+1)(C_L R_L s+1)}$

Filter 34

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ R_3+\frac{1}{C_3 s},\ \infty,\ \infty,\ R_L+\frac{1}{C_L s}\right)$
$H(s)$: $\frac{\infty g_m(C_L R_L s+1)}{C_L s(\infty g_m+1)}$

Filter 35

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ R_3+\frac{1}{C_3 s},\ \infty,\ \infty,\ L_L s+\frac{1}{C_L s}\right)$
$H(s)$: $\frac{\infty g_m(C_L L_L s^2+1)}{C_L s(\infty g_m+1)}$

Filter 36

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ R_3+\frac{1}{C_3 s},\ \infty,\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$
$H(s)$: $\frac{\infty L_L g_m s}{(\infty g_m+1)(C_L L_L s^2+1)}$

Filter 37

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ R_3+\frac{1}{C_3 s},\ \infty,\ \infty,\ L_L s+R_L+\frac{1}{C_L s}\right)$
$H(s)$: $\frac{\infty g_m(C_L L_L s^2+C_L R_L s+1)}{C_L s(\infty g_m+1)}$

Filter 38

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

Filter 39

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ R_3+\frac{1}{C_3 s},\ \infty,\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}+R_L\right)$
$H(s)$: $\frac{\infty g_m(C_L L_L R_L s^2+L_L s+R_L)}{(\infty g_m+1)(C_L L_L s^2+1)}$

Filter 40

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ R_3+\frac{1}{C_3 s},\ \infty,\ \infty,\ \frac{R_L\left(L_L s+\frac{1}{C_L s}\right)}{L_L s+R_L+\frac{1}{C_L s}}\right)$
$H(s)$: $\frac{\infty R_L g_m(C_L L_L s^2+1)}{(\infty g_m+1)(C_L L_L s^2+C_L R_L s+1)}$

Filter 41

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ L_3 s+\frac{1}{C_3 s},\ \infty,\ \infty,\ R_L\right)$
$H(s)$: $\frac{\infty R_L g_m}{\infty g_m+1}$

Filter 42

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ L_3 s+\frac{1}{C_3 s},\ \infty,\ \infty,\ \frac{1}{C_L s}\right)$
$H(s)$: $\frac{\infty g_m}{C_L s(\infty g_m+1)}$

Filter 43

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ L_3 s+\frac{1}{C_3 s},\ \infty,\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$
$H(s)$: $\frac{\infty R_L g_m}{(\infty g_m+1)(C_L R_L s+1)}$

Filter 44

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ L_3 s+\frac{1}{C_3 s},\ \infty,\ \infty,\ R_L+\frac{1}{C_L s}\right)$
$H(s)$: $\frac{\infty g_m(C_L R_L s+1)}{C_L s(\infty g_m+1)}$

Filter 45

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ L_3 s+\frac{1}{C_3 s},\ \infty,\ \infty,\ L_L s+\frac{1}{C_L s}\right)$
$H(s)$: $\frac{\infty g_m(C_L L_L s^2+1)}{C_L s(\infty g_m+1)}$

Filter 46

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ L_3 s+\frac{1}{C_3 s},\ \infty,\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$
$H(s)$: $\frac{\infty L_L g_m s}{(\infty g_m+1)(C_L L_L s^2+1)}$

Filter 47

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ L_3 s+\frac{1}{C_3 s},\ \infty,\ \infty,\ L_L s+R_L+\frac{1}{C_L s}\right)$
$H(s)$: $\frac{\infty g_m(C_L L_L s^2+C_L R_L s+1)}{C_L s(\infty g_m+1)}$

Filter 48

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

Filter 49

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ L_3 s+\frac{1}{C_3 s},\ \infty,\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}+R_L\right)$
$H(s)$: $\frac{\infty g_m\left(C_L L_L R_L s^2+L_L s+R_L\right)}{(\infty g_m+1)(C_L L_L s^2+1)}$

Filter 50

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ L_3 s+\frac{1}{C_3 s},\ \infty,\ \infty,\ \frac{R_L\left(L_L s+\frac{1}{C_{L^*}}\right)}{L_L s+R_L+\frac{1}{C_{L^*}}}\right)$
$H(s)$: $\frac{\infty R_L g_m\left(C_L L_L s^2+1\right)}{(\infty g_m+1)(C_L L_L s^2+C_L R_L s+1)}$

Filter 51

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ \frac{L_3 s}{C_3 L_3 s^2+1},\ \infty,\ \infty,\ R_L\right)$
$H(s)$: $\frac{\infty R_L g_m}{\infty g_m+1}$

Filter 52

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ \frac{L_3 s}{C_3 L_3 s^2+1},\ \infty,\ \infty,\ \frac{1}{C_L s}\right)$
$H(s)$: $\frac{\infty g_m}{C_L s(\infty g_m+1)}$

Filter 53

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ \frac{L_3 s}{C_3 L_3 s^2+1},\ \infty,\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$
$H(s)$: $\frac{\infty R_L g_m}{(\infty g_m+1)(C_L R_L s+1)}$

Filter 54

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ \frac{L_3 s}{C_3 L_3 s^2+1},\ \infty,\ \infty,\ R_L+\frac{1}{C_L s}\right)$
$H(s)$: $\frac{\infty g_m\left(C_L R_L s+1\right)}{C_L s(\infty g_m+1)}$

Filter 55

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ \frac{L_3 s}{C_3 L_3 s^2+1},\ \infty,\ \infty,\ L_L s+\frac{1}{C_L s}\right)$
$H(s)$: $\frac{\infty g_m\left(C_L L_L s^2+1\right)}{C_L s(\infty g_m+1)}$

Filter 56

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ \frac{L_3 s}{C_3 L_3 s^2+1},\ \infty,\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$
$H(s)$: $\frac{\infty L_L g_m s}{(\infty g_m+1)(C_L L_L s^2+1)}$

Filter 57

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ \frac{L_3 s}{C_3 L_3 s^2+1},\ \infty,\ \infty,\ L_L s+R_L+\frac{1}{C_L s}\right)$
$H(s)$: $\frac{\infty g_m\left(C_L L_L s^2+C_L R_L s+1\right)}{C_L s(\infty g_m+1)}$

Filter 58

Filter Type: BP
$Z(s)$: $\left(\infty,\ \infty,\ \frac{L_3 s}{C_3 L_3 s^2+1},\ \infty,\ \infty,\ \frac{1}{C_L s+\frac{1}{R_L}+\frac{1}{L_{L^*}}}\right)$
$H(s)$: $\frac{\infty L_L R_L g_m s}{(\infty g_m+1)(C_L L_L R_L s^2+L_L s+R_L)}$
Q: $C_L R_L \sqrt{\frac{1}{C_L L_L}}$
ω_0: $\sqrt{\frac{1}{C_L L_L}}$
Bandwidth: $\frac{1}{C_L R_L}$

Filter 59

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ \frac{L_3 s}{C_3 L_3 s^2+1},\ \infty,\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}+R_L\right)$
$H(s)$: $\frac{\infty g_m\left(C_L L_L R_L s^2+L_L s+R_L\right)}{(\infty g_m+1)(C_L L_L s^2+1)}$

Filter 60

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ \frac{L_3 s}{C_3 L_3 s^2+1},\ \infty,\ \infty,\ \frac{R_L\left(L_L s+\frac{1}{C_{L^*}}\right)}{L_L s+R_L+\frac{1}{C_{L^*}}}\right)$
$H(s)$: $\frac{\infty R_L g_m\left(C_L L_L s^2+1\right)}{(\infty g_m+1)(C_L L_L s^2+C_L R_L s+1)}$

Filter 61

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ L_3 s+R_3+\frac{1}{C_3 s},\ \infty,\ \infty,\ R_L\right)$
$H(s)$: $\frac{\infty R_L g_m}{\infty g_m+1}$

Filter 62

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ L_3 s+R_3+\frac{1}{C_3 s},\ \infty,\ \infty,\ \frac{1}{C_L s}\right)$
$H(s)$: $\frac{\infty g_m}{C_L s(\infty g_m+1)}$

Filter 63

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ L_3 s+R_3+\frac{1}{C_3 s},\ \infty,\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$
$H(s)$: $\frac{\infty R_L g_m}{(\infty g_m+1)(C_L R_L s+1)}$

Filter 64

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ L_3 s+R_3+\frac{1}{C_3 s},\ \infty,\ \infty,\ R_L+\frac{1}{C_L s}\right)$
$H(s)$: $\frac{\infty g_m\left(C_L R_L s+1\right)}{C_L s(\infty g_m+1)}$

Filter 65

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ L_3 s + R_3 + \frac{1}{C_3 s},\ \infty,\ \infty,\ L_L s + \frac{1}{C_L s}\right)$
$H(s)$: $\frac{\infty g_m \left(C_L L_L s^2 + 1\right)}{C_L s (\infty g_m + 1)}$

Filter 66

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ L_3 s + R_3 + \frac{1}{C_3 s},\ \infty,\ \infty,\ \frac{L_L s}{C_L L_L s^2 + 1}\right)$
$H(s)$: $\frac{\infty L_L g_m s}{(\infty g_m + 1)\left(C_L L_L s^2 + 1\right)}$

Filter 67

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ L_3 s + R_3 + \frac{1}{C_3 s},\ \infty,\ \infty,\ L_L s + R_L + \frac{1}{C_L s}\right)$
$H(s)$: $\frac{\infty g_m \left(C_L L_L s^2 + C_L R_L s + 1\right)}{C_L (\infty g_m + 1)}$

Filter 68

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

Filter 69

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ L_3 s + R_3 + \frac{1}{C_3 s},\ \infty,\ \infty,\ \frac{L_L s}{C_L L_L s^2 + 1} + R_L\right)$
$H(s)$: $\frac{\infty g_m \left(C_L L_L R_L s^2 + L_L s + R_L\right)}{(\infty g_m + 1)\left(C_L L_L s^2 + 1\right)}$

Filter 70

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ L_3 s + R_3 + \frac{1}{C_3 s},\ \infty,\ \infty,\ \frac{R_L \left(L_L s + \frac{1}{C_L s}\right)}{L_L s + R_L + \frac{1}{C_L s}}\right)$
$H(s)$: $\frac{\infty R_L g_m \left(C_L L_L s^2 + 1\right)}{(\infty g_m + 1)\left(C_L L_L s^2 + C_L R_L s + 1\right)}$

Filter 71

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ \frac{1}{C_3 s + \frac{1}{R_3} + \frac{1}{L_3 s}},\ \infty,\ \infty,\ R_L\right)$
$H(s)$: $\frac{\infty R_L g_m}{\infty g_m + 1}$

Filter 72

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ \frac{1}{C_3 s + \frac{1}{R_3} + \frac{1}{L_3 s}},\ \infty,\ \infty,\ \frac{1}{C_L s}\right)$
$H(s)$: $\frac{\infty g_m}{C_L s (\infty g_m + 1)}$

Filter 73

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ \frac{1}{C_3 s + \frac{1}{R_3} + \frac{1}{L_3 s}},\ \infty,\ \infty,\ \frac{R_L}{C_L R_L s + 1}\right)$
$H(s)$: $\frac{\infty R_L g_m}{(\infty g_m + 1)(C_L R_L s + 1)}$

Filter 74

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ \frac{1}{C_3 s + \frac{1}{R_3} + \frac{1}{L_3 s}},\ \infty,\ \infty,\ R_L + \frac{1}{C_L s}\right)$
$H(s)$: $\frac{\infty g_m (C_L R_L s + 1)}{C_L s (\infty g_m + 1)}$

Filter 75

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ \frac{1}{C_3 s + \frac{1}{R_3} + \frac{1}{L_3 s}},\ \infty,\ \infty,\ L_L s + \frac{1}{C_L s}\right)$
$H(s)$: $\frac{\infty g_m \left(C_L L_L s^2 + 1\right)}{C_L s (\infty g_m + 1)}$

Filter 76

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ \frac{1}{C_3 s + \frac{1}{R_3} + \frac{1}{L_3 s}},\ \infty,\ \infty,\ \frac{L_L s}{C_L L_L s^2 + 1}\right)$
$H(s)$: $\frac{\infty L_L g_m s}{(\infty g_m + 1)\left(C_L L_L s^2 + 1\right)}$

Filter 77

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ \frac{1}{C_3 s + \frac{1}{R_3} + \frac{1}{L_3 s}},\ \infty,\ \infty,\ L_L s + R_L + \frac{1}{C_L s}\right)$
$H(s)$: $\frac{\infty g_m \left(C_L L_L s^2 + C_L R_L s + 1\right)}{C_L (\infty g_m + 1)}$

Filter 78

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

Filter 79

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ \frac{1}{C_3 s + \frac{1}{R_3} + \frac{1}{L_3 s}},\ \infty,\ \infty,\ \frac{L_L s}{C_L L_L s^2 + 1} + R_L\right)$
$H(s)$: $\frac{\infty g_m \left(C_L L_L R_L s^2 + L_L s + R_L\right)}{(\infty g_m + 1)\left(C_L L_L s^2 + 1\right)}$

Filter 80

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ \frac{1}{C_3 s+\frac{1}{R_3}+\frac{1}{L_3 s}},\ \infty,\ \infty,\ \frac{R_L\left(L_L s+\frac{1}{C_L s}\right)}{L_L s+R_L+\frac{1}{C_L s}}\right)$
$H(s)$: $\frac{\infty R_L g_m\left(C_L L_L s^2+1\right)}{(\infty g_m+1)(C_L L_L s^2+C_L R_L s+1)}$

Filter 81

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ \frac{L_3 s}{C_3 L_3 s^2+1}+R_3,\ \infty,\ \infty,\ R_L\right)$
$H(s)$: $\frac{\infty R_L g_m}{\infty g_m+1}$

Filter 82

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ \frac{L_3 s}{C_3 L_3 s^2+1}+R_3,\ \infty,\ \infty,\ \frac{1}{C_L s}\right)$
$H(s)$: $\frac{\infty g_m}{C_L s(\infty g_m+1)}$

Filter 83

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ \frac{L_3 s}{C_3 L_3 s^2+1}+R_3,\ \infty,\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$
$H(s)$: $\frac{\infty R_L g_m}{(\infty g_m+1)(C_L R_L s+1)}$

Filter 84

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ \frac{L_3 s}{C_3 L_3 s^2+1}+R_3,\ \infty,\ \infty,\ R_L+\frac{1}{C_L s}\right)$
$H(s)$: $\frac{\infty g_m(C_L R_L s+1)}{C_L s(\infty g_m+1)}$

Filter 85

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ \frac{L_3 s}{C_3 L_3 s^2+1}+R_3,\ \infty,\ \infty,\ L_L s+\frac{1}{C_L s}\right)$
$H(s)$: $\frac{\infty g_m\left(C_L L_L s^2+1\right)}{C_L s(\infty g_m+1)}$

Filter 86

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ \frac{L_3 s}{C_3 L_3 s^2+1}+R_3,\ \infty,\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$
$H(s)$: $\frac{\infty L_L g_m s}{(\infty g_m+1)(C_L L_L s^2+1)}$

Filter 87

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ \frac{L_3 s}{C_3 L_3 s^2+1}+R_3,\ \infty,\ \infty,\ L_L s+R_L+\frac{1}{C_L s}\right)$
$H(s)$: $\frac{\infty g_m\left(C_L L_L s^2+C_L R_L s+1\right)}{C_L s(\infty g_m+1)}$

Filter 88

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

Filter 89

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ \frac{L_3 s}{C_3 L_3 s^2+1}+R_3,\ \infty,\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}+R_L\right)$
$H(s)$: $\frac{\infty g_m\left(C_L L_L R_L s^2+L_L s+R_L\right)}{(\infty g_m+1)(C_L L_L s^2+1)}$

Filter 90

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ \frac{L_3 s}{C_3 L_3 s^2+1}+R_3,\ \infty,\ \infty,\ \frac{R_L\left(L_L s+\frac{1}{C_L s}\right)}{L_L s+R_L+\frac{1}{C_L s}}\right)$
$H(s)$: $\frac{\infty R_L g_m\left(C_L L_L s^2+1\right)}{(\infty g_m+1)(C_L L_L s^2+C_L R_L s+1)}$

Filter 91

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ \frac{R_3\left(L_3 s+\frac{1}{C_3 s}\right)}{L_3 s+R_3+\frac{1}{C_3 s}},\ \infty,\ \infty,\ R_L\right)$
$H(s)$: $\frac{\infty R_L g_m}{\infty g_m+1}$

Filter 92

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ \frac{R_3\left(L_3 s+\frac{1}{C_3 s}\right)}{L_3 s+R_3+\frac{1}{C_3 s}},\ \infty,\ \infty,\ \frac{1}{C_L s}\right)$
$H(s)$: $\frac{\infty g_m}{C_L s(\infty g_m+1)}$

Filter 93

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ \frac{R_3\left(L_3 s+\frac{1}{C_3 s}\right)}{L_3 s+R_3+\frac{1}{C_3 s}},\ \infty,\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$
$H(s)$: $\frac{\infty R_L g_m}{(\infty g_m+1)(C_L R_L s+1)}$

Filter 94

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ \frac{R_3\left(L_3 s+\frac{1}{C_3 s}\right)}{L_3 s+R_3+\frac{1}{C_3 s}},\ \infty,\ \infty,\ R_L+\frac{1}{C_L s}\right)$
$H(s)$: $\frac{\infty g_m(C_L R_L s+1)}{C_L s(\infty g_m+1)}$

Filter 95

Invalid filter
$Z(s)$: $\left(\infty,\ \infty,\ \frac{R_3\left(L_3 s+\frac{1}{C_3 s}\right)}{L_3 s+R_3+\frac{1}{C_3 s}},\ \infty,\ \infty,\ L_L s+\frac{1}{C_L s}\right)$
$H(s)$: $\frac{\infty g_m\left(C_L L_L s^2+1\right)}{C_L s(\infty g_m+1)}$

Filter 96

Invalid filter

$Z(s)$: $\left(\infty,\ \infty,\ \frac{R_3\left(L_3 s+\frac{1}{C_3 s}\right)}{L_3 s+R_3+\frac{1}{C_3 s}},\ \infty,\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$

$H(s)$: $\frac{\infty L_L g_m s}{(\infty g_m+1)(C_L L_L s^2+1)}$

Filter 97

Invalid filter

$Z(s)$: $\left(\infty,\ \infty,\ \frac{R_3\left(L_3 s+\frac{1}{C_3 s}\right)}{L_3 s+R_3+\frac{1}{C_3 s}},\ \infty,\ \infty,\ L_L s+R_L+\frac{1}{C_L s}\right)$

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

Filter 98

Filter Type: BP

$Z(s)$: $\left(\infty,\ \infty,\ \frac{R_3\left(L_3 s+\frac{1}{C_3 s}\right)}{L_3 s+R_3+\frac{1}{C_3 s}},\ \infty,\ \infty,\ \frac{1}{C_L s+\frac{1}{R_L}+\frac{1}{x_{L^*}}}\right)$

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

Q: $C_L R_L \sqrt{\frac{1}{C_L L_L}}$

ω_0: $\sqrt{\frac{1}{C_L L_L}}$

Bandwidth: $\frac{1}{C_L R_L}$

Filter 99

Invalid filter

$Z(s)$: $\left(\infty,\ \infty,\ \frac{R_3\left(L_3 s+\frac{1}{C_3 s}\right)}{L_3 s+R_3+\frac{1}{C_3 s}},\ \infty,\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}+R_L\right)$

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

Filter 100

Invalid filter

$Z(s)$: $\left(\infty,\ \infty,\ \frac{R_3\left(L_3 s+\frac{1}{C_3 s}\right)}{L_3 s+R_3+\frac{1}{C_3 s}},\ \infty,\ \infty,\ \frac{R_L\left(L_L s+\frac{1}{C_{L^*} s}\right)}{L_L s+R_L+\frac{1}{C_{L^*} s}}\right)$

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