Experiment: TIA Z4 ZL

Filter 1

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

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

Filter 11

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

Filter 12

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

Filter 13

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

Filter 14

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

Filter 15

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

Filter 16

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

Filter 17

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

Filter 18

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

Filter 20

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

Filter 21

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

Filter 22

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

Filter 23

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

Filter 24

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

Filter 25

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

Filter 26

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

Filter 27

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

Filter 28

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

Filter 30

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

Filter 31

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

Filter 32

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

Filter 33

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

Filter 34

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

Filter 35

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

Filter 36

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

Filter 37

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

Filter 38

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

Filter 40

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

Filter 41

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

Filter 42

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

Filter 43

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

Filter 44

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

Filter 45

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

Filter 46

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

Filter 47

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

Filter 48

Filter Type: BP
$Z(s)$: $\left(\infty,\ \infty,\ \infty,\ L_4 s+\frac{1}{C_4 s},\ \infty,\ \frac{1}{C_L s+\frac{1}{R_L}+\frac{1}{L_L s}}\right)$
$H(s)$: $\frac{\infty L_L R_L g_m s}{(\infty g_m+1)(C_L L_L R_L s^2+L_L s+R_L)}$
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 49

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

Filter 50

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

Filter 51

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

Filter 52

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

Filter 53

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

Filter 54

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

Filter 55

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

Filter 56

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

Filter 57

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

Filter 58

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

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

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

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

Filter 70

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

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

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

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

$H(s)$: $\frac{\infty L_L R_L g_{m_2} s}{(\infty g_{m_1}+1)(C_L L_L R_L s^2+L_L s+R_L)}$

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 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

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

Filter 81

Invalid filter

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

Filter 82

Invalid filter

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

Filter 83

Invalid filter

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

Filter 84

Invalid filter

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

Filter 85

Invalid filter

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

Filter 86

Invalid filter

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

Filter 87

Invalid filter

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

Filter 88

Filter Type: BP

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

$H(s)$: $\frac{\infty L_L R_L g_{m_2} s}{(\infty g_{m_1}+1)(C_L L_L R_L s^2+L_L s+R_L)}$

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

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

Filter 90

Invalid filter

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

Filter 91

Invalid filter

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

Filter 92

Invalid filter

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

Filter 93

Invalid filter

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

Filter 94

Invalid filter

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

Filter 95

Invalid filter

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

Filter 96

Invalid filter

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

Filter 97

Invalid filter

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

Filter 98

Filter Type: BP

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

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

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 99

Invalid filter

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

Filter 100

Invalid filter

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