

Experiment: TIA Z4 ZL

Filter 1

Invalid filter
 $Z(s)$: $(\infty, \infty, \infty, \infty, R_4, \infty, R_L)$

Filter 2

Invalid filter
 $Z(s)$: $\left(\infty, \infty, \infty, R_4, \infty, \frac{1}{C_L s}\right)$

Filter 3

Invalid filter
 $Z(s)$: $\left(\infty, \infty, \infty, R_4, \infty, \frac{R_L}{C_L R_L s + 1}\right)$

Filter 4

Invalid filter
 $Z(s)$: $\left(\infty, \infty, \infty, R_4, \infty, R_L + \frac{1}{C_L s}\right)$

Filter 5

Invalid filter
 $Z(s)$: $\left(\infty, \infty, \infty, R_4, \infty, L_L s + \frac{1}{C_L s}\right)$

Filter 6

Invalid filter
 $Z(s)$: $\left(\infty, \infty, \infty, R_4, \infty, \frac{L_L s}{C_L L_L s^2 + 1}\right)$

Filter 7

Invalid filter
 $Z(s)$: $\left(\infty, \infty, \infty, R_4, \infty, L_L s + R_L + \frac{1}{C_L s}\right)$

Filter 8

Filter Type: BP

$Z(s)$: $\left(\infty, \infty, \infty, R_4, \infty, \frac{1}{C_L s + \frac{1}{R_L + \frac{1}{L_L s}}}\right)$
 $H(s)$: $\frac{\infty L_L R_L g_m s}{(\infty g_m + 1)(C_L L_L R_L s^2 + L_L s + R_L)}$
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
 $Z(s)$: $\left(\infty, \infty, \infty, R_4, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L\right)$

Filter 10

Invalid filter
 $Z(s)$: $\left(\infty, \infty, \infty, R_4, \infty, \frac{R_L \left(L_L s + \frac{1}{C_L}\right)}{L_L s + R_L + \frac{1}{C_L s}}\right)$

Filter 11

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

Filter 12

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

Filter 13

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

Filter 14

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

Filter 15

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

Filter 16

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

Filter 17

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

Filter 18

Filter Type: BP

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

Filter 20

Invalid filter

$$Z(s)\colon \left(\infty,\infty,\infty,\frac{1}{C_4s},\infty,\frac{R_L\left(L_Ls+\frac{1}{C_L^2}\right)}{L_Ls+R_L+\frac{1}{C_L^2s}}\right)$$

Filter 21

Invalid filter

$$Z(s)\colon \left(\infty,\infty,\infty,\frac{R_4}{C_4R_4s+1},\infty,R_L\right)$$

Filter 22

Invalid filter

$$Z(s)\colon \left(\infty,\infty,\infty,\frac{R_4}{C_4R_4s+1},\infty,\frac{1}{C_Ls}\right)$$

Filter 23

Invalid filter

$$Z(s)\colon \left(\infty,\infty,\infty,\frac{R_4}{C_4R_4s+1},\infty,\frac{R_L}{C_LR_Ls+1}\right)$$

Filter 24

Invalid filter

$$Z(s)\colon \left(\infty,\infty,\infty,\frac{R_4}{C_4R_4s+1},\infty,R_L+\frac{1}{C_Ls}\right)$$

Filter 25

Invalid filter

$$Z(s)\colon \left(\infty,\infty,\infty,\frac{R_4}{C_4R_4s+1},\infty,L_Ls+\frac{1}{C_Ls}\right)$$

Filter 26

Invalid filter

$$Z(s)\colon \left(\infty,\infty,\infty,\frac{R_4}{C_4R_4s+1},\infty,\frac{L_Ls}{C_LL_Ls^2+1}\right)$$

Filter 27

Invalid filter

$$Z(s)\colon \left(\infty,\infty,\infty,\frac{R_4}{C_4R_4s+1},\infty,L_Ls+R_L+\frac{1}{C_Ls}\right)$$

Filter 28

Filter Type: BP

$$Z(s)\colon \left(\infty,\infty,\infty,\frac{R_4}{C_4R_4s+1},\infty,\frac{1}{C_Ls+\frac{1}{R_L}+\frac{1}{L_Ls}}\right)$$

$$H(s)\colon \frac{\infty L_LR_Lg_{m,s}}{(\infty g_{m,s}+1)(C_LL_LR_Ls^2+L_Ls+R_L)}$$

$$\mathbf{Q}\colon C_LR_L\sqrt{\frac{1}{C_LL_L}}$$

$$\omega_0\colon \sqrt{\frac{1}{C_LL_L}}$$

$$\mathbf{Bandwidth}\colon \frac{1}{C_LR_L}$$

Filter 29

Invalid filter

$$Z(s)\colon \left(\infty,\infty,\infty,\frac{R_4}{C_4R_4s+1},\infty,\frac{L_Ls}{C_LL_Ls^2+1}+R_L\right)$$

Filter 30

Invalid filter

$$Z(s)\colon \left(\infty,\infty,\infty,\frac{R_4}{C_4R_4s+1},\infty,\frac{R_L\left(L_Ls+\frac{1}{C_L^2}\right)}{L_Ls+R_L+\frac{1}{C_L^2s}}\right)$$

Filter 31

Invalid filter

$$Z(s)\colon \left(\infty,\infty,\infty,R_4+\frac{1}{C_4s},\infty,R_L\right)$$

Filter 32

Invalid filter

$$Z(s)\colon \left(\infty,\infty,\infty,R_4+\frac{1}{C_4s},\infty,\frac{1}{C_Ls}\right)$$

Filter 33

Invalid filter

$$Z(s)\colon \left(\infty,\infty,\infty,R_4+\frac{1}{C_4s},\infty,\frac{R_L}{C_LR_Ls+1}\right)$$

Filter 34

Invalid filter

$$Z(s)\colon \left(\infty,\infty,\infty,R_4+\frac{1}{C_4s},\infty,R_L+\frac{1}{C_Ls}\right)$$

Filter 35

Invalid filter

$$Z(s)\colon \left(\infty,\infty,\infty,R_4+\frac{1}{C_4s},\infty,L_Ls+\frac{1}{C_Ls}\right)$$

Filter 36

Invalid filter

$$Z(s)\colon \left(\infty,\infty,\infty,R_4+\frac{1}{C_4s},\infty,\frac{L_Ls}{C_LL_Ls^2+1}\right)$$

Filter 37

Invalid filter

$$Z(s)\colon \left(\infty,\infty,\infty,R_4+\frac{1}{C_4s},\infty,L_Ls+R_L+\frac{1}{C_Ls}\right)$$

Filter 38

Filter Type: BP

$$Z(s)\colon \left(\infty,\infty,\infty,R_4+\frac{1}{C_4s},\infty,\frac{1}{C_Ls+\frac{1}{R_L}+\frac{1}{L_Ls}}\right)$$

$$H(s)\colon \frac{\infty L_LR_Lg_{m,s}}{(\infty g_{m,s}+1)(C_LL_LR_Ls^2+L_Ls+R_L)}$$

$$\mathbf{Q}\colon C_LR_L\sqrt{\frac{1}{C_LL_L}}$$

$$\omega_0\colon \sqrt{\frac{1}{C_LL_L}}$$

$$\mathbf{Bandwidth}\colon \frac{1}{C_LR_L}$$

Filter 39

Invalid filter

$$Z(s)\colon \left(\infty, \infty, \infty, R_4 + \frac{1}{C_4s}, \infty, \frac{L_4s}{C_L L_L s^2 + 1} + R_L\right)$$

Filter 40

Invalid filter

$$Z(s)\colon \left(\infty, \infty, \infty, R_4 + \frac{1}{C_4s}, \infty, \frac{R_L\left(L_Ls + \frac{1}{C_L}\right)}{L_Ls + R_L + \frac{1}{C_L^2}}\right)$$

Filter 41

Invalid filter

$$Z(s)\colon \left(\infty, \infty, \infty, L_4s + \frac{1}{C_4s}, \infty, R_L\right)$$

Filter 42

Invalid filter

$$Z(s)\colon \left(\infty, \infty, \infty, L_4s + \frac{1}{C_4s}, \infty, \frac{1}{C_Ls}\right)$$

Filter 43

Invalid filter

$$Z(s)\colon \left(\infty, \infty, \infty, L_4s + \frac{1}{C_4s}, \infty, \frac{R_L}{C_LR_Ls + 1}\right)$$

Filter 44

Invalid filter

$$Z(s)\colon \left(\infty, \infty, \infty, L_4s + \frac{1}{C_4s}, \infty, R_L + \frac{1}{C_Ls}\right)$$

Filter 45

Invalid filter

$$Z(s)\colon \left(\infty, \infty, \infty, L_4s + \frac{1}{C_4s}, \infty, L_Ls + \frac{1}{C_Ls}\right)$$

Filter 46

Invalid filter

$$Z(s)\colon \left(\infty, \infty, \infty, L_4s + \frac{1}{C_4s}, \infty, \frac{L_4s}{C_L L_L s^2 + 1}\right)$$

Filter 47

Invalid filter

$$Z(s)\colon \left(\infty, \infty, \infty, L_4s + \frac{1}{C_4s}, \infty, L_Ls + R_L + \frac{1}{C_Ls}\right)$$

Filter 48

Filter Type: BP

$$Z(s)\colon \left(\infty, \infty, \infty, L_4s + \frac{1}{C_4s}, \infty, \frac{1}{C_Ls + \frac{1}{R_L} + \frac{1}{L_Ls}}\right)$$

$$H(s)\colon \frac{\infty L_LR_Lg_0s}{(\infty g_0 + 1)(C_L L_LR_Ls^2 + L_Ls + R_L)}$$

$$\mathbf{Q}\colon C_LR_L\sqrt{\frac{1}{C_LL_L}}$$

$$\omega_0\colon \sqrt{\frac{1}{C_LL_L}}$$

$$\mathbf{Bandwidth}\colon \frac{1}{C_LR_L}$$

Filter 49

Invalid filter

$$Z(s)\colon \left(\infty, \infty, \infty, L_4s + \frac{1}{C_4s}, \infty, \frac{L_4s}{C_L L_L s^2 + 1} + R_L\right)$$

Filter 50

Invalid filter

$$Z(s)\colon \left(\infty, \infty, \infty, L_4s + \frac{1}{C_4s}, \infty, \frac{R_L\left(L_Ls + \frac{C_LR_L}{C_L}\right)}{L_Ls + R_L + \frac{1}{C_L^2}}\right)$$

Filter 51

Invalid filter

$$Z(s)\colon \left(\infty, \infty, \infty, \frac{L_4s}{C_4L_4s^2 + 1}, \infty, R_L\right)$$

Filter 52

Invalid filter

$$Z(s)\colon \left(\infty, \infty, \infty, \frac{L_4s}{C_4L_4s^2 + 1}, \infty, \frac{1}{C_Ls}\right)$$

Filter 53

Invalid filter

$$Z(s)\colon \left(\infty, \infty, \infty, \frac{L_4s}{C_4L_4s^2 + 1}, \infty, \frac{R_L}{C_LR_Ls + 1}\right)$$

Filter 54

Invalid filter

$$Z(s)\colon \left(\infty, \infty, \infty, \frac{L_4s}{C_4L_4s^2 + 1}, \infty, R_L + \frac{1}{C_Ls}\right)$$

Filter 55

Invalid filter

$$Z(s)\colon \left(\infty, \infty, \infty, \frac{L_4s}{C_4L_4s^2 + 1}, \infty, L_Ls + \frac{1}{C_Ls}\right)$$

Filter 56

Invalid filter

$$Z(s)\colon \left(\infty, \infty, \infty, \frac{L_4s}{C_4L_4s^2 + 1}, \infty, \frac{L_4s}{C_LL_Ls^2 + 1}\right)$$

Filter 57

Invalid filter

$$Z(s)\colon \left(\infty, \infty, \infty, \frac{L_4s}{C_4L_4s^2 + 1}, \infty, L_Ls + R_L + \frac{1}{C_Ls}\right)$$

Filter 58

Filter Type: BP

$$Z(s)\colon \left(\infty, \infty, \infty, \frac{L_4s}{C_4L_4s^2 + 1}, \infty, \frac{1}{C_Ls + \frac{1}{R_L} + \frac{1}{L_Ls}}\right)$$

$$H(s)\colon \frac{\infty L_LR_Lg_0s}{(\infty g_0 + 1)(C_L L_LR_Ls^2 + L_Ls + R_L)}$$

$$\mathbf{Q}\colon C_LR_L\sqrt{\frac{1}{C_LL_L}}$$

$$\omega_0\colon \sqrt{\frac{1}{C_LL_L}}$$

$$\mathbf{Bandwidth}\colon \frac{1}{C_LR_L}$$

Filter 59

Invalid filter
 $Z(s)$: $\left(\infty, \infty, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L\right)$

Filter 60

Invalid filter
 $Z(s)$: $\left(\infty, \infty, \infty, \frac{L_4 s}{C_4 L_4 s^2 + 1}, \infty, \frac{R_L \left(L_L s + \frac{1}{C_L^2}\right)}{L_L s + R_L + \frac{1}{C_L^2}}\right)$

Filter 61

Invalid filter
 $Z(s)$: $\left(\infty, \infty, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, R_L\right)$

Filter 62

Invalid filter
 $Z(s)$: $\left(\infty, \infty, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, \frac{1}{C_L s}\right)$

Filter 63

Invalid filter
 $Z(s)$: $\left(\infty, \infty, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, \frac{R_L}{C_L R_L s + 1}\right)$

Filter 64

Invalid filter
 $Z(s)$: $\left(\infty, \infty, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, R_L + \frac{1}{C_L s}\right)$

Filter 65

Invalid filter
 $Z(s)$: $\left(\infty, \infty, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, L_L s + \frac{1}{C_L s}\right)$

Filter 66

Invalid filter
 $Z(s)$: $\left(\infty, \infty, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, \frac{L_L s}{C_L L_4 s^2 + 1}\right)$

Filter 67

Invalid filter
 $Z(s)$: $\left(\infty, \infty, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, L_L s + R_L + \frac{1}{C_L s}\right)$

Filter 68

Filter Type: BP
 $Z(s)$: $\left(\infty, \infty, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}}\right)$
 $H(s)$: $\frac{\omega L_L R_L g_m s}{(\infty g_m + 1)(C_L L_L R_L s^2 + L_L s + R_L)}$
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 69

Invalid filter
 $Z(s)$: $\left(\infty, \infty, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, \frac{L_4 s}{C_L L_L s^2 + 1} + R_L\right)$

Filter 70

Invalid filter
 $Z(s)$: $\left(\infty, \infty, \infty, L_4 s + R_4 + \frac{1}{C_4 s}, \infty, \frac{R_L \left(L_L s + \frac{1}{C_L^2}\right)}{L_L s + R_L + \frac{1}{C_L^2}}\right)$

Filter 71

Invalid filter
 $Z(s)$: $\left(\infty, \infty, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, R_L\right)$

Filter 72

Invalid filter
 $Z(s)$: $\left(\infty, \infty, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, \frac{1}{C_L s}\right)$

Filter 73

Invalid filter
 $Z(s)$: $\left(\infty, \infty, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, \frac{R_L}{C_L R_L s + 1}\right)$

Filter 74

Invalid filter
 $Z(s)$: $\left(\infty, \infty, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, R_L + \frac{1}{C_L s}\right)$

Filter 75

Invalid filter
 $Z(s)$: $\left(\infty, \infty, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, L_L s + \frac{1}{C_L s}\right)$

Filter 76

Invalid filter
 $Z(s)$: $\left(\infty, \infty, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, \frac{L_4 s}{C_L L_L s^2 + 1}\right)$

Filter 77

Invalid filter
 $Z(s)$: $\left(\infty, \infty, \infty, \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}}, \infty, L_L s + R_L + \frac{1}{C_L s}\right)$

Filter 78**Filter Type:** BP

$$Z(s): \left(\infty, \infty, \infty, \frac{1}{C_4 s + \frac{1}{R_4 + \frac{1}{L_4 s}}}, \infty, \frac{1}{C_L s + \frac{1}{R_L}} \right)$$

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

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

$$\omega_0: \sqrt{\frac{1}{C_L L_L}}$$

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

Filter 79

Invalid filter

$$Z(s): \left(\infty, \infty, \infty, \frac{1}{C_4 s + \frac{1}{R_4 + \frac{1}{L_4 s}}}, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$$

Filter 80

Invalid filter

$$Z(s): \left(\infty, \infty, \infty, \frac{1}{C_4 s + \frac{1}{R_4 + \frac{1}{L_4 s}}}, \infty, \frac{R_L \left(L_L s + \frac{1}{C_L} \right)}{L_L s + R_L + \frac{R_L}{C_L s}} \right)$$

Filter 81

Invalid filter

$$Z(s): \left(\infty, \infty, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_4, \infty, R_L \right)$$

Filter 82

Invalid filter

$$Z(s): \left(\infty, \infty, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_4, \infty, \frac{1}{C_L s} \right)$$

Filter 83

Invalid filter

$$Z(s): \left(\infty, \infty, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_4, \infty, \frac{R_L}{C_L R_L s + 1} \right)$$

Filter 84

Invalid filter

$$Z(s): \left(\infty, \infty, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_4, \infty, R_L + \frac{1}{C_L s} \right)$$

Filter 85

Invalid filter

$$Z(s): \left(\infty, \infty, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_4, \infty, L_L s + \frac{1}{C_L s} \right)$$

Filter 86

Invalid filter

$$Z(s): \left(\infty, \infty, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_4, \infty, \frac{L_L s}{C_L L_L s^2 + 1} \right)$$

Filter 87

Invalid filter

$$Z(s): \left(\infty, \infty, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_4, \infty, L_L s + R_L + \frac{1}{C_L s} \right)$$

Filter 88**Filter Type:** BP

$$Z(s): \left(\infty, \infty, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_4, \infty, \frac{1}{C_L s + \frac{1}{R_L + \frac{1}{L_L s}}} \right)$$

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

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

$$\omega_0: \sqrt{\frac{1}{C_L L_L}}$$

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

Filter 89

Invalid filter

$$Z(s): \left(\infty, \infty, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_4, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_L \right)$$

Filter 90

Invalid filter

$$Z(s): \left(\infty, \infty, \infty, \frac{L_L s}{C_L L_L s^2 + 1} + R_4, \infty, \frac{R_L \left(L_L s + \frac{1}{C_L} \right)}{L_L s + R_L + \frac{R_L}{C_L s}} \right)$$

Filter 91

Invalid filter

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

Filter 92

Invalid filter

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

Filter 93

Invalid filter

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

Filter 94

Invalid filter

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

Filter 95

Invalid filter

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

Filter 96

Invalid filter

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

Filter 97

Invalid filter

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

Filter 98

Filter Type: BP

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

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

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

$$\omega_0: \sqrt{\frac{1}{C_L L_L}}$$

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

Filter 99

Invalid filter

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

Filter 100

Invalid filter

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