Experiment: TIA Z2 Z4 ZL

Filter 1

Invalid filter
$Z(s)$: $(\infty,\ R_2,\ \infty,\ R_4,\ \infty,\ R_L)$

Filter 2

Invalid filter
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ R_4,\ \infty,\ \frac{1}{C_L s}\right)$

Filter 3

Invalid filter
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ R_4,\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$

Filter 4

Invalid filter
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ R_4,\ \infty,\ R_L+\frac{1}{C_L s}\right)$

Filter 5

Filter Type: BS
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ R_4,\ \infty,\ L_L s+\frac{1}{C_L s}\right)$
$H(s)$: $\frac{R_4\left(C_L L_L s^2+1\right)}{2C_L L_L s^2+C_L R_4 s+2}$
Q: $\frac{2L_L\sqrt{\frac{1}{C_L L_L}}}{R_4}$
ω_0: $\sqrt{\frac{1}{C_L L_L}}$
Bandwidth: $\frac{R_4}{2L_L}$

Filter 6

Filter Type: BP
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ R_4,\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$
$H(s)$: $\frac{L_L R_4 s}{C_L L_L R_4 s^2+2L_L s+R_4}$
Q: $\frac{C_L R_4\sqrt{\frac{1}{C_L L_L}}}{2}$
ω_0: $\sqrt{\frac{1}{C_L L_L}}$
Bandwidth: $\frac{2}{C_L R_4}$

Filter 7

Filter Type: GE
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ R_4,\ \infty,\ L_L s+R_L+\frac{1}{C_L s}\right)$
$H(s)$: $\frac{R_4\left(C_L L_L s^2+C_L R_L s+1\right)}{2C_L L_L s^2+C_L R_4 s+2C_L R_L s+2}$
Q: $\frac{2L_L\sqrt{\frac{1}{C_L L_L}}}{R_4+2R_L}$
ω_0: $\sqrt{\frac{1}{C_L L_L}}$
Bandwidth: $\frac{R_4+2R_L}{2L_L}$
Qz: $\frac{L_L\sqrt{\frac{1}{C_L L_L}}}{R_L}$

Filter 8

Filter Type: BP
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ R_4,\ \infty,\ \frac{1}{C_L s+\frac{1}{R_L+\frac{1}{L_L s}}}\right)$
$H(s)$: $\frac{L_L R_4 R_L s}{C_L L_L R_4 R_L s^2+L_L R_4 s+2L_L R_L s+R_4 R_L}$
Q: $\frac{C_L R_4\sqrt{\frac{1}{C_L L_L}}}{R_4+2R_L}$
ω_0: $\sqrt{\frac{1}{C_L L_L}}$
Bandwidth: $\frac{R_4+2R_L}{C_L R_4 R_L}$

Filter 9

Filter Type: GE
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ R_4,\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}+R_L\right)$
$H(s)$: $\frac{R_4\left(C_L L_L R_L s^2+L_L s+R_L\right)}{C_L L_L R_4 s^2+2C_L L_L R_L s^2+2L_L s+R_4+2R_L}$
Q: $\frac{C_L\sqrt{\frac{1}{C_L L_L}}\left(R_4+2R_L\right)}{2}$
ω_0: $\sqrt{\frac{1}{C_L L_L}}$
Bandwidth: $\frac{2}{C_L(R_4+2R_L)}$
Qz: $C_L R_L\sqrt{\frac{1}{C_L L_L}}$

Filter 10

Filter Type: BS
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ R_4,\ \infty,\ \frac{R_L\left(L_L s+\frac{1}{C_L s}\right)}{L_L s+R_L+\frac{1}{C_L s}}\right)$
$H(s)$: $\frac{R_4 R_L\left(C_L L_L s^2+1\right)}{C_L L_L R_4 s^2+2C_L L_L R_L s^2+C_L R_4 R_L s+R_4+2R_L}$
Q: $\frac{L_L\sqrt{\frac{1}{C_L L_L}}\left(R_4+2R_L\right)}{R_4 R_L}$
ω_0: $\sqrt{\frac{1}{C_L L_L}}$
Bandwidth: $\frac{R_4 R_L}{L_L(R_4+2R_L)}$

Filter 11

Invalid filter
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ \frac{1}{C_4 s},\ \infty,\ R_L\right)$

Filter 12

Invalid filter
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ \frac{1}{C_4 s},\ \infty,\ \frac{1}{C_L s}\right)$

Filter 13

Invalid filter
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ \frac{1}{C_4 s},\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$

Filter 14

Invalid filter
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ \frac{1}{C_4 s},\ \infty,\ R_L+\frac{1}{C_L s}\right)$

Filter 15

Invalid filter
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ \frac{1}{C_4 s},\ \infty,\ L_L s + \frac{1}{C_L s}\right)$

Filter 16

Invalid filter
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ \frac{1}{C_4 s},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$

Filter 17

Invalid filter
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ \frac{1}{C_4 s},\ \infty,\ L_L s + R_L + \frac{1}{C_L s}\right)$

Filter 18

Filter Type: BP
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ \frac{1}{C_4 s},\ \infty,\ \frac{1}{C_L s+\frac{1}{R_L}+\frac{1}{L_L s}}\right)$
$H(s)$: $\frac{L_L R_L s}{2C_4 L_L R_L s^2+C_L L_L R_L s^2+L_L s+R_L}$
Q: $R_L\sqrt{\frac{1}{L_L(2C_4+C_L)}}\,(2C_4+C_L)$
ω_0: $\sqrt{\frac{1}{L_L(2C_4+C_L)}}$
Bandwidth: $\frac{1}{R_L(2C_4+C_L)}$

Filter 19

Invalid filter
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ \frac{1}{C_4 s},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1} + R_L\right)$

Filter 20

Filter Type: BS
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ \frac{1}{C_4 s},\ \infty,\ \frac{R_L\left(L_L s+\frac{1}{C_L s}\right)}{L_L s+R_L+\frac{1}{C_L s}}\right)$
$H(s)$: $\frac{R_L(C_L L_L s^2+1)}{2C_4 C_L L_L R_L s^3+2C_4 R_L s+C_L L_L s^2+C_L R_L s+1}$
Q: $\frac{C_L L_L+\sqrt{C_L L_L}}{R_L(2C_4+C_L)}$
ω_0: $\sqrt{\frac{1}{C_L L_L}}$
Bandwidth: $\frac{R_L(2C_4+C_L)}{C_L L_L}$

Filter 21

Invalid filter
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ \frac{R_4}{C_4 R_4 s+1},\ \infty,\ R_L\right)$

Filter 22

Invalid filter
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ \frac{R_4}{C_4 R_4 s+1},\ \infty,\ \frac{1}{C_L s}\right)$

Filter 23

Invalid filter
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ \frac{R_4}{C_4 R_4 s+1},\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$

Filter 24

Filter Type: Invalid011
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ \frac{R_4}{C_4 R_4 s+1},\ \infty,\ R_L + \frac{1}{C_L s}\right)$
$H(s)$: $\frac{R_4(C_L R_L s+1)}{2C_4 C_L R_4 R_L s^2+2C_4 R_4 s+C_L R_4 s+2C_L R_L s+2}$
Q: $\frac{2C_4 C_L R_4 R_L\sqrt{\frac{1}{C_4 C_L R_4 R_L}}}{2C_4 R_4+C_L R_4+2C_L R_L}$
ω_0: $\sqrt{\frac{1}{C_4 C_L R_4 R_L}}$
Bandwidth: $\frac{2C_4 R_4+C_L R_4+2C_L R_L}{2C_4 C_L R_4 R_L}$

Filter 25

Filter Type: BS
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ \frac{R_4}{C_4 R_4 s+1},\ \infty,\ L_L s + \frac{1}{C_L s}\right)$
$H(s)$: $\frac{R_4(C_L L_L s^2+1)}{2C_4 C_L L_L R_4 s^2+2C_4 R_4 s+2C_L L_L s^2+C_L R_4 s+2}$
Q: $\frac{2C_L L_L\sqrt{\frac{1}{C_L L_L}}}{R_4(2C_4+C_L)}$
ω_0: $\sqrt{\frac{1}{C_L L_L}}$
Bandwidth: $\frac{R_4(2C_4+C_L)}{2C_L L_L}$

Filter 26

Filter Type: BP
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ \frac{R_4}{C_4 R_4 s+1},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$
$H(s)$: $\frac{L_L R_4 s}{2C_4 L_L R_4 s^2+C_L L_L R_4 s^2+2L_L s+R_4}$
Q: $\frac{R_4\sqrt{\frac{1}{L_L(2C_4+C_L)}}\,(2C_4+C_L)}{2}$
ω_0: $\sqrt{\frac{1}{L_L(2C_4+C_L)}}$
Bandwidth: $\frac{2}{R_4(2C_4+C_L)}$

Filter 27

Invalid filter
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ \frac{R_4}{C_4 R_4 s+1},\ \infty,\ L_L s + R_L + \frac{1}{C_L s}\right)$

Filter 28

Filter Type: BP
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ \frac{R_4}{C_4 R_4 s+1},\ \infty,\ \frac{1}{C_L s+\frac{1}{R_L}+\frac{1}{L_L s}}\right)$
$H(s)$: $\frac{L_L R_4 R_L s}{2C_4 L_L R_4 R_L s^2+C_L L_L R_4 R_L s^2+L_L R_4 s+2L_L R_L s+R_4 R_L}$
Q: $\frac{R_4 R_L\sqrt{\frac{1}{L_L(2C_4+C_L)}}\,(2C_4+C_L)}{R_4+2R_L}$
ω_0: $\sqrt{\frac{1}{L_L(2C_4+C_L)}}$
Bandwidth: $\frac{R_4+2R_L}{R_4 R_L(2C_4+C_L)}$

Filter 29

Invalid filter
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ \frac{R_4}{C_4 R_4 s+1},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1} + R_L\right)$

Filter 30

Filter Type: BS

$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ \frac{R_4}{C_4R_4s+1},\ \infty,\ \frac{R_L\left(L_Ls+\frac{1}{C_Ls}\right)}{L_Ls+R_L+\frac{1}{C_Ls}}\right)$

$H(s)$: $\frac{R_4R_L(C_LL_Ls^2+1)}{2C_4C_LL_LR_4R_Ls^3+2C_4R_4R_Ls+C_LL_LR_4s^2+2C_LL_LR_Ls^2+C_LR_4R_Ls+R_4+2R_L}$

Q: $\frac{C_LL_L\sqrt{\frac{1}{C_LL_L}}(R_4+2R_L)}{R_4R_L(2C_4+C_L)}$

ω_0: $\sqrt{\frac{1}{C_LL_L}}$

Bandwidth: $\frac{R_4R_L(2C_4+C_L)}{C_LL_L(R_4+2R_L)}$

Filter 31

Invalid filter

$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ R_4+\frac{1}{C_4s},\ \infty,\ R_L\right)$

Filter 32

Invalid filter

$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ R_4+\frac{1}{C_4s},\ \infty,\ \frac{1}{C_Ls}\right)$

Filter 33

Filter Type: Invalid011

$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ R_4+\frac{1}{C_4s},\ \infty,\ \frac{R_L}{C_LR_Ls+1}\right)$

$H(s)$: $\frac{R_L(C_4R_4s+1)}{C_4C_LR_4R_Ls^2+C_4R_4s+2C_4R_Ls+C_LR_Ls+1}$

Q: $\frac{C_4C_LR_4R_L\sqrt{\frac{1}{C_4C_LR_4R_L}}}{C_4R_4+2C_4R_L+C_LR_L}$

ω_0: $\sqrt{\frac{1}{C_4C_LR_4R_L}}$

Bandwidth: $\frac{C_4R_4+2C_4R_L+C_LR_L}{C_4C_LR_4R_L}$

Filter 34

Invalid filter

$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ R_4+\frac{1}{C_4s},\ \infty,\ R_L+\frac{1}{C_Ls}\right)$

Filter 35

Invalid filter

$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ R_4+\frac{1}{C_4s},\ \infty,\ L_Ls+\frac{1}{C_Ls}\right)$

Filter 36

Filter Type: Invalid110

$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ R_4+\frac{1}{C_4s},\ \infty,\ \frac{L_Ls}{C_LL_Ls^2+1}\right)$

$H(s)$: $\frac{L_Ls(C_4R_4s+1)}{C_4C_LL_LR_4s^3+2C_4L_Ls^2+C_4R_4s+C_LL_Ls+1}$

Q: $\frac{L_L\sqrt{\frac{1}{L_L(2C_4+C_L)}}(2C_4+C_L)}{C_4R_4}$

ω_0: $\sqrt{\frac{1}{L_L(2C_4+C_L)}}$

Bandwidth: $\frac{C_4R_4}{L_L(2C_4+C_L)}$

Filter 37

Invalid filter

$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ R_4+\frac{1}{C_4s},\ \infty,\ L_Ls+R_L+\frac{1}{C_Ls}\right)$

Filter 38

Filter Type: Invalid110

$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ R_4+\frac{1}{C_4s},\ \infty,\ \frac{1}{C_Ls+\frac{1}{R_L+\frac{1}{L_Ls}}}\right)$

$H(s)$: $\frac{L_LR_Ls(C_4R_4s+1)}{C_4C_LL_LR_4s^3+C_4L_LR_4s^2+2C_4L_LR_Ls^2+C_4R_4R_Ls+C_LL_LR_Ls^2+L_Ls+R_L}$

Q: $\frac{L_L\sqrt{\frac{R_L}{L_L(C_4R_4+2C_4R_L+C_LR_L)}}(C_4R_4+2C_4R_L+C_LR_L)}{C_4R_4R_L+L_L}$

ω_0: $\sqrt{\frac{R_L}{L_L(C_4R_4+2C_4R_L+C_LR_L)}}$

Bandwidth: $\frac{C_4R_4R_L+L_L}{L_L(C_4R_4+2C_4R_L+C_LR_L)}$

Filter 39

Invalid filter

$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ R_4+\frac{1}{C_4s},\ \infty,\ \frac{L_Ls}{C_LL_Ls^2+1}+R_L\right)$

Filter 40

Invalid filter

$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ R_4+\frac{1}{C_4s},\ \infty,\ \frac{R_L\left(L_Ls+\frac{1}{C_Ls}\right)}{L_Ls+R_L+\frac{1}{C_Ls}}\right)$

Filter 41

Filter Type: BS

$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ L_4s+\frac{1}{C_4s},\ \infty,\ R_L\right)$

$H(s)$: $\frac{R_L(C_4L_4s^2+1)}{C_4L_4s^2+2C_4R_Ls+1}$

Q: $\frac{L_4\sqrt{\frac{1}{C_4L_4}}}{2R_L}$

ω_0: $\sqrt{\frac{1}{C_4L_4}}$

Bandwidth: $\frac{2R_L}{L_4}$

Filter 42

Invalid filter

$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ L_4s+\frac{1}{C_4s},\ \infty,\ \frac{1}{C_Ls}\right)$

Filter 43

Filter Type: BS

$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ L_4s+\frac{1}{C_4s},\ \infty,\ \frac{R_L}{C_LR_Ls+1}\right)$

$H(s)$: $\frac{R_L(C_4L_4s^2+1)}{C_4C_LL_LR_4s^3+C_4L_4s^2+2C_4R_Ls+C_LR_Ls+1}$

Q: $\frac{C_4L_4\sqrt{\frac{1}{C_4L_4}}}{R_L(2C_4+C_L)}$

ω_0: $\sqrt{\frac{1}{C_4L_4}}$

Bandwidth: $\frac{R_L(2C_4+C_L)}{C_4L_4}$

Filter 44

Invalid filter

$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ L_4s+\frac{1}{C_4s},\ \infty,\ R_L+\frac{1}{C_Ls}\right)$

Filter 45

Invalid filter
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ L_4 s + \frac{1}{C_4 s},\ \infty,\ L_L s + \frac{1}{C_L s}\right)$

Filter 46

Invalid filter
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ L_4 s + \frac{1}{C_4 s},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$

Filter 47

Invalid filter
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ L_4 s + \frac{1}{C_4 s},\ \infty,\ L_L s + R_L + \frac{1}{C_L s}\right)$

Filter 48

Invalid filter
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ L_4 s + \frac{1}{C_4 s},\ \infty,\ \frac{1}{C_L s + \frac{1}{R_L + \frac{1}{L_L s}}}\right)$

Filter 49

Invalid filter
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ L_4 s + \frac{1}{C_4 s},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1} + R_L\right)$

Filter 50

Invalid filter
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ L_4 s + \frac{1}{C_4 s},\ \infty,\ \frac{R_L\left(L_L s + \frac{1}{C_L s}\right)}{L_L s + R_L + \frac{1}{C_L s}}\right)$

Filter 51

Filter Type: BP
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1},\ \infty,\ R_L\right)$
$H(s)$: $\frac{L_4 R_L s}{2C_4 L_4 R_L s^2 + L_4 s + 2R_L}$
Q: $2C_4 R_L \sqrt{\frac{1}{C_4 L_4}}$
ω_0: $\sqrt{\frac{1}{C_4 L_4}}$
Bandwidth: $\frac{1}{2C_4 R_L}$

Filter 52

Invalid filter
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1},\ \infty,\ \frac{1}{C_L s}\right)$

Filter 53

Filter Type: BP
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1},\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$
$H(s)$: $\frac{L_4 R_L s}{2C_4 L_4 R_L s^2 + C_4 L_4 L_L s^2 + L_4 s + 2R_L}$
Q: $\sqrt{2} R_L \sqrt{\frac{1}{L_4(2C_4+C_L)}}\,(2C_4 + C_L)$
ω_0: $\sqrt{2}\sqrt{\frac{1}{L_4(2C_4+C_L)}}$
Bandwidth: $\frac{1}{R_L(2C_4+C_L)}$

Filter 54

Filter Type: Invalid110
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1},\ \infty,\ R_L + \frac{1}{C_L s}\right)$
$H(s)$: $\frac{L_4 s(C_L R_L s+1)}{2C_4 C_L L_4 R_L s^3 + 2C_4 L_4 s^2 + C_L L_4 s^2 + 2C_L R_L s + 2}$
Q: $\frac{\sqrt{2} L_4 \sqrt{\frac{1}{L_4(2C_4+C_L)}}\,(2C_4+C_L)}{2C_L R_L}$
ω_0: $\sqrt{2}\sqrt{\frac{1}{L_4(2C_4+C_L)}}$
Bandwidth: $\frac{2C_L R_L}{L_4(2C_4+C_L)}$

Filter 55

Invalid filter
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1},\ \infty,\ L_L s + \frac{1}{C_L s}\right)$

Filter 56

Invalid filter
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$

Filter 57

Invalid filter
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1},\ \infty,\ L_L s + R_L + \frac{1}{C_L s}\right)$

Filter 58

Filter Type: BP
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1},\ \infty,\ \frac{1}{C_L s + \frac{1}{R_L + \frac{1}{L_L s}}}\right)$
$H(s)$: $\frac{L_4 L_L R_L s}{2C_4 L_4 L_L R_L s^2 + C_L L_4 L_L R_L s^2 + L_4 L_L s + L_4 R_L + 2L_L R_L}$
Q: $R_L \sqrt{\frac{L_4+2L_L}{L_4 L_L(2C_4+C_L)}}\,(2C_4 + C_L)$
ω_0: $\sqrt{\frac{L_4+2L_L}{L_4 L_L(2C_4+C_L)}}$
Bandwidth: $\frac{1}{R_L(2C_4+C_L)}$

Filter 59

Invalid filter
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1} + R_L\right)$

Filter 60

Invalid filter
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1},\ \infty,\ \frac{R_L\left(L_L s + \frac{1}{C_L s}\right)}{L_L s + R_L + \frac{1}{C_L s}}\right)$

Filter 61

Filter Type: GE
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ L_4 s + R_4 + \frac{1}{C_4 s},\ \infty,\ R_L\right)$
$H(s)$: $\frac{R_L\left(C_4 L_4 s^2 + C_4 R_4 s + 1\right)}{C_4 L_4 s^2 + C_4 R_4 s + 2C_4 R_L s + 1}$
Q: $\frac{L_4\sqrt{\frac{1}{C_4 L_4}}}{R_4 + 2R_L}$
ω_0: $\sqrt{\frac{1}{C_4 L_4}}$
Bandwidth: $\frac{R_4 + 2R_L}{L_4}$
Qz: $\frac{L_4\sqrt{\frac{1}{C_4 L_4}}}{R_4}$

Filter 62

Invalid filter
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ L_4 s + R_4 + \frac{1}{C_4 s},\ \infty,\ \frac{1}{C_L s}\right)$

Filter 63

Invalid filter
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ L_4 s + R_4 + \frac{1}{C_4 s},\ \infty,\ \frac{R_L}{C_L R_L s + 1}\right)$

Filter 64

Invalid filter
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ L_4 s + R_4 + \frac{1}{C_4 s},\ \infty,\ R_L + \frac{1}{C_L s}\right)$

Filter 65

Invalid filter
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ L_4 s + R_4 + \frac{1}{C_4 s},\ \infty,\ L_L s + \frac{1}{C_L s}\right)$

Filter 66

Invalid filter
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ L_4 s + R_4 + \frac{1}{C_4 s},\ \infty,\ \frac{L_L s}{C_L L_L s^2 + 1}\right)$

Filter 67

Invalid filter
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ L_4 s + R_4 + \frac{1}{C_4 s},\ \infty,\ L_L s + R_L + \frac{1}{C_L s}\right)$

Filter 68

Invalid filter
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ L_4 s + R_4 + \frac{1}{C_4 s},\ \infty,\ \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}}\right)$

Filter 69

Invalid filter
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ L_4 s + R_4 + \frac{1}{C_4 s},\ \infty,\ \frac{L_L s}{C_L L_L s^2 + 1} + R_L\right)$

Filter 70

Invalid filter
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ L_4 s + R_4 + \frac{1}{C_4 s},\ \infty,\ \frac{R_L\left(L_L s + \frac{1}{C_L s}\right)}{L_L s + R_L + \frac{1}{C_L s}}\right)$

Filter 71

Filter Type: BP
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}},\ \infty,\ R_L\right)$
$H(s)$: $\frac{L_4 R_4 R_L s}{2C_4 L_4 R_4 R_L s^2 + L_4 R_4 s + 2L_4 R_L s + 2R_4 R_L}$
Q: $\frac{2C_4 R_4 R_L\sqrt{\frac{1}{C_4 L_4}}}{R_4 + 2R_L}$
ω_0: $\sqrt{\frac{1}{C_4 L_4}}$
Bandwidth: $\frac{R_4 + 2R_L}{2C_4 R_4 R_L}$

Filter 72

Filter Type: BP
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}},\ \infty,\ \frac{1}{C_L s}\right)$
$H(s)$: $\frac{L_4 R_4 s}{2C_4 L_4 R_4 s^2 + C_L L_4 R_4 s^2 + 2L_4 s + 2R_4}$
Q: $\frac{\sqrt{2}R_4\sqrt{\frac{1}{L_4(2C_4 + C_L)}}(2C_4 + C_L)}{2}$
ω_0: $\sqrt{2}\sqrt{\frac{2}{L_4(2C_4 + C_L)}}$
Bandwidth: $\frac{2}{R_4(2C_4 + C_L)}$

Filter 73

Filter Type: BP
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}},\ \infty,\ \frac{R_L}{C_L R_L s + 1}\right)$
$H(s)$: $\frac{L_4 R_4 R_L s}{2C_4 L_4 R_4 R_L s^2 + C_L L_4 R_4 R_L s^2 + L_4 R_4 s + 2L_4 R_L s + 2R_4 R_L}$
Q: $\frac{\sqrt{2}R_4 R_L\sqrt{\frac{1}{L_4(2C_4 + C_L)}}(2C_4 + C_L)}{R_4 + 2R_L}$
ω_0: $\sqrt{2}\sqrt{\frac{1}{L_4(2C_4 + C_L)}}$
Bandwidth: $\frac{R_4 + 2R_L}{R_4 R_L(2C_4 + C_L)}$

Filter 74

Filter Type: Invalid110
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}},\ \infty,\ R_L + \frac{1}{C_L s}\right)$
$H(s)$: $\frac{L_4 R_4 s(C_L R_L s + 1)}{2C_4 C_L L_4 R_4 R_L s^3 + 2C_4 L_4 R_4 s^2 + C_L L_4 R_4 s^2 + 2C_L L_4 R_L s^2 + 2C_L R_4 R_L s + 2L_4 s + 2R_4}$
Q: $\frac{\sqrt{2L_4}\sqrt{\frac{R_4}{L_4(2C_4 R_4 + C_L R_4 + 2C_L R_L)}}(2C_4 R_4 + C_L R_4 + 2C_L R_L)}{2(C_L R_4 R_L + L_4)}$
ω_0: $\sqrt{2}\sqrt{\frac{R_4}{L_4(2C_4 R_4 + C_L R_4 + 2C_L R_L)}}$
Bandwidth: $\frac{2(C_L R_4 R_L + L_4)}{L_4(2C_4 R_4 + C_L R_4 + 2C_L R_L)}$

Filter 75

Invalid filter
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}},\ \infty,\ L_L s + \frac{1}{C_L s}\right)$

Filter 76

Filter Type: BP
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ \frac{1}{C_4 s+\frac{1}{R_4+L_4 s}},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$
$H(s)$: $\frac{L_4 L_L R_4 s}{2C_4 L_4 L_L R_4 s^2+C_L L_4 L_L R_4 s^2+2L_4 L_L s+L_4 R_4+2L_L R_4}$
Q: $\frac{R_4\sqrt{\frac{L_4+2L_L}{L_4 L_L(2C_4+C_L)}}(2C_4+C_L)}{2}$
ω_0: $\sqrt{\frac{L_4+2L_L}{L_4 L_L(2C_4+C_L)}}$
Bandwidth: $\frac{2}{R_4(2C_4+C_L)}$

Filter 77

Invalid filter
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ \frac{1}{C_4 s+\frac{1}{R_4+L_4 s}},\ \infty,\ L_L s+R_L+\frac{1}{C_L s}\right)$

Filter 78

Filter Type: BP
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ \frac{1}{C_4 s+\frac{1}{R_4+L_4 s}},\ \infty,\ \frac{1}{C_L s+\frac{1}{R_L}+\frac{1}{L_L s}}\right)$
$H(s)$: $\frac{L_4 L_L R_4 R_L s}{2C_4 L_4 L_L R_4 R_L s^2+C_L L_4 L_L R_4 R_L s^2+L_4 L_L R_4 s+2L_4 L_L R_L s+L_4 R_4 R_L+2L_L R_4 R_L}$
Q: $\frac{R_4 R_L\sqrt{\frac{L_4+2L_L}{L_4 L_L(2C_4+C_L)}}(2C_4+C_L)}{R_4+2R_L}$
ω_0: $\sqrt{\frac{L_4+2L_L}{L_4 L_L(2C_4+C_L)}}$
Bandwidth: $\frac{R_4+2R_L}{R_4 R_L(2C_4+C_L)}$

Filter 79

Invalid filter
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ \frac{1}{C_4 s+\frac{1}{R_4+L_4 s}},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}+R_L\right)$

Filter 80

Invalid filter
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ \frac{1}{C_4 s+\frac{1}{R_4+L_4 s}},\ \infty,\ \frac{R_L\left(L_L s+\frac{1}{C_L s}\right)}{L_L s+R_L+\frac{1}{C_L s}}\right)$

Filter 81

Filter Type: GE
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1}+R_4,\ \infty,\ R_L\right)$
$H(s)$: $\frac{R_L(C_4 L_4 R_4 s^2+L_4 s+R_4)}{C_4 L_4 R_4 s^2+2C_4 L_4 R_L s^2+L_4 s+R_4+2R_L}$
Q: $C_4\sqrt{\frac{1}{C_4 L_4}}(R_4+2R_L)$
ω_0: $\sqrt{\frac{1}{C_4 L_4}}$
Bandwidth: $\frac{1}{C_4(R_4+2R_L)}$
Qz: $C_4 R_4\sqrt{\frac{1}{C_4 L_4}}$

Filter 82

Invalid filter
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1}+R_4,\ \infty,\ \frac{1}{C_L s}\right)$

Filter 83

Invalid filter
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1}+R_4,\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$

Filter 84

Invalid filter
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1}+R_4,\ \infty,\ R_L+\frac{1}{C_L s}\right)$

Filter 85

Invalid filter
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1}+R_4,\ \infty,\ L_L s+\frac{1}{C_L s}\right)$

Filter 86

Invalid filter
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1}+R_4,\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$

Filter 87

Invalid filter
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1}+R_4,\ \infty,\ L_L s+R_L+\frac{1}{C_L s}\right)$

Filter 88

Invalid filter
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1}+R_4,\ \infty,\ \frac{1}{C_L s+\frac{1}{R_L}+\frac{1}{L_L s}}\right)$

Filter 89

Invalid filter
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1}+R_4,\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}+R_L\right)$

Filter 90

Invalid filter
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1}+R_4,\ \infty,\ \frac{R_L\left(L_L s+\frac{1}{C_L s}\right)}{L_L s+R_L+\frac{1}{C_L s}}\right)$

Filter 91

Filter Type: BS
$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ \frac{R_4\left(L_4 s+\frac{1}{C_4 s}\right)}{L_4 s+R_4+\frac{1}{C_4 s}},\ \infty,\ R_L\right)$
$H(s)$: $\frac{R_4 R_L\left(C_4 L_4 s^2+1\right)}{C_4 L_4 R_4 s^2+2C_4 L_4 R_L s^2+2C_4 R_4 R_L s+R_4+2R_L}$
Q: $\frac{L_4\sqrt{\frac{1}{C_4 L_4}}(R_4+2R_L)}{2R_4 R_L}$
ω_0: $\sqrt{\frac{1}{C_4 L_4}}$
Bandwidth: $\frac{2R_4 R_L}{L_4(R_4+2R_L)}$

Filter 92

Filter Type: BS

$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ \frac{R_4\left(L_4s+\frac{1}{C_4s}\right)}{L_4s+R_4+\frac{1}{C_4s}},\ \infty,\ \frac{1}{C_Ls}\right)$

$H(s)$: $\frac{R_4\left(C_4L_4s^2+1\right)}{C_4C_LL_4R_4s^3+2C_4L_4s^2+2C_4R_4s+C_LR_4s+2}$

Q: $\frac{2C_4L_4\sqrt{\frac{1}{C_4L_4}}}{R_4(2C_4+C_L)}$

ω_0: $\sqrt{\frac{1}{C_4L_4}}$

Bandwidth: $\frac{R_4(2C_4+C_L)}{2C_4L_4}$

Filter 93

Filter Type: BS

$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ \frac{R_4\left(L_4s+\frac{1}{C_4s}\right)}{L_4s+R_4+\frac{1}{C_4s}},\ \infty,\ \frac{R_Ls}{C_LR_Ls+1}\right)$

$H(s)$: $\frac{R_4R_L\left(C_4L_4s^2+1\right)}{C_4C_LL_4R_4R_Ls^3+C_4L_4R_4s^2+2C_4L_4R_Ls^2+2C_4R_4R_Ls+C_LR_4R_Ls+R_4+2R_L}$

Q: $\frac{C_4L_4\sqrt{\frac{1}{C_4L_4}}(R_4+2R_L)}{R_4R_L(2C_4+C_L)}$

ω_0: $\sqrt{\frac{1}{C_4L_4}}$

Bandwidth: $\frac{R_4R_L(2C_4+C_L)}{C_4L_4(R_4+2R_L)}$

Filter 94

Invalid filter

$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ \frac{R_4\left(L_4s+\frac{1}{C_4s}\right)}{L_4s+R_4+\frac{1}{C_4s}},\ \infty,\ R_L+\frac{1}{C_Ls}\right)$

Filter 95

Invalid filter

$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ \frac{R_4\left(L_4s+\frac{1}{C_4s}\right)}{L_4s+R_4+\frac{1}{C_4s}},\ \infty,\ L_Ls+\frac{1}{C_Ls}\right)$

Filter 96

Invalid filter

$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ \frac{R_4\left(L_4s+\frac{1}{C_4s}\right)}{L_4s+R_4+\frac{1}{C_4s}},\ \infty,\ \frac{L_Ls}{C_LL_Ls^2+1}\right)$

Filter 97

Invalid filter

$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ \frac{R_4\left(L_4s+\frac{1}{C_4s}\right)}{L_4s+R_4+\frac{1}{C_4s}},\ \infty,\ L_Ls+R_L+\frac{1}{C_Ls}\right)$

Filter 98

Invalid filter

$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ \frac{R_4\left(L_4s+\frac{1}{C_4s}\right)}{L_4s+R_4+\frac{1}{C_4s}},\ \infty,\ \frac{1}{C_Ls+\frac{1}{R_L}+\frac{1}{L_Ls}}\right)$

Filter 99

Invalid filter

$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ \frac{R_4\left(L_4s+\frac{1}{C_4s}\right)}{L_4s+R_4+\frac{1}{C_4s}},\ \infty,\ \frac{L_Ls}{C_LL_Ls^2+1}+R_L\right)$

Filter 100

Invalid filter

$Z(s)$: $\left(\infty,\ R_2,\ \infty,\ \frac{R_4\left(L_4s+\frac{1}{C_4s}\right)}{L_4s+R_4+\frac{1}{C_4s}},\ \infty,\ \frac{R_L\left(L_Ls+\frac{1}{C_Ls}\right)}{L_Ls+R_L+\frac{1}{C_Ls}}\right)$

Filter 101

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{1}{C_2s},\ \infty,\ R_4,\ \infty,\ R_L\right)$

Filter 102

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{1}{C_2s},\ \infty,\ R_4,\ \infty,\ \frac{1}{C_Ls}\right)$

Filter 103

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{1}{C_2s},\ \infty,\ R_4,\ \infty,\ \frac{R_L}{C_LR_Ls+1}\right)$

Filter 104

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{1}{C_2s},\ \infty,\ R_4,\ \infty,\ R_L+\frac{1}{C_Ls}\right)$

Filter 105

Filter Type: BS

$Z(s)$: $\left(\infty,\ \frac{1}{C_2s},\ \infty,\ R_4,\ \infty,\ L_Ls+\frac{1}{C_Ls}\right)$

$H(s)$: $\frac{R_4\left(C_LL_Ls^2+1\right)}{2C_LL_Ls^2+C_LR_4s+2}$

Q: $\frac{2L_L\sqrt{\frac{1}{C_LL_L}}}{R_4}$

ω_0: $\sqrt{\frac{1}{C_LL_L}}$

Bandwidth: $\frac{R_L}{2L_L}$

Filter 106

Filter Type: BP

$Z(s)$: $\left(\infty,\ \frac{1}{C_2s},\ \infty,\ R_4,\ \infty,\ \frac{L_Ls}{C_LL_Ls^2+1}\right)$

$H(s)$: $\frac{L_LR_4s}{C_LL_LR_4s^2+2L_Ls+R_4}$

Q: $\frac{C_LR_4\sqrt{\frac{1}{C_LL_L}}}{2}$

ω_0: $\sqrt{\frac{1}{C_LL_L}}$

Bandwidth: $\frac{2}{C_LR_4}$

Filter 107

Filter Type: GE

$Z(s)$: $\left(\infty,\ \frac{1}{C_2s},\ \infty,\ R_4,\ \infty,\ L_Ls+R_L+\frac{1}{C_Ls}\right)$

$H(s)$: $\frac{R_4\left(C_LL_Ls^2+C_LR_Ls+1\right)}{2C_LL_Ls^2+C_LR_4s+2C_LR_Ls+2}$

Q: $\frac{2L_L\sqrt{\frac{1}{C_LL_L}}}{R_4+2R_L}$

ω_0: $\sqrt{\frac{1}{C_LL_L}}$

Bandwidth: $\frac{R_4+2R_L}{2L_L}$

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

Filter 108

Filter Type: BP
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ R_4,\ \infty,\ \frac{1}{C_L s+\frac{1}{R_L}+\frac{1}{L_L s}}\right)$
$H(s)$: $\frac{L_L R_4 R_L s}{C_L L_L R_4 R_L s^2+L_L R_4 s+2L_L R_L s+R_4 R_L}$
Q: $\frac{C_L R_4 R_L\sqrt{\frac{1}{C_L L_L}}}{R_4+2R_L}$
ω_0: $\sqrt{\frac{1}{C_L L_L}}$
Bandwidth: $\frac{R_4+2R_L}{C_L R_4 R_L}$

Filter 109

Filter Type: GE
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ R_4,\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}+R_L\right)$
$H(s)$: $\frac{R_L\left(C_L L_L R_L s^2+L_L s+R_L\right)}{C_L L_L R_4 s^2+2C_L L_L R_L s^2+2L_L s+R_4+2R_L}$
Q: $\frac{C_L\sqrt{\frac{1}{C_L L_L}}(R_4+2R_L)}{2}$
ω_0: $\sqrt{\frac{1}{C_L L_L}}$
Bandwidth: $\frac{2}{C_L(R_4+2R_L)}$
Qz: $C_L R_L\sqrt{\frac{1}{C_L L_L}}$

Filter 110

Filter Type: BS
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ R_4,\ \infty,\ \frac{R_L\left(L_L s+\frac{1}{C_L s}\right)}{L_L s+R_L+\frac{1}{C_L s}}\right)$
$H(s)$: $\frac{R_4 R_L\left(C_L L_L s^2+1\right)}{C_L L_L R_4 s^2+2C_L L_L R_L s^2+C_L R_4 R_L s+R_4+2R_L}$
Q: $\frac{L_L\sqrt{\frac{1}{C_L L_L}}(R_4+2R_L)}{R_4 R_L}$
ω_0: $\sqrt{\frac{1}{C_L L_L}}$
Bandwidth: $\frac{R_L R_L}{L_L(R_4+2R_L)}$

Filter 111

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s},\ \infty,\ R_L\right)$

Filter 112

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s},\ \infty,\ \frac{1}{C_L s}\right)$

Filter 113

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s},\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$

Filter 114

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s},\ \infty,\ R_L+\frac{1}{C_L s}\right)$

Filter 115

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s},\ \infty,\ L_L s+\frac{1}{C_L s}\right)$

Filter 116

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$

Filter 117

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s},\ \infty,\ L_L s+R_L+\frac{1}{C_L s}\right)$

Filter 118

Filter Type: BP
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s},\ \infty,\ \frac{1}{C_L s+\frac{1}{R_L}+\frac{1}{L_L s}}\right)$
$H(s)$: $\frac{L_L R_L s}{2C_4 L_L R_L s^2+C_L L_L R_L s^2+L_L s+R_L}$
Q: $R_L\sqrt{\frac{1}{L_L(2C_4+C_L)}}(2C_4+C_L)$
ω_0: $\sqrt{\frac{1}{L_L(2C_4+C_L)}}$
Bandwidth: $\frac{1}{R_L(2C_4+C_L)}$

Filter 119

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}+R_L\right)$

Filter 120

Filter Type: BS
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s},\ \infty,\ \frac{R_L\left(L_L s+\frac{1}{C_L s}\right)}{L_L s+R_L+\frac{1}{C_L s}}\right)$
$H(s)$: $\frac{R_L\left(C_L L_L s^2+1\right)}{2C_4 C_L L_L R_L s^3+2C_4 R_L s+C_L L_L s^2+C_L R_L s+1}$
Q: $\frac{C_L L_L\sqrt{\frac{1}{C_L L_L}}}{R_L(2C_4+C_L)}$
ω_0: $\sqrt{\frac{1}{C_L L_L}}$
Bandwidth: $\frac{R_L(2C_4+C_L)}{C_L L_L}$

Filter 121

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \frac{R_4}{C_4 R_4 s+1},\ \infty,\ R_L\right)$

Filter 122

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \frac{R_4}{C_4 R_4 s+1},\ \infty,\ \frac{1}{C_L s}\right)$

Filter 123

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \frac{R_4}{C_4 R_4 s+1},\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$

Filter 124

Filter Type: Invalid011
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \frac{R_4}{C_4 R_4 s+1},\ \infty,\ R_L+\frac{1}{C_L s}\right)$
$H(s)$: $\frac{R_4(C_L L_L s^2+1)}{2C_4 C_L R_4 R_L s^2+2C_4 R_4 s+C_L R_4 s^2+2C_L R_L s+2}$
Q: $\frac{2C_4 C_L R_4 R_L \sqrt{C_4 C_L R_4 R_L}}{2C_4 R_4+C_L R_4+2C_L R_L}$
ω_0: $\sqrt{\frac{1}{C_4 C_L R_4 R_L}}$
Bandwidth: $\frac{2C_4 R_4+C_L R_4+2C_L R_L}{2C_4 C_L R_4 R_L}$

Filter 125

Filter Type: BS
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \frac{R_4}{C_4 R_4 s+1},\ \infty,\ L_L s+\frac{1}{C_L s}\right)$
$H(s)$: $\frac{R_4(C_L L_L s^2+1)}{2C_4 C_L L_L R_4 s^3+2C_4 R_4 s+2C_L L_L s^2+C_L R_4 s+2}$
Q: $\frac{2C_4 L_L \sqrt{\frac{1}{C_L L_L}}}{R_4(2C_4+C_L)}$
ω_0: $\sqrt{\frac{1}{C_L L_L}}$
Bandwidth: $\frac{R_4(2C_4+C_L)}{2C_L L_L}$

Filter 126

Filter Type: BP
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \frac{R_4}{C_4 R_4 s+1},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$
$H(s)$: $\frac{L_L R_4 s}{2C_4 L_L R_4 s^2+C_L L_L R_4 s^2+2L_L s+R_4}$
Q: $\frac{R_4\sqrt{\frac{1}{L_L(2C_4+C_L)}}(2C_4+C_L)}{2}$
ω_0: $\sqrt{\frac{1}{L_L(2C_4+C_L)}}$
Bandwidth: $\frac{2}{R_4(2C_4+C_L)}$

Filter 127

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \frac{R_4}{C_4 R_4 s+1},\ \infty,\ L_L s+R_L+\frac{1}{C_L s}\right)$

Filter 128

Filter Type: BP
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \frac{R_4}{C_4 R_4 s+1},\ \infty,\ \frac{1}{C_L s+\frac{1}{R_L}+\frac{1}{L_L s}}\right)$
$H(s)$: $\frac{L_L R_4 R_L s}{2C_4 L_L R_4 R_L s^2+C_L L_L R_4 R_L s^2+L_L R_4 s+2L_L R_L s+R_4 R_L}$
Q: $\frac{R_4 R_L\sqrt{\frac{1}{L_L(2C_4+C_L)}}(2C_4+C_L)}{R_4+2R_L}$
ω_0: $\sqrt{\frac{1}{L_L(2C_4+C_L)}}$
Bandwidth: $\frac{R_4+2R_L}{R_4 R_L(2C_4+C_L)}$

Filter 129

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \frac{R_4}{C_4 R_4 s+1},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}+R_L\right)$

Filter 130

Filter Type: BS
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \frac{R_4}{C_4 R_4 s+1},\ \infty,\ \frac{R_L\left(L_L s+\frac{1}{C_L s}\right)}{L_L s+R_L+\frac{1}{C_L s}}\right)$
$H(s)$: $\frac{R_4 R_L(C_L L_L s^2+1)}{2C_4 C_L L_L R_4 R_L s^3+2C_4 R_4 R_L s+C_L L_L R_4 s^2+2C_L L_L R_L s^2+C_L R_4 R_L s+R_4+2R_L}$
Q: $\frac{C_L L_L\sqrt{\frac{1}{C_L L_L}}(R_4+2R_L)}{R_4 R_L(2C_4+C_L)}$
ω_0: $\sqrt{\frac{1}{C_L L_L}}$
Bandwidth: $\frac{R_4 R_L(2C_4+C_L)}{C_L L_L(R_4+2R_L)}$

Filter 131

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ R_4+\frac{1}{C_4 s},\ \infty,\ R_L\right)$

Filter 132

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ R_4+\frac{1}{C_4 s},\ \infty,\ \frac{1}{C_L s}\right)$

Filter 133

Filter Type: Invalid011
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ R_4+\frac{1}{C_4 s},\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$
$H(s)$: $\frac{R_4(C_4 R_4 s+1)}{C_4 C_L R_4 R_L s^2+C_4 R_4 s+2C_4 R_L s+C_L R_L s+1}$
Q: $\frac{C_4 C_L R_4 R_L\sqrt{\frac{1}{C_4 C_L R_4 R_L}}}{C_4 R_4+2C_4 R_L+C_L R_L}$
ω_0: $\sqrt{\frac{1}{C_4 C_L R_4 R_L}}$
Bandwidth: $\frac{C_L R_4+2C_4 R_L+C_L R_L}{C_4 C_L R_4 R_L}$

Filter 134

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ R_4+\frac{1}{C_4 s},\ \infty,\ R_L+\frac{1}{C_L s}\right)$

Filter 135

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ R_4+\frac{1}{C_4 s},\ \infty,\ L_L s+\frac{1}{C_L s}\right)$

Filter 136

Filter Type: Invalid110
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ R_4+\frac{1}{C_4 s},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$
$H(s)$: $\frac{L_L s(C_4 R_4 s+1)}{C_4 C_L L_L R_4 s^3+2C_4 L_L s^2+C_4 R_4 s+C_L L_L s^2+1}$
Q: $\frac{L_L\sqrt{\frac{1}{L_L(2C_4+C_L)}}(2C_4+C_L)}{C_4 R_4}$
ω_0: $\sqrt{\frac{1}{L_L(2C_4+C_L)}}$
Bandwidth: $\frac{C_4 R_4}{L_L(2C_4+C_L)}$

Filter 137

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ R_4+\frac{1}{C_4 s},\ \infty,\ L_L s+R_L+\frac{1}{C_L s}\right)$

Filter 138

Filter Type: Invalid110
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ R_4+\frac{1}{C_4 s},\ \infty,\ \frac{1}{C_L s+\frac{1}{R_L}+\frac{1}{L_L s}}\right)$
$H(s)$: $\frac{L_L R_L s(C_4 R_4 s+1)}{C_4 C_L L_L R_4 R_L s^3+C_4 L_L R_4 s^2+2C_4 L_L R_L s^2+C_4 R_4 R_L s+C_L L_L R_L s^2+L_L s+R_L}$
Q: $\frac{L_L\sqrt{\frac{R_L}{L_L(C_4 R_4+2C_4 R_L+C_L R_L)}}(C_4 R_4+2C_4 R_L+C_L R_L)}{C_4 R_4 R_L+L_L}$
ω_0: $\sqrt{\frac{R_L}{L_L(C_4 R_4+2C_4 R_L+C_L R_L)}}$
Bandwidth: $\frac{C_4 R_4 R_L+L_L}{L_L(C_4 R_4+2C_4 R_L+C_L R_L)}$

Filter 139

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ R_4+\frac{1}{C_4 s},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}+R_L\right)$

Filter 140

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ R_4+\frac{1}{C_4 s},\ \infty,\ \frac{R_L\left(L_L s+\frac{1}{C_L s}\right)}{L_L s+R_L+\frac{1}{C_L s}}\right)$

Filter 141

Filter Type: BS
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ L_4 s+\frac{1}{C_4 s},\ \infty,\ R_L\right)$
$H(s)$: $\frac{R_L(C_4 L_4 s^2+1)}{C_4 L_4 s^2+2C_4 R_L s+1}$
Q: $\frac{L_4\sqrt{\frac{1}{C_4 L_4}}}{2R_L}$
ω_0: $\sqrt{\frac{1}{C_4 L_4}}$
Bandwidth: $\frac{2R_L}{L_4}$

Filter 142

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ L_4 s+\frac{1}{C_4 s},\ \infty,\ \frac{1}{C_L s}\right)$

Filter 143

Filter Type: BS
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ L_4 s+\frac{1}{C_4 s},\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$
$H(s)$: $\frac{R_L(C_4 L_4 s^2+1)}{C_4 C_L L_4 R_L s^3+C_4 L_4 s^2+2C_4 R_L s+C_L R_L s+1}$
Q: $\frac{C_4 L_4\sqrt{\frac{1}{C_4 L_4}}}{R_L(2C_4+C_L)}$
ω_0: $\sqrt{\frac{1}{C_4 L_4}}$
Bandwidth: $\frac{R_L(2C_4+C_L)}{C_4 L_4}$

Filter 144

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ L_4 s+\frac{1}{C_4 s},\ \infty,\ R_L+\frac{1}{C_L s}\right)$

Filter 145

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ L_4 s+\frac{1}{C_4 s},\ \infty,\ L_L s+\frac{1}{C_L s}\right)$

Filter 146

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ L_4 s+\frac{1}{C_4 s},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$

Filter 147

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ L_4 s+\frac{1}{C_4 s},\ \infty,\ L_L s+R_L+\frac{1}{C_L s}\right)$

Filter 148

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ L_4 s+\frac{1}{C_4 s},\ \infty,\ \frac{1}{C_L s+\frac{1}{R_L}+\frac{1}{L_L s}}\right)$

Filter 149

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ L_4 s+\frac{1}{C_4 s},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}+R_L\right)$

Filter 150

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ L_4 s+\frac{1}{C_4 s},\ \infty,\ \frac{R_L\left(L_L s+\frac{1}{C_L s}\right)}{L_L s+R_L+\frac{1}{C_L s}}\right)$

Filter 151

Filter Type: BP
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1},\ \infty,\ R_L\right)$
$H(s)$: $\frac{L_4 R_L s}{2C_4 L_4 R_L s^2+L_4 s+2R_L}$
Q: $2C_4 R_L\sqrt{\frac{1}{C_4 L_4}}$
ω_0: $\sqrt{\frac{1}{C_4 L_4}}$
Bandwidth: $\frac{1}{2C_4 R_L}$

Filter 152

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1},\ \infty,\ \frac{1}{C_L s}\right)$

Filter 153

Filter Type: BP
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1},\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$
$H(s)$: $\frac{L_4 R_L s}{2C_4 L_4 R_L s^2+C_4 L_4+R_L s^2+L_4 s+2R_L}$
Q: $\sqrt{2}R_L\sqrt{\frac{1}{L_4(2C_4+C_L)}}\,(2C_4+C_L)$
ω_0: $\sqrt{2}\sqrt{\frac{1}{L_4(2C_4+C_L)}}$
Bandwidth: $\frac{1}{R_L(2C_4+C_L)}$

Filter 154

Filter Type: Invalid110
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1},\ \infty,\ R_L+\frac{1}{C_L s}\right)$
$H(s)$: $\frac{L_4 s(C_L R_L s+1)}{2C_4 C_L L_4 R_L s^3+2C_4 L_4 s^2+C_L L_4 s^2+2C_L R_L s+2}$
Q: $\frac{\sqrt{2}L_4\sqrt{\frac{1}{L_4(2C_4+C_L)}}(2C_4+C_L)}{2C_L R_L}$
ω_0: $\sqrt{2}\sqrt{\frac{1}{L_4(2C_4+C_L)}}$
Bandwidth: $\frac{2C_L R_L}{L_4(2C_4+C_L)}$

Filter 155

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1},\ \infty,\ L_L s+\frac{1}{C_L s}\right)$

Filter 156

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$

Filter 157

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1},\ \infty,\ L_L s+R_L+\frac{1}{C_L s}\right)$

Filter 158

Filter Type: BP
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1},\ \infty,\ \frac{1}{C_L s+\frac{1}{R_L+\frac{1}{C_L s}}}\right)$
$H(s)$: $\frac{L_4 L_L R_L s}{2C_4 L_4 L_L R_L s^2+C_L L_4 L_L R_L s^2+L_4 L_L s+L_4 R_L+2L_L R_L}$
Q: $R_L\sqrt{\frac{L_4+2L_L}{L_4 L_L(2C_4+C_L)}}\,(2C_4+C_L)$
ω_0: $\sqrt{\frac{L_4+2L_L}{L_4 L_L(2C_4+C_L)}}$
Bandwidth: $\frac{1}{R_L(2C_4+C_L)}$

Filter 159

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}+R_L\right)$

Filter 160

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1},\ \infty,\ \frac{R_L\left(L_L s+\frac{1}{C_L s}\right)}{L_L s+R_L+\frac{1}{C_L s}}\right)$

Filter 161

Filter Type: GE
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ L_4 s+R_4+\frac{1}{C_4 s},\ \infty,\ R_L\right)$
$H(s)$: $\frac{R_L\left(C_4 L_4 s^2+C_4 R_4 s+1\right)}{C_4 L_4 s^2+C_4 R_4 s+2C_4 R_L s+1}$
Q: $\frac{L_4\sqrt{C_4^{-1}L_4^{-1}}}{R_4+2R_L}$
ω_0: $\sqrt{C_4^{-1}L_4^{-1}}$
Bandwidth: $\frac{R_4+2R_L}{L_4}$
Qz: $\frac{L_4\sqrt{C_4^{-1}L_4^{-1}}}{R_4}$

Filter 162

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ L_4 s+R_4+\frac{1}{C_4 s},\ \infty,\ \frac{1}{C_L s}\right)$

Filter 163

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ L_4 s+R_4+\frac{1}{C_4 s},\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$

Filter 164

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ L_4 s+R_4+\frac{1}{C_4 s},\ \infty,\ R_L+\frac{1}{C_L s}\right)$

Filter 165

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ L_4 s+R_4+\frac{1}{C_4 s},\ \infty,\ L_L s+\frac{1}{C_L s}\right)$

Filter 166

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ L_4 s+R_4+\frac{1}{C_4 s},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$

Filter 167

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ L_4 s+R_4+\frac{1}{C_4 s},\ \infty,\ L_L s+R_L+\frac{1}{C_L s}\right)$

Filter 168

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ L_4 s+R_4+\frac{1}{C_4 s},\ \infty,\ \frac{1}{C_L s+\frac{1}{R_L+\frac{1}{C_L s}}}\right)$

Filter 169

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ L_4 s+R_4+\frac{1}{C_4 s},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}+R_L\right)$

Filter 170

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ L_4 s + R_4 + \frac{1}{C_4 s},\ \infty,\ \frac{R_L\left(L_L s + \frac{1}{C_L s}\right)}{L_L s + R_L + \frac{1}{C_L s}}\right)$

Filter 171

Filter Type: BP

$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}},\ \infty,\ R_L\right)$

$H(s)$: $\frac{L_4 R_4 R_L s}{2C_4 L_4 R_4 R_L s^2 + L_4 R_4 s + 2L_4 R_L s + 2R_4 R_L}$

Q: $\frac{2C_4 R_4 R_L \sqrt{\frac{1}{C_4 L_4}}}{R_4 + 2R_L}$

ω_0: $\sqrt{\frac{1}{C_4 L_4}}$

Bandwidth: $\frac{R_4 + 2R_L}{2C_4 R_4 R_L}$

Filter 172

Filter Type: BP

$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}},\ \infty,\ \frac{1}{C_L s}\right)$

$H(s)$: $\frac{L_4 R_4 s}{2C_4 L_4 R_4 s^2 + C_L L_4 L_L R_4 s^2 + 2L_4 s + 2R_4}$

Q: $\frac{\sqrt{2}R_4 \sqrt{\frac{1}{L_4(2C_4 + C_L)}}(2C_4 + C_L)}{2}$

ω_0: $\sqrt{2}\sqrt{\frac{1}{L_4(2C_4 + C_L)}}$

Bandwidth: $\frac{2}{R_4(2C_4 + C_L)}$

Filter 173

Filter Type: BP

$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}},\ \infty,\ \frac{R_L}{C_L R_L s + 1}\right)$

$H(s)$: $\frac{L_4 R_4 R_L s}{2C_4 L_4 R_4 R_L s^2 + C_L L_4 R_4 R_L s^2 + L_4 R_4 s + 2L_4 R_L s + 2R_4 R_L}$

Q: $\frac{\sqrt{2}R_4 R_L \sqrt{\frac{1}{L_4(2C_4 + C_L)}}(2C_4 + C_L)}{R_4 + 2R_L}$

ω_0: $\sqrt{2}\sqrt{\frac{1}{L_4(2C_4 + C_L)}}$

Bandwidth: $\frac{R_4 + 2R_L}{R_4 R_L(2C_4 + C_L)}$

Filter 174

Filter Type: Invalid110

$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}},\ \infty,\ R_L + \frac{1}{C_L s}\right)$

$H(s)$: $\frac{L_4 R_4 s(C_L R_L s + 1)}{2C_4 C_L L_4 R_4 R_L s^3 + 2C_4 L_4 R_4 s^2 + C_L L_4 R_4 s^2 + 2C_L L_4 R_L s^2 + 2C_L R_4 R_L s + 2L_4 s + 2R_4}$

Q: $\frac{R_4 \sqrt{\frac{1}{L_4(2C_4 R_4 + C_L R_4 + 2C_L R_L)}}(2C_4 R_4 + C_L R_4 + 2C_L R_L)}{2(C_L R_4 R_L + L_4)}$

ω_0: $\sqrt{2}\sqrt{\frac{R_4}{L_4(2C_4 R_4 + C_L R_4 + 2C_L R_L)}}$

Bandwidth: $\frac{2(C_L R_4 R_L + L_4)}{L_4(2C_4 R_4 + C_L R_4 + 2C_L R_L)}$

Filter 175

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}},\ \infty,\ L_L s + \frac{1}{C_L s}\right)$

Filter 176

Filter Type: BP

$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}},\ \infty,\ \frac{L_L s}{C_L L_L s^2 + 1}\right)$

$H(s)$: $\frac{L_4 L_L R_4 s}{2C_4 L_4 L_L R_4 R_L s^2 + C_L L_4 L_L R_4 s^2 + L_4 L_L s + L_4 R_4 s + 2L_L R_4 s + 2R_4}$

Q: $\frac{R_4 \sqrt{\frac{L_4 + 2L_L}{L_4 L_L(2C_4 + C_L)}}(2C_4 + C_L)}{L_4 + 2L_L}$

ω_0: $\sqrt{\frac{L_4 + 2L_L}{L_4 L_L(2C_4 + C_L)}}$

Bandwidth: $\frac{R_4 + 2R_L}{R_4 L_L(2C_4 + C_L)}$

Filter 177

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}},\ \infty,\ L_L s + R_L + \frac{1}{C_L s}\right)$

Filter 178

Filter Type: BP

$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}},\ \infty,\ \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}}\right)$

$H(s)$: $\frac{L_4 L_L R_4 R_L s}{2C_4 L_4 L_L R_4 R_L s^2 + C_L L_4 L_L R_4 R_L s^2 + L_4 L_L R_4 s + 2L_4 L_L R_L s + L_4 R_4 R_L s + 2L_L R_4 R_L}$

Q: $\frac{R_4 R_L \sqrt{\frac{L_4 + 2L_L}{L_4 L_L(2C_4 + C_L)}}(2C_4 + C_L)}{R_4 + 2R_L}$

ω_0: $\sqrt{\frac{L_4 + 2L_L}{L_4 L_L(2C_4 + C_L)}}$

Bandwidth: $\frac{R_4 + 2R_L}{R_4 R_L(2C_4 + C_L)}$

Filter 179

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}},\ \infty,\ \frac{L_L s}{C_L L_L s^2 + 1} + R_L\right)$

Filter 180

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}},\ \infty,\ \frac{R_L\left(L_L s + \frac{1}{C_L s}\right)}{L_L s + R_L + \frac{1}{C_L s}}\right)$

Filter 181

Filter Type: GE

$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4,\ \infty,\ R_L\right)$

$H(s)$: $\frac{R_L(C_4 L_4 R_4 s^2 + L_4 s + R_4)}{2C_4 L_4 R_4 s^2 + 2C_4 L_4 R_L s^2 + L_4 s + R_4 + 2R_L}$

Q: $C_4 \sqrt{\frac{1}{C_4 L_4}}\,(R_4 + 2R_L)$

ω_0: $\sqrt{\frac{1}{C_4 L_4}}$

Bandwidth: $\frac{1}{C_4(R_4 + 2R_L)}$

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

Filter 182

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4,\ \infty,\ \frac{1}{C_L s}\right)$

Filter 183

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1}+R_4,\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$

Filter 184

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1}+R_4,\ \infty,\ R_L+\frac{1}{C_L s}\right)$

Filter 185

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1}+R_4,\ \infty,\ L_L s+\frac{1}{C_L s}\right)$

Filter 186

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1}+R_4,\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$

Filter 187

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1}+R_4,\ \infty,\ L_L s+R_L+\frac{1}{C_L s}\right)$

Filter 188

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1}+R_4,\ \infty,\ \frac{1}{C_L s+\frac{1}{R_L}+\frac{1}{L_L s}}\right)$

Filter 189

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1}+R_4,\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}+R_L\right)$

Filter 190

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1}+R_4,\ \infty,\ \frac{R_L\left(L_L s+\frac{1}{C_L s}\right)}{L_L s+R_L+\frac{1}{C_L s}}\right)$

Filter 191

Filter Type: BS
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \frac{R_4\left(L_4 s+\frac{1}{C_4 s}\right)}{L_4 s+R_4+\frac{1}{C_4 s}},\ \infty,\ R_L\right)$
$H(s)$: $\frac{R_4 R_L\left(C_4 L_4 s^2+1\right)}{C_4 L_4 R_4 s^2+2C_4 L_4 R_L s^2+2C_4 R_4 R_L s+R_4+2R_L}$
Q: $\frac{L_4\sqrt{\frac{1}{C_4 L_4}}\left(R_4+2R_L\right)}{2R_4 R_L}$
ω_0: $\sqrt{\frac{1}{C_4 L_4}}$
Bandwidth: $\frac{2R_4 R_L}{L_4\left(R_4+2R_L\right)}$

Filter 192

Filter Type: BS
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \frac{R_4\left(L_4 s+\frac{1}{C_4 s}\right)}{L_4 s+R_4+\frac{1}{C_4 s}},\ \infty,\ \frac{1}{C_L s}\right)$
$H(s)$: $\frac{R_4\left(C_4 L_4 s^2+1\right)}{C_4 C_L L_L R_4 s^3+2C_4 L_4 s^2+2C_4 R_4 s+C_L R_4 s+2}$
Q: $\frac{2C_4 L_4\sqrt{\frac{1}{C_4 L_4}}}{R_4\left(2C_4+C_L\right)}$
ω_0: $\sqrt{\frac{1}{C_4 L_4}}$
Bandwidth: $\frac{R_4\left(2C_4+C_L\right)}{2C_4 L_4}$

Filter 193

Filter Type: BS
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \frac{R_4\left(L_4 s+\frac{1}{C_4 s}\right)}{L_4 s+R_4+\frac{1}{C_4 s}},\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$
$H(s)$: $\frac{R_4 R_L\left(C_4 L_4 s^2+1\right)}{C_4 C_L L_L R_4 R_L s^3+C_4 L_4 R_4 s^2+2C_4 L_4 R_L s^2+2C_4 R_4 R_L s+C_L R_4 R_L s+R_4+2R_L}$
Q: $\frac{C_4 L_4\sqrt{\frac{1}{C_4 L_4}}\left(R_4+2R_L\right)}{R_4 R_L\left(2C_4+C_L\right)}$
ω_0: $\sqrt{\frac{1}{C_4 L_4}}$
Bandwidth: $\frac{R_4 R_L\left(2C_4+C_L\right)}{C_4 L_4\left(R_4+2R_L\right)}$

Filter 194

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \frac{R_4\left(L_4 s+\frac{1}{C_4 s}\right)}{L_4 s+R_4+\frac{1}{C_4 s}},\ \infty,\ R_L+\frac{1}{C_L s}\right)$

Filter 195

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \frac{R_4\left(L_4 s+\frac{1}{C_4 s}\right)}{L_4 s+R_4+\frac{1}{C_4 s}},\ \infty,\ L_L s+\frac{1}{C_L s}\right)$

Filter 196

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \frac{R_4\left(L_4 s+\frac{1}{C_4 s}\right)}{L_4 s+R_4+\frac{1}{C_4 s}},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$

Filter 197

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \frac{R_4\left(L_4 s+\frac{1}{C_4 s}\right)}{L_4 s+R_4+\frac{1}{C_4 s}},\ \infty,\ L_L s+R_L+\frac{1}{C_L s}\right)$

Filter 198

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \frac{R_4\left(L_4 s+\frac{1}{C_4 s}\right)}{L_4 s+R_4+\frac{1}{C_4 s}},\ \infty,\ \frac{1}{C_L s+\frac{1}{R_L}+\frac{1}{L_L s}}\right)$

Filter 199

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \frac{R_4\left(L_4 s+\frac{1}{C_4 s}\right)}{L_4 s+R_4+\frac{1}{C_4 s}},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}+R_L\right)$

Filter 200

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{1}{C_2 s},\ \infty,\ \frac{R_4\left(L_4 s+\frac{1}{C_4 s}\right)}{L_4 s+R_4+\frac{1}{C_4 s}},\ \infty,\ \frac{R_L\left(L_L s+\frac{1}{C_L s}\right)}{L_L s+R_L+\frac{1}{C_L s}}\right)$

Filter 201

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ R_4,\ \infty,\ R_L\right)$

Filter 202

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ R_4,\ \infty,\ \frac{1}{C_Ls}\right)$

Filter 203

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ R_4,\ \infty,\ \frac{R_4}{C_LR_Ls+1}\right)$

Filter 204

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ R_4,\ \infty,\ R_L+\frac{1}{C_Ls}\right)$

Filter 205

Filter Type: BS
$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ R_4,\ \infty,\ L_Ls+\frac{1}{C_Ls}\right)$
$H(s)$: $\frac{R_4\left(C_LL_Ls^2+1\right)}{2C_LL_Ls^2+C_LR_4s+2}$
Q: $\frac{2L_L\sqrt{\frac{1}{C_LL_L}}}{R_4}$
ω_0: $\sqrt{\frac{1}{C_LL_L}}$
Bandwidth: $\frac{R_4}{2L_L}$

Filter 206

Filter Type: BP
$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ R_4,\ \infty,\ \frac{L_Ls}{C_LL_Ls^2+1}\right)$
$H(s)$: $\frac{L_LR_4s}{C_LL_LR_4s^2+2L_Ls+R_4}$
Q: $\frac{C_LR_4\sqrt{\frac{1}{C_LL_L}}}{2}$
ω_0: $\sqrt{\frac{1}{C_LL_L}}$
Bandwidth: $\frac{2}{C_LR_4}$

Filter 207

Filter Type: GE
$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ R_4,\ \infty,\ L_Ls+R_L+\frac{1}{C_Ls}\right)$
$H(s)$: $\frac{R_4\left(C_LL_Ls^2+C_LR_Ls+1\right)}{2C_LL_Ls^2+C_LR_4s+2C_LR_Ls+2}$
Q: $\frac{2L_L\sqrt{\frac{1}{C_LL_L}}}{R_4+2R_L}$
ω_0: $\sqrt{\frac{1}{C_LL_L}}$
Bandwidth: $\frac{R_4+2R_L}{2L_L}$
Qz: $\frac{L_L\sqrt{\frac{1}{C_LL_L}}}{R_L}$

Filter 208

Filter Type: BP
$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ R_4,\ \infty,\ \frac{1}{C_LR_Ls+\frac{L_L}{R_L}+\frac{1}{C_Ls}}\right)$
$H(s)$: $\frac{L_LR_4R_Ls}{C_LL_LR_4R_Ls^2+L_LR_4s^2+2L_LR_Ls+R_4R_L}$
Q: $\frac{C_LR_4R_L\sqrt{\frac{1}{C_LL_L}}}{R_4+2R_L}$
ω_0: $\sqrt{\frac{1}{C_LL_L}}$
Bandwidth: $\frac{R_4+2R_L}{C_LR_4R_L}$

Filter 209

Filter Type: GE
$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ R_4,\ \infty,\ \frac{L_Ls}{C_LL_Ls^2+1}+R_L\right)$
$H(s)$: $\frac{R_4\left(C_LL_LR_Ls^2+L_Ls+R_L\right)}{C_LL_LR_4s^2+2C_LL_LR_Ls^2+2L_Ls+R_4+2R_L}$
Q: $\frac{C_L\sqrt{\frac{1}{C_LL_L}}(R_4+2R_L)}{2}$
ω_0: $\sqrt{\frac{1}{C_LL_L}}$
Bandwidth: $\frac{2}{C_L(R_4+2R_L)}$
Qz: $C_LR_L\sqrt{\frac{1}{C_LL_L}}$

Filter 210

Filter Type: BS
$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ R_4,\ \infty,\ \frac{R_L\left(L_Ls+\frac{1}{C_Ls}\right)}{L_Ls+R_L+\frac{1}{C_Ls}}\right)$
$H(s)$: $\frac{R_4R_L\left(C_LL_Ls^2+1\right)}{C_LL_LR_4s^2+2C_LL_LR_Ls^2+C_LR_4R_Ls+R_4+2R_L}$
Q: $\frac{L_L\sqrt{\frac{1}{C_LL_L}}(R_4+2R_L)}{R_4R_L}$
ω_0: $\sqrt{\frac{1}{C_LL_L}}$
Bandwidth: $\frac{R_4R_L}{L_L(R_4+2R_L)}$

Filter 211

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ \frac{1}{C_4s},\ \infty,\ R_L\right)$

Filter 212

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ \frac{1}{C_4s},\ \infty,\ \frac{1}{C_Ls}\right)$

Filter 213

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ \frac{1}{C_4s},\ \infty,\ \frac{R_L}{C_LR_Ls+1}\right)$

Filter 214

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ \frac{1}{C_4s},\ \infty,\ R_L+\frac{1}{C_Ls}\right)$

Filter 215

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ \frac{1}{C_4s},\ \infty,\ L_Ls+\frac{1}{C_Ls}\right)$

Filter 216

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ \frac{1}{C_4s},\ \infty,\ \frac{L_Ls}{C_LL_Ls^2+1}\right)$

Filter 217

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ \frac{1}{C_4s},\ \infty,\ L_Ls+R_L+\frac{1}{C_Ls}\right)$

Filter 218

Filter Type: BP
$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ \frac{1}{C_4s},\ \infty,\ \frac{1}{C_Ls+\frac{1}{R_L+\frac{1}{L_Ls}}}\right)$
$H(s)$: $\frac{L_LR_Ls}{2C_4L_LR_Ls^2+C_4L_LR_Ls+L_Ls+R_L}$
Q: $R_L\sqrt{\frac{1}{L_L(2C_4+C_L)}}\,(2C_4+C_L)$
ω_0: $\sqrt{\frac{1}{L_L(2C_4+C_L)}}$
Bandwidth: $\frac{1}{R_L(2C_4+C_L)}$

Filter 219

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ \frac{1}{C_4s},\ \infty,\ \frac{L_Ls}{C_LL_Ls^2+1}+R_L\right)$

Filter 220

Filter Type: BS
$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ \frac{1}{C_4s},\ \infty,\ \frac{R_L\left(L_Ls+\frac{1}{C_Ls}\right)}{L_Ls+R_L+\frac{1}{C_Ls}}\right)$
$H(s)$: $\frac{R_L(C_4L_Ls^2+1)}{2C_4C_LL_LR_Ls^3+2C_4R_Ls+C_LL_Ls^2+C_LR_Ls+2R_L}$
Q: $\frac{C_LL_L\sqrt{\frac{1}{C_LL_L}}}{R_L(2C_4+C_L)}$
ω_0: $\sqrt{\frac{1}{C_LL_L}}$
Bandwidth: $\frac{R_L(2C_4+C_L)}{C_LL_L}$

Filter 221

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ \frac{R_4}{C_4R_4s+1},\ \infty,\ R_L\right)$

Filter 222

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ \frac{R_4}{C_4R_4s+1},\ \infty,\ \frac{1}{C_Ls}\right)$

Filter 223

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ \frac{R_4}{C_4R_4s+1},\ \infty,\ \frac{R_L}{C_LR_Ls+1}\right)$

Filter 224

Filter Type: Invalid011
$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ \frac{R_4}{C_4R_4s+1},\ \infty,\ R_L+\frac{1}{C_Ls}\right)$
$H(s)$: $\frac{R_4(C_LR_Ls+1)}{2C_4C_LR_LR_4s^2+2C_4R_4s+C_LR_4s+2C_LR_Ls+2}$
Q: $\frac{2C_4C_LR_4R_L\sqrt{\frac{1}{C_4C_LR_4R_L}}}{2C_4R_4+C_LR_4+2C_LR_L}$
ω_0: $\sqrt{\frac{1}{C_4C_LR_4R_L}}$
Bandwidth: $\frac{2C_4R_4+C_LR_4+2C_LR_L}{2C_4C_LR_4R_L}$

Filter 225

Filter Type: BS
$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ \frac{R_4}{C_4R_4s+1},\ \infty,\ L_Ls+\frac{1}{C_Ls}\right)$
$H(s)$: $\frac{R_4(C_LL_Ls^2+1)}{2C_4C_LL_LR_4s^3+2C_4R_4s+2C_LL_Ls^2+C_LR_4s+2}$
Q: $\frac{2C_LL_L\sqrt{\frac{1}{C_LL_L}}}{R_4(2C_4+C_L)}$
ω_0: $\sqrt{\frac{1}{C_LL_L}}$
Bandwidth: $\frac{R_4(2C_4+C_L)}{2C_LL_L}$

Filter 226

Filter Type: BP
$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ \frac{R_4}{C_4R_4s+1},\ \infty,\ \frac{L_Ls}{C_LL_Ls^2+1}\right)$
$H(s)$: $\frac{L_LR_Ls}{2C_4L_LR_4s^2+C_4L_LR_4s^2+2L_Ls+R_4}$
Q: $\frac{R_4\sqrt{\frac{1}{L_L(2C_4+C_L)}}\,(2C_4+C_L)}{2}$
ω_0: $\sqrt{\frac{1}{L_L(2C_4+C_L)}}$
Bandwidth: $\frac{2}{R_4(2C_4+C_L)}$

Filter 227

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ \frac{R_4}{C_4R_4s+1},\ \infty,\ L_Ls+R_L+\frac{1}{C_Ls}\right)$

Filter 228

Filter Type: BP
$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ \frac{R_4}{C_4R_4s+1},\ \infty,\ \frac{1}{C_Ls+\frac{1}{R_L+\frac{1}{L_Ls}}}\right)$
$H(s)$: $\frac{L_LR_LR_4s}{2C_4L_LR_4R_Ls^2+C_LL_LR_4R_Ls^2+L_LR_4s+2L_LR_Ls+R_4R_L}$
Q: $\frac{R_4R_L\sqrt{\frac{1}{L_L(2C_4+C_L)}}\,(2C_4+C_L)}{R_4+2R_L}$
ω_0: $\sqrt{\frac{1}{L_L(2C_4+C_L)}}$
Bandwidth: $\frac{R_4+2R_L}{R_4R_L(2C_4+C_L)}$

Filter 229

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ \frac{R_4}{C_4R_4s+1},\ \infty,\ \frac{L_Ls}{C_LL_Ls^2+1}+R_L\right)$

Filter 230

Filter Type: BS

$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ \frac{R_4}{C_4R_4s+1},\ \infty,\ \frac{R_L\left(L_Ls+\frac{1}{C_Ls}\right)}{L_Ls+R_Ls+\frac{R_L}{C_Ls}}\right)$

$H(s)$: $\frac{R_4R_L(C_LL_Ls^2+1)}{2C_4C_LL_LR_4R_Ls^3+2C_4R_4R_Ls+C_LL_LR_4s^2+2C_LL_LR_Ls^2+C_LR_4R_Ls+R_4+2R_L}$

Q: $\frac{C_LL_L\sqrt{\frac{1}{C_LL_L}}(R_4+2R_L)}{R_4R_L(2C_4+C_L)}$

ω_0: $\sqrt{\frac{1}{C_LL_L}}$

Bandwidth: $\frac{R_4R_L(2C_4+C_L)}{C_LL_L(R_4+2R_L)}$

Filter 231

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ R_4+\frac{1}{C_4s},\ \infty,\ R_L\right)$

Filter 232

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ R_4+\frac{1}{C_4s},\ \infty,\ \frac{1}{C_Ls}\right)$

Filter 233

Filter Type: Invalid011

$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ R_4+\frac{1}{C_4s},\ \infty,\ \frac{R_L}{C_LR_Ls+1}\right)$

$H(s)$: $\frac{R_L(C_4R_4s+1)}{C_4C_LR_4R_Ls^2+C_4R_4s+2C_4R_Ls+C_LR_Ls+1}$

Q: $\frac{C_4C_LR_4R_L\sqrt{\frac{1}{C_4C_LR_4R_L}}}{C_4R_4+2C_4R_L+C_LR_L}$

ω_0: $\sqrt{\frac{1}{C_4C_LR_4R_L}}$

Bandwidth: $\frac{C_4R_4+2C_4R_L+C_LR_L}{C_4C_LR_4R_L}$

Filter 234

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ R_4+\frac{1}{C_4s},\ \infty,\ R_L+\frac{1}{C_Ls}\right)$

Filter 235

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ R_4+\frac{1}{C_4s},\ \infty,\ L_Ls+\frac{1}{C_Ls}\right)$

Filter 236

Filter Type: Invalid110

$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ R_4+\frac{1}{C_4s},\ \infty,\ \frac{L_Ls}{C_LL_Ls^2+1}\right)$

$H(s)$: $\frac{L_Ls(C_4R_4s+1)}{C_4C_LL_LR_4s^3+2C_4L_Ls^2+C_4R_4s+C_LL_Ls^2+1}$

Q: $\frac{L_L\sqrt{\frac{1}{L_L(2C_4+C_L)}}(2C_4+C_L)}{C_4R_4}$

ω_0: $\sqrt{\frac{1}{L_L(2C_4+C_L)}}$

Bandwidth: $\frac{C_4R_4}{L_L(2C_4+C_L)}$

Filter 237

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ R_4+\frac{1}{C_4s},\ \infty,\ L_Ls+R_L+\frac{1}{C_Ls}\right)$

Filter 238

Filter Type: Invalid110

$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ R_4+\frac{1}{C_4s},\ \infty,\ \frac{1}{C_Ls+\frac{1}{R_L}+\frac{1}{L_Ls}}\right)$

$H(s)$: $\frac{L_LR_Ls(C_4R_4s+1)}{C_4C_LL_LR_4R_Ls^3+C_4L_LR_4s^2+2C_4L_LR_Ls^2+C_4R_4R_Ls+C_LL_LR_Ls^2+L_Ls+R_L}$

Q: $\frac{L_L\sqrt{\frac{R_L}{L_L(C_4R_4+2C_4R_L+C_LR_L)}}(C_4R_4+2C_4R_L+C_LR_L)}{C_4R_4R_L+L_L}$

ω_0: $\sqrt{\frac{R_L}{L_L(C_4R_4+2C_4R_L+C_LR_L)}}$

Bandwidth: $\frac{C_4R_4R_L+L_L}{L_L(C_4R_4+2C_4R_L+C_LR_L)}$

Filter 239

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ R_4+\frac{1}{C_4s},\ \infty,\ \frac{L_Ls}{C_LL_Ls^2+1}+R_L\right)$

Filter 240

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ R_4+\frac{1}{C_4s},\ \infty,\ \frac{R_L\left(L_Ls+\frac{1}{C_Ls}\right)}{L_Ls+R_L+\frac{1}{C_Ls}}\right)$

Filter 241

Filter Type: BS

$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ L_4s+\frac{1}{C_4s},\ \infty,\ R_L\right)$

$H(s)$: $\frac{R_L(C_4L_4s^2+1)}{C_4L_4s^2+2C_4R_Ls+1}$

Q: $\frac{L_4\sqrt{\frac{C_4}{L_4}}}{2R_L}$

ω_0: $\sqrt{\frac{1}{C_4L_4}}$

Bandwidth: $\frac{2R_L}{L_4}$

Filter 242

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ L_4s+\frac{1}{C_4s},\ \infty,\ \frac{1}{C_Ls}\right)$

Filter 243

Filter Type: BS

$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ L_4s+\frac{1}{C_4s},\ \infty,\ \frac{R_L}{C_LR_Ls+1}\right)$

$H(s)$: $\frac{R_L(C_4L_4s^2+1)}{C_4C_LL_LR_4s^3+C_4L_4s^2+2C_4R_Ls+C_LR_Ls+1}$

Q: $\frac{C_4L_4\sqrt{\frac{C_4}{L_4}}}{R_L(2C_4+C_L)}$

ω_0: $\sqrt{\frac{1}{C_4L_4}}$

Bandwidth: $\frac{R_L(2C_4+C_L)}{C_4L_4}$

Filter 244

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ L_4s+\frac{1}{C_4s},\ \infty,\ R_L+\frac{1}{C_Ls}\right)$

Filter 245

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ L_4s+\frac{1}{C_4s},\ \infty,\ L_Ls+\frac{1}{C_Ls}\right)$

Filter 246

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ L_4s+\frac{1}{C_4s},\ \infty,\ \frac{L_Ls}{C_LL_Ls^2+1}\right)$

Filter 247

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ L_4s+\frac{1}{C_4s},\ \infty,\ L_Ls+R_L+\frac{1}{C_Ls}\right)$

Filter 248

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ L_4s+\frac{1}{C_4s},\ \infty,\ \frac{1}{C_Ls+\frac{1}{R_L+\frac{1}{L_Ls}}}\right)$

Filter 249

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ L_4s+\frac{1}{C_4s},\ \infty,\ \frac{L_Ls}{C_LL_Ls^2+1}+R_L\right)$

Filter 250

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ L_4s+\frac{1}{C_4s},\ \infty,\ \frac{R_L\left(L_Ls+\frac{1}{C_Ls}\right)}{L_Ls+R_L+\frac{1}{C_Ls}}\right)$

Filter 251

Filter Type: BP
$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ \frac{L_4s}{C_4L_4s^2+1},\ \infty,\ R_L\right)$
$H(s)$: $\frac{L_4R_Ls}{2C_4L_4R_Ls^2+L_4s+2R_L}$
Q: $2C_4R_L\sqrt{\frac{1}{C_4L_4}}$
ω_0: $\sqrt{\frac{1}{C_4L_4}}$
Bandwidth: $\frac{1}{2C_4R_L}$

Filter 252

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ \frac{L_4s}{C_4L_4s^2+1},\ \infty,\ \frac{1}{C_Ls}\right)$

Filter 253

Filter Type: BP
$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ \frac{L_4s}{C_4L_4s^2+1},\ \infty,\ \frac{R_L}{C_LR_Ls+1}\right)$
$H(s)$: $\frac{L_4R_Ls}{2C_4L_4R_Ls^2+C_LL_4R_Ls^2+L_4s+2R_L}$
Q: $\sqrt{2}R_L\sqrt{\frac{1}{L_4(2C_4+C_L)}}\left(2C_4+C_L\right)$
ω_0: $\sqrt{2}\sqrt{\frac{1}{L_4(2C_4+C_L)}}$
Bandwidth: $\frac{2}{R_L(2C_4+C_L)}$

Filter 254

Filter Type: Invalid110
$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ \frac{L_4s}{C_4L_4s^2+1},\ \infty,\ R_L+\frac{1}{C_Ls}\right)$
$H(s)$: $\frac{L_4s(C_LR_Ls+1)}{2C_4C_LL_4R_Ls^3+2C_4L_4s^2+C_LL_4s^2+2C_LR_Ls+2}$
Q: $\frac{\sqrt{2}L_4\sqrt{\frac{1}{L_4(2C_4+C_L)}}(2C_4+C_L)}{2C_LR_L}$
ω_0: $\sqrt{2}\sqrt{\frac{1}{L_4(2C_4+C_L)}}$
Bandwidth: $\frac{2C_LR_L}{L_4(2C_4+C_L)}$

Filter 255

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ \frac{L_4s}{C_4L_4s^2+1},\ \infty,\ L_Ls+\frac{1}{C_Ls}\right)$

Filter 256

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ \frac{L_4s}{C_4L_4s^2+1},\ \infty,\ \frac{L_Ls}{C_LL_Ls^2+1}\right)$

Filter 257

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ \frac{L_4s}{C_4L_4s^2+1},\ \infty,\ L_Ls+R_L+\frac{1}{C_Ls}\right)$

Filter 258

Filter Type: BP
$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ \frac{L_4s}{C_4L_4s^2+1},\ \infty,\ \frac{1}{C_Ls+\frac{1}{R_L+\frac{1}{L_Ls}}}\right)$
$H(s)$: $\frac{L_4L_Ls}{2C_4L_4L_LR_Ls^2+C_LL_4L_LR_Ls^2+L_4L_Ls+L_4R_Ls+2L_LR_L}$
Q: $R_L\sqrt{\frac{L_4+2L_L}{L_4L_L(2C_4+C_L)}}\left(2C_4+C_L\right)$
ω_0: $\sqrt{\frac{L_4+2L_L}{L_4L_L(2C_4+C_L)}}$
Bandwidth: $\frac{1}{R_L(2C_4+C_L)}$

Filter 259

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ \frac{L_4s}{C_4L_4s^2+1},\ \infty,\ \frac{L_Ls}{C_LL_Ls^2+1}+R_L\right)$

Filter 260

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ \frac{L_4s}{C_4L_4s^2+1},\ \infty,\ \frac{R_L\left(L_Ls+\frac{1}{C_Ls}\right)}{L_Ls+R_L+\frac{1}{C_Ls}}\right)$

Filter 261

Filter Type: GE
$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ L_4s+R_4+\frac{1}{C_4s},\ \infty,\ R_L\right)$
$H(s)$: $\frac{R_L(C_4L_4s^2+C_4R_4s+1)}{C_4L_4s^2+C_4R_4s+2C_4R_Ls+1}$
Q: $\frac{L_4\sqrt{\frac{1}{C_4L_4}}}{R_4+2R_L}$
ω_0: $\sqrt{\frac{1}{C_4L_4}}$
Bandwidth: $\frac{R_4+2R_L}{L_4}$
Qz: $\frac{L_4\sqrt{\frac{1}{C_4L_4}}}{R_4}$

Filter 262

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ L_4s+R_4+\frac{1}{C_4s},\ \infty,\ \frac{1}{C_Ls}\right)$

Filter 263

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ L_4s+R_4+\frac{1}{C_4s},\ \infty,\ \frac{R_L}{C_LR_Ls+1}\right)$

Filter 264

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ L_4s+R_4+\frac{1}{C_4s},\ \infty,\ R_L+\frac{1}{C_Ls}\right)$

Filter 265

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ L_4s+R_4+\frac{1}{C_4s},\ \infty,\ L_Ls+\frac{1}{C_Ls}\right)$

Filter 266

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ L_4s+R_4+\frac{1}{C_4s},\ \infty,\ \frac{L_Ls}{C_LL_Ls^2+1}\right)$

Filter 267

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ L_4s+R_4+\frac{1}{C_4s},\ \infty,\ L_Ls+R_L+\frac{1}{C_Ls}\right)$

Filter 268

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ L_4s+R_4+\frac{1}{C_4s},\ \infty,\ \frac{1}{C_Ls+\frac{1}{R_L}+\frac{1}{L_Ls}}\right)$

Filter 269

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ L_4s+R_4+\frac{1}{C_4s},\ \infty,\ \frac{L_Ls}{C_LL_Ls^2+1}+R_L\right)$

Filter 270

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ L_4s+R_4+\frac{1}{C_4s},\ \infty,\ \frac{R_L\left(L_Ls+\frac{1}{C_Ls}\right)}{L_Ls+R_L+\frac{1}{C_Ls}}\right)$

Filter 271

Filter Type: BP
$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ \frac{1}{C_4s+\frac{1}{R_4}+\frac{1}{L_4s}},\ \infty,\ R_L\right)$
$H(s)$: $\frac{L_4R_4R_Ls}{2C_4L_4R_4R_Ls^2+L_4R_4s+2L_4R_Ls+2R_4R_L}$
Q: $\frac{2C_4R_4R_L\sqrt{\frac{1}{C_4L_4}}}{R_4+2R_L}$
ω_0: $\sqrt{\frac{1}{C_4L_4}}$
Bandwidth: $\frac{R_4+2R_L}{2C_4R_4R_L}$

Filter 272

Filter Type: BP
$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ \frac{1}{C_4s+\frac{1}{R_4}+\frac{1}{L_4s}},\ \infty,\ \frac{1}{C_Ls}\right)$
$H(s)$: $\frac{L_4R_4s}{2C_4L_4R_4s^2+C_4L_4R_4s^2+2L_4s+2R_4}$
Q: $\frac{\sqrt{2}R_4\sqrt{\frac{2}{L_4(2C_4+C_L)}}(2C_4+C_L)}{2}$
ω_0: $\sqrt{2}\sqrt{\frac{2}{L_4(2C_4+C_L)}}$
Bandwidth: $\frac{2}{R_4(2C_4+C_L)}$

Filter 273

Filter Type: BP
$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ \frac{1}{C_4s+\frac{1}{R_4}+\frac{1}{L_4s}},\ \infty,\ \frac{R_L}{C_LR_Ls+1}\right)$
$H(s)$: $\frac{L_4R_4R_Ls}{2C_4L_4R_4R_Ls^2+C_4L_4R_4R_Ls^2+L_4R_4s+2L_4R_Ls+2R_4R_L}$
Q: $\frac{\sqrt{2}R_4R_L\sqrt{\frac{1}{L_4(2C_4+C_L)}}(2C_4+C_L)}{R_4+2R_L}$
ω_0: $\sqrt{2}\sqrt{\frac{1}{L_4(2C_4+C_L)}}$
Bandwidth: $\frac{R_4+2R_L}{R_4R_L(2C_4+C_L)}$

Filter 274

Filter Type: Invalid110
$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ \frac{1}{C_4s+\frac{1}{R_4}+\frac{1}{L_4s}},\ \infty,\ R_L+\frac{1}{C_Ls}\right)$
$H(s)$: $\frac{L_4R_4s(C_LR_Ls+1)}{2C_4C_LL_4R_4R_Ls^3+2C_4L_4R_4s^2+C_LL_4R_4s^2+2C_LL_4R_Ls^2+2C_LR_4R_Ls+2L_4s+2R_4}$
Q: $\frac{\sqrt{2}L_4\sqrt{\frac{R_4}{L_4(2C_4R_4+C_LR_4+2C_LR_L)}}(2C_4R_4+C_LR_4+2C_LR_L)}{2(C_LR_4R_L+L_4)}$
ω_0: $\sqrt{2}\sqrt{\frac{R_4}{L_4(2C_4R_4+C_LR_4+2C_LR_L)}}$
Bandwidth: $\frac{2(C_LR_4R_L+L_4)}{L_4(2C_4R_4+C_LR_4+2C_LR_L)}$

Filter 275

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ \frac{1}{C_4s+\frac{1}{R_4}+\frac{1}{L_4s}},\ \infty,\ L_Ls+\frac{1}{C_Ls}\right)$

Filter 276

Filter Type: BP

$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ \frac{1}{C_4s+\frac{1}{R_4}+\frac{1}{L_4s}},\ \infty,\ \frac{L_Ls}{C_LL_Ls^2+1}\right)$

$H(s)$: $\frac{L_4L_LR_4s}{2C_4L_4L_LR_4s^2+C_LL_4L_LR_4s^2+2L_4L_Ls+L_4R_4+2L_LR_4}$

Q: $\frac{R_4\sqrt{\frac{L_4+2L_L}{L_4L_L(2C_4+C_L)}}(2C_4+C_L)}{2}$

ω_0: $\sqrt{\frac{L_4+2L_L}{L_4L_L(2C_4+C_L)}}$

Bandwidth: $\frac{2}{R_4(2C_4+C_L)}$

Filter 277

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ \frac{1}{C_4s+\frac{1}{R_4}+\frac{1}{L_4s}},\ \infty,\ L_Ls+R_L+\frac{1}{C_Ls}\right)$

Filter 278

Filter Type: BP

$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ \frac{1}{C_4s+\frac{1}{R_4}+\frac{1}{L_4s}},\ \infty,\ \frac{1}{C_Ls+\frac{1}{R_L}+\frac{1}{L_Ls}}\right)$

$H(s)$: $\frac{L_4L_LR_4R_Ls}{2C_4L_4L_LR_4R_Ls^2+C_LL_4L_LR_4R_Ls^2+L_4L_LR_4s+2L_4L_LR_Ls+L_4R_4R_L+2L_LR_4R_L}$

Q: $\frac{R_4R_L\sqrt{\frac{L_4+2L_L}{L_4L_L(2C_4+C_L)}}(2C_4+C_L)}{R_4+2R_L}$

ω_0: $\sqrt{\frac{L_4+2L_L}{L_4L_L(2C_4+C_L)}}$

Bandwidth: $\frac{R_4+2R_L}{R_4R_L(2C_4+C_L)}$

Filter 279

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ \frac{1}{C_4s+\frac{1}{R_4}+\frac{1}{L_4s}},\ \infty,\ \frac{L_Ls}{C_LL_Ls^2+1}+R_L\right)$

Filter 280

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ \frac{1}{C_4s+\frac{1}{R_4}+\frac{1}{L_4s}},\ \infty,\ \frac{R_L\left(L_Ls+\frac{1}{C_Ls}\right)}{L_Ls+R_L+\frac{1}{C_Ls}}\right)$

Filter 281

Filter Type: GE

$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ \frac{L_4s}{C_4L_4s^2+1}+R_4,\ \infty,\ R_L\right)$

$H(s)$: $\frac{R_L(C_4L_4R_4s^2+L_4s+R_4)}{C_4L_4R_4s^2+2C_4L_4R_Ls^2+L_4s+R_4+2R_L}$

Q: $C_4\sqrt{\frac{1}{C_4L_4}}\left(R_4+2R_L\right)$

ω_0: $\sqrt{\frac{1}{C_4L_4}}$

Bandwidth: $\frac{1}{C_4(R_4+2R_L)}$

Qz: $C_4R_4\sqrt{\frac{1}{C_4L_4}}$

Filter 282

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ \frac{L_4s}{C_4L_4s^2+1}+R_4,\ \infty,\ \frac{1}{C_Ls}\right)$

Filter 283

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ \frac{L_4s}{C_4L_4s^2+1}+R_4,\ \infty,\ \frac{R_L}{C_LR_Ls+1}\right)$

Filter 284

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ \frac{L_4s}{C_4L_4s^2+1}+R_4,\ \infty,\ R_L+\frac{1}{C_Ls}\right)$

Filter 285

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ \frac{L_4s}{C_4L_4s^2+1}+R_4,\ \infty,\ L_Ls+\frac{1}{C_Ls}\right)$

Filter 286

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ \frac{L_4s}{C_4L_4s^2+1}+R_4,\ \infty,\ \frac{L_Ls}{C_LL_Ls^2+1}\right)$

Filter 287

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ \frac{L_4s}{C_4L_4s^2+1}+R_4,\ \infty,\ L_Ls+R_L+\frac{1}{C_Ls}\right)$

Filter 288

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ \frac{L_4s}{C_4L_4s^2+1}+R_4,\ \infty,\ \frac{1}{C_Ls+\frac{1}{R_L}+\frac{1}{L_Ls}}\right)$

Filter 289

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ \frac{L_4s}{C_4L_4s^2+1}+R_4,\ \infty,\ \frac{L_Ls}{C_LL_Ls^2+1}+R_L\right)$

Filter 290

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ \frac{L_4s}{C_4L_4s^2+1}+R_4,\ \infty,\ \frac{R_L\left(L_Ls+\frac{1}{C_Ls}\right)}{L_Ls+R_L+\frac{1}{C_Ls}}\right)$

Filter 291

Filter Type: BS

$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ \frac{R_4\left(L_4s+\frac{1}{C_4s}\right)}{L_4s+R_4+\frac{1}{C_4s}},\ \infty,\ R_L\right)$

$H(s)$: $\frac{R_4R_L(C_4L_4s^2+1)}{C_4L_4R_4s^2+2C_4L_4R_Ls^2+2C_4R_4R_Ls+R_4+2R_L}$

Q: $\frac{L_4\sqrt{\frac{1}{C_4L_4}}(R_4+2R_L)}{2R_4R_L}$

ω_0: $\sqrt{\frac{1}{C_4L_4}}$

Bandwidth: $\frac{2R_4R_L}{L_4(R_4+2R_L)}$

Filter 292

Filter Type: BS

$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ \frac{R_4\left(L_4s+\frac{1}{C_4s}\right)}{L_4s+R_4+\frac{1}{C_4s}},\ \infty,\ \frac{1}{C_Ls}\right)$

$H(s)$: $\frac{R_4\left(C_4L_4s^2+1\right)}{C_4C_LL_4R_4s^3+2C_4L_4s^2+2C_4R_4s+C_LR_4s+2}$

Q: $\frac{2C_4L_4\sqrt{\frac{1}{C_4L_4}}}{R_4(2C_4+C_L)}$

ω_0: $\sqrt{\frac{1}{C_4L_4}}$

Bandwidth: $\frac{R_4(2C_4+C_L)}{2C_4L_4}$

Filter 293

Filter Type: BS

$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ \frac{R_4\left(L_4s+\frac{1}{C_4s}\right)}{L_4s+R_4+\frac{1}{C_4s}},\ \infty,\ \frac{R_L}{C_LR_Ls+1}\right)$

$H(s)$: $\frac{R_4R_L\left(C_4L_4s^2+1\right)}{C_4C_LL_4R_4R_Ls^3+C_4L_4R_4s^2+2C_4L_4R_Ls^2+2C_4R_4R_Ls+C_LR_4R_Ls+R_4+2R_L}$

Q: $\frac{C_4L_4\sqrt{\frac{1}{C_4L_4}}(R_4+2R_L)}{R_4R_L(2C_4+C_L)}$

ω_0: $\sqrt{\frac{1}{C_4L_4}}$

Bandwidth: $\frac{R_4R_L(2C_4+C_L)}{C_4L_4(R_4+2R_L)}$

Filter 294

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ \frac{R_4\left(L_4s+\frac{1}{C_4s}\right)}{L_4s+R_4+\frac{1}{C_4s}},\ \infty,\ R_L+\frac{1}{C_Ls}\right)$

Filter 295

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ \frac{R_4\left(L_4s+\frac{1}{C_4s}\right)}{L_4s+R_4+\frac{1}{C_4s}},\ \infty,\ L_Ls+\frac{1}{C_Ls}\right)$

Filter 296

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ \frac{R_4\left(L_4s+\frac{1}{C_4s}\right)}{L_4s+R_4+\frac{1}{C_4s}},\ \infty,\ \frac{L_Ls}{C_LL_Ls^2+1}\right)$

Filter 297

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ \frac{R_4\left(L_4s+\frac{1}{C_4s}\right)}{L_4s+R_4+\frac{1}{C_4s}},\ \infty,\ L_Ls+R_L+\frac{1}{C_Ls}\right)$

Filter 298

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ \frac{R_4\left(L_4s+\frac{1}{C_4s}\right)}{L_4s+R_4+\frac{1}{C_4s}},\ \infty,\ \frac{1}{C_Ls+\frac{1}{R_L}+\frac{1}{L_Ls}}\right)$

Filter 299

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ \frac{R_4\left(L_4s+\frac{1}{C_4s}\right)}{L_4s+R_4+\frac{1}{C_4s}},\ \infty,\ \frac{L_Ls}{C_LL_Ls^2+1}+R_L\right)$

Filter 300

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2}{C_2R_2s+1},\ \infty,\ \frac{R_4\left(L_4s+\frac{1}{C_4s}\right)}{L_4s+R_4+\frac{1}{C_4s}},\ \infty,\ \frac{R_4\left(L_Ls+\frac{1}{C_Ls}\right)}{L_Ls+R_L+\frac{1}{C_Ls}}\right)$

Filter 301

Invalid filter

$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2s},\ \infty,\ R_4,\ \infty,\ R_L\right)$

Filter 302

Invalid filter

$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2s},\ \infty,\ R_4,\ \infty,\ \frac{1}{C_Ls}\right)$

Filter 303

Invalid filter

$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2s},\ \infty,\ R_4,\ \infty,\ \frac{R_L}{C_LR_Ls+1}\right)$

Filter 304

Invalid filter

$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2s},\ \infty,\ R_4,\ \infty,\ R_L+\frac{1}{C_Ls}\right)$

Filter 305

Filter Type: BS

$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2s},\ \infty,\ R_4,\ \infty,\ L_Ls+\frac{1}{C_Ls}\right)$

$H(s)$: $\frac{R_4\left(C_LL_Ls^2+1\right)}{2C_LL_Ls^2+C_LR_4s+2}$

Q: $\frac{2L_L\sqrt{\frac{1}{C_LL_L}}}{R_4}$

ω_0: $\sqrt{\frac{1}{C_LL_L}}$

Bandwidth: $\frac{R_4}{2L_L}$

Filter 306

Filter Type: BP

$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2s},\ \infty,\ R_4,\ \infty,\ \frac{L_Ls}{C_LL_Ls^2+1}\right)$

$H(s)$: $\frac{L_LR_4s}{C_LL_LR_4s^2+2L_Ls+R_4}$

Q: $\frac{C_LR_4\sqrt{\frac{1}{C_LL_L}}}{2}$

ω_0: $\sqrt{\frac{1}{C_LL_L}}$

Bandwidth: $\frac{2}{C_LR_4}$

Filter 307

Filter Type: GE

$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2s},\ \infty,\ R_4,\ \infty,\ L_Ls+R_L+\frac{1}{C_Ls}\right)$

$H(s)$: $\frac{R_4\left(C_LL_Ls^2+C_LR_Ls+1\right)}{2C_LL_Ls^2+C_LR_4s+2C_LR_Ls+2}$

Q: $\frac{2L_L\sqrt{\frac{1}{C_LL_L}}}{R_4+2R_L}$

ω_0: $\sqrt{\frac{1}{C_LL_L}}$

Bandwidth: $\frac{R_4+2R_L}{2L_L}$

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

Filter 308

Filter Type: BP
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ R_4,\ \infty,\ \frac{1}{C_L s+\frac{1}{R_L}+\frac{1}{L_L s}}\right)$
$H(s)$: $\frac{L_L R_4 R_L s}{C_L L_L R_4 R_L s^2+L_L R_4 s+2L_L R_L s+R_4 R_L}$
Q: $\frac{C_L R_4 R_L\sqrt{\frac{1}{C_L L_L}}}{R_4+2R_L}$
ω_0: $\sqrt{\frac{1}{C_L L_L}}$
Bandwidth: $\frac{R_4+2R_L}{C_L R_4 R_L}$

Filter 309

Filter Type: GE
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ R_4,\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}+R_L\right)$
$H(s)$: $\frac{R_4\left(C_L L_L R_L s^2+L_L s+R_L\right)}{C_L L_L R_4 s^2+2C_L L_L R_L s^2+2L_L s+R_4+2R_L}$
Q: $\frac{C_L\sqrt{\frac{1}{C_L L_L}}(R_4+2R_L)}{2}$
ω_0: $\sqrt{\frac{1}{C_L L_L}}$
Bandwidth: $\frac{2}{C_L(R_4+2R_L)}$
Qz: $C_L R_L\sqrt{\frac{1}{C_L L_L}}$

Filter 310

Filter Type: BS
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ R_4,\ \infty,\ \frac{R_L\left(L_L s+\frac{1}{C_L s}\right)}{L_L s+R_L+\frac{1}{C_L s}}\right)$
$H(s)$: $\frac{R_4 R_L\left(C_L L_L s^2+1\right)}{C_L L_L R_4 s^2+2C_L L_L R_L s^2+C_L R_4 R_L s+R_4+2R_L}$
Q: $\frac{L_L\sqrt{\frac{1}{C_L L_L}}(R_4+2R_L)}{R_4 R_L}$
ω_0: $\sqrt{\frac{1}{C_L L_L}}$
Bandwidth: $\frac{R_4 R_L}{L_L(R_4+2R_L)}$

Filter 311

Invalid filter
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s},\ \infty,\ R_L\right)$

Filter 312

Invalid filter
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s},\ \infty,\ \frac{1}{C_L s}\right)$

Filter 313

Invalid filter
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s},\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$

Filter 314

Invalid filter
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s},\ \infty,\ R_L+\frac{1}{C_L s}\right)$

Filter 315

Invalid filter
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s},\ \infty,\ L_L s+\frac{1}{C_L s}\right)$

Filter 316

Invalid filter
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$

Filter 317

Invalid filter
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s},\ \infty,\ L_L s+R_L+\frac{1}{C_L s}\right)$

Filter 318

Filter Type: BP
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s},\ \infty,\ \frac{1}{C_L s+\frac{1}{R_L}+\frac{1}{L_L s}}\right)$
$H(s)$: $\frac{L_L R_L s}{2C_4 L_L R_L s^2+C_L L_L R_L s^2+L_L s+R_L}$
Q: $R_L\sqrt{\frac{1}{L_L(2C_4+C_L)}}(2C_4+C_L)$
ω_0: $\sqrt{\frac{1}{L_L(2C_4+C_L)}}$
Bandwidth: $\frac{1}{R_L(2C_4+C_L)}$

Filter 319

Invalid filter
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}+R_L\right)$

Filter 320

Filter Type: BS
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s},\ \infty,\ \frac{R_L\left(L_L s+\frac{1}{C_L s}\right)}{L_L s+R_L+\frac{1}{C_L s}}\right)$
$H(s)$: $\frac{R_L\left(C_L L_L s^2+1\right)}{2C_4 C_L L_L R_L s^3+2C_4 R_L s+C_L L_L s^2+C_L R_L s+1}$
Q: $\frac{C_L L_L\sqrt{\frac{1}{C_L L_L}}}{R_L(2C_4+C_L)}$
ω_0: $\sqrt{\frac{1}{C_L L_L}}$
Bandwidth: $\frac{R_L(2C_4+C_L)}{C_L L_L}$

Filter 321

Invalid filter
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ \frac{R_4}{C_4 R_4 s+1},\ \infty,\ R_L\right)$

Filter 322

Invalid filter
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ \frac{R_4}{C_4 R_4 s+1},\ \infty,\ \frac{1}{C_L s}\right)$

Filter 323

Invalid filter
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ \frac{R_4}{C_4 R_4 s+1},\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$

Filter 324

Filter Type: Invalid011
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ \frac{R_4}{C_4 R_4 s+1},\ \infty,\ R_L+\frac{1}{C_L s}\right)$
$H(s)$: $\frac{R_4(C_L R_L s+1)}{2C_4 C_L R_4 R_L s^2+2C_4 R_4+C_L R_4 s+2C_L R_L s+2}$
Q: $\frac{2C_4 C_L R_4 R_L \sqrt{C_4 C_L R_4 R_L}}{2C_4 R_4+C_L R_4+2C_L R_L}$
ω_0: $\sqrt{\frac{1}{C_4 C_L R_4 R_L}}$
Bandwidth: $\frac{2C_4 R_4+C_L R_4+2C_L R_L}{2C_4 C_L R_4 R_L}$

Filter 325

Filter Type: BS
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ \frac{R_4}{C_4 R_4 s+1},\ \infty,\ L_L s+\frac{1}{C_L s}\right)$
$H(s)$: $\frac{R_4(C_L L_L s^2+1)}{2C_4 C_L L_L R_4 s^3+2C_4 R_4 s+2C_L L_L s^2+C_L R_4 s+2}$
Q: $\frac{2C_4 L_L \sqrt{\frac{1}{C_4 C_L}}}{R_4(2C_4+C_L)}$
ω_0: $\sqrt{\frac{1}{C_L L_L}}$
Bandwidth: $\frac{R_4(2C_4+C_L)}{2C_L L_L}$

Filter 326

Filter Type: BP
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ \frac{R_4}{C_4 R_4 s+1},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$
$H(s)$: $\frac{L_L R_4 s}{2C_4 L_L R_4 s^2+C_L L_L R_4 s^2+2L_L s+R_4}$
Q: $\frac{R_4\sqrt{\frac{1}{L_L(2C_4+C_L)}}(2C_4+C_L)}{2}$
ω_0: $\sqrt{\frac{1}{L_L(2C_4+C_L)}}$
Bandwidth: $\frac{2}{R_4(2C_4+C_L)}$

Filter 327

Invalid filter
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ \frac{R_4}{C_4 R_4 s+1},\ \infty,\ L_L s+R_L+\frac{1}{C_L s}\right)$

Filter 328

Filter Type: BP
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ \frac{R_4}{C_4 R_4 s+1},\ \infty,\ \frac{1}{C_L s+\frac{1}{R_L+\frac{1}{L_L s}}}\right)$
$H(s)$: $\frac{L_L R_4 R_L s}{2C_4 L_L R_4 R_L s^2+C_L L_L R_4 R_L s^2+L_L R_4 s+2L_L R_L s+R_4 R_L}$
Q: $\frac{R_4 R_L\sqrt{\frac{1}{L_L(2C_4+C_L)}}(2C_4+C_L)}{R_4+2R_L}$
ω_0: $\sqrt{\frac{1}{L_L(2C_4+C_L)}}$
Bandwidth: $\frac{R_4+2R_L}{R_4 R_L(2C_4+C_L)}$

Filter 329

Invalid filter
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ \frac{R_4}{C_4 R_4 s+1},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}+R_L\right)$

Filter 330

Filter Type: BS
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ \frac{R_4}{C_4 R_4 s+1},\ \infty,\ \frac{R_L\left(L_L s+\frac{1}{C_L s}\right)}{L_L s+R_L+\frac{1}{C_L s}}\right)$
$H(s)$: $\frac{R_4 R_L(C_L L_L s^2+1)}{2C_4 C_L L_L R_4 R_L s^3+2C_4 R_4 R_L s+C_L L_L R_4 s^2+2C_L L_L R_L s^2+C_L R_4 R_L s+R_4+2R_L}$
Q: $\frac{C_L L_L\sqrt{\frac{1}{C_L L_L}}(R_4+2R_L)}{R_4 R_L(2C_4+C_L)}$
ω_0: $\sqrt{\frac{1}{C_L L_L}}$
Bandwidth: $\frac{R_4 R_L(2C_4+C_L)}{C_L L_L(R_4+2R_L)}$

Filter 331

Invalid filter
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ R_4+\frac{1}{C_4 s},\ \infty,\ R_L\right)$

Filter 332

Invalid filter
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ R_4+\frac{1}{C_4 s},\ \infty,\ \frac{1}{C_L s}\right)$

Filter 333

Filter Type: Invalid011
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ R_4+\frac{1}{C_4 s},\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$
$H(s)$: $\frac{R_4(C_4 R_4 s+1)}{C_4 C_L R_4 R_L s^2+C_4 R_4 s+2C_4 R_L s+C_L R_L s+1}$
Q: $\frac{C_4 C_L R_4 R_L\sqrt{\frac{1}{C_4 C_L R_4 R_L}}}{C_4 R_4+2C_4 R_L+C_L R_L}$
ω_0: $\sqrt{\frac{1}{C_4 C_L R_4 R_L}}$
Bandwidth: $\frac{C_4 R_4+2C_4 R_L+C_L R_L}{C_4 C_L R_4 R_L}$

Filter 334

Invalid filter
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ R_4+\frac{1}{C_4 s},\ \infty,\ R_L+\frac{1}{C_L s}\right)$

Filter 335

Invalid filter
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ R_4+\frac{1}{C_4 s},\ \infty,\ L_L s+\frac{1}{C_L s}\right)$

Filter 336

Filter Type: Invalid110
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ R_4+\frac{1}{C_4 s},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$
$H(s)$: $\frac{L_L s(C_4 R_4 s+1)}{C_4 C_L L_L R_4 s^3+2C_4 L_L s^2+C_4 R_4 s+C_L L_L s^2+1}$
Q: $\frac{L_L\sqrt{\frac{1}{L_L(2C_4+C_L)}}(2C_4+C_L)}{C_4 R_4}$
ω_0: $\sqrt{\frac{1}{L_L(2C_4+C_L)}}$
Bandwidth: $\frac{C_4 R_4}{L_L(2C_4+C_L)}$

Filter 337

Invalid filter
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ R_4+\frac{1}{C_4 s},\ \infty,\ L_L s+R_L+\frac{1}{C_L s}\right)$

Filter 338

Filter Type: Invalid110
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ R_4+\frac{1}{C_4 s},\ \infty,\ \frac{1}{C_L s+\frac{1}{R_L}+\frac{1}{L_L s}}\right)$
$H(s)$: $\frac{L_L R_L s(C_4 R_4 s+1)}{C_4 C_L L_L R_4 R_L s^3+C_4 L_L R_4 s^2+2C_4 L_L R_L s^2+C_4 R_4 R_L s+C_L L_L R_L s^2+L_L s+R_L}$
Q: $\frac{L_L\sqrt{\frac{R_L}{L_L(C_4 R_4+2C_4 R_L+C_L R_L)}}(C_4 R_4+2C_4 R_L+C_L R_L)}{C_4 R_4 R_L+L_L}$
ω_0: $\sqrt{\frac{R_L}{L_L(C_4 R_4+2C_4 R_L+C_L R_L)}}$
Bandwidth: $\frac{C_4 R_4 R_L+L_L}{L_L(C_4 R_4+2C_4 R_L+C_L R_L)}$

Filter 339

Invalid filter
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ R_4+\frac{1}{C_4 s},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}+R_L\right)$

Filter 340

Invalid filter
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ R_4+\frac{1}{C_4 s},\ \infty,\ \frac{R_L\left(L_L s+\frac{1}{C_L s}\right)}{L_L s+R_L+\frac{1}{C_L s}}\right)$

Filter 341

Filter Type: BS
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ L_4 s+\frac{1}{C_4 s},\ \infty,\ R_L\right)$
$H(s)$: $\frac{R_L(C_4 L_4 s^2+1)}{C_4 L_4 s^2+2C_4 R_L s+1}$
Q: $\frac{L_4\sqrt{\frac{1}{C_4 L_4}}}{2R_L}$
ω_0: $\sqrt{\frac{1}{C_4 L_4}}$
Bandwidth: $\frac{2R_L}{L_4}$

Filter 342

Invalid filter
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ L_4 s+\frac{1}{C_4 s},\ \infty,\ \frac{1}{C_L s}\right)$

Filter 343

Filter Type: BS
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ L_4 s+\frac{1}{C_4 s},\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$
$H(s)$: $\frac{R_L(C_4 L_4 s^2+1)}{C_4 C_L L_4 R_L s^3+C_4 L_4 s^2+2C_4 R_L s+C_L R_L s+1}$
Q: $\frac{C_4 L_4\sqrt{\frac{1}{C_4 L_4}}}{R_L(2C_4+C_L)}$
ω_0: $\sqrt{\frac{1}{C_4 L_4}}$
Bandwidth: $\frac{R_L(2C_4+C_L)}{C_4 L_4}$

Filter 344

Invalid filter
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ L_4 s+\frac{1}{C_4 s},\ \infty,\ R_L+\frac{1}{C_L s}\right)$

Filter 345

Invalid filter
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ L_4 s+\frac{1}{C_4 s},\ \infty,\ L_L s+\frac{1}{C_L s}\right)$

Filter 346

Invalid filter
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ L_4 s+\frac{1}{C_4 s},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$

Filter 347

Invalid filter
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ L_4 s+\frac{1}{C_4 s},\ \infty,\ L_L s+R_L+\frac{1}{C_L s}\right)$

Filter 348

Invalid filter
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ L_4 s+\frac{1}{C_4 s},\ \infty,\ \frac{1}{C_L s+\frac{1}{R_L}+\frac{1}{L_L s}}\right)$

Filter 349

Invalid filter
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ L_4 s+\frac{1}{C_4 s},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}+R_L\right)$

Filter 350

Invalid filter
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ L_4 s+\frac{1}{C_4 s},\ \infty,\ \frac{R_L\left(L_L s+\frac{1}{C_L s}\right)}{L_L s+R_L+\frac{1}{C_L s}}\right)$

Filter 351

Filter Type: BP
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1},\ \infty,\ R_L\right)$
$H(s)$: $\frac{L_4 R_L s}{2C_4 L_4 R_L s^2+L_4 s+2R_L}$
Q: $2C_4 R_L\sqrt{\frac{1}{C_4 L_4}}$
ω_0: $\sqrt{\frac{1}{C_4 L_4}}$
Bandwidth: $\frac{1}{2C_4 R_L}$

Filter 352

Invalid filter
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1},\ \infty,\ \frac{1}{C_L s}\right)$

Filter 353

Filter Type: BP
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1},\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$
$H(s)$: $\frac{L_4 R_L s}{2C_4 L_4 R_L s^2+C_4 L_4 R_L s^2+L_4 s+2R_L}$
Q: $\sqrt{2}R_L\sqrt{\frac{1}{L_4(2C_4+C_L)}}\,(2C_4+C_L)$
ω_0: $\sqrt{2}\sqrt{\frac{1}{L_4(2C_4+C_L)}}$
Bandwidth: $\frac{1}{R_L(2C_4+C_L)}$

Filter 354

Filter Type: Invalid110
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1},\ \infty,\ R_L+\frac{1}{C_L s}\right)$
$H(s)$: $\frac{L_4 s(C_L R_L s+1)}{2C_4 C_L L_4 R_L s^3+2C_4 L_4 s^2+C_L L_4 s^2+2C_L R_L s+2}$
Q: $\frac{\sqrt{2}L_4\sqrt{\frac{1}{L_4(2C_4+C_L)}}(2C_4+C_L)}{2C_L R_L}$
ω_0: $\sqrt{2}\sqrt{\frac{1}{L_4(2C_4+C_L)}}$
Bandwidth: $\frac{2C_L R_L}{L_4(2C_4+C_L)}$

Filter 355

Invalid filter
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1},\ \infty,\ L_L s+\frac{1}{C_L s}\right)$

Filter 356

Invalid filter
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$

Filter 357

Invalid filter
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1},\ \infty,\ L_L s+R_L+\frac{1}{C_L s}\right)$

Filter 358

Filter Type: BP
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1},\ \infty,\ \frac{1}{C_L s+\frac{1}{R_L}+\frac{1}{L_L s}}\right)$
$H(s)$: $\frac{L_4 L_L R_L s}{2C_4 L_4 L_L R_L s^2+C_L L_4 L_L R_L s^2+L_4 L_L s+L_4 R_L+2L_L R_L}$
Q: $R_L\sqrt{\frac{L_4+2L_L}{L_4 L_L(2C_4+C_L)}}\,(2C_4+C_L)$
ω_0: $\sqrt{\frac{L_4+2L_L}{L_4 L_L(2C_4+C_L)}}$
Bandwidth: $\frac{1}{R_L(2C_4+C_L)}$

Filter 359

Invalid filter
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}+R_L\right)$

Filter 360

Invalid filter
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1},\ \infty,\ \frac{R_L\left(L_L s+\frac{1}{C_L s}\right)}{L_L s+R_L+\frac{1}{C_L s}}\right)$

Filter 361

Filter Type: GE
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ L_4 s+R_4+\frac{1}{C_4 s},\ \infty,\ R_L\right)$
$H(s)$: $\frac{R_L(C_4 L_4 s^2+C_4 R_4 s+1)}{C_4 L_4 s^2+C_4 R_4 s+2C_4 R_L s+1}$
Q: $\frac{L_4\sqrt{\frac{1}{C_4 L_4}}}{R_4+2R_L}$
ω_0: $\sqrt{\frac{1}{C_4 L_4}}$
Bandwidth: $\frac{R_4+2R_L}{L_4}$
Qz: $\frac{L_4\sqrt{\frac{1}{C_4 L_4}}}{R_4}$

Filter 362

Invalid filter
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ L_4 s+R_4+\frac{1}{C_4 s},\ \infty,\ \frac{1}{C_L s}\right)$

Filter 363

Invalid filter
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ L_4 s+R_4+\frac{1}{C_4 s},\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$

Filter 364

Invalid filter
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ L_4 s+R_4+\frac{1}{C_4 s},\ \infty,\ R_L+\frac{1}{C_L s}\right)$

Filter 365

Invalid filter
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ L_4 s+R_4+\frac{1}{C_4 s},\ \infty,\ L_L s+\frac{1}{C_L s}\right)$

Filter 366

Invalid filter
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ L_4 s+R_4+\frac{1}{C_4 s},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$

Filter 367

Invalid filter
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ L_4 s+R_4+\frac{1}{C_4 s},\ \infty,\ L_L s+R_L+\frac{1}{C_L s}\right)$

Filter 368

Invalid filter
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ L_4 s+R_4+\frac{1}{C_4 s},\ \infty,\ \frac{1}{C_L s+\frac{1}{R_L}+\frac{1}{L_L s}}\right)$

Filter 369

Invalid filter
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ L_4 s+R_4+\frac{1}{C_4 s},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}+R_L\right)$

Filter 370

Invalid filter

$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ L_4 s+R_4+\frac{1}{C_4 s},\ \infty,\ \frac{R_L\left(L_L s+\frac{1}{C_L s}\right)}{L_L s+R_L+\frac{1}{C_L s}}\right)$

Filter 371

Filter Type: BP

$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s+\frac{1}{R_4+\frac{1}{L_4 s}}},\ \infty,\ R_L\right)$

$H(s)$: $\frac{L_4 R_4 R_L s}{2C_4 L_4 R_4 R_L s^2+L_4 R_4 s+2L_4 R_L s+2R_4 R_L}$

Q: $\frac{2C_4 R_4 R_L \sqrt{\frac{1}{C_4 L_4}}}{R_4+2R_L}$

ω_0: $\sqrt{\frac{1}{C_4 L_4}}$

Bandwidth: $\frac{R_4+2R_L}{2C_4 R_4 R_L}$

Filter 372

Filter Type: BP

$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s+\frac{1}{R_4+\frac{1}{L_4 s}}},\ \infty,\ \frac{1}{C_L s}\right)$

$H(s)$: $\frac{L_4 R_4 s}{2C_4 L_4 R_4 s^2+C_L L_4 R_4 s^2+2L_4 s+2R_4}$

Q: $\frac{\sqrt{2}R_4\sqrt{\frac{1}{L_4(2C_4+C_L)}}(2C_4+C_L)}{2}$

ω_0: $\sqrt{2}\sqrt{\frac{1}{L_4(2C_4+C_L)}}$

Bandwidth: $\frac{2}{R_4(2C_4+C_L)}$

Filter 373

Filter Type: BP

$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s+\frac{1}{R_4+\frac{1}{L_4 s}}},\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$

$H(s)$: $\frac{L_4 R_4 R_L s}{2C_4 L_4 R_4 R_L s^2+C_L L_4 R_4 R_L s^2+L_4 R_4 s+2L_4 R_L s+2R_4 R_L}$

Q: $\frac{\sqrt{2}R_4 R_L\sqrt{\frac{1}{L_4(2C_4+C_L)}}(2C_4+C_L)}{R_4+2R_L}$

ω_0: $\sqrt{2}\sqrt{\frac{1}{L_4(2C_4+C_L)}}$

Bandwidth: $\frac{R_4+2R_L}{R_4R_L(2C_4+C_L)}$

Filter 374

Filter Type: Invalid110

$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s+\frac{1}{R_4+\frac{1}{L_4 s}}},\ \infty,\ R_L+\frac{1}{C_L s}\right)$

$H(s)$: $\frac{L_4 R_4 s(C_L R_L s+1)}{2C_4 C_L L_4 R_4 R_L s^3+2C_4 L_4 R_4 s^2+C_L L_4 R_4 s^2+2C_L L_4 R_L s^2+2C_L R_4 R_L s+2L_4 s+2R_4}$

Q: $\frac{R_4\sqrt{\frac{1}{L_4(2C_4+C_L R_4+2C_L R_L)}}(2C_4 R_4+C_L R_4+2C_L R_L)}{2(C_L R_4 R_L+L_4)}$

ω_0: $\sqrt{2}\sqrt{\frac{1}{L_4(2C_4 R_4+C_L R_4+2C_L R_L)}}$

Bandwidth: $\frac{2(C_L R_4 R_L+L_4)}{L_4(2C_4 R_4+C_L R_4+2C_L R_L)}$

Filter 375

Invalid filter

$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s+\frac{1}{R_4+\frac{1}{L_4 s}}},\ \infty,\ L_L s+\frac{1}{C_L s}\right)$

Filter 376

Filter Type: BP

$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s+\frac{1}{R_4+\frac{1}{L_4 s}}},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$

$H(s)$: $\frac{L_4 L_L R_4 s}{2C_4 L_4 L_L R_4 s^2+C_L L_4 L_L R_4 s^2+L_4 L_L s+2L_4 L_L s+L_4 R_4+2L_L R_4}$

Q: $\frac{R_4\sqrt{\frac{L_4+2L_L}{L_4 L_L(2C_4+C_L)}}(2C_4+C_L)}{R_4+2R_L}$

ω_0: $\sqrt{\frac{L_4+2L_L}{L_4 L_L(2C_4+C_L)}}$

Bandwidth: $\frac{2}{R_4(2C_4+C_L)}$

Filter 377

Invalid filter

$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s+\frac{1}{R_4+\frac{1}{L_4 s}}},\ \infty,\ L_L s+R_L+\frac{1}{C_L s}\right)$

Filter 378

Filter Type: BP

$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s+\frac{1}{R_4+\frac{1}{L_4 s}}},\ \infty,\ \frac{1}{C_L s+\frac{1}{R_L}+\frac{1}{L_L s}}\right)$

$H(s)$: $\frac{L_4 L_L R_4 R_L s}{2C_4 L_4 L_L R_4 R_L s^2+C_L L_4 L_L R_4 R_L s^2+L_4 L_L R_4 s+2L_4 L_L R_L s+L_4 R_4 R_L+2L_L R_4 R_L}$

Q: $\frac{R_4 R_L\sqrt{\frac{L_4+2L_L}{L_4 L_L(2C_4+C_L)}}(2C_4+C_L)}{R_4+2R_L}$

ω_0: $\sqrt{\frac{L_4+2L_L}{L_4 L_L(2C_4+C_L)}}$

Bandwidth: $\frac{R_4+2R_L}{R_4R_L(2C_4+C_L)}$

Filter 379

Invalid filter

$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s+\frac{1}{R_4+\frac{1}{L_4 s}}},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}+R_L\right)$

Filter 380

Invalid filter

$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s+\frac{1}{R_4+\frac{1}{L_4 s}}},\ \infty,\ \frac{R_L\left(L_L s+\frac{1}{C_L s}\right)}{L_L s+R_L+\frac{1}{C_L s}}\right)$

Filter 381

Filter Type: GE

$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1}+R_4,\ \infty,\ R_L\right)$

$H(s)$: $\frac{R_L(C_4 L_4 R_4 s^2+L_4 s+R_4)}{C_4 L_4 R_4 s^2+2C_4 L_4 R_L s^2+L_4 s+R_4+2R_L}$

Q: $C_4\sqrt{\frac{1}{C_4 L_4}}\,(R_4+2R_L)$

ω_0: $\sqrt{\frac{1}{C_4 L_4}}$

Bandwidth: $\frac{1}{C_4(R_4+2R_L)}$

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

Filter 382

Invalid filter

$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1}+R_4,\ \infty,\ \frac{1}{C_L s}\right)$

Filter 383

Invalid filter
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1}+R_4,\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$

Filter 384

Invalid filter
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1}+R_4,\ \infty,\ R_L+\frac{1}{C_L s}\right)$

Filter 385

Invalid filter
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1}+R_4,\ \infty,\ L_L s+\frac{1}{C_L s}\right)$

Filter 386

Invalid filter
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1}+R_4,\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$

Filter 387

Invalid filter
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1}+R_4,\ \infty,\ L_L s+R_L+\frac{1}{C_L s}\right)$

Filter 388

Invalid filter
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1}+R_4,\ \infty,\ \frac{1}{C_L s+\frac{1}{R_L+\frac{1}{L_L s}}}\right)$

Filter 389

Invalid filter
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1}+R_4,\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}+R_L\right)$

Filter 390

Invalid filter
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1}+R_4,\ \infty,\ \frac{R_L\left(L_L s+\frac{1}{C_L s}\right)}{L_L s+R_L+\frac{1}{C_L s}}\right)$

Filter 391

Filter Type: BS
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ \frac{R_4\left(L_4 s+\frac{1}{C_4 s}\right)}{L_4 s+R_4+\frac{1}{C_4 s}},\ \infty,\ R_L\right)$
$H(s)$: $\frac{R_4 R_L\left(C_4 L_4 s^2+1\right)}{C_4 L_4 R_4 s^2+2C_4 L_4 R_L s^2+2C_4 R_4 R_L s+R_4+2R_L}$
Q: $\frac{L_4\sqrt{\frac{1}{C_4 L_4}}\left(R_4+2R_L\right)}{2R_4 R_L}$
ω_0: $\sqrt{\frac{1}{C_4 L_4}}$
Bandwidth: $\frac{2R_4 R_L}{L_4\left(R_4+2R_L\right)}$

Filter 392

Filter Type: BS
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ \frac{R_4\left(L_4 s+\frac{1}{C_4 s}\right)}{L_4 s+R_4+\frac{1}{C_4 s}},\ \infty,\ \frac{1}{C_L s}\right)$
$H(s)$: $\frac{R_4\left(C_4 L_4 s^2+1\right)}{C_4 C_L L_L R_4 s^3+2C_4 L_4 s^2+2C_4 R_4 s+C_L R_4 s+2}$
Q: $\frac{2C_4 L_4\sqrt{\frac{1}{C_4 L_4}}}{R_4(2C_4+C_L)}$
ω_0: $\sqrt{\frac{1}{C_4 L_4}}$
Bandwidth: $\frac{R_4(2C_4+C_L)}{2C_4 L_4}$

Filter 393

Filter Type: BS
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ \frac{R_4\left(L_4 s+\frac{1}{C_4 s}\right)}{L_4 s+R_4+\frac{1}{C_4 s}},\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$
$H(s)$: $\frac{R_4 R_L\left(C_4 L_4 s^2+1\right)}{C_4 C_L L_L R_4 R_L s^3+C_4 L_4 R_4 s^2+2C_4 L_4 R_L s^2+2C_4 R_4 R_L s+C_L R_4 R_L s+R_4+2R_L}$
Q: $\frac{C_4 L_4\sqrt{\frac{1}{C_4 L_4}}\left(R_4+2R_L\right)}{R_4 R_L(2C_4+C_L)}$
ω_0: $\sqrt{\frac{1}{C_4 L_4}}$
Bandwidth: $\frac{R_4 R_L(2C_4+C_L)}{C_4 L_4\left(R_4+2R_L\right)}$

Filter 394

Invalid filter
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ \frac{R_4\left(L_4 s+\frac{1}{C_4 s}\right)}{L_4 s+R_4+\frac{1}{C_4 s}},\ \infty,\ R_L+\frac{1}{C_L s}\right)$

Filter 395

Invalid filter
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ \frac{R_4\left(L_4 s+\frac{1}{C_4 s}\right)}{L_4 s+R_4+\frac{1}{C_4 s}},\ \infty,\ L_L s+\frac{1}{C_L s}\right)$

Filter 396

Invalid filter
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ \frac{R_4\left(L_4 s+\frac{1}{C_4 s}\right)}{L_4 s+R_4+\frac{1}{C_4 s}},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$

Filter 397

Invalid filter
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ \frac{R_4\left(L_4 s+\frac{1}{C_4 s}\right)}{L_4 s+R_4+\frac{1}{C_4 s}},\ \infty,\ L_L s+R_L+\frac{1}{C_L s}\right)$

Filter 398

Invalid filter
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ \frac{R_4\left(L_4 s+\frac{1}{C_4 s}\right)}{L_4 s+R_4+\frac{1}{C_4 s}},\ \infty,\ \frac{1}{C_L s+\frac{1}{R_L+\frac{1}{L_L s}}}\right)$

Filter 399

Invalid filter
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ \frac{R_4\left(L_4 s+\frac{1}{C_4 s}\right)}{L_4 s+R_4+\frac{1}{C_4 s}},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}+R_L\right)$

Filter 400

Invalid filter
$Z(s)$: $\left(\infty,\ R_2+\frac{1}{C_2 s},\ \infty,\ \frac{R_4\left(L_4 s+\frac{1}{C_4 s}\right)}{L_4 s+R_4+\frac{1}{C_4 s}},\ \infty,\ \frac{R_L\left(L_L s+\frac{1}{C_L s}\right)}{L_L s+R_L+\frac{1}{C_L s}}\right)$

Filter 401

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s+\frac{1}{C_2 s},\ \infty,\ R_4,\ \infty,\ R_L\right)$

Filter 402

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s+\frac{1}{C_2 s},\ \infty,\ R_4,\ \infty,\ \frac{1}{C_L s}\right)$

Filter 403

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s+\frac{1}{C_2 s},\ \infty,\ R_4,\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$

Filter 404

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s+\frac{1}{C_2 s},\ \infty,\ R_4,\ \infty,\ R_L+\frac{1}{C_L s}\right)$

Filter 405

Filter Type: BS
$Z(s)$: $\left(\infty,\ L_2 s+\frac{1}{C_2 s},\ \infty,\ R_4,\ \infty,\ L_L s+\frac{1}{C_L s}\right)$
$H(s)$: $\frac{R_4\left(C_L L_L s^2+1\right)}{2C_L L_L s^2+C_L R_4 s+2}$
Q: $\frac{2L_L\sqrt{\frac{1}{C_L L_L}}}{R_4}$
ω_0: $\sqrt{\frac{1}{C_L L_L}}$
Bandwidth: $\frac{R_4}{2L_L}$

Filter 406

Filter Type: BP
$Z(s)$: $\left(\infty,\ L_2 s+\frac{1}{C_2 s},\ \infty,\ R_4,\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$
$H(s)$: $\frac{L_L R_4 s}{C_L L_L R_4 s^2+2L_L s+R_4}$
Q: $\frac{C_L R_4\sqrt{\frac{1}{C_L L_L}}}{2}$
ω_0: $\sqrt{\frac{1}{C_L L_L}}$
Bandwidth: $\frac{2}{C_L R_4}$

Filter 407

Filter Type: GE
$Z(s)$: $\left(\infty,\ L_2 s+\frac{1}{C_2 s},\ \infty,\ R_4,\ \infty,\ L_L s+R_L+\frac{1}{C_L s}\right)$
$H(s)$: $\frac{R_4\left(C_L L_L s^2+C_L R_L s+1\right)}{2C_L L_L s^2+C_L R_4 s+2C_L R_L s+2}$
Q: $\frac{2L_L\sqrt{\frac{1}{C_L L_L}}}{R_4+2R_L}$
ω_0: $\sqrt{\frac{1}{C_L L_L}}$
Bandwidth: $\frac{R_4+2R_L}{2L_L}$
Qz: $\frac{L_L\sqrt{\frac{1}{C_L L_L}}}{R_L}$

Filter 408

Filter Type: BP
$Z(s)$: $\left(\infty,\ L_2 s+\frac{1}{C_2 s},\ \infty,\ R_4,\ \infty,\ \frac{1}{C_L s+\frac{1}{R_L}+\frac{1}{L_L s}}\right)$
$H(s)$: $\frac{L_L R_4 R_L s}{C_L L_L R_4 R_L s^2+L_L R_4 s^2+2L_L R_L s^2+2L_L R_L s+R_4 R_L}$
Q: $\frac{C_L R_4 R_L\sqrt{\frac{1}{C_L L_L}}}{R_4+2R_L}$
ω_0: $\sqrt{\frac{1}{C_L L_L}}$
Bandwidth: $\frac{R_4+2R_L}{C_L R_4 R_L}$

Filter 409

Filter Type: GE
$Z(s)$: $\left(\infty,\ L_2 s+\frac{1}{C_2 s},\ \infty,\ R_4,\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}+R_L\right)$
$H(s)$: $\frac{R_4\left(C_L L_L R_L s^2+L_L s+R_L\right)}{C_L L_L R_4 s^2+2C_L L_L R_L s^2+2L_L s+R_4+2R_L}$
Q: $\frac{C_L\sqrt{\frac{1}{C_L L_L}}\left(R_4+2R_L\right)}{2}$
ω_0: $\sqrt{\frac{1}{C_L L_L}}$
Bandwidth: $\frac{2}{C_L\left(R_4+2R_L\right)}$
Qz: $C_L R_L\sqrt{\frac{1}{C_L L_L}}$

Filter 410

Filter Type: BS
$Z(s)$: $\left(\infty,\ L_2 s+\frac{1}{C_2 s},\ \infty,\ R_4,\ \infty,\ \frac{R_L\left(L_L s+\frac{1}{C_L s}\right)}{L_L s+R_L+\frac{1}{C_L s}}\right)$
$H(s)$: $\frac{R_4 R_L\left(C_L L_L s^2+1\right)}{C_L L_L R_4 s^2+2C_L L_L R_L s^2+C_L R_4 R_L s+R_4+2R_L}$
Q: $\frac{L_L\sqrt{\frac{1}{C_L L_L}}\left(R_4+2R_L\right)}{R_4 R_L}$
ω_0: $\sqrt{\frac{1}{C_L L_L}}$
Bandwidth: $\frac{R_4 R_L}{L_L\left(R_4+2R_L\right)}$

Filter 411

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s+\frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s},\ \infty,\ R_L\right)$

Filter 412

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s+\frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s},\ \infty,\ \frac{1}{C_L s}\right)$

Filter 413

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s+\frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s},\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$

Filter 414

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s+\frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s},\ \infty,\ R_L+\frac{1}{C_L s}\right)$

Filter 415

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s+\frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s},\ \infty,\ L_L s+\frac{1}{C_L s}\right)$

Filter 416

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s + \frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$

Filter 417

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s + \frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s},\ \infty,\ L_L s + R_L + \frac{1}{C_L s}\right)$

Filter 418

Filter Type: BP
$Z(s)$: $\left(\infty,\ L_2 s + \frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s},\ \infty,\ \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}}\right)$
$H(s)$: $\frac{L_L R_L s}{2C_4 L_L R_L s^2 + C_L L_L R_L s^2 + L_L s + R_L}$
Q: $R_L\sqrt{\frac{1}{L_L(2C_4+C_L)}}\,(2C_4 + C_L)$
ω_0: $\sqrt{\frac{1}{L_L(2C_4+C_L)}}$
Bandwidth: $\frac{1}{R_L(2C_4+C_L)}$

Filter 419

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s + \frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1} + R_L\right)$

Filter 420

Filter Type: BS
$Z(s)$: $\left(\infty,\ L_2 s + \frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s},\ \infty,\ \frac{R_L\left(L_L s + \frac{1}{C_L s}\right)}{L_L s + R_L + \frac{R_L}{C_L s}}\right)$
$H(s)$: $\frac{R_L(C_L L_L s^2+1)}{2C_4 C_L L_L R_L s^3 + 2C_4 R_L s + C_L L_L s^2 + C_L R_L s + 1}$
Q: $\frac{C_L L_L\sqrt{\frac{1}{C_L L_L}}}{R_L(2C_4+C_L)}$
ω_0: $\sqrt{\frac{1}{C_L L_L}}$
Bandwidth: $\frac{R_L(2C_4+C_L)}{C_L L_L}$

Filter 421

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s + \frac{1}{C_2 s},\ \infty,\ \frac{R_L}{C_4 R_L s+1},\ \infty,\ R_L\right)$

Filter 422

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s + \frac{1}{C_2 s},\ \infty,\ \frac{R_L}{C_4 R_L s+1},\ \infty,\ \frac{1}{C_L s}\right)$

Filter 423

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s + \frac{1}{C_2 s},\ \infty,\ \frac{R_L}{C_4 R_L s+1},\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$

Filter 424

Filter Type: Invalid011
$Z(s)$: $\left(\infty,\ L_2 s + \frac{1}{C_2 s},\ \infty,\ \frac{R_L}{C_4 R_L s+1},\ \infty,\ R_L + \frac{1}{C_L s}\right)$
$H(s)$: $\frac{R_L(C_L R_L s+1)}{2C_4 C_L R_L R_L s^2 + 2C_4 R_L s + C_L R_L s + 2C_L R_L s + 2}$
Q: $\frac{2C_4 C_L R_L R_L\sqrt{\frac{1}{C_L C_4 R_L R_L}}}{2C_4 R_L + C_L R_L + 2C_L R_L}$
ω_0: $\sqrt{\frac{1}{C_L C_4 R_L R_L}}$
Bandwidth: $\frac{2C_4 R_L + C_L R_L + 2C_L R_L}{2C_4 C_L R_L R_L}$

Filter 425

Filter Type: BS
$Z(s)$: $\left(\infty,\ L_2 s + \frac{1}{C_2 s},\ \infty,\ \frac{R_L}{C_4 R_L s+1},\ \infty,\ L_L s + \frac{1}{C_L s}\right)$
$H(s)$: $\frac{R_L(C_L L_L s^2+1)}{2C_4 C_L L_L R_L s^3 + 2C_4 R_L s + 2C_L L_L s^2 + C_L R_L s + 2}$
Q: $\frac{2C_L L_L\sqrt{\frac{1}{C_L L_L}}}{R_L(2C_4+C_L)}$
ω_0: $\sqrt{\frac{1}{C_L L_L}}$
Bandwidth: $\frac{R_L(2C_4+C_L)}{2C_L L_L}$

Filter 426

Filter Type: BP
$Z(s)$: $\left(\infty,\ L_2 s + \frac{1}{C_2 s},\ \infty,\ \frac{R_L}{C_4 R_L s+1},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$
$H(s)$: $\frac{L_L R_L s}{2C_4 L_L R_L s^2 + C_L L_L R_L s^2 + 2L_L s + R_L}$
Q: $\frac{R_L\sqrt{\frac{1}{L_L(2C_4+C_L)}}\,(2C_4+C_L)}{2}$
ω_0: $\sqrt{\frac{1}{L_L(2C_4+C_L)}}$
Bandwidth: $\frac{2}{R_L(2C_4+C_L)}$

Filter 427

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s + \frac{1}{C_2 s},\ \infty,\ \frac{R_L}{C_4 R_L s+1},\ \infty,\ L_L s + R_L + \frac{1}{C_L s}\right)$

Filter 428

Filter Type: BP
$Z(s)$: $\left(\infty,\ L_2 s + \frac{1}{C_2 s},\ \infty,\ \frac{R_L}{C_4 R_L s+1},\ \infty,\ \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}}\right)$
$H(s)$: $\frac{L_L R_L R_L s}{2C_4 L_L R_L R_L s^2 + C_L L_L R_L R_L s^2 + L_L R_L s + 2L_L R_L s + R_L R_L}$
Q: $\frac{R_L R_L\sqrt{\frac{1}{L_L(2C_4+C_L)}}\,(2C_4+C_L)}{R_L+2R_L}$
ω_0: $\sqrt{\frac{1}{L_L(2C_4+C_L)}}$
Bandwidth: $\frac{R_L+2R_L}{R_L R_L(2C_4+C_L)}$

Filter 429

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s + \frac{1}{C_2 s},\ \infty,\ \frac{R_L}{C_4 R_L s+1},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1} + R_L\right)$

Filter 430

Filter Type: BS

$Z(s)$: $\left(\infty,\ L_2 s+\frac{1}{C_2 s},\ \infty,\ \frac{R_4}{C_4 R_4 s+1},\ \infty,\ \frac{R_L\left(L_L s+\frac{1}{C_L s}\right)}{L_L s+R_L+\frac{1}{C_L s}}\right)$

$H(s)$: $\frac{R_4 R_L (C_L L_L s^2+1)}{2C_4 C_L L_L R_4 R_L s^3+2C_4 R_4 R_L s+C_L L_L R_4 s^2+2C_L L_L R_L s^2+C_L R_4 R_L s+R_4+2R_L}$

Q: $\frac{C_L L_L \sqrt{\frac{1}{C_L L_L}}(R_4+2R_L)}{R_4 R_L (2C_4+C_L)}$

ω_0: $\sqrt{\frac{1}{C_L L_L}}$

Bandwidth: $\frac{R_4 R_L (2C_4+C_L)}{C_L L_L (R_4+2R_L)}$

Filter 431

Invalid filter

$Z(s)$: $\left(\infty,\ L_2 s+\frac{1}{C_2 s},\ \infty,\ R_4+\frac{1}{C_4 s},\ \infty,\ R_L\right)$

Filter 432

Invalid filter

$Z(s)$: $\left(\infty,\ L_2 s+\frac{1}{C_2 s},\ \infty,\ R_4+\frac{1}{C_4 s},\ \infty,\ \frac{1}{C_L s}\right)$

Filter 433

Filter Type: Invalid011

$Z(s)$: $\left(\infty,\ L_2 s+\frac{1}{C_2 s},\ \infty,\ R_4+\frac{1}{C_4 s},\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$

$H(s)$: $\frac{R_L (C_4 R_4 s+1)}{C_4 C_L R_4 R_L s^2+C_4 R_4 s+2C_4 R_L s+2C_4 R_L s+C_L R_L s+1}$

Q: $\frac{C_4 C_L R_4 R_L \sqrt{\frac{1}{C_4 C_L R_4 R_L}}}{C_4 R_4+2C_4 R_L+C_L R_L}$

ω_0: $\sqrt{\frac{1}{C_4 C_L R_4 R_L}}$

Bandwidth: $\frac{C_4 R_4+2C_4 R_L+C_L R_L}{C_4 C_L R_4 R_L}$

Filter 434

Invalid filter

$Z(s)$: $\left(\infty,\ L_2 s+\frac{1}{C_2 s},\ \infty,\ R_4+\frac{1}{C_4 s},\ \infty,\ R_L+\frac{1}{C_L s}\right)$

Filter 435

Invalid filter

$Z(s)$: $\left(\infty,\ L_2 s+\frac{1}{C_2 s},\ \infty,\ R_4+\frac{1}{C_4 s},\ \infty,\ L_L s+\frac{1}{C_L s}\right)$

Filter 436

Filter Type: Invalid110

$Z(s)$: $\left(\infty,\ L_2 s+\frac{1}{C_2 s},\ \infty,\ R_4+\frac{1}{C_4 s},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$

$H(s)$: $\frac{L_L s (C_4 R_4 s+1)}{C_4 C_L L_L R_4 s^3+2C_4 L_L s^2+C_4 R_4 s+C_L L_L s^2+1}$

Q: $\frac{L_L \sqrt{\frac{1}{L_L (2C_4+C_L)}}(2C_4+C_L)}{C_4 R_4}$

ω_0: $\sqrt{\frac{1}{L_L (2C_4+C_L)}}$

Bandwidth: $\frac{C_4 R_4}{L_L (2C_4+C_L)}$

Filter 437

Invalid filter

$Z(s)$: $\left(\infty,\ L_2 s+\frac{1}{C_2 s},\ \infty,\ R_4+\frac{1}{C_4 s},\ \infty,\ L_L s+R_L+\frac{1}{C_L s}\right)$

Filter 438

Filter Type: Invalid110

$Z(s)$: $\left(\infty,\ L_2 s+\frac{1}{C_2 s},\ \infty,\ R_4+\frac{1}{C_4 s},\ \infty,\ \frac{1}{C_L s+\frac{1}{R_L}+\frac{1}{L_L s}}\right)$

$H(s)$: $\frac{L_L R_L s (C_4 R_4 s+1)}{C_4 C_L L_L R_4 R_L s^3+C_4 L_L R_4 s^2+2C_4 L_L R_L s^2+C_4 R_4 R_L s+C_L L_L R_L s^2+L_L s+R_L}$

Q: $\frac{L_L \sqrt{\frac{R_L}{L_L (C_4 R_4+2C_4 R_L+C_L R_L)}}(C_4 R_4+2C_4 R_L+C_L R_L)}{C_4 R_4 R_L+L_L}$

ω_0: $\sqrt{\frac{R_L}{L_L (C_4 R_4+2C_4 R_L+C_L R_L)}}$

Bandwidth: $\frac{C_4 R_4 R_L+L_L}{L_L (C_4 R_4+2C_4 R_L+C_L R_L)}$

Filter 439

Invalid filter

$Z(s)$: $\left(\infty,\ L_2 s+\frac{1}{C_2 s},\ \infty,\ R_4+\frac{1}{C_4 s},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}+R_L\right)$

Filter 440

Invalid filter

$Z(s)$: $\left(\infty,\ L_2 s+\frac{1}{C_2 s},\ \infty,\ R_4+\frac{1}{C_4 s},\ \infty,\ \frac{R_L\left(L_L s+\frac{1}{C_L s}\right)}{L_L s+R_L+\frac{1}{C_L s}}\right)$

Filter 441

Filter Type: BS

$Z(s)$: $\left(\infty,\ L_2 s+\frac{1}{C_2 s},\ \infty,\ L_4 s+\frac{1}{C_4 s},\ \infty,\ R_L\right)$

$H(s)$: $\frac{R_L (C_4 L_4 s^2+1)}{C_4 L_4 s^2+2C_4 R_L s+1}$

Q: $\frac{L_4 \sqrt{\frac{1}{C_4 L_4}}}{2R_L}$

ω_0: $\sqrt{\frac{1}{C_4 L_4}}$

Bandwidth: $\frac{2R_L}{L_4}$

Filter 442

Invalid filter

$Z(s)$: $\left(\infty,\ L_2 s+\frac{1}{C_2 s},\ \infty,\ L_4 s+\frac{1}{C_4 s},\ \infty,\ \frac{1}{C_L s}\right)$

Filter 443

Filter Type: BS

$Z(s)$: $\left(\infty,\ L_2 s+\frac{1}{C_2 s},\ \infty,\ L_4 s+\frac{1}{C_4 s},\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$

$H(s)$: $\frac{R_L (C_4 L_4 s^2+1)}{C_4 C_L L_4 R_L s^3+C_4 L_4 s^2+2C_4 R_L s+C_L R_L s+1}$

Q: $\frac{C_4 L_4 \sqrt{\frac{1}{C_4 L_4}}}{R_L (2C_4+C_L)}$

ω_0: $\sqrt{\frac{1}{C_4 L_4}}$

Bandwidth: $\frac{R_L (2C_4+C_L)}{C_4 L_4}$

Filter 444

Invalid filter

$Z(s)$: $\left(\infty,\ L_2 s+\frac{1}{C_2 s},\ \infty,\ L_4 s+\frac{1}{C_4 s},\ \infty,\ R_L+\frac{1}{C_L s}\right)$

Filter 445

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s+\frac{1}{C_2 s},\ \infty,\ L_4 s+\frac{1}{C_4 s},\ \infty,\ L_L s+\frac{1}{C_L s}\right)$

Filter 446

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s+\frac{1}{C_2 s},\ \infty,\ L_4 s+\frac{1}{C_4 s},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$

Filter 447

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s+\frac{1}{C_2 s},\ \infty,\ L_4 s+\frac{1}{C_4 s},\ \infty,\ L_L s+R_L+\frac{1}{C_L s}\right)$

Filter 448

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s+\frac{1}{C_2 s},\ \infty,\ L_4 s+\frac{1}{C_4 s},\ \infty,\ \frac{1}{C_L s+\frac{1}{R_L}+\frac{1}{L_L s}}\right)$

Filter 449

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s+\frac{1}{C_2 s},\ \infty,\ L_4 s+\frac{1}{C_4 s},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}+R_L\right)$

Filter 450

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s+\frac{1}{C_2 s},\ \infty,\ L_4 s+\frac{1}{C_4 s},\ \infty,\ \frac{R_L\left(L_L s+\frac{1}{C_L s}\right)}{L_L s+R_L+\frac{1}{C_L s}}\right)$

Filter 451

Filter Type: BP
$Z(s)$: $\left(\infty,\ L_2 s+\frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1},\ \infty,\ R_L\right)$
$H(s)$: $\frac{L_4 R_L s}{2C_4 L_4 R_L s^2+L_4 s+2R_L}$
Q: $2C_4 R_L\sqrt{\frac{1}{C_4 L_4}}$
ω_0: $\sqrt{\frac{1}{C_4 L_4}}$
Bandwidth: $\frac{1}{2C_4 R_L}$

Filter 452

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s+\frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1},\ \infty,\ \frac{1}{C_L s}\right)$

Filter 453

Filter Type: BP
$Z(s)$: $\left(\infty,\ L_2 s+\frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1},\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$
$H(s)$: $\frac{L_4 R_L s}{2C_4 L_4 R_L s^2+C_L L_4 R_L s^2+L_4 s+2R_L}$
Q: $\sqrt{2}R_L\sqrt{\frac{1}{L_4(2C_4+C_L)}}\,(2C_4+C_L)$
ω_0: $\sqrt{2}\sqrt{\frac{1}{L_4(2C_4+C_L)}}$
Bandwidth: $\frac{2}{R_L(2C_4+C_L)}$

Filter 454

Filter Type: Invalid110
$Z(s)$: $\left(\infty,\ L_2 s+\frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1},\ \infty,\ R_L+\frac{1}{C_L s}\right)$
$H(s)$: $\frac{L_4 s(C_L R_L s+1)}{2C_4 C_L L_4 R_L s^3+2C_4 L_4 s^2+C_L L_4 s^2+2C_L R_L s+2}$
Q: $\frac{\sqrt{2}L_4\sqrt{\frac{1}{L_4(2C_4+C_L)}}(2C_4+C_L)}{2C_L R_L}$
ω_0: $\sqrt{2}\sqrt{\frac{1}{L_4(2C_4+C_L)}}$
Bandwidth: $\frac{2C_L R_L}{L_4(2C_4+C_L)}$

Filter 455

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s+\frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1},\ \infty,\ L_L s+\frac{1}{C_L s}\right)$

Filter 456

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s+\frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$

Filter 457

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s+\frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1},\ \infty,\ L_L s+R_L+\frac{1}{C_L s}\right)$

Filter 458

Filter Type: BP
$Z(s)$: $\left(\infty,\ L_2 s+\frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1},\ \infty,\ \frac{1}{C_L s+\frac{1}{R_L}+\frac{1}{L_L s}}\right)$
$H(s)$: $\frac{L_4 L_L R_L s}{2C_4 L_4 L_L R_L s^2+C_L L_4 L_L R_L s^2+L_4 L_L s+L_4 R_L+2L_L R_L}$
Q: $R_L\sqrt{\frac{L_4+2L_L}{L_4 L_L(2C_4+C_L)}}\,(2C_4+C_L)$
ω_0: $\sqrt{\frac{L_4+2L_L}{L_4 L_L(2C_4+C_L)}}$
Bandwidth: $\frac{1}{R_L(2C_4+C_L)}$

Filter 459

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s+\frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}+R_L\right)$

Filter 460

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s+\frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1},\ \infty,\ \frac{R_L\left(L_L s+\frac{1}{C_L s}\right)}{L_L s+R_L+\frac{1}{C_L s}}\right)$

Filter 461

Filter Type: GE
$Z(s)$: $\left(\infty,\ L_2 s+\frac{1}{C_2 s},\ \infty,\ L_4 s+R_4+\frac{1}{C_4 s},\ \infty,\ R_L\right)$
$H(s)$: $\frac{R_L\left(C_4 L_4 s^2+C_4 R_4 s+1\right)}{C_4 L_4 s^2+C_4 R_4 s+2 C_4 R_L s+1}$
Q: $\frac{L_4\sqrt{\frac{1}{C_4 L_4}}}{R_4+2R_L}$
ω_0: $\sqrt{\frac{1}{C_4 L_4}}$
Bandwidth: $\frac{R_4+2R_L}{L_4}$
Qz: $\frac{L_4\sqrt{\frac{1}{C_4 L_4}}}{R_4}$

Filter 462

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s+\frac{1}{C_2 s},\ \infty,\ L_4 s+R_4+\frac{1}{C_4 s},\ \infty,\ \frac{1}{C_L s}\right)$

Filter 463

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s+\frac{1}{C_2 s},\ \infty,\ L_4 s+R_4+\frac{1}{C_4 s},\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$

Filter 464

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s+\frac{1}{C_2 s},\ \infty,\ L_4 s+R_4+\frac{1}{C_4 s},\ \infty,\ R_L+\frac{1}{C_L s}\right)$

Filter 465

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s+\frac{1}{C_2 s},\ \infty,\ L_4 s+R_4+\frac{1}{C_4 s},\ \infty,\ L_L s+\frac{1}{C_L s}\right)$

Filter 466

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s+\frac{1}{C_2 s},\ \infty,\ L_4 s+R_4+\frac{1}{C_4 s},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$

Filter 467

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s+\frac{1}{C_2 s},\ \infty,\ L_4 s+R_4+\frac{1}{C_4 s},\ \infty,\ L_L s+R_L+\frac{1}{C_L s}\right)$

Filter 468

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s+\frac{1}{C_2 s},\ \infty,\ L_4 s+R_4+\frac{1}{C_4 s},\ \infty,\ \frac{1}{C_L s+\frac{1}{R_L}+\frac{1}{L_L s}}\right)$

Filter 469

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s+\frac{1}{C_2 s},\ \infty,\ L_4 s+R_4+\frac{1}{C_4 s},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}+R_L\right)$

Filter 470

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s+\frac{1}{C_2 s},\ \infty,\ L_4 s+R_4+\frac{1}{C_4 s},\ \infty,\ \frac{R_L\left(L_L s+\frac{1}{C_L s}\right)}{L_L s+R_L+\frac{1}{C_L s}}\right)$

Filter 471

Filter Type: BP
$Z(s)$: $\left(\infty,\ L_2 s+\frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s+\frac{1}{R_4}+\frac{1}{L_4 s}},\ \infty,\ R_L\right)$
$H(s)$: $\frac{L_4 R_4 R_L s}{2C_4 L_4 R_4 R_L s^2+L_4 R_4 s+2L_4 R_L s+2R_4 R_L}$
Q: $\frac{2C_4 R_4 R_L\sqrt{\frac{1}{C_4 L_4}}}{R_4+2R_L}$
ω_0: $\sqrt{\frac{1}{C_4 L_4}}$
Bandwidth: $\frac{R_4+2R_L}{2C_4 R_4 R_L}$

Filter 472

Filter Type: BP
$Z(s)$: $\left(\infty,\ L_2 s+\frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s+\frac{1}{R_4}+\frac{1}{L_4 s}},\ \infty,\ \frac{1}{C_L s}\right)$
$H(s)$: $\frac{L_4 R_4 s}{2C_4 L_4 R_4 s^2+C_L L_4 R_4 s^2+2L_4 s+2R_4}$
Q: $\frac{\sqrt{2}R_4\sqrt{\frac{1}{L_4(2C_4+C_L)}}(2C_4+C_L)}{2}$
ω_0: $\sqrt{2}\sqrt{\frac{2}{L_4(2C_4+C_L)}}$
Bandwidth: $\frac{2}{R_4(2C_4+C_L)}$

Filter 473

Filter Type: BP
$Z(s)$: $\left(\infty,\ L_2 s+\frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s+\frac{1}{R_4}+\frac{1}{L_4 s}},\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$
$H(s)$: $\frac{L_4 R_4 R_L s}{2C_4 L_4 R_4 R_L s^2+C_L L_4 R_4 R_L s^2+L_4 R_4 s+2L_4 R_L s+2R_4 R_L}$
Q: $\frac{\sqrt{2}R_4 R_L\sqrt{\frac{1}{L_4(2C_4+C_L)}}(2C_4+C_L)}{R_4+2R_L}$
ω_0: $\sqrt{2}\sqrt{\frac{1}{L_4(2C_4+C_L)}}$
Bandwidth: $\frac{R_4+2R_L}{R_4 R_L(2C_4+C_L)}$

Filter 474

Filter Type: Invalid110
$Z(s)$: $\left(\infty,\ L_2 s+\frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s+\frac{1}{R_4}+\frac{1}{L_4 s}},\ \infty,\ R_L+\frac{1}{C_L s}\right)$
$H(s)$: $\frac{L_4 R_4 s(C_L R_L s+1)}{2C_4 C_L L_4 R_4 R_L s^3+2C_4 L_4 R_4 s^2+C_L L_4 R_4 s^2+2C_L L_4 R_L s^2+2C_L R_4 R_L s+2L_4 s+2R_4}$
Q: $\frac{\sqrt{2}L_4\sqrt{\frac{R_4}{L_4(2C_4 R_4+C_L R_4+2C_L R_L)}}(2C_4 R_4+C_L R_4+2C_L R_L)}{2(C_L R_4 R_L+L_4)}$
ω_0: $\sqrt{2}\sqrt{\frac{R_4}{L_4(2C_4 R_4+C_L R_4+2C_L R_L)}}$
Bandwidth: $\frac{2(C_L R_4 R_L+L_4)}{L_4(2C_4 R_4+C_L R_4+2C_L R_L)}$

Filter 475

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s+\frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s+\frac{1}{R_4}+\frac{1}{L_4 s}},\ \infty,\ L_L s+\frac{1}{C_L s}\right)$

Filter 476

Filter Type: BP

$Z(s)$: $\left(\infty,\ L_2 s + \frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}},\ \infty,\ \frac{L_L s}{C_L L_L s^2 + 1}\right)$

$H(s)$: $\frac{L_4 L_L R_4 s}{2C_4 L_4 L_L R_4 s^2 + C_L L_4 L_L R_4 s^2 + 2L_4 L_L s + L_4 R_4 + 2L_L R_4}$

Q: $\frac{R_4 \sqrt{\frac{L_4 + 2L_L}{L_4 L_L (2C_4 + C_L)}} (2C_4 + C_L)}{2}$

ω_0: $\sqrt{\frac{L_4 + 2L_L}{L_4 L_L (2C_4 + C_L)}}$

Bandwidth: $\frac{2}{R_4 (2C_4 + C_L)}$

Filter 477

Invalid filter

$Z(s)$: $\left(\infty,\ L_2 s + \frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}},\ \infty,\ L_L s + R_L + \frac{1}{C_L s}\right)$

Filter 478

Filter Type: BP

$Z(s)$: $\left(\infty,\ L_2 s + \frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}},\ \infty,\ \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}}\right)$

$H(s)$: $\frac{L_4 L_L R_4 R_L s}{2C_4 L_4 L_L R_4 R_L s^2 + C_L L_4 L_L R_4 R_L s^2 + L_4 L_L R_4 s + 2L_4 L_L R_L s + L_4 R_4 R_L + 2L_L R_4 R_L}$

Q: $\frac{R_4 R_L \sqrt{\frac{L_4 + 2L_L}{L_4 L_L (2C_4 + C_L)}} (2C_4 + C_L)}{R_4 + 2R_L}$

ω_0: $\sqrt{\frac{L_4 + 2L_L}{L_4 L_L (2C_4 + C_L)}}$

Bandwidth: $\frac{R_4 + 2R_L}{R_4 R_L (2C_4 + C_L)}$

Filter 479

Invalid filter

$Z(s)$: $\left(\infty,\ L_2 s + \frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}},\ \infty,\ \frac{L_L s}{C_L L_L s^2 + 1} + R_L\right)$

Filter 480

Invalid filter

$Z(s)$: $\left(\infty,\ L_2 s + \frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}},\ \infty,\ \frac{R_L \left(L_L s + \frac{1}{C_L s}\right)}{L_L s + R_L + \frac{1}{C_L s}}\right)$

Filter 481

Filter Type: GE

$Z(s)$: $\left(\infty,\ L_2 s + \frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4,\ \infty,\ R_L\right)$

$H(s)$: $\frac{R_L (C_4 L_4 R_4 s^2 + L_4 s + R_4)}{C_4 L_4 R_4 s^2 + 2C_4 L_4 R_L s^2 + L_4 s + R_4 + 2R_L}$

Q: $C_4 \sqrt{\frac{1}{C_4 L_4}} (R_4 + 2R_L)$

ω_0: $\sqrt{\frac{1}{C_4 L_4}}$

Bandwidth: $\frac{1}{C_4 (R_4 + 2R_L)}$

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

Filter 482

Invalid filter

$Z(s)$: $\left(\infty,\ L_2 s + \frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4,\ \infty,\ \frac{1}{C_L s}\right)$

Filter 483

Invalid filter

$Z(s)$: $\left(\infty,\ L_2 s + \frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4,\ \infty,\ \frac{R_L}{C_L R_L s + 1}\right)$

Filter 484

Invalid filter

$Z(s)$: $\left(\infty,\ L_2 s + \frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4,\ \infty,\ R_L + \frac{1}{C_L s}\right)$

Filter 485

Invalid filter

$Z(s)$: $\left(\infty,\ L_2 s + \frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4,\ \infty,\ L_L s + \frac{1}{C_L s}\right)$

Filter 486

Invalid filter

$Z(s)$: $\left(\infty,\ L_2 s + \frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4,\ \infty,\ \frac{L_L s}{C_L L_L s^2 + 1}\right)$

Filter 487

Invalid filter

$Z(s)$: $\left(\infty,\ L_2 s + \frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4,\ \infty,\ L_L s + R_L + \frac{1}{C_L s}\right)$

Filter 488

Invalid filter

$Z(s)$: $\left(\infty,\ L_2 s + \frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4,\ \infty,\ \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}}\right)$

Filter 489

Invalid filter

$Z(s)$: $\left(\infty,\ L_2 s + \frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4,\ \infty,\ \frac{L_L s}{C_L L_L s^2 + 1} + R_L\right)$

Filter 490

Invalid filter

$Z(s)$: $\left(\infty,\ L_2 s + \frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4,\ \infty,\ \frac{R_L \left(L_L s + \frac{1}{C_L s}\right)}{L_L s + R_L + \frac{1}{C_L s}}\right)$

Filter 491

Filter Type: BS

$Z(s)$: $\left(\infty,\ L_2 s + \frac{1}{C_2 s},\ \infty,\ \frac{R_4 \left(L_4 s + \frac{1}{C_4 s}\right)}{L_4 s + R_4 + \frac{1}{C_4 s}},\ \infty,\ R_L\right)$

$H(s)$: $\frac{R_4 R_L (C_4 L_4 s^2 + 1)}{C_4 L_4 R_4 s^2 + 2C_4 L_4 R_L s^2 + 2C_4 R_4 R_L s + R_4 + 2R_L}$

Q: $\frac{L_4 \sqrt{\frac{1}{C_4 L_4}} (R_4 + 2R_L)}{2R_4 R_L}$

ω_0: $\sqrt{\frac{1}{C_4 L_4}}$

Bandwidth: $\frac{2R_4 R_L}{L_4 (R_4 + 2R_L)}$

Filter 492

Filter Type: BS

$Z(s)$: $\left(\infty,\ L_2 s + \frac{1}{C_2 s},\ \infty,\ \frac{R_4\left(L_4 s + \frac{1}{C_4 s}\right)}{L_4 s + R_4 + \frac{1}{C_4 s}},\ \infty,\ \frac{1}{C_L s}\right)$

$H(s)$: $\frac{R_4\left(C_4 L_4 s^2+1\right)}{C_4 C_L L_2 R_4 s^3+2 C_4 L_4 s^2+2 C_4 R_4 s+C_L R_4 s+2}$

Q: $\frac{2 C_4 L_4 \sqrt{\frac{1}{C_4 L_4}}}{R_4(2C_4+C_L)}$

ω_0: $\sqrt{\frac{1}{C_4 L_4}}$

Bandwidth: $\frac{R_4(2C_4+C_L)}{2C_4 L_4}$

Filter 493

Filter Type: BS

$Z(s)$: $\left(\infty,\ L_2 s + \frac{1}{C_2 s},\ \infty,\ \frac{R_4\left(L_4 s + \frac{1}{C_4 s}\right)}{L_4 s + R_4 + \frac{1}{C_4 s}},\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$

$H(s)$: $\frac{R_4 R_L\left(C_4 L_4 s^2+1\right)}{C_4 C_L L_2 R_4 R_L s^3+C_4 L_4 R_4 s^2+2 C_4 L_4 R_L s^2+2 C_4 R_4 R_L s+C_L R_4 R_L s+R_4+2 R_L}$

Q: $\frac{C_4 L_4 \sqrt{\frac{1}{C_4 L_4}}(R_4+2R_L)}{R_4 R_L(2C_4+C_L)}$

ω_0: $\sqrt{\frac{1}{C_4 L_4}}$

Bandwidth: $\frac{R_4 R_L(2C_4+C_L)}{C_4 L_4(R_4+2R_L)}$

Filter 494

Invalid filter

$Z(s)$: $\left(\infty,\ L_2 s + \frac{1}{C_2 s},\ \infty,\ \frac{R_4\left(L_4 s + \frac{1}{C_4 s}\right)}{L_4 s + R_4 + \frac{1}{C_4 s}},\ \infty,\ R_L + \frac{1}{C_L s}\right)$

Filter 495

Invalid filter

$Z(s)$: $\left(\infty,\ L_2 s + \frac{1}{C_2 s},\ \infty,\ \frac{R_4\left(L_4 s + \frac{1}{C_4 s}\right)}{L_4 s + R_4 + \frac{1}{C_4 s}},\ \infty,\ L_L s + \frac{1}{C_L s}\right)$

Filter 496

Invalid filter

$Z(s)$: $\left(\infty,\ L_2 s + \frac{1}{C_2 s},\ \infty,\ \frac{R_4\left(L_4 s + \frac{1}{C_4 s}\right)}{L_4 s + R_4 + \frac{1}{C_4 s}},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$

Filter 497

Invalid filter

$Z(s)$: $\left(\infty,\ L_2 s + \frac{1}{C_2 s},\ \infty,\ \frac{R_4\left(L_4 s + \frac{1}{C_4 s}\right)}{L_4 s + R_4 + \frac{1}{C_4 s}},\ \infty,\ L_L s + R_L + \frac{1}{C_L s}\right)$

Filter 498

Invalid filter

$Z(s)$: $\left(\infty,\ L_2 s + \frac{1}{C_2 s},\ \infty,\ \frac{R_4\left(L_4 s + \frac{1}{C_4 s}\right)}{L_4 s + R_4 + \frac{1}{C_4 s}},\ \infty,\ \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}}\right)$

Filter 499

Invalid filter

$Z(s)$: $\left(\infty,\ L_2 s + \frac{1}{C_2 s},\ \infty,\ \frac{R_4\left(L_4 s + \frac{1}{C_4 s}\right)}{L_4 s + R_4 + \frac{1}{C_4 s}},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1} + R_L\right)$

Filter 500

Invalid filter

$Z(s)$: $\left(\infty,\ L_2 s + \frac{1}{C_2 s},\ \infty,\ \frac{R_4\left(L_4 s + \frac{1}{C_4 s}\right)}{L_4 s + R_4 + \frac{1}{C_4 s}},\ \infty,\ \frac{R_L\left(L_L s + \frac{1}{C_L s}\right)}{L_L s + R_L + \frac{1}{C_L s}}\right)$

Filter 501

Invalid filter

$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ R_4,\ \infty,\ R_L\right)$

Filter 502

Invalid filter

$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ R_4,\ \infty,\ \frac{1}{C_L s}\right)$

Filter 503

Invalid filter

$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ R_4,\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$

Filter 504

Invalid filter

$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ R_4,\ \infty,\ R_L + \frac{1}{C_L s}\right)$

Filter 505

Filter Type: BS

$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ R_4,\ \infty,\ L_L s + \frac{1}{C_L s}\right)$

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

Q: $\frac{2 L_L \sqrt{\frac{1}{C_L L_L}}}{R_4}$

ω_0: $\sqrt{\frac{1}{C_L L_L}}$

Bandwidth: $\frac{R_4}{2L_L}$

Filter 506

Filter Type: BP

$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ R_4,\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$

$H(s)$: $\frac{L_L R_4 s}{C_L L_L R_4 s^2+2 L_L s+R_4}$

Q: $\frac{C_L R_4 \sqrt{\frac{1}{C_L L_L}}}{2}$

ω_0: $\sqrt{\frac{1}{C_L L_L}}$

Bandwidth: $\frac{2}{C_L R_4}$

Filter 507

Filter Type: GE

$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ R_4,\ \infty,\ L_L s + R_L + \frac{1}{C_L s}\right)$

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

Q: $\frac{2 L_L \sqrt{\frac{1}{C_L L_L}}}{R_4+2R_L}$

ω_0: $\sqrt{\frac{1}{C_L L_L}}$

Bandwidth: $\frac{R_4+2R_L}{2L_L}$

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

Filter 508

Filter Type: BP
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ R_4,\ \infty,\ \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}}\right)$
$H(s)$: $\frac{L_L R_4 R_L s}{C_L L_L R_4 R_L s^2 + L_L R_4 s + 2L_L R_L s + R_4 R_L}$
Q: $\frac{C_L R_4 R_L \sqrt{\frac{1}{C_L L_L}}}{R_4 + 2R_L}$
ω_0: $\sqrt{\frac{1}{C_L L_L}}$
Bandwidth: $\frac{R_4 + 2R_L}{C_L R_4 R_L}$

Filter 509

Filter Type: GE
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ R_4,\ \infty,\ \frac{L_L s}{C_L L_L s^2 + 1} + R_L\right)$
$H(s)$: $\frac{R_4\left(C_L L_L R_L s^2 + L_L s + R_L\right)}{C_L L_L R_4 s^2 + 2C_L L_L R_L s^2 + 2L_L s + R_4 + 2R_L}$
Q: $\frac{C_L\sqrt{\frac{1}{C_L L_L}}(R_4 + 2R_L)}{2}$
ω_0: $\sqrt{\frac{1}{C_L L_L}}$
Bandwidth: $\frac{2}{C_L(R_4 + 2R_L)}$
Qz: $C_L R_L \sqrt{\frac{1}{C_L L_L}}$

Filter 510

Filter Type: BS
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ R_4,\ \infty,\ \frac{R_L\left(L_L s + \frac{1}{C_L s}\right)}{L_L s + R_L + \frac{1}{C_L s}}\right)$
$H(s)$: $\frac{R_4 R_L\left(C_L L_L s^2 + 1\right)}{C_L L_L R_4 s^2 + 2C_L L_L R_L s^2 + C_L R_4 R_L s + R_4 + 2R_L}$
Q: $\frac{L_L\sqrt{\frac{1}{C_L L_L}}(R_4 + 2R_L)}{R_4 R_L}$
ω_0: $\sqrt{\frac{1}{C_L L_L}}$
Bandwidth: $\frac{R_4 R_L}{L_L(R_4 + 2R_L)}$

Filter 511

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s},\ \infty,\ R_L\right)$

Filter 512

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s},\ \infty,\ \frac{1}{C_L s}\right)$

Filter 513

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s},\ \infty,\ \frac{R_L}{C_L R_L s + 1}\right)$

Filter 514

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s},\ \infty,\ R_L + \frac{1}{C_L s}\right)$

Filter 515

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s},\ \infty,\ L_L s + \frac{1}{C_L s}\right)$

Filter 516

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s},\ \infty,\ \frac{L_L s}{C_L L_L s^2 + 1}\right)$

Filter 517

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s},\ \infty,\ L_L s + R_L + \frac{1}{C_L s}\right)$

Filter 518

Filter Type: BP
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s},\ \infty,\ \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}}\right)$
$H(s)$: $\frac{L_L R_L s}{2C_4 L_L R_L s^2 + C_L L_L R_L s^2 + L_L s + R_L}$
Q: $R_L\sqrt{\frac{1}{L_L(2C_4 + C_L)}}\,(2C_4 + C_L)$
ω_0: $\sqrt{\frac{1}{L_L(2C_4 + C_L)}}$
Bandwidth: $\frac{1}{R_L(2C_4 + C_L)}$

Filter 519

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s},\ \infty,\ \frac{L_L s}{C_L L_L s^2 + 1} + R_L\right)$

Filter 520

Filter Type: BS
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s},\ \infty,\ \frac{R_L\left(L_L s + \frac{1}{C_L s}\right)}{L_L s + R_L + \frac{1}{C_L s}}\right)$
$H(s)$: $\frac{R_L\left(C_L L_L s^2 + 1\right)}{2C_4 C_L L_L R_L s^3 + 2C_4 R_L s + C_L L_L s^2 + C_L R_L s + 1}$
Q: $\frac{C_L L_L\sqrt{\frac{1}{C_L L_L}}}{R_L(2C_4 + C_L)}$
ω_0: $\sqrt{\frac{1}{C_L L_L}}$
Bandwidth: $\frac{R_L(2C_4 + C_L)}{C_L L_L}$

Filter 521

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \frac{R_4}{C_4 R_4 s + 1},\ \infty,\ R_L\right)$

Filter 522

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \frac{R_4}{C_4 R_4 s + 1},\ \infty,\ \frac{1}{C_L s}\right)$

Filter 523

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \frac{R_4}{C_4 R_4 s+1},\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$

Filter 524

Filter Type: Invalid011
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \frac{R_4}{C_4 R_4 s+1},\ \infty,\ R_L + \frac{1}{C_L s}\right)$
$H(s)$: $\frac{R_4(C_L R_L s+1)}{2C_4 C_L R_4 R_L s^2+2C_4 R_4 s+C_L R_4 s+2C_L R_L s+2}$
Q: $\frac{2C_4 C_L R_4 R_L \sqrt{C_4 C_L R_4 R_L}}{2C_4 R_4+C_L R_4+2C_L R_L}$
ω_0: $\sqrt{\frac{1}{C_4 C_L R_4 R_L}}$
Bandwidth: $\frac{2C_4 R_4+C_L R_4+2C_L R_L}{2C_4 C_L R_4 R_L}$

Filter 525

Filter Type: BS
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \frac{R_4}{C_4 R_4 s+1},\ \infty,\ L_L s + \frac{1}{C_L s}\right)$
$H(s)$: $\frac{R_4(C_L L_L s^2+1)}{2C_4 C_L L_L R_4 s^3+2C_4 R_4 s+2C_L L_L s^2+C_L R_4 s+2}$
Q: $\frac{2C_4 L_L \sqrt{\frac{1}{C_4 C_L}}}{R_4(2C_4+C_L)}$
ω_0: $\sqrt{\frac{1}{C_L L_L}}$
Bandwidth: $\frac{R_4(2C_4+C_L)}{2C_L L_L}$

Filter 526

Filter Type: BP
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \frac{R_4}{C_4 R_4 s+1},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$
$H(s)$: $\frac{L_L R_4 s}{2C_4 L_L R_4 s^2+C_L L_L R_4 s^2+2L_L s+R_4}$
Q: $\frac{R_4\sqrt{\frac{1}{L_L(2C_4+C_L)}}(2C_4+C_L)}{2}$
ω_0: $\sqrt{\frac{1}{L_L(2C_4+C_L)}}$
Bandwidth: $\frac{2}{R_4(2C_4+C_L)}$

Filter 527

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \frac{R_4}{C_4 R_4 s+1},\ \infty,\ L_L s + R_L + \frac{1}{C_L s}\right)$

Filter 528

Filter Type: BP
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \frac{R_4}{C_4 R_4 s+1},\ \infty,\ \frac{1}{C_L s+\frac{1}{R_L}+\frac{1}{L_L s}}\right)$
$H(s)$: $\frac{L_L R_4 R_L s}{2C_4 L_L R_4 R_L s^2+C_L L_L R_4 R_L s^2+L_L R_4 s+2L_L R_L s+R_4 R_L}$
Q: $\frac{R_4 R_L \sqrt{\frac{1}{L_L(2C_4+C_L)}}(2C_4+C_L)}{R_4+2R_L}$
ω_0: $\sqrt{\frac{1}{L_L(2C_4+C_L)}}$
Bandwidth: $\frac{R_4+2R_L}{R_4 R_L(2C_4+C_L)}$

Filter 529

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \frac{R_4}{C_4 R_4 s+1},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1} + R_L\right)$

Filter 530

Filter Type: BS
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \frac{R_4}{C_4 R_4 s+1},\ \infty,\ \frac{R_L\left(L_L s+\frac{1}{C_L s}\right)}{L_L s+R_L+\frac{1}{C_L s}}\right)$
$H(s)$: $\frac{R_4 R_L(C_L L_L s^2+1)}{2C_4 C_L L_L R_4 R_L s^3+2C_4 R_4 R_L s+C_L L_L R_4 s^2+2C_L L_L R_L s^2+C_L R_4 R_L s+R_4+2R_L}$
Q: $\frac{C_L L_L \sqrt{\frac{1}{C_L L_L}}(R_4+2R_L)}{R_4 R_L(2C_4+C_L)}$
ω_0: $\sqrt{\frac{1}{C_L L_L}}$
Bandwidth: $\frac{R_4 R_L(2C_4+C_L)}{C_L L_L(R_4+2R_L)}$

Filter 531

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ R_4 + \frac{1}{C_4 s},\ \infty,\ R_L\right)$

Filter 532

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ R_4 + \frac{1}{C_4 s},\ \infty,\ \frac{1}{C_L s}\right)$

Filter 533

Filter Type: Invalid011
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ R_4 + \frac{1}{C_4 s},\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$
$H(s)$: $\frac{R_4(C_4 R_4 s+1)}{C_4 C_L R_4 R_L s^2+C_4 R_4 s+2C_4 R_L s+C_L R_L s+1}$
Q: $\frac{C_4 C_L R_4 R_L \sqrt{\frac{1}{C_4 C_L R_4 R_L}}}{C_4 R_4+2C_4 R_L+C_L R_L}$
ω_0: $\sqrt{\frac{1}{C_4 C_L R_4 R_L}}$
Bandwidth: $\frac{C_4 R_4+2C_4 R_L+C_L R_L}{C_4 C_L R_4 R_L}$

Filter 534

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ R_4 + \frac{1}{C_4 s},\ \infty,\ R_L + \frac{1}{C_L s}\right)$

Filter 535

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ R_4 + \frac{1}{C_4 s},\ \infty,\ L_L s + \frac{1}{C_L s}\right)$

Filter 536

Filter Type: Invalid110
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ R_4 + \frac{1}{C_4 s},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$
$H(s)$: $\frac{L_L s(C_4 R_4 s+1)}{C_4 C_L L_L R_4 s^3+2C_4 L_L s^2+C_4 R_4 s+C_L L_L s^2+1}$
Q: $\frac{L_L\sqrt{\frac{1}{L_L(2C_4+C_L)}}(2C_4+C_L)}{C_4 R_4}$
ω_0: $\sqrt{\frac{1}{L_L(2C_4+C_L)}}$
Bandwidth: $\frac{C_4 R_4}{L_L(2C_4+C_L)}$

Filter 537

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ R_4 + \frac{1}{C_4 s},\ \infty,\ L_L s + R_L + \frac{1}{C_L s}\right)$

Filter 538

Filter Type: Invalid110
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ R_4 + \frac{1}{C_4 s},\ \infty,\ \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}}\right)$
$H(s)$: $\frac{L_L R_L s(C_4 R_4 s+1)}{C_4 C_L L_L R_4 R_L s^3 + C_4 L_L R_4 s^2 + 2C_4 L_L R_L s^2 + C_4 R_4 R_L s + C_L L_L R_L s^2 + L_L s + R_L}$
Q: $\frac{L_L \sqrt{\frac{R_L}{L_L(C_4 R_4 + 2C_4 R_L + C_L R_L)}}(C_4 R_4 + 2C_4 R_L + C_L R_L)}{C_4 R_4 R_L + L_L}$
ω_0: $\sqrt{\frac{R_L}{L_L(C_4 R_4 + 2C_4 R_L + C_L R_L)}}$
Bandwidth: $\frac{C_4 R_4 R_L + L_L}{L_L(C_4 R_4 + 2C_4 R_L + C_L R_L)}$

Filter 539

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ R_4 + \frac{1}{C_4 s},\ \infty,\ \frac{L_L s}{C_L L_L s^2 + 1} + R_L\right)$

Filter 540

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ R_4 + \frac{1}{C_4 s},\ \infty,\ \frac{R_L\left(L_L s + \frac{1}{C_{L^2}}\right)}{L_L s + R_L + \frac{1}{C_{L^2}}}\right)$

Filter 541

Filter Type: BS
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ L_4 s + \frac{1}{C_4 s},\ \infty,\ R_L\right)$
$H(s)$: $\frac{R_L(C_4 L_4 s^2+1)}{C_4 L_4 s^2 + 2C_4 R_L s + 1}$
Q: $\frac{L_4 \sqrt{\frac{1}{C_4 L_4}}}{2R_L}$
ω_0: $\sqrt{\frac{1}{C_4 L_4}}$
Bandwidth: $\frac{2R_L}{L_4}$

Filter 542

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ L_4 s + \frac{1}{C_4 s},\ \infty,\ \frac{1}{C_L s}\right)$

Filter 543

Filter Type: BS
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ L_4 s + \frac{1}{C_4 s},\ \infty,\ \frac{R_L}{C_L R_L s + 1}\right)$
$H(s)$: $\frac{R_L(C_4 L_4 s^2+1)}{C_4 C_L L_4 R_L s^3 + C_4 L_4 s^2 + 2C_4 R_L s + C_L R_L s + 1}$
Q: $\frac{C_4 L_4 \sqrt{\frac{1}{C_4 L_4}}}{R_L(2C_4 + C_L)}$
ω_0: $\sqrt{\frac{1}{C_4 L_4}}$
Bandwidth: $\frac{R_L(2C_4 + C_L)}{C_4 L_4}$

Filter 544

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ L_4 s + \frac{1}{C_4 s},\ \infty,\ R_L + \frac{1}{C_L s}\right)$

Filter 545

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ L_4 s + \frac{1}{C_4 s},\ \infty,\ L_L s + \frac{1}{C_L s}\right)$

Filter 546

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ L_4 s + \frac{1}{C_4 s},\ \infty,\ \frac{L_L s}{C_L L_L s^2 + 1}\right)$

Filter 547

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ L_4 s + \frac{1}{C_4 s},\ \infty,\ L_L s + R_L + \frac{1}{C_L s}\right)$

Filter 548

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ L_4 s + \frac{1}{C_4 s},\ \infty,\ \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}}\right)$

Filter 549

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ L_4 s + \frac{1}{C_4 s},\ \infty,\ \frac{L_L s}{C_L L_L s^2 + 1} + R_L\right)$

Filter 550

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ L_4 s + \frac{1}{C_4 s},\ \infty,\ \frac{R_L\left(L_L s + \frac{1}{C_{L^2}}\right)}{L_L s + R_L + \frac{1}{C_{L^2}}}\right)$

Filter 551

Filter Type: BP
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2 + 1},\ \infty,\ R_L\right)$
$H(s)$: $\frac{L_4 R_L s}{2C_4 L_4 R_L s^2 + L_4 s + 2R_L}$
Q: $2C_4 R_L \sqrt{\frac{1}{C_4 L_4}}$
ω_0: $\sqrt{\frac{1}{C_4 L_4}}$
Bandwidth: $\frac{1}{2C_4 R_L}$

Filter 552

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2 + 1},\ \infty,\ \frac{1}{C_L s}\right)$

Filter 553

Filter Type: BP
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1},\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$
$H(s)$: $\frac{L_4 R_L s}{2C_4 L_4 R_L s^2 + C_4 L_4 R_L s^2 + L_4 s + 2R_L}$
Q: $\sqrt{2} R_L \sqrt{\frac{1}{L_4(2C_4+C_L)}}\,(2C_4 + C_L)$
ω_0: $\sqrt{2}\sqrt{\frac{1}{L_4(2C_4+C_L)}}$
Bandwidth: $\frac{1}{R_L(2C_4+C_L)}$

Filter 554

Filter Type: Invalid110
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1},\ \infty,\ R_L + \frac{1}{C_L s}\right)$
$H(s)$: $\frac{L_4 s(C_L R_L s+1)}{2C_4 C_L L_4 R_L s^3 + 2C_4 L_4 s^2 + C_L L_4 s^2 + 2C_L R_L s + 2}$
Q: $\frac{\sqrt{2} L_4 \sqrt{\frac{1}{L_4(2C_4+C_L)}}\,(2C_4+C_L)}{2C_L R_L}$
ω_0: $\sqrt{2}\sqrt{\frac{1}{L_4(2C_4+C_L)}}$
Bandwidth: $\frac{2C_L R_L}{L_4(2C_4+C_L)}$

Filter 555

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1},\ \infty,\ L_L s + \frac{1}{C_L s}\right)$

Filter 556

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$

Filter 557

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1},\ \infty,\ L_L s + R_L + \frac{1}{C_L s}\right)$

Filter 558

Filter Type: BP
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1},\ \infty,\ \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}}\right)$
$H(s)$: $\frac{L_4 L_L R_L s}{2C_4 L_4 L_L R_L s^2 + C_L L_4 L_L R_L s^2 + L_4 L_L s + L_4 R_L + 2L_L R_L}$
Q: $R_L \sqrt{\frac{L_4+2L_L}{L_4 L_L(2C_4+C_L)}}\,(2C_4 + C_L)$
ω_0: $\sqrt{\frac{L_4+2L_L}{L_4 L_L(2C_4+C_L)}}$
Bandwidth: $\frac{1}{R_L(2C_4+C_L)}$

Filter 559

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1} + R_L\right)$

Filter 560

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1},\ \infty,\ \frac{R_L\left(L_L s + \frac{1}{C_L s}\right)}{L_L s + R_L + \frac{1}{C_L s}}\right)$

Filter 561

Filter Type: GE
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ L_4 s + R_4 + \frac{1}{C_4 s},\ \infty,\ R_L\right)$
$H(s)$: $\frac{R_L\left(C_4 L_4 s^2 + C_4 R_4 s + 1\right)}{C_4 L_4 s^2 + C_4 R_4 s + 2C_4 R_L s + 1}$
Q: $\frac{L_4\sqrt{\frac{1}{C_4 L_4}}}{R_4 + 2R_L}$
ω_0: $\sqrt{\frac{1}{C_4 L_4}}$
Bandwidth: $\frac{R_4 + 2R_L}{L_4}$
Qz: $\frac{L_4\sqrt{\frac{1}{C_4 L_4}}}{R_4}$

Filter 562

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ L_4 s + R_4 + \frac{1}{C_4 s},\ \infty,\ \frac{1}{C_L s}\right)$

Filter 563

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ L_4 s + R_4 + \frac{1}{C_4 s},\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$

Filter 564

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ L_4 s + R_4 + \frac{1}{C_4 s},\ \infty,\ R_L + \frac{1}{C_L s}\right)$

Filter 565

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ L_4 s + R_4 + \frac{1}{C_4 s},\ \infty,\ L_L s + \frac{1}{C_L s}\right)$

Filter 566

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ L_4 s + R_4 + \frac{1}{C_4 s},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$

Filter 567

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ L_4 s + R_4 + \frac{1}{C_4 s},\ \infty,\ L_L s + R_L + \frac{1}{C_L s}\right)$

Filter 568

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ L_4 s + R_4 + \frac{1}{C_4 s},\ \infty,\ \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}}\right)$

Filter 569

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ L_4 s + R_4 + \frac{1}{C_4 s},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1} + R_L\right)$

Filter 570

Invalid filter

$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ L_4 s + R_4 + \frac{1}{C_4 s},\ \infty,\ \frac{R_L\left(L_L s + \frac{1}{C_L s}\right)}{L_L s + R_L + \frac{1}{C_L s}}\right)$

Filter 571

Filter Type: BP

$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}},\ \infty,\ R_L\right)$

$H(s)$: $\frac{L_4 R_4 R_L s}{2C_4 L_4 R_4 R_L s^2 + L_4 R_4 s + 2L_4 R_L s + 2R_4 R_L}$

Q: $\frac{2C_4 R_4 R_L \sqrt{\frac{1}{C_4 L_4}}}{R_4 + 2R_L}$

ω_0: $\sqrt{\frac{1}{C_4 L_4}}$

Bandwidth: $\frac{R_4 + 2R_L}{2C_4 R_4 R_L}$

Filter 572

Filter Type: BP

$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}},\ \infty,\ \frac{1}{C_L s}\right)$

$H(s)$: $\frac{L_4 R_4 s}{2C_4 L_4 R_4 s^2 + C_L L_4 R_4 s^2 + 2L_4 s + 2R_4}$

Q: $\frac{\sqrt{2}R_4 \sqrt{\frac{1}{L_4(2C_4 + C_L)}}(2C_4 + C_L)}{2}$

ω_0: $\sqrt{2}\sqrt{\frac{1}{L_4(2C_4 + C_L)}}$

Bandwidth: $\frac{2}{R_4(2C_4 + C_L)}$

Filter 573

Filter Type: BP

$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}},\ \infty,\ \frac{R_L}{C_L R_L s + 1}\right)$

$H(s)$: $\frac{L_4 R_4 R_L s}{2C_4 L_4 R_4 R_L s^2 + C_L L_4 R_4 R_L s^2 + L_4 R_4 s + 2L_4 R_L s + 2R_4 R_L}$

Q: $\frac{\sqrt{2}R_4 R_L \sqrt{\frac{1}{L_4(2C_4 + C_L)}}(2C_4 + C_L)}{R_4 + 2R_L}$

ω_0: $\sqrt{2}\sqrt{\frac{1}{L_4(2C_4 + C_L)}}$

Bandwidth: $\frac{R_4 + 2R_L}{R_4 R_L(2C_4 + C_L)}$

Filter 574

Filter Type: Invalid110

$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}},\ \infty,\ R_L + \frac{1}{C_L s}\right)$

$H(s)$: $\frac{L_4 R_4 s(C_L R_L s + 1)}{2C_4 C_L L_4 R_4 R_L s^3 + 2C_4 L_4 R_4 s^2 + C_L L_4 R_4 s^2 + 2C_L L_4 R_L s^2 + 2C_L R_4 R_L s + 2L_4 s + 2R_4}$

Q: $\frac{R_4 \sqrt{\frac{L_4 + 2L_L}{L_4 L_L(2C_4 + C_L)}}(2C_4 + C_L)}{2(C_L R_4 R_L + L_4)}$

ω_0: $\sqrt{2}\sqrt{\frac{R_4}{L_4(2C_4 R_4 + C_L R_4 + 2C_L R_L)}}$

Bandwidth: $\frac{2(C_L R_4 R_L + L_4)}{L_4(2C_4 R_4 + C_L R_4 + 2C_L R_L)}$

Filter 575

Invalid filter

$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}},\ \infty,\ L_L s + \frac{1}{C_L s}\right)$

Filter 576

Filter Type: BP

$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}},\ \infty,\ \frac{L_L s}{C_L L_L s^2 + 1}\right)$

$H(s)$: $\frac{L_4 L_L R_4 s}{2C_4 L_4 L_L R_4 R_L s^2 + C_L L_4 L_L R_4 s^2 + 2L_4 L_L s + L_4 R_4 s + 2L_L R_4}$

Q: $\frac{R_4 \sqrt{\frac{L_4 + 2L_L}{L_4 L_L(2C_4 + C_L)}}(2C_4 + C_L)}{2}$

ω_0: $\sqrt{\frac{1}{L_4 L_L(2C_4 + C_L)}}$

Bandwidth: $\frac{R_4}{L_4 L_L(2C_4 + C_L)}$

Filter 577

Invalid filter

$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}},\ \infty,\ L_L s + R_L + \frac{1}{C_L s}\right)$

Filter 578

Filter Type: BP

$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}},\ \infty,\ \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}}\right)$

$H(s)$: $\frac{L_4 L_L R_4 R_L s}{2C_4 L_4 L_L R_4 R_L R_L s^2 + C_L L_4 L_L R_4 R_L s^2 + L_4 L_L R_4 s + 2L_4 L_L R_L s + L_4 R_4 R_L s + 2L_L R_4 R_L}$

Q: $\frac{R_4 R_L \sqrt{\frac{L_4 + 2L_L}{L_4 L_L(2C_4 + C_L)}}(2C_4 + C_L)}{R_4 + 2R_L}$

ω_0: $\sqrt{\frac{L_4 + 2L_L}{L_4 L_L(2C_4 + C_L)}}$

Bandwidth: $\frac{R_4 + 2R_L}{R_4 R_L(2C_4 + C_L)}$

Filter 579

Invalid filter

$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}},\ \infty,\ \frac{L_L s}{C_L L_L s^2 + 1} + R_L\right)$

Filter 580

Invalid filter

$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \frac{1}{C_4 s + \frac{1}{R_4} + \frac{1}{L_4 s}},\ \infty,\ \frac{R_L\left(L_L s + \frac{1}{C_L s}\right)}{L_L s + R_L + \frac{1}{C_L s}}\right)$

Filter 581

Filter Type: GE

$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4,\ \infty,\ R_L\right)$

$H(s)$: $\frac{R_L(C_4 L_4 R_4 s^2 + L_4 s + R_4)}{C_4 L_4 R_4 s^2 + 2C_4 L_4 R_L s^2 + L_4 s + R_4 + 2R_L}$

Q: $C_4 \sqrt{\frac{1}{C_4 L_4}}\,(R_4 + 2R_L)$

ω_0: $\sqrt{\frac{1}{C_4 L_4}}$

Bandwidth: $\frac{1}{C_4(R_4 + 2R_L)}$

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

Filter 582

Invalid filter

$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2 + 1} + R_4,\ \infty,\ \frac{1}{C_L s}\right)$

Filter 583

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1} + R_4,\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$

Filter 584

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1} + R_4,\ \infty,\ R_L + \frac{1}{C_L s}\right)$

Filter 585

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1} + R_4,\ \infty,\ L_L s + \frac{1}{C_L s}\right)$

Filter 586

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1} + R_4,\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$

Filter 587

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1} + R_4,\ \infty,\ L_L s + R_L + \frac{1}{C_L s}\right)$

Filter 588

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1} + R_4,\ \infty,\ \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}}\right)$

Filter 589

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1} + R_4,\ \infty,\ \frac{L_L s}{C_L L_L s^2+1} + R_L\right)$

Filter 590

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1} + R_4,\ \infty,\ \frac{R_L\left(L_L s + \frac{1}{C_L s}\right)}{L_L s + R_L + \frac{1}{C_L s}}\right)$

Filter 591

Filter Type: BS
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \frac{R_4\left(L_4 s + \frac{1}{C_4 s}\right)}{L_4 s + R_4 + \frac{1}{C_4 s}},\ \infty,\ R_L\right)$
$H(s)$: $\frac{R_4 R_L\left(C_4 L_4 s^2+1\right)}{C_4 L_4 R_4 s^2 + 2C_4 L_4 R_L s^2 + 2C_4 R_4 R_L s + R_4 + 2R_L}$
Q: $\frac{L_4\sqrt{\frac{1}{C_4 L_4}}\left(R_4+2R_L\right)}{2R_4 R_L}$
ω_0: $\sqrt{\frac{1}{C_4 L_4}}$
Bandwidth: $\frac{2R_4 R_L}{L_4(R_4+2R_L)}$

Filter 592

Filter Type: BS
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \frac{R_4\left(L_4 s + \frac{1}{C_4 s}\right)}{L_4 s + R_4 + \frac{1}{C_4 s}},\ \infty,\ \frac{1}{C_L s}\right)$
$H(s)$: $\frac{R_4\left(C_4 L_4 s^2+1\right)}{C_4 C_L L_L R_4 s^3 + 2C_4 L_4 R_4 s^2 + 2C_4 R_4 s + C_L R_4 s + 2}$
Q: $\frac{2C_4 L_4\sqrt{\frac{1}{C_4 L_4}}}{R_4(2C_4+C_L)}$
ω_0: $\sqrt{\frac{1}{C_4 L_4}}$
Bandwidth: $\frac{R_4(2C_4+C_L)}{2C_4 L_4}$

Filter 593

Filter Type: BS
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \frac{R_4\left(L_4 s + \frac{1}{C_4 s}\right)}{L_4 s + R_4 + \frac{1}{C_4 s}},\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$
$H(s)$: $\frac{R_4 R_L\left(C_4 L_4 s^2+1\right)}{C_4 C_L L_L R_4 R_L s^3 + C_4 L_4 R_4 s^2 + 2C_4 L_4 R_L s^2 + 2C_4 R_4 R_L s + C_L R_4 R_L s + R_4 + 2R_L}$
Q: $\frac{C_4 L_4\sqrt{\frac{1}{C_4 L_4}}\left(R_4+2R_L\right)}{R_4 R_L(2C_4+C_L)}$
ω_0: $\sqrt{\frac{1}{C_4 L_4}}$
Bandwidth: $\frac{R_4 R_L(2C_4+C_L)}{C_4 L_4(R_4+2R_L)}$

Filter 594

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \frac{R_4\left(L_4 s + \frac{1}{C_4 s}\right)}{L_4 s + R_4 + \frac{1}{C_4 s}},\ \infty,\ R_L + \frac{1}{C_L s}\right)$

Filter 595

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \frac{R_4\left(L_4 s + \frac{1}{C_4 s}\right)}{L_4 s + R_4 + \frac{1}{C_4 s}},\ \infty,\ L_L s + \frac{1}{C_L s}\right)$

Filter 596

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \frac{R_4\left(L_4 s + \frac{1}{C_4 s}\right)}{L_4 s + R_4 + \frac{1}{C_4 s}},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$

Filter 597

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \frac{R_4\left(L_4 s + \frac{1}{C_4 s}\right)}{L_4 s + R_4 + \frac{1}{C_4 s}},\ \infty,\ L_L s + R_L + \frac{1}{C_L s}\right)$

Filter 598

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \frac{R_4\left(L_4 s + \frac{1}{C_4 s}\right)}{L_4 s + R_4 + \frac{1}{C_4 s}},\ \infty,\ \frac{1}{C_L s + \frac{1}{R_L} + \frac{1}{L_L s}}\right)$

Filter 599

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \frac{R_4\left(L_4 s + \frac{1}{C_4 s}\right)}{L_4 s + R_4 + \frac{1}{C_4 s}},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1} + R_L\right)$

Filter 600

Invalid filter
$Z(s)$: $\left(\infty,\ L_2 s + R_2 + \frac{1}{C_2 s},\ \infty,\ \frac{R_4\left(L_4 s + \frac{1}{C_4 s}\right)}{L_4 s + R_4 + \frac{1}{C_4 s}},\ \infty,\ \frac{R_L\left(L_L s + \frac{1}{C_L s}\right)}{L_L s + R_L + \frac{1}{C_L s}}\right)$

Filter 601

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ R_4,\ \infty,\ R_L\right)$

Filter 602

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ R_4,\ \infty,\ \frac{1}{C_L s}\right)$

Filter 603

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ R_4,\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$

Filter 604

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ R_4,\ \infty,\ R_L+\frac{1}{C_L s}\right)$

Filter 605

Filter Type: BS
$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ R_4,\ \infty,\ L_L s+\frac{1}{C_L s}\right)$
$H(s)$: $\frac{R_4\left(C_L L_L s^2+1\right)}{2C_L L_L s^2+C_L R_4 s+2}$
Q: $\frac{2L_L\sqrt{\frac{1}{C_L L_L}}}{R_4}$
ω_0: $\sqrt{\frac{1}{C_L L_L}}$
Bandwidth: $\frac{R_4}{2L_L}$

Filter 606

Filter Type: BP
$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ R_4,\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$
$H(s)$: $\frac{L_L R_4 s}{C_L L_L R_4 s^2+2L_L s+R_4}$
Q: $\frac{C_L R_4\sqrt{\frac{1}{C_L L_L}}}{2}$
ω_0: $\sqrt{\frac{1}{C_L L_L}}$
Bandwidth: $\frac{2}{C_L R_4}$

Filter 607

Filter Type: GE
$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ R_4,\ \infty,\ L_L s+R_L+\frac{1}{C_L s}\right)$
$H(s)$: $\frac{R_4\left(C_L L_L s^2+C_L R_L s+1\right)}{2C_L L_L s^2+C_L R_4 s+2C_L R_L s+2}$
Q: $\frac{2L_L\sqrt{\frac{1}{C_L L_L}}}{R_4+2R_L}$
ω_0: $\sqrt{\frac{1}{C_L L_L}}$
Bandwidth: $\frac{R_4+2R_L}{2L_L}$
Qz: $\frac{L_L\sqrt{\frac{1}{C_L L_L}}}{R_L}$

Filter 608

Filter Type: BP
$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ R_4,\ \infty,\ \frac{1}{C_L s+\frac{1}{R_L+L_L s}}\right)$
$H(s)$: $\frac{L_L R_4 R_L s}{C_L L_L R_4 R_L s^2+L_L R_4 s^2+2L_L R_L s^2+2L_L R_L s+R_4 R_L}$
Q: $\frac{C_L R_4 R_L\sqrt{\frac{1}{C_L L_L}}}{R_4+2R_L}$
ω_0: $\sqrt{\frac{1}{C_L L_L}}$
Bandwidth: $\frac{R_4+2R_L}{C_L R_4 R_L}$

Filter 609

Filter Type: GE
$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ R_4,\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}+R_L\right)$
$H(s)$: $\frac{R_4\left(C_L L_L R_L s^2+L_L s+R_L\right)}{C_L L_L R_4 s^2+2C_L L_L R_L s^2+2L_L s+R_4+2R_L}$
Q: $\frac{C_L\sqrt{\frac{1}{C_L L_L}}\left(R_4+2R_L\right)}{2}$
ω_0: $\sqrt{\frac{1}{C_L L_L}}$
Bandwidth: $\frac{2}{C_L\left(R_4+2R_L\right)}$
Qz: $C_L R_L\sqrt{\frac{1}{C_L L_L}}$

Filter 610

Filter Type: BS
$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ R_4,\ \infty,\ \frac{R_L\left(L_L s+\frac{1}{C_L s}\right)}{L_L s+R_L+\frac{1}{C_L s}}\right)$
$H(s)$: $\frac{R_4 R_L\left(C_L L_L s^2+1\right)}{C_L L_L R_4 s^2+2C_L L_L R_L s^2+C_L R_4 R_L s+R_4+2R_L}$
Q: $\frac{L_L\sqrt{\frac{1}{C_L L_L}}\left(R_4+2R_L\right)}{R_4 R_L}$
ω_0: $\sqrt{\frac{1}{C_L L_L}}$
Bandwidth: $\frac{R_4 R_L}{L_L\left(R_4+2R_L\right)}$

Filter 611

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ \frac{1}{C_4 s},\ \infty,\ R_L\right)$

Filter 612

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ \frac{1}{C_4 s},\ \infty,\ \frac{1}{C_L s}\right)$

Filter 613

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ \frac{1}{C_4 s},\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$

Filter 614

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ \frac{1}{C_4 s},\ \infty,\ R_L+\frac{1}{C_L s}\right)$

Filter 615

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ \frac{1}{C_4 s},\ \infty,\ L_L s+\frac{1}{C_L s}\right)$

Filter 616

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ \frac{1}{C_4 s},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$

Filter 617

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ \frac{1}{C_4 s},\ \infty,\ L_L s+R_L+\frac{1}{C_L s}\right)$

Filter 618

Filter Type: BP
$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ \frac{1}{C_4 s},\ \infty,\ \frac{1}{C_L s+\frac{1}{R_L}+\frac{1}{L_L s}}\right)$
$H(s)$: $\frac{L_L R_L s}{2C_4 L_L R_L s^2+C_L L_L R_L s^2+L_L s+R_L}$
Q: $R_L\sqrt{\frac{1}{L_L(2C_4+C_L)}}\,(2C_4+C_L)$
ω_0: $\sqrt{\frac{1}{L_L(2C_4+C_L)}}$
Bandwidth: $\frac{1}{R_L(2C_4+C_L)}$

Filter 619

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ \frac{1}{C_4 s},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}+R_L\right)$

Filter 620

Filter Type: BS
$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ \frac{1}{C_4 s},\ \infty,\ \frac{R_L\left(L_L s+\frac{1}{C_{L'}}\right)}{L_L s+R_L+\frac{1}{C_{L'}s}}\right)$
$H(s)$: $\frac{R_L(C_L L_L s^2+1)}{2C_4 C_L L_L R_L s^3+2C_4 R_L s^2+C_L L_L s^2+C_L R_L s+1}$
Q: $\frac{C_L L_L\sqrt{\frac{1}{C_L L_L}}}{R_L(2C_4+C_L)}$
ω_0: $\sqrt{\frac{1}{C_L L_L}}$
Bandwidth: $\frac{R_L(2C_4+C_L)}{C_L L_L}$

Filter 621

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ \frac{R_4}{C_4 R_4 s+1},\ \infty,\ R_L\right)$

Filter 622

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ \frac{R_4}{C_4 R_4 s+1},\ \infty,\ \frac{1}{C_L s}\right)$

Filter 623

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ \frac{R_4}{C_4 R_4 s+1},\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$

Filter 624

Filter Type: Invalid011
$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ \frac{R_4}{C_4 R_4 s+1},\ \infty,\ R_L+\frac{1}{C_L s}\right)$
$H(s)$: $\frac{R_4(C_L R_L s+1)}{2C_4 C_L R_4 R_L s^2+2C_4 R_4 s+C_L R_4 s+2C_L R_L s+2}$
Q: $\frac{2C_4 C_L R_4 R_L\sqrt{\frac{1}{C_L C_4 R_4 R_L}}}{2C_4 R_4+C_L R_4+2C_L R_L}$
ω_0: $\sqrt{\frac{1}{C_4 C_L R_4 R_L}}$
Bandwidth: $\frac{2C_4 R_4+C_L R_4+2C_L R_L}{2C_4 C_L R_4 R_L}$

Filter 625

Filter Type: BS
$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ \frac{R_4}{C_4 R_4 s+1},\ \infty,\ L_L s+\frac{1}{C_L s}\right)$
$H(s)$: $\frac{R_4(C_L L_L s^2+1)}{2C_4 C_L L_L R_4 s^3+2C_4 R_4 s^2+2C_L L_L s^2+C_L R_4 s+2}$
Q: $\frac{2C_L L_L\sqrt{\frac{1}{C_L L_L}}}{R_4(2C_4+C_L)}$
ω_0: $\sqrt{\frac{1}{C_L L_L}}$
Bandwidth: $\frac{R_4(2C_4+C_L)}{2C_L L_L}$

Filter 626

Filter Type: BP
$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ \frac{R_4}{C_4 R_4 s+1},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$
$H(s)$: $\frac{L_L R_4 s}{2C_4 L_L R_4 s^2+C_L L_L R_4 s^2+2L_L s+R_4}$
Q: $\frac{R_4\sqrt{\frac{1}{L_L(2C_4+C_L)}}\,(2C_4+C_L)}{2}$
ω_0: $\sqrt{\frac{1}{L_L(2C_4+C_L)}}$
Bandwidth: $\frac{2}{R_4(2C_4+C_L)}$

Filter 627

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ \frac{R_4}{C_4 R_4 s+1},\ \infty,\ L_L s+R_L+\frac{1}{C_L s}\right)$

Filter 628

Filter Type: BP
$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ \frac{R_4}{C_4 R_4 s+1},\ \infty,\ \frac{1}{C_L s+\frac{1}{R_L}+\frac{1}{L_{L'}s}}\right)$
$H(s)$: $\frac{L_L R_4 R_L s}{2C_4 L_L R_4 R_L s^2+C_L L_L R_4 R_L s^2+L_L R_4 s+2L_L R_L s+R_4 R_L}$
Q: $\frac{R_4 R_L\sqrt{\frac{1}{L_L(2C_4+C_L)}}\,(2C_4+C_L)}{R_4+2R_L}$
ω_0: $\sqrt{\frac{1}{L_L(2C_4+C_L)}}$
Bandwidth: $\frac{R_4+2R_L}{R_4 R_L(2C_4+C_L)}$

Filter 629

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ \frac{R_4}{C_4 R_4 s+1},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}+R_L\right)$

Filter 630

Filter Type: BS

$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ \frac{R_4}{C_4 R_4 s+1},\ \infty,\ \frac{R_L\left(L_L s+\frac{1}{C_L s}\right)}{L_L s+R_L+\frac{1}{C_L s}}\right)$

$H(s)$: $\frac{R_4 R_L (C_L L_L s^2+1)}{2C_4 C_L L_L R_4 R_L s^3+2C_4 R_4 R_L s+C_L L_L R_4 s^2+2C_L L_L R_L s^2+C_L R_4 R_L s+R_4+2R_L}$

Q: $\frac{C_L L_L \sqrt{\frac{1}{C_L L_L}}(R_4+2R_L)}{R_4 R_L (2C_4+C_L)}$

ω_0: $\sqrt{\frac{1}{C_L L_L}}$

Bandwidth: $\frac{R_4 R_L (2C_4+C_L)}{C_L L_L (R_4+2R_L)}$

Filter 631

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ R_4+\frac{1}{C_4 s},\ \infty,\ R_L\right)$

Filter 632

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ R_4+\frac{1}{C_4 s},\ \infty,\ \frac{1}{C_L s}\right)$

Filter 633

Filter Type: Invalid011

$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ R_4+\frac{1}{C_4 s},\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$

$H(s)$: $\frac{R_L (C_4 R_4 s+1)}{C_4 C_L R_4 R_L s^2+C_4 R_4 s+2C_4 R_L s+C_L R_L s+1}$

Q: $\frac{C_4 C_L R_4 R_L \sqrt{\frac{1}{C_4 C_L R_4 R_L}}}{C_4 R_4+2C_4 R_L+C_L R_L}$

ω_0: $\sqrt{\frac{1}{C_4 C_L R_4 R_L}}$

Bandwidth: $\frac{C_4 R_4+2C_4 R_L+C_L R_L}{C_4 C_L R_4 R_L}$

Filter 634

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ R_4+\frac{1}{C_4 s},\ \infty,\ R_L+\frac{1}{C_L s}\right)$

Filter 635

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ R_4+\frac{1}{C_4 s},\ \infty,\ L_L 8+\frac{1}{C_L s}\right)$

Filter 636

Filter Type: Invalid110

$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ R_4+\frac{1}{C_4 s},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$

$H(s)$: $\frac{L_L s (C_4 R_4 s+1)}{C_4 C_L L_L R_4 s^3+2C_4 L_L s^2+C_4 R_4 s+C_L L_L s+1}$

Q: $\frac{L_L \sqrt{\frac{1}{L_L (2C_4+C_L)}}(2C_4+C_L)}{C_4 R_4}$

ω_0: $\sqrt{\frac{1}{L_L (2C_4+C_L)}}$

Bandwidth: $\frac{C_4 R_4}{L_L (2C_4+C_L)}$

Filter 637

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ R_4+\frac{1}{C_4 s},\ \infty,\ L_L 8+R_L+\frac{1}{C_L s}\right)$

Filter 638

Filter Type: Invalid110

$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ R_4+\frac{1}{C_4 s},\ \infty,\ \frac{1}{C_L s+\frac{1}{R_L+\frac{1}{L_L s}}}\right)$

$H(s)$: $\frac{L_L R_L s (C_4 R_4 s+1)}{C_4 C_L L_L R_4 R_L s^3+C_4 L_L R_4 s^2+2C_4 L_L R_L s^2+C_4 R_4 R_L s+C_L L_L R_L s^2+L_L s+R_L}$

Q: $\frac{L_L \sqrt{\frac{R_L}{L_L (C_4 R_4+2C_4 R_L+C_L R_L)}}(C_4 R_4+2C_4 R_L+C_L R_L)}{C_4 R_4 R_L+L_L}$

ω_0: $\sqrt{\frac{R_L}{L_L (C_4 R_4+2C_4 R_L+C_L R_L)}}$

Bandwidth: $\frac{C_4 R_4 R_L+L_L}{L_L (C_4 R_4+2C_4 R_L+C_L R_L)}$

Filter 639

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ R_4+\frac{1}{C_4 s},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}+R_L\right)$

Filter 640

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ R_4+\frac{1}{C_4 s},\ \infty,\ \frac{R_L\left(L_L s+\frac{1}{C_L s}\right)}{L_L s+R_L+\frac{1}{C_L s}}\right)$

Filter 641

Filter Type: BS

$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ L_4 s+\frac{1}{C_4 s},\ \infty,\ R_L\right)$

$H(s)$: $\frac{R_L (C_4 L_4 s^2+1)}{C_4 L_4 s^2+2C_4 R_L s+1}$

Q: $\frac{L_4 \sqrt{\frac{1}{C_4 L_4}}}{2R_L}$

ω_0: $\sqrt{\frac{1}{C_4 L_4}}$

Bandwidth: $\frac{2R_L}{L_4}$

Filter 642

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ L_4 s+\frac{1}{C_4 s},\ \infty,\ \frac{1}{C_L s}\right)$

Filter 643

Filter Type: BS

$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ L_4 s+\frac{1}{C_4 s},\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$

$H(s)$: $\frac{R_L (C_4 L_4 s^2+1)}{C_4 C_L L_4 R_L s^3+C_4 L_4 s^2+2C_4 R_L s+C_L R_L s+1}$

Q: $\frac{C_4 L_4 \sqrt{\frac{1}{C_4 L_4}}}{R_L (2C_4+C_L)}$

ω_0: $\sqrt{\frac{1}{C_4 L_4}}$

Bandwidth: $\frac{R_L (2C_4+C_L)}{C_4 L_4}$

Filter 644

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ L_4 s+\frac{1}{C_4 s},\ \infty,\ R_L+\frac{1}{C_L s}\right)$

Filter 645

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ L_4 s+\frac{1}{C_4 s},\ \infty,\ L_L s+\frac{1}{C_L s}\right)$

Filter 646

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ L_4 s+\frac{1}{C_4 s},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$

Filter 647

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ L_4 s+\frac{1}{C_4 s},\ \infty,\ L_L s+R_L+\frac{1}{C_L s}\right)$

Filter 648

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ L_4 s+\frac{1}{C_4 s},\ \infty,\ \frac{1}{C_L s+\frac{1}{R_L}+\frac{1}{L_L s}}\right)$

Filter 649

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ L_4 s+\frac{1}{C_4 s},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}+R_L\right)$

Filter 650

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ L_4 s+\frac{1}{C_4 s},\ \infty,\ \frac{R_L\left(L_L s+\frac{1}{C_L s}\right)}{L_L s+R_L+\frac{1}{C_L s}}\right)$

Filter 651

Filter Type: BP
$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1},\ \infty,\ R_L\right)$
$H(s)$: $\frac{L_4 R_L s}{2C_4 L_4 R_L s^2+L_4 s+2R_L}$
Q: $2C_4 R_L\sqrt{\frac{1}{C_4 L_4}}$
ω_0: $\sqrt{\frac{1}{C_4 L_4}}$
Bandwidth: $\frac{1}{2C_4 R_L}$

Filter 652

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1},\ \infty,\ \frac{1}{C_L s}\right)$

Filter 653

Filter Type: BP
$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1},\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$
$H(s)$: $\frac{L_4 R_L s}{2C_4 L_4 R_L s^2+C_L L_4 R_L s^2+2L_4 s+L_4 s+2R_L}$
Q: $\sqrt{2}R_L\sqrt{\frac{1}{L_4(2C_4+C_L)}}\,(2C_4+C_L)$
ω_0: $\sqrt{2}\sqrt{\frac{1}{L_4(2C_4+C_L)}}$
Bandwidth: $\frac{1}{R_L(2C_4+C_L)}$

Filter 654

Filter Type: Invalid110
$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1},\ \infty,\ R_L+\frac{1}{C_L s}\right)$
$H(s)$: $\frac{L_4 s(C_L R_L s+1)}{2C_4 C_L L_4 R_L s^3+2C_4 L_4 s^2+C_L L_4 s^2+2C_L R_L s+2}$
Q: $\frac{\sqrt{2}L_4\sqrt{\frac{1}{L_4(2C_4+C_L)}}(2C_4+C_L)}{2C_L R_L}$
ω_0: $\sqrt{2}\sqrt{\frac{1}{L_4(2C_4+C_L)}}$
Bandwidth: $\frac{2C_L R_L}{L_4(2C_4+C_L)}$

Filter 655

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1},\ \infty,\ L_L s+\frac{1}{C_L s}\right)$

Filter 656

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$

Filter 657

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1},\ \infty,\ L_L s+R_L+\frac{1}{C_L s}\right)$

Filter 658

Filter Type: BP
$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1},\ \infty,\ \frac{1}{C_L s+\frac{1}{R_L}+\frac{1}{L_L s}}\right)$
$H(s)$: $\frac{L_4 L_L R_L s}{2C_4 L_4 L_L R_L s^2+C_L L_4 L_L R_L s^2+L_4 L_L s+L_4 R_L+2L_L R_L}$
Q: $R_L\sqrt{\frac{L_4+2L_L}{L_4 L_L(2C_4+C_L)}}\,(2C_4+C_L)$
ω_0: $\sqrt{\frac{L_4+2L_L}{L_4 L_L(2C_4+C_L)}}$
Bandwidth: $\frac{1}{R_L(2C_4+C_L)}$

Filter 659

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}+R_L\right)$

Filter 660

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1},\ \infty,\ \frac{R_L\left(L_L s+\frac{1}{C_L s}\right)}{L_L s+R_L+\frac{1}{C_L s}}\right)$

Filter 661

Filter Type: GE
$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ L_4 s+R_4+\frac{1}{C_4 s},\ \infty,\ R_L\right)$
$H(s)$: $\frac{R_L\left(C_4 L_4 s^2+C_4 R_4 s+1\right)}{C_4 L_4 s^2+C_4 R_4 s+2C_4 R_L s+1}$
Q: $\frac{L_4\sqrt{\frac{1}{C_4 L_4}}}{R_4+2R_L}$
ω_0: $\sqrt{\frac{1}{C_4 L_4}}$
Bandwidth: $\frac{R_4+2R_L}{L_4}$
Qz: $\frac{L_4\sqrt{\frac{1}{C_4 L_4}}}{R_4}$

Filter 662

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ L_4 s+R_4+\frac{1}{C_4 s},\ \infty,\ \frac{1}{C_L s}\right)$

Filter 663

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ L_4 s+R_4+\frac{1}{C_4 s},\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$

Filter 664

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ L_4 s+R_4+\frac{1}{C_4 s},\ \infty,\ R_L+\frac{1}{C_L s}\right)$

Filter 665

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ L_4 s+R_4+\frac{1}{C_4 s},\ \infty,\ L_L s+\frac{1}{C_L s}\right)$

Filter 666

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ L_4 s+R_4+\frac{1}{C_4 s},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$

Filter 667

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ L_4 s+R_4+\frac{1}{C_4 s},\ \infty,\ L_L s+R_L+\frac{1}{C_L s}\right)$

Filter 668

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ L_4 s+R_4+\frac{1}{C_4 s},\ \infty,\ \frac{1}{C_L s+\frac{1}{R_L}+\frac{1}{L_L s}}\right)$

Filter 669

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ L_4 s+R_4+\frac{1}{C_4 s},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}+R_L\right)$

Filter 670

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ L_4 s+R_4+\frac{1}{C_4 s},\ \infty,\ \frac{R_L\left(L_L s+\frac{1}{C_L s}\right)}{L_L s+R_L+\frac{1}{C_L s}}\right)$

Filter 671

Filter Type: BP
$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ \frac{1}{C_4 s+\frac{1}{R_4}+\frac{1}{L_4 s}},\ \infty,\ R_L\right)$
$H(s)$: $\frac{L_4 R_4 R_L s}{2C_4 L_4 R_4 R_L s^2+L_4 R_4 s+2L_4 R_L s+2R_4 R_L}$
Q: $\frac{2C_4 R_4 R_L\sqrt{\frac{1}{C_4 L_4}}}{R_4+2R_L}$
ω_0: $\sqrt{\frac{1}{C_4 L_4}}$
Bandwidth: $\frac{R_4+2R_L}{2C_4 R_4 R_L}$

Filter 672

Filter Type: BP
$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ \frac{1}{C_4 s+\frac{1}{R_4}+\frac{1}{L_4 s}},\ \infty,\ \frac{1}{C_L s}\right)$
$H(s)$: $\frac{L_4 R_4 s}{2C_4 L_4 R_4 s^2+C_L L_4 R_4 s^2+2L_4 s+2R_4}$
Q: $\frac{\sqrt{2}R_4\sqrt{\frac{1}{L_4(2C_4+C_L)}}(2C_4+C_L)}{2}$
ω_0: $\sqrt{2}\sqrt{\frac{1}{L_4(2C_4+C_L)}}$
Bandwidth: $\frac{2}{R_4(2C_4+C_L)}$

Filter 673

Filter Type: BP
$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ \frac{1}{C_4 s+\frac{1}{R_4}+\frac{1}{L_4 s}},\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$
$H(s)$: $\frac{L_4 R_4 R_L s}{2C_4 L_4 R_4 R_L s^2+C_L L_4 R_4 R_L s^2+L_4 R_4 s+2L_4 R_L s+2R_4 R_L}$
Q: $\frac{\sqrt{2}R_4 R_L\sqrt{\frac{1}{L_4(2C_4+C_L)}}(2C_4+C_L)}{R_4+2R_L}$
ω_0: $\sqrt{2}\sqrt{\frac{1}{L_4(2C_4+C_L)}}$
Bandwidth: $\frac{R_4+2R_L}{R_4 R_L(2C_4+C_L)}$

Filter 674

Filter Type: Invalid110
$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ \frac{1}{C_4 s+\frac{1}{R_4}+\frac{1}{L_4 s}},\ \infty,\ R_L+\frac{1}{C_L s}\right)$
$H(s)$: $\frac{L_4 R_4 s(C_L R_L s+1)}{2C_4 C_L L_4 R_4 R_L s^3+2C_4 L_4 R_4 s^2+C_L L_4 R_4 s^2+2C_L L_4 R_L s^2+2C_L R_4 R_L s+2L_4 s+2R_4}$
Q: $\frac{\sqrt{2L_4}\sqrt{\frac{R_4}{L_4(2C_4 R_4+C_L R_4+2C_L R_L)}}(2C_4 R_4+C_L R_4+2C_L R_L)}{2(C_L R_4 R_L+L_4)}$
ω_0: $\sqrt{2}\sqrt{\frac{R_4}{L_4(2C_4 R_4+C_L R_4+2C_L R_L)}}$
Bandwidth: $\frac{2(C_L R_4 R_L+L_4)}{L_4(2C_4 R_4+C_L R_4+2C_L R_L)}$

Filter 675

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ \frac{1}{C_4 s+\frac{1}{R_4}+\frac{1}{L_4 s}},\ \infty,\ L_L s+\frac{1}{C_L s}\right)$

Filter 676

Filter Type: BP

$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ \frac{1}{C_4 s+\frac{1}{R_4}+\frac{1}{L_4 s}},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$

$H(s)$: $\frac{L_4 L_L R_4 s}{2C_4 L_4 L_L R_4 s^2+C_L L_4 L_L R_4 s^2+2L_4 L_L s+L_4 R_4+2L_L R_4}$

Q: $\frac{R_4\sqrt{\frac{L_4+2L_L}{L_4 L_L(2C_4+C_L)}}(2C_4+C_L)}{2}$

ω_0: $\sqrt{\frac{L_4+2L_L}{L_4 L_L(2C_4+C_L)}}$

Bandwidth: $\frac{2}{R_4(2C_4+C_L)}$

Filter 677

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ \frac{1}{C_4 s+\frac{1}{R_4}+\frac{1}{L_4 s}},\ \infty,\ L_L s+R_L+\frac{1}{C_L s}\right)$

Filter 678

Filter Type: BP

$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ \frac{1}{C_4 s+\frac{1}{R_4}+\frac{1}{L_4 s}},\ \infty,\ \frac{1}{C_L s+\frac{1}{R_L}+\frac{1}{L_L s}}\right)$

$H(s)$: $\frac{L_4 L_L R_4 R_L s}{2C_4 L_4 L_L R_4 R_L s^2+C_L L_4 L_L R_4 R_L s^2+L_4 L_L R_4 s+2L_4 L_L R_L s+L_4 R_4 R_L+2L_L R_4 R_L}$

Q: $\frac{R_4 R_L\sqrt{\frac{L_4+2L_L}{L_4 L_L(2C_4+C_L)}}(2C_4+C_L)}{R_4+2R_L}$

ω_0: $\sqrt{\frac{L_4+2L_L}{L_4 L_L(2C_4+C_L)}}$

Bandwidth: $\frac{R_4+2R_L}{R_4 R_L(2C_4+C_L)}$

Filter 679

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ \frac{1}{C_4 s+\frac{1}{R_4}+\frac{1}{L_4 s}},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}+R_L\right)$

Filter 680

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ \frac{1}{C_4 s+\frac{1}{R_4}+\frac{1}{L_4 s}},\ \infty,\ \frac{R_L\left(L_L s+\frac{1}{C_L s}\right)}{L_L s+R_L+\frac{1}{C_L s}}\right)$

Filter 681

Filter Type: GE

$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1}+R_4,\ \infty,\ R_L\right)$

$H(s)$: $\frac{R_L\left(C_4 L_4 R_4 s^2+L_4 s+R_4\right)}{C_4 L_4 R_4 s^2+2C_4 L_4 R_L s^2+L_4 s+R_4+2R_L}$

Q: $C_4\sqrt{\frac{1}{C_4 L_4}}\left(R_4+2R_L\right)$

ω_0: $\sqrt{\frac{1}{C_4 L_4}}$

Bandwidth: $\frac{1}{C_4(R_4+2R_L)}$

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

Filter 682

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1}+R_4,\ \infty,\ \frac{1}{C_L s}\right)$

Filter 683

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1}+R_4,\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$

Filter 684

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1}+R_4,\ \infty,\ R_L+\frac{1}{C_L s}\right)$

Filter 685

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1}+R_4,\ \infty,\ L_L s+\frac{1}{C_L s}\right)$

Filter 686

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1}+R_4,\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$

Filter 687

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1}+R_4,\ \infty,\ L_L s+R_L+\frac{1}{C_L s}\right)$

Filter 688

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1}+R_4,\ \infty,\ \frac{1}{C_L s+\frac{1}{R_L}+\frac{1}{L_L s}}\right)$

Filter 689

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1}+R_4,\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}+R_L\right)$

Filter 690

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1}+R_4,\ \infty,\ \frac{R_L\left(L_L s+\frac{1}{C_L s}\right)}{L_L s+R_L+\frac{1}{C_L s}}\right)$

Filter 691

Filter Type: BS

$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ \frac{R_4\left(L_4 s+\frac{1}{C_4 s}\right)}{L_4 s+R_4+\frac{1}{C_4 s}},\ \infty,\ R_L\right)$

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

Q: $\frac{L_4\sqrt{\frac{1}{C_4 L_4}}(R_4+2R_L)}{2R_4 R_L}$

ω_0: $\sqrt{\frac{1}{C_4 L_4}}$

Bandwidth: $\frac{2R_4 R_L}{L_4(R_4+2R_L)}$

Filter 692

Filter Type: BS

$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ \frac{R_4\left(L_4 s+\frac{1}{C_4 s}\right)}{L_4 s+R_4+\frac{1}{C_4 s}},\ \infty,\ \frac{1}{C_L s}\right)$

$H(s)$: $\frac{R_4\left(C_4 L_4 s^2+1\right)}{C_4 C_L L_2 R_4 s^3+2 C_4 L_4 s^2+2 C_4 R_4 s+C_L R_4 s+2}$

Q: $\frac{2C_4L_4\sqrt{\frac{1}{C_4L_4}}}{R_4(2C_4+C_L)}$

ω_0: $\sqrt{\frac{1}{C_4 L_4}}$

Bandwidth: $\frac{R_4(2C_4+C_L)}{2C_4L_4}$

Filter 693

Filter Type: BS

$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ \frac{R_4\left(L_4 s+\frac{1}{C_4 s}\right)}{L_4 s+R_4+\frac{1}{C_4 s}},\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$

$H(s)$: $\frac{R_4 R_L\left(C_4 L_4 s^2+1\right)}{C_4 C_L L_2 R_4 R_L s^3+C_4 L_4 R_4 s^2+2 C_4 L_4 R_L s^2+2 C_4 R_4 R_L s+C_L R_4 R_L s+R_4+2 R_L}$

Q: $\frac{C_4L_4\sqrt{\frac{1}{C_4L_4}}(R_4+2R_L)}{R_4R_L(2C_4+C_L)}$

ω_0: $\sqrt{\frac{1}{C_4 L_4}}$

Bandwidth: $\frac{R_4R_L(2C_4+C_L)}{C_4L_4(R_4+2R_L)}$

Filter 694

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ \frac{R_4\left(L_4 s+\frac{1}{C_4 s}\right)}{L_4 s+R_4+\frac{1}{C_4 s}},\ \infty,\ R_L+\frac{1}{C_L s}\right)$

Filter 695

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ \frac{R_4\left(L_4 s+\frac{1}{C_4 s}\right)}{L_4 s+R_4+\frac{1}{C_4 s}},\ \infty,\ L_L s+\frac{1}{C_L s}\right)$

Filter 696

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ \frac{R_4\left(L_4 s+\frac{1}{C_4 s}\right)}{L_4 s+R_4+\frac{1}{C_4 s}},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$

Filter 697

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ \frac{R_4\left(L_4 s+\frac{1}{C_4 s}\right)}{L_4 s+R_4+\frac{1}{C_4 s}},\ \infty,\ L_L s+R_L+\frac{1}{C_L s}\right)$

Filter 698

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ \frac{R_4\left(L_4 s+\frac{1}{C_4 s}\right)}{L_4 s+R_4+\frac{1}{C_4 s}},\ \infty,\ \frac{1}{C_L s+\frac{1}{R_L}+\frac{1}{L_L s}}\right)$

Filter 699

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ \frac{R_4\left(L_4 s+\frac{1}{C_4 s}\right)}{L_4 s+R_4+\frac{1}{C_4 s}},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}+R_L\right)$

Filter 700

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{L_2 s}{C_2 L_2 s^2+1}+R_2,\ \infty,\ \frac{R_4\left(L_4 s+\frac{1}{C_4 s}\right)}{L_4 s+R_4+\frac{1}{C_4 s}},\ \infty,\ \frac{R_L\left(L_L s+\frac{1}{C_L s}\right)}{L_L s+R_L+\frac{1}{C_L s}}\right)$

Filter 701

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2 s+\frac{1}{C_2 s}\right)}{L_2 s+R_2+\frac{1}{C_2 s}},\ \infty,\ R_4,\ \infty,\ R_L\right)$

Filter 702

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2 s+\frac{1}{C_2 s}\right)}{L_2 s+R_2+\frac{1}{C_2 s}},\ \infty,\ R_4,\ \infty,\ \frac{1}{C_L s}\right)$

Filter 703

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2 s+\frac{1}{C_2 s}\right)}{L_2 s+R_2+\frac{1}{C_2 s}},\ \infty,\ R_4,\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$

Filter 704

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2 s+\frac{1}{C_2 s}\right)}{L_2 s+R_2+\frac{1}{C_2 s}},\ \infty,\ R_4,\ \infty,\ R_L+\frac{1}{C_L s}\right)$

Filter 705

Filter Type: BS

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2 s+\frac{1}{C_2 s}\right)}{L_2 s+R_2+\frac{1}{C_2 s}},\ \infty,\ R_4,\ \infty,\ L_L s+\frac{1}{C_L s}\right)$

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

Q: $\frac{2L_L\sqrt{\frac{1}{C_LL_L}}}{R_4}$

ω_0: $\sqrt{\frac{1}{C_L L_L}}$

Bandwidth: $\frac{R_4}{2L_L}$

Filter 706

Filter Type: BP

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2 s+\frac{1}{C_2 s}\right)}{L_2 s+R_2+\frac{1}{C_2 s}},\ \infty,\ R_4,\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$

$H(s)$: $\frac{L_L R_4 s}{C_L L_L R_4 s^2+2 L_L s+R_4}$

Q: $\frac{C_LR_4\sqrt{\frac{1}{C_LL_L}}}{2}$

ω_0: $\sqrt{\frac{1}{C_L L_L}}$

Bandwidth: $\frac{2}{C_L R_4}$

Filter 707

Filter Type: GE
$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2 s+\frac{1}{C_2 s}\right)}{L_2 s+R_2+\frac{1}{C_2 s}},\ \infty,\ R_4,\ \infty,\ L_L s+R_L+\frac{1}{C_L s}\right)$
$H(s)$: $\frac{R_4\left(C_L L_L s^2+C_L R_L s+1\right)}{2C_L L_L s^2+2C_L R_4 s+2C_L R_L s+2}$
Q: $\frac{2L_L\sqrt{\frac{1}{C_L L_L}}}{R_L+2R_L}$
ω_0: $\sqrt{\frac{1}{C_L L_L}}$
Bandwidth: $\frac{R_L+2R_L}{2L_L}$
Qz: $\frac{L_L\sqrt{\frac{1}{C_L L_L}}}{R_L}$

Filter 708

Filter Type: BP
$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2 s+\frac{1}{C_2 s}\right)}{L_2 s+R_2+\frac{1}{C_2 s}},\ \infty,\ R_4,\ \infty,\ \frac{1}{C_L s+\frac{1}{R_L}+\frac{1}{L_L s}}\right)$
$H(s)$: $\frac{L_L R_4 R_L s}{C_L L_L R_4 R_L s^2+L_L R_4 s+2L_L R_L s+R_4 R_L}$
Q: $\frac{C_L R_4 R_L\sqrt{\frac{1}{C_L L_L}}}{R_4+2R_L}$
ω_0: $\sqrt{\frac{1}{C_L L_L}}$
Bandwidth: $\frac{R_4+2R_L}{C_L R_4 R_L}$

Filter 709

Filter Type: GE
$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2 s+\frac{1}{C_2 s}\right)}{L_2 s+R_2+\frac{1}{C_2 s}},\ \infty,\ R_4,\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}+R_L\right)$
$H(s)$: $\frac{R_4\left(C_L L_L R_L s^2+L_L s+R_L\right)}{C_L L_L R_4 s^2+2C_L L_L R_L s^2+2L_L s+R_4+2R_L}$
Q: $\frac{C_L\sqrt{\frac{1}{C_L L_L}}(R_4+2R_L)}{2}$
ω_0: $\sqrt{\frac{1}{C_L L_L}}$
Bandwidth: $\frac{2}{C_L(R_4+2R_L)}$
Qz: $C_L R_L\sqrt{\frac{1}{C_L L_L}}$

Filter 710

Filter Type: BS
$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2 s+\frac{1}{C_2 s}\right)}{L_2 s+R_2+\frac{1}{C_2 s}},\ \infty,\ R_4,\ \infty,\ \frac{R_L\left(L_L s+\frac{1}{C_L s}\right)}{L_L s+R_L+\frac{1}{C_L s}}\right)$
$H(s)$: $\frac{R_4 R_L\left(C_L L_L s^2+1\right)}{C_L L_L R_4 s^2+2C_L L_L R_L s^2+C_L R_4 R_L s+R_4+2R_L}$
Q: $\frac{L_L\sqrt{\frac{1}{C_L L_L}}(R_4+2R_L)}{R_4 R_L}$
ω_0: $\sqrt{\frac{1}{C_L L_L}}$
Bandwidth: $\frac{R_4 R_L}{L_L(R_4+2R_L)}$

Filter 711

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2 s+\frac{1}{C_2 s}\right)}{L_2 s+R_2+\frac{1}{C_2 s}},\ \infty,\ \frac{1}{C_4 s},\ \infty,\ R_L\right)$

Filter 712

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2 s+\frac{1}{C_2 s}\right)}{L_2 s+R_2+\frac{1}{C_2 s}},\ \infty,\ \frac{1}{C_4 s},\ \infty,\ \frac{1}{C_L s}\right)$

Filter 713

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2 s+\frac{1}{C_2 s}\right)}{L_2 s+R_2+\frac{1}{C_2 s}},\ \infty,\ \frac{1}{C_4 s},\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$

Filter 714

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2 s+\frac{1}{C_2 s}\right)}{L_2 s+R_2+\frac{1}{C_2 s}},\ \infty,\ \frac{1}{C_4 s},\ \infty,\ R_L+\frac{1}{C_L s}\right)$

Filter 715

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2 s+\frac{1}{C_2 s}\right)}{L_2 s+R_2+\frac{1}{C_2 s}},\ \infty,\ \frac{1}{C_4 s},\ \infty,\ L_L s+\frac{1}{C_L s}\right)$

Filter 716

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2 s+\frac{1}{C_2 s}\right)}{L_2 s+R_2+\frac{1}{C_2 s}},\ \infty,\ \frac{1}{C_4 s},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$

Filter 717

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2 s+\frac{1}{C_2 s}\right)}{L_2 s+R_2+\frac{1}{C_2 s}},\ \infty,\ \frac{1}{C_4 s},\ \infty,\ L_L s+R_L+\frac{1}{C_L s}\right)$

Filter 718

Filter Type: BP
$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2 s+\frac{1}{C_2 s}\right)}{L_2 s+R_2+\frac{1}{C_2 s}},\ \infty,\ \frac{1}{C_4 s},\ \infty,\ \frac{1}{C_L s+\frac{1}{R_L}+\frac{1}{L_L s}}\right)$
$H(s)$: $\frac{L_L R_L s}{2C_4 L_L R_L s^2+C_L L_L R_L s^2+L_L s+R_L}$
Q: $R_L\sqrt{\frac{1}{L_L(2C_4+C_L)}}\,(2C_4+C_L)$
ω_0: $\sqrt{\frac{1}{L_L(2C_4+C_L)}}$
Bandwidth: $\frac{1}{R_L(2C_4+C_L)}$

Filter 719

Invalid filter
$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2 s+\frac{1}{C_2 s}\right)}{L_2 s+R_2+\frac{1}{C_2 s}},\ \infty,\ \frac{1}{C_4 s},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}+R_L\right)$

Filter 720

Filter Type: BS
$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2 s+\frac{1}{C_2 s}\right)}{L_2 s+R_2+\frac{1}{C_2 s}},\ \infty,\ \frac{1}{C_4 s},\ \infty,\ \frac{R_L\left(L_L s+\frac{1}{C_L s}\right)}{L_L s+R_L+\frac{1}{C_L s}}\right)$
$H(s)$: $\frac{R_L\left(C_L L_L s^2+1\right)}{2C_4 C_L L_L R_L s^3+2C_4 R_L s+C_L L_L s^2+C_L R_L s+1}$
Q: $\frac{C_L L_L\sqrt{\frac{1}{C_L L_L}}}{R_L(2C_4+C_L)}$
ω_0: $\sqrt{\frac{1}{C_L L_L}}$
Bandwidth: $\frac{R_L(2C_4+C_L)}{C_L L_L}$

Filter 721

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2 s+\frac{1}{C_2 s}\right)}{L_2 s+R_2+\frac{1}{C_2 s}},\ \infty,\ \frac{R_4}{C_4 R_4 s+1},\ \infty,\ R_L\right)$

Filter 722

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2 s+\frac{1}{C_2 s}\right)}{L_2 s+R_2+\frac{1}{C_2 s}},\ \infty,\ \frac{R_4}{C_4 R_4 s+1},\ \infty,\ \frac{1}{C_L s}\right)$

Filter 723

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2 s+\frac{1}{C_2 s}\right)}{L_2 s+R_2+\frac{1}{C_2 s}},\ \infty,\ \frac{R_4}{C_4 R_4 s+1},\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$

Filter 724

Filter Type: Invalid011

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2 s+\frac{1}{C_2 s}\right)}{L_2 s+R_2+\frac{1}{C_2 s}},\ \infty,\ \frac{R_4}{C_4 R_4 s+1},\ \infty,\ R_L+\frac{1}{C_L s}\right)$

$H(s)$: $\frac{R_4(C_L R_L s+1)}{2C_4C_L R_4 R_L s^2+2C_4 R_4 s+C_L R_4 s+2C_L R_L s+2}$

Q: $\frac{2C_4C_L R_4 R_L\sqrt{\frac{1}{C_4C_L R_4 R_L}}}{2C_L R_4+C_L R_4+2C_L R_L}$

ω_0: $\sqrt{\frac{1}{C_4C_L R_4 R_L}}$

Bandwidth: $\frac{2C_4 R_4+C_L R_4+2C_L R_L}{2C_4C_L R_4 R_L}$

Filter 725

Filter Type: BS

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2 s+\frac{1}{C_2 s}\right)}{L_2 s+R_2+\frac{1}{C_2 s}},\ \infty,\ \frac{R_4}{C_4 R_4 s+1},\ \infty,\ L_L s+\frac{1}{C_L s}\right)$

$H(s)$: $\frac{R_4(C_L L_L s^2+1)}{2C_4C_L L_L R_4 s^3+2C_4 R_4 s+2C_L L_L R_4 s+2C_L L_L s^2+C_L R_4 s+2}$

Q: $\frac{2C_L L_L\sqrt{\frac{1}{C_L L_L}}}{R_4(2C_4+C_L)}$

ω_0: $\sqrt{\frac{1}{C_L L_L}}$

Bandwidth: $\frac{R_4(2C_4+C_L)}{2C_L L_L}$

Filter 726

Filter Type: BP

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2 s+\frac{1}{C_2 s}\right)}{L_2 s+R_2+\frac{1}{C_2 s}},\ \infty,\ \frac{R_4}{C_4 R_4 s+1},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$

$H(s)$: $\frac{L_L R_4 s}{2C_4L_L R_4 s^2+C_L L_L R_4 s^2+2C_4 R_4 s+C_L L_L s^2+2L_L s+R_4}$

Q: $\frac{R_4\sqrt{\frac{1}{L_L(2C_4+C_L)}}(2C_4+C_L)}{2}$

ω_0: $\sqrt{\frac{1}{L_L(2C_4+C_L)}}$

Bandwidth: $\frac{2}{R_4(2C_4+C_L)}$

Filter 727

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2 s+\frac{1}{C_2 s}\right)}{L_2 s+R_2+\frac{1}{C_2 s}},\ \infty,\ \frac{R_4}{C_4 R_4 s+1},\ \infty,\ L_L s+R_L+\frac{1}{C_L s}\right)$

Filter 728

Filter Type: BP

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2 s+\frac{1}{C_2 s}\right)}{L_2 s+R_2+\frac{1}{C_2 s}},\ \infty,\ \frac{R_4}{C_4 R_4 s+1},\ \infty,\ \frac{1}{C_L s+\frac{1}{R_L}+\frac{1}{r_L s}}\right)$

$H(s)$: $\frac{L_L R_4 R_L s}{2C_4L_L R_4 R_L s^2+C_L L_L R_4 R_L s^2+L_L R_4 s+2L_L R_L s+R_4 R_L}$

Q: $\frac{R_4 R_L\sqrt{\frac{1}{L_L(2C_4+C_L)}}(2C_4+C_L)}{R_4+2R_L}$

ω_0: $\sqrt{\frac{1}{L_L(2C_4+C_L)}}$

Bandwidth: $\frac{R_4+2R_L}{R_4R_L(2C_4+C_L)}$

Filter 729

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2 s+\frac{1}{C_2 s}\right)}{L_2 s+R_2+\frac{1}{C_2 s}},\ \infty,\ \frac{R_4}{C_4 R_4 s+1},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}+R_L\right)$

Filter 730

Filter Type: BS

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2 s+\frac{1}{C_2 s}\right)}{L_2 s+R_2+\frac{1}{C_2 s}},\ \infty,\ \frac{R_4}{C_4 R_4 s+1},\ \infty,\ \frac{R_L\left(L_L s+\frac{1}{C_L s}\right)}{L_L s+R_L+\frac{1}{C_L s}}\right)$

$H(s)$: $\frac{R_4R_L(C_L L_L s^2+1)}{2C_4C_L L_L R_4 R_L s^2+2C_4 R_4 R_L s+C_L L_L R_4 s^2+2C_L L_L R_L s^2+C_L R_4 R_L s+R_4+2R_L}$

Q: $\frac{C_L L_L\sqrt{\frac{1}{C_L L_L}}(R_4+2R_L)}{R_4R_L(2C_4+C_L)}$

ω_0: $\sqrt{\frac{1}{C_L L_L}}$

Bandwidth: $\frac{R_4R_L(2C_4+C_L)}{C_L L_L(R_4+2R_L)}$

Filter 731

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2 s+\frac{1}{C_2 s}\right)}{L_2 s+R_2+\frac{1}{C_2 s}},\ \infty,\ R_4+\frac{1}{C_4 s},\ \infty,\ R_L\right)$

Filter 732

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2 s+\frac{1}{C_2 s}\right)}{L_2 s+R_2+\frac{1}{C_2 s}},\ \infty,\ R_4+\frac{1}{C_4 s},\ \infty,\ \frac{1}{C_L s}\right)$

Filter 733

Filter Type: Invalid011

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2 s+\frac{1}{C_2 s}\right)}{L_2 s+R_2+\frac{1}{C_2 s}},\ \infty,\ R_4+\frac{1}{C_4 s},\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$

$H(s)$: $\frac{R_4(C_L R_L s+1)}{C_4C_L R_4 R_L s^2+C_L R_4 s+2C_4 R_L s+C_L R_L s+1}$

Q: $\frac{C_4C_L R_4 R_L\sqrt{\frac{1}{C_4C_L R_4 R_L}}}{C_L R_4+2C_4 R_L+C_L R_L}$

ω_0: $\sqrt{\frac{1}{C_4C_L R_4 R_L}}$

Bandwidth: $\frac{C_L R_4+2C_4 R_L+C_L R_L}{C_4C_L R_4 R_L}$

Filter 734

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2 s+\frac{1}{C_2 s}\right)}{L_2 s+R_2+\frac{1}{C_2 s}},\ \infty,\ R_4+\frac{1}{C_4 s},\ \infty,\ R_L+\frac{1}{C_L s}\right)$

Filter 735

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2s+\frac{1}{C_2s}\right)}{L_2s+R_2+\frac{1}{C_2s}},\ \infty,\ R_4+\frac{1}{C_4s},\ \infty,\ L_Ls+\frac{1}{C_Ls}\right)$

Filter 736

Filter Type: Invalid110

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2s+\frac{1}{C_2s}\right)}{L_2s+R_2+\frac{1}{C_2s}},\ \infty,\ R_4+\frac{1}{C_4s},\ \infty,\ \frac{L_Ls}{C_LL_Ls^2+1}\right)$

$H(s)$: $\frac{L_Ls(C_4R_4s+1)}{C_4C_LL_LR_4s^3+2C_LL_Ls^2+C_4R_4s+C_LL_Ls^2+1}$

Q: $\frac{L_L\sqrt{\frac{1}{L_L(2C_4+C_L)}}(2C_4+C_L)}{C_4R_4}$

ω_0: $\sqrt{\frac{1}{L_L(2C_4+C_L)}}$

Bandwidth: $\frac{C_4R_4}{L_L(2C_4+C_L)}$

Filter 737

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2s+\frac{1}{C_2s}\right)}{L_2s+R_2+\frac{1}{C_2s}},\ \infty,\ R_4+\frac{1}{C_4s},\ \infty,\ L_Ls+R_L+\frac{1}{C_Ls}\right)$

Filter 738

Filter Type: Invalid110

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2s+\frac{1}{C_2s}\right)}{L_2s+R_2+\frac{1}{C_2s}},\ \infty,\ R_4+\frac{1}{C_4s},\ \infty,\ \frac{1}{C_Ls+\frac{1}{R_L}+\frac{1}{L_Ls}}\right)$

$H(s)$: $\frac{L_LR_Ls(C_4R_4s+1)}{C_4C_LL_LR_4R_Ls^3+C_4L_LR_4s^2+2C_4L_LR_Ls^2+C_4R_4R_Ls+C_LL_LR_Ls^2+L_Ls+R_L}$

Q: $\frac{L_L\sqrt{\frac{R_L}{L_L(C_4R_4+2C_4R_L+C_LR_L)}}(C_4R_4+2C_4R_L+C_LR_L)}{C_4R_4R_L+L_L}$

ω_0: $\sqrt{\frac{R_L}{L_L(C_4R_4+2C_4R_L+C_LR_L)}}$

Bandwidth: $\frac{C_4R_4R_L+L_L}{L_L(C_4R_4+2C_4R_L+C_LR_L)}$

Filter 739

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2s+\frac{1}{C_2s}\right)}{L_2s+R_2+\frac{1}{C_2s}},\ \infty,\ R_4+\frac{1}{C_4s},\ \infty,\ \frac{L_Ls}{C_LL_Ls^2+1}+R_L\right)$

Filter 740

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2s+\frac{1}{C_2s}\right)}{L_2s+R_2+\frac{1}{C_2s}},\ \infty,\ R_4+\frac{1}{C_4s},\ \infty,\ \frac{R_L\left(L_Ls+\frac{1}{C_Ls}\right)}{L_Ls+R_L+\frac{1}{C_Ls}}\right)$

Filter 741

Filter Type: BS

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2s+\frac{1}{C_2s}\right)}{L_2s+R_2+\frac{1}{C_2s}},\ \infty,\ L_4s+\frac{1}{C_4s},\ \infty,\ R_L\right)$

$H(s)$: $\frac{R_L\left(C_4L_4s^2+1\right)}{C_4L_4s^2+2C_4R_Ls+1}$

Q: $\frac{L_4\sqrt{\frac{1}{C_4L_4}}}{2R_L}$

ω_0: $\sqrt{\frac{1}{C_4L_4}}$

Bandwidth: $\frac{2R_L}{L_4}$

Filter 742

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2s+\frac{1}{C_2s}\right)}{L_2s+R_2+\frac{1}{C_2s}},\ \infty,\ L_4s+\frac{1}{C_4s},\ \infty,\ \frac{1}{C_Ls}\right)$

Filter 743

Filter Type: BS

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2s+\frac{1}{C_2s}\right)}{L_2s+R_2+\frac{1}{C_2s}},\ \infty,\ L_4s+\frac{1}{C_4s},\ \infty,\ \frac{R_L}{C_LR_Ls+1}\right)$

$H(s)$: $\frac{R_L\left(C_4L_4s^2+1\right)}{C_4C_LL_LR_Ls^3+C_4L_4s^2+2C_4R_Ls+C_LR_Ls+1}$

Q: $\frac{C_4L_4\sqrt{\frac{1}{C_4L_4}}}{R_L(2C_4+C_L)}$

ω_0: $\sqrt{\frac{1}{C_4L_4}}$

Bandwidth: $\frac{R_L(2C_4+C_L)}{C_4L_4}$

Filter 744

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2s+\frac{1}{C_2s}\right)}{L_2s+R_2+\frac{1}{C_2s}},\ \infty,\ L_4s+\frac{1}{C_4s},\ \infty,\ R_L+\frac{1}{C_Ls}\right)$

Filter 745

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2s+\frac{1}{C_2s}\right)}{L_2s+R_2+\frac{1}{C_2s}},\ \infty,\ L_4s+\frac{1}{C_4s},\ \infty,\ L_Ls+\frac{1}{C_Ls}\right)$

Filter 746

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2s+\frac{1}{C_2s}\right)}{L_2s+R_2+\frac{1}{C_2s}},\ \infty,\ L_4s+\frac{1}{C_4s},\ \infty,\ \frac{L_Ls}{C_LL_Ls^2+1}\right)$

Filter 747

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2s+\frac{1}{C_2s}\right)}{L_2s+R_2+\frac{1}{C_2s}},\ \infty,\ L_4s+\frac{1}{C_4s},\ \infty,\ L_Ls+R_L+\frac{1}{C_Ls}\right)$

Filter 748

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2s+\frac{1}{C_2s}\right)}{L_2s+R_2+\frac{1}{C_2s}},\ \infty,\ L_4s+\frac{1}{C_4s},\ \infty,\ \frac{1}{C_Ls+\frac{1}{R_L}+\frac{1}{L_Ls}}\right)$

Filter 749

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2s+\frac{1}{C_2s}\right)}{L_2s+R_2+\frac{1}{C_2s}},\ \infty,\ L_4s+\frac{1}{C_4s},\ \infty,\ \frac{L_Ls}{C_LL_Ls^2+1}+R_L\right)$

Filter 750

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2s+\frac{1}{C_2s}\right)}{L_2s+R_2+\frac{1}{C_2s}},\ \infty,\ L_4s+\frac{1}{C_4s},\ \infty,\ \frac{R_L\left(L_Ls+\frac{1}{C_Ls}\right)}{L_Ls+R_L+\frac{1}{C_Ls}}\right)$

Filter 751

Filter Type: BP

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2 s+\frac{1}{C_2 s}\right)}{L_2 s+R_2+\frac{1}{C_2 s}},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1},\ \infty,\ R_L\right)$

$H(s)$: $\frac{L_4 R_L s}{2C_4 L_4 R_L s^2+L_4 s+2R_L}$

Q: $2C_4 R_L\sqrt{\frac{1}{C_4 L_4}}$

ω_0: $\sqrt{\frac{1}{C_4 L_4}}$

Bandwidth: $\frac{1}{2C_4 R_L}$

Filter 752

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2 s+\frac{1}{C_2 s}\right)}{L_2 s+R_2+\frac{1}{C_2 s}},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1},\ \infty,\ \frac{1}{C_L s}\right)$

Filter 753

Filter Type: BP

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2 s+\frac{1}{C_2 s}\right)}{L_2 s+R_2+\frac{1}{C_2 s}},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1},\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$

$H(s)$: $\frac{L_4 R_L s}{2C_4 L_4 R_L s^2+C_L L_4 R_L s^2+L_4 s+2R_L}$

Q: $\sqrt{2}R_L\sqrt{\frac{1}{L_4(2C_4+C_L)}}\,(2C_4+C_L)$

ω_0: $\sqrt{2}\sqrt{\frac{1}{L_4(2C_4+C_L)}}$

Bandwidth: $\frac{1}{R_L(2C_4+C_L)}$

Filter 754

Filter Type: Invalid110

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2 s+\frac{1}{C_2 s}\right)}{L_2 s+R_2+\frac{1}{C_2 s}},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1},\ \infty,\ R_L+\frac{1}{C_L s}\right)$

$H(s)$: $\frac{L_4 s(C_L R_L s+1)}{2C_4 C_L L_4 R_L s^3+2C_4 L_4 s^2+C_L L_4 s^2+2C_L R_L s+2}$

Q: $\frac{\sqrt{2}L_4\sqrt{\frac{1}{L_4(2C_4+C_L)}}\,(2C_4+C_L)}{2C_L R_L}$

ω_0: $\sqrt{2}\sqrt{\frac{1}{L_4(2C_4+C_L)}}$

Bandwidth: $\frac{2C_L R_L}{L_4(2C_4+C_L)}$

Filter 755

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2 s+\frac{1}{C_2 s}\right)}{L_2 s+R_2+\frac{1}{C_2 s}},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1},\ \infty,\ L_L s+\frac{1}{C_L s}\right)$

Filter 756

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2 s+\frac{1}{C_2 s}\right)}{L_2 s+R_2+\frac{1}{C_2 s}},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$

Filter 757

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2 s+\frac{1}{C_2 s}\right)}{L_2 s+R_2+\frac{1}{C_2 s}},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1},\ \infty,\ L_L s+R_L+\frac{1}{C_L s}\right)$

Filter 758

Filter Type: BP

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2 s+\frac{1}{C_2 s}\right)}{L_2 s+R_2+\frac{1}{C_2 s}},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1},\ \infty,\ \frac{1}{\frac{1}{R_L}+\frac{1}{L_L s}}\right)$

$H(s)$: $\frac{L_4 L_L R_L s}{2C_4 L_4 L_L R_L s^2+C_L L_4 L_L R_L s^2+L_4 L_L s+L_4 R_L+2L_L R_L}$

Q: $R_L\sqrt{\frac{L_4+2L_L}{L_4 L_L(2C_4+C_L)}}\,(2C_4+C_L)$

ω_0: $\sqrt{\frac{L_4+2L_L}{L_4 L_L(2C_4+C_L)}}$

Bandwidth: $\frac{1}{R_L(2C_4+C_L)}$

Filter 759

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2 s+\frac{1}{C_2 s}\right)}{L_2 s+R_2+\frac{1}{C_2 s}},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}+R_L\right)$

Filter 760

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2 s+\frac{1}{C_2 s}\right)}{L_2 s+R_2+\frac{1}{C_2 s}},\ \infty,\ \frac{L_4 s}{C_4 L_4 s^2+1},\ \infty,\ \frac{R_L\left(L_L s+\frac{1}{C_L s}\right)}{L_L s+R_L+\frac{1}{C_L s}}\right)$

Filter 761

Filter Type: GE

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2 s+\frac{1}{C_2 s}\right)}{L_2 s+R_2+\frac{1}{C_2 s}},\ \infty,\ L_4 s+R_4+\frac{1}{C_4 s},\ \infty,\ R_L\right)$

$H(s)$: $\frac{R_L(C_4 L_4 s^2+C_4 R_4 s+1)}{C_4 L_4 s^2+C_4 R_4 s+2C_4 R_L s+1}$

Q: $\frac{L_4\sqrt{\frac{1}{C_4 L_4}}}{R_4+2R_L}$

ω_0: $\sqrt{\frac{1}{C_4 L_4}}$

Bandwidth: $\frac{R_4+2R_L}{L_4}$

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

Filter 762

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2 s+\frac{1}{C_2 s}\right)}{L_2 s+R_2+\frac{1}{C_2 s}},\ \infty,\ L_4 s+R_4+\frac{1}{C_4 s},\ \infty,\ \frac{1}{C_L s}\right)$

Filter 763

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2 s+\frac{1}{C_2 s}\right)}{L_2 s+R_2+\frac{1}{C_2 s}},\ \infty,\ L_4 s+R_4+\frac{1}{C_4 s},\ \infty,\ \frac{R_L}{C_L R_L s+1}\right)$

Filter 764

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2 s+\frac{1}{C_2 s}\right)}{L_2 s+R_2+\frac{1}{C_2 s}},\ \infty,\ L_4 s+R_4+\frac{1}{C_4 s},\ \infty,\ R_L+\frac{1}{C_L s}\right)$

Filter 765

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2 s+\frac{1}{C_2 s}\right)}{L_2 s+R_2+\frac{1}{C_2 s}},\ \infty,\ L_4 s+R_4+\frac{1}{C_4 s},\ \infty,\ L_L s+\frac{1}{C_L s}\right)$

Filter 766

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2s+\frac{1}{C_2s}\right)}{L_2s+R_2+\frac{1}{C_2s}},\ \infty,\ L_4s+R_4+\frac{1}{C_4s},\ \infty,\ \frac{L_Ls}{C_LL_Ls^2+1}\right)$

Filter 767

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2s+\frac{1}{C_2s}\right)}{L_2s+R_2+\frac{1}{C_2s}},\ \infty,\ L_4s+R_4+\frac{1}{C_4s},\ \infty,\ L_Ls+R_L+\frac{1}{C_Ls}\right)$

Filter 768

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2s+\frac{1}{C_2s}\right)}{L_2s+R_2+\frac{1}{C_2s}},\ \infty,\ L_4s+R_4+\frac{1}{C_4s},\ \infty,\ \frac{1}{C_Ls+\frac{1}{R_L}+\frac{1}{L_Ls}}\right)$

Filter 769

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2s+\frac{1}{C_2s}\right)}{L_2s+R_2+\frac{1}{C_2s}},\ \infty,\ L_4s+R_4+\frac{1}{C_4s},\ \infty,\ \frac{L_Ls}{C_LL_Ls^2+1}+R_L\right)$

Filter 770

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2s+\frac{1}{C_2s}\right)}{L_2s+R_2+\frac{1}{C_2s}},\ \infty,\ L_4s+R_4+\frac{1}{C_4s},\ \infty,\ \frac{R_L\left(L_Ls+\frac{1}{C_Ls}\right)}{L_Ls+R_L+\frac{1}{C_Ls}}\right)$

Filter 771

Filter Type: BP

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2s+\frac{1}{C_2s}\right)}{L_2s+R_2+\frac{1}{C_2s}},\ \infty,\ \frac{1}{C_4s+\frac{1}{R_4}+\frac{1}{L_4s}},\ \infty,\ R_L\right)$

$H(s)$: $\frac{L_4R_4R_Ls}{2C_4L_4R_4R_Ls^2+L_4R_4s+2L_4R_Ls+2R_4R_L}$

Q: $\frac{2C_4R_4R_L\sqrt{\frac{1}{C_4L_4}}}{R_4+2R_L}$

ω_0: $\sqrt{\frac{1}{C_4L_4}}$

Bandwidth: $\frac{R_4+2R_L}{2C_4R_4R_L}$

Filter 772

Filter Type: BP

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2s+\frac{1}{C_2s}\right)}{L_2s+R_2+\frac{1}{C_2s}},\ \infty,\ \frac{1}{C_4s+\frac{1}{R_4}+\frac{1}{L_4s}},\ \infty,\ \frac{1}{C_Ls+\frac{1}{R_L}}\right)$

$H(s)$: $\frac{L_4R_4s}{2C_4L_4R_4s^2+C_4L_4R_4s+2L_4s+2R_4}$

Q: $\frac{\sqrt{2}R_4\sqrt{\frac{1}{L_4(2C_4+C_L)}}(2C_4+C_L)}{2}$

ω_0: $\sqrt{2}\sqrt{\frac{1}{L_4(2C_4+C_L)}}$

Bandwidth: $\frac{2}{R_4(2C_4+C_L)}$

Filter 773

Filter Type: BP

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2s+\frac{1}{C_2s}\right)}{L_2s+R_2+\frac{1}{C_2s}},\ \infty,\ \frac{1}{C_4s+\frac{1}{R_4}+\frac{1}{L_4s}},\ \infty,\ \frac{R_L}{C_LR_Ls+1}\right)$

$H(s)$: $\frac{L_4R_4R_Ls}{2C_4L_4R_4R_Ls^2+C_4L_4R_4R_Ls+2C_4L_4R_4s^2+L_4R_4s+2L_4R_Ls+2R_4R_L}$

Q: $\frac{\sqrt{2}R_4R_L\sqrt{\frac{1}{L_4(2C_4+C_L)}}(2C_4+C_L)}{R_4+2R_L}$

ω_0: $\sqrt{2}\sqrt{\frac{1}{L_4(2C_4+C_L)}}$

Bandwidth: $\frac{R_4+2R_L}{R_4R_L(2C_4+C_L)}$

Filter 774

Filter Type: Invalid110

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2s+\frac{1}{C_2s}\right)}{L_2s+R_2+\frac{1}{C_2s}},\ \infty,\ \frac{1}{C_4s+\frac{1}{R_4}+\frac{1}{L_4s}},\ \infty,\ R_L+\frac{1}{C_Ls}\right)$

$H(s)$: $\frac{L_4R_4R_Ls}{2C_4C_LL_4R_4R_Ls^3+2C_4L_4R_4s^2+C_LL_4R_4s^2+2C_4L_4R_Ls^2+2C_LR_4R_Ls+2L_4s+2R_4}$

Q: $\frac{\sqrt{2}L_4\sqrt{\frac{R_4}{L_4(2C_4R_4+C_LR_4+2C_LR_L)}}(2C_4R_4+C_LR_4+2C_LR_L)}{2(C_LR_4R_L+L_4)}$

ω_0: $\sqrt{2}\sqrt{\frac{R_4}{L_4(2C_4R_4+C_LR_4+2C_LR_L)}}$

Bandwidth: $\frac{2(C_LR_4R_L+L_4)}{L_4(2C_4R_4+C_LR_4+2C_LR_L)}$

Filter 775

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2s+\frac{1}{C_2s}\right)}{L_2s+R_2+\frac{1}{C_2s}},\ \infty,\ \frac{1}{C_4s+\frac{1}{R_4}+\frac{1}{L_4s}},\ \infty,\ L_Ls+\frac{1}{C_Ls}\right)$

Filter 776

Filter Type: BP

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2s+\frac{1}{C_2s}\right)}{L_2s+R_2+\frac{1}{C_2s}},\ \infty,\ \frac{1}{C_4s+\frac{1}{R_4}+\frac{1}{L_4s}},\ \infty,\ \frac{L_Ls}{C_LL_Ls^2+1}\right)$

$H(s)$: $\frac{L_4L_LR_4s}{2C_4L_4L_LR_4s^2+C_LL_4L_LR_4s^2+2L_4L_Ls+L_4R_4+2L_LR_4}$

Q: $\frac{R_4\sqrt{\frac{L_4+2L_L}{L_4L_L(2C_4+C_L)}}(2C_4+C_L)}{2}$

ω_0: $\sqrt{\frac{L_4+2L_L}{L_4L_L(2C_4+C_L)}}$

Bandwidth: $\frac{2}{R_4(2C_4+C_L)}$

Filter 777

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2s+\frac{1}{C_2s}\right)}{L_2s+R_2+\frac{1}{C_2s}},\ \infty,\ \frac{1}{C_4s+\frac{1}{R_4}+\frac{1}{L_4s}},\ \infty,\ L_Ls+R_L+\frac{1}{C_Ls}\right)$

Filter 778

Filter Type: BP

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2s+\frac{1}{C_2s}\right)}{L_2s+R_2+\frac{1}{C_2s}},\ \infty,\ \frac{1}{C_4s+\frac{1}{R_4}+\frac{1}{L_4s}},\ \infty,\ \frac{1}{C_Ls+\frac{1}{R_L}+\frac{1}{L_Ls}}\right)$

$H(s)$: $\frac{L_4L_LR_4R_Ls}{2C_4L_4L_LR_4R_Ls^2+C_LL_4L_LR_4R_Ls^2+L_4L_LR_4s+2L_4L_LR_Ls+L_4R_4R_L+2L_LR_4R_L}$

Q: $\frac{R_4R_L\sqrt{\frac{L_4+2L_L}{L_4L_L(2C_4+C_L)}}(2C_4+C_L)}{R_4+2R_L}$

ω_0: $\sqrt{\frac{L_4+2L_L}{L_4L_L(2C_4+C_L)}}$

Bandwidth: $\frac{R_4+2R_L}{R_4R_L(2C_4+C_L)}$

Filter 779

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2s+\frac{1}{C_2s}\right)}{L_2s+R_2+\frac{1}{C_2s}},\ \infty,\ \frac{1}{C_4s+\frac{1}{R_4}+\frac{1}{L_4s}},\ \infty,\ \frac{L_Ls}{C_LL_Ls^2+1}+R_L\right)$

Filter 780

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2s+\frac{1}{C_2s}\right)}{L_2s+R_2+\frac{1}{C_2s}},\ \infty,\ \frac{1}{C_4Ls+\frac{1}{R_4}+\frac{1}{C_4s}},\ \infty,\ \frac{R_L\left(L_Ls+\frac{1}{C_Ls}\right)}{L_Ls+R_L+\frac{1}{C_Ls}}\right)$

Filter 781

Filter Type: GE

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2s+\frac{1}{C_2s}\right)}{L_2s+R_2+\frac{1}{C_2s}},\ \infty,\ \frac{L_4s}{C_4L_4s^2+1}+R_4,\ \infty,\ R_L\right)$

$H(s)$: $\frac{R_L\left(C_4L_4R_4s^2+L_4s+R_4\right)}{C_4L_4R_Ls^2+2C_4L_4R_4s^2+2C_4L_4R_Ls^2+L_4s+R_4+2R_L}$

Q: $C_4\sqrt{\frac{1}{C_4L_4}}\left(R_4+2R_L\right)$

ω_0: $\sqrt{\frac{1}{C_4L_4}}$

Bandwidth: $\frac{1}{C_4(R_4+2R_L)}$

Qz: $C_4R_4\sqrt{\frac{1}{C_4L_4}}$

Filter 782

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2s+\frac{1}{C_2s}\right)}{L_2s+R_2+\frac{1}{C_2s}},\ \infty,\ \frac{L_4s}{C_4L_4s^2+1}+R_4,\ \infty,\ \frac{1}{C_Ls}\right)$

Filter 783

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2s+\frac{1}{C_2s}\right)}{L_2s+R_2+\frac{1}{C_2s}},\ \infty,\ \frac{L_4s}{C_4L_4s^2+1}+R_4,\ \infty,\ \frac{R_L}{C_LR_Ls+1}\right)$

Filter 784

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2s+\frac{1}{C_2s}\right)}{L_2s+R_2+\frac{1}{C_2s}},\ \infty,\ \frac{L_4s}{C_4L_4s^2+1}+R_4,\ \infty,\ R_L+\frac{1}{C_Ls}\right)$

Filter 785

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2s+\frac{1}{C_2s}\right)}{L_2s+R_2+\frac{1}{C_2s}},\ \infty,\ \frac{L_4s}{C_4L_4s^2+1}+R_4,\ \infty,\ L_Ls+\frac{1}{C_Ls}\right)$

Filter 786

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2s+\frac{1}{C_2s}\right)}{L_2s+R_2+\frac{1}{C_2s}},\ \infty,\ \frac{L_4s}{C_4L_4s^2+1}+R_4,\ \infty,\ \frac{L_Ls}{C_LL_Ls^2+1}\right)$

Filter 787

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2s+\frac{1}{C_2s}\right)}{L_2s+R_2+\frac{1}{C_2s}},\ \infty,\ \frac{L_4s}{C_4L_4s^2+1}+R_4,\ \infty,\ L_Ls+R_L+\frac{1}{C_Ls}\right)$

Filter 788

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2s+\frac{1}{C_2s}\right)}{L_2s+R_2+\frac{1}{C_2s}},\ \infty,\ \frac{L_4s}{C_4L_4s^2+1}+R_4,\ \infty,\ \frac{1}{C_Ls+\frac{1}{R_L}+\frac{1}{L_Ls}}\right)$

Filter 789

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2s+\frac{1}{C_2s}\right)}{L_2s+R_2+\frac{1}{C_2s}},\ \infty,\ \frac{L_4s}{C_4L_4s^2+1}+R_4,\ \infty,\ \frac{L_4s}{C_4L_4s^2+1}+R_L\right)$

Filter 790

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2s+\frac{1}{C_2s}\right)}{L_2s+R_2+\frac{1}{C_2s}},\ \infty,\ \frac{L_4s}{C_4L_4s^2+1}+R_4,\ \infty,\ \frac{R_L\left(L_Ls+\frac{1}{C_Ls}\right)}{L_Ls+R_L+\frac{1}{C_Ls}}\right)$

Filter 791

Filter Type: BS

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2s+\frac{1}{C_2s}\right)}{L_2s+R_2+\frac{1}{C_2s}},\ \infty,\ \frac{R_4\left(L_4s+\frac{1}{C_4s}\right)}{L_4s+R_4+\frac{1}{C_4s}},\ \infty,\ R_L\right)$

$H(s)$: $\frac{R_4R_L\left(C_4L_4s^2+1\right)}{C_4L_4R_4s^2+2C_4L_4R_Ls^2+2C_4R_4R_Ls+R_4+2R_L}$

Q: $\frac{L_4\sqrt{\frac{1}{C_4L_4}}\left(R_4+2R_L\right)}{2R_4R_L}$

ω_0: $\sqrt{\frac{1}{C_4L_4}}$

Bandwidth: $\frac{2R_4R_L}{L_4(R_4+2R_L)}$

Filter 792

Filter Type: BS

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2s+\frac{1}{C_2s}\right)}{L_2s+R_2+\frac{1}{C_2s}},\ \infty,\ \frac{R_4\left(L_4s+\frac{1}{C_4s}\right)}{L_4s+R_4+\frac{1}{C_4s}},\ \infty,\ \frac{1}{C_Ls}\right)$

$H(s)$: $\frac{R_4\left(C_4L_4s^2+1\right)}{C_4C_LL_4R_4s^3+2C_4L_4s^2+2C_4R_4s+C_LR_4s+2}$

Q: $\frac{2C_4L_4\sqrt{\frac{1}{C_4L_4}}}{R_4(2C_4+C_L)}$

ω_0: $\sqrt{\frac{1}{C_4L_4}}$

Bandwidth: $\frac{R_4(2C_4+C_L)}{2C_4L_4}$

Filter 793

Filter Type: BS

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2s+\frac{1}{C_2s}\right)}{L_2s+R_2+\frac{1}{C_2s}},\ \infty,\ \frac{R_4\left(L_4s+\frac{1}{C_4s}\right)}{L_4s+R_4+\frac{1}{C_4s}},\ \infty,\ \frac{R_L}{C_LR_Ls+1}\right)$

$H(s)$: $\frac{R_4R_L\left(C_4L_4s^2+1\right)}{C_4C_LL_4R_4R_Ls^3+C_4L_4R_4s^2+2C_4L_4R_Ls^2+2C_4R_4R_Ls+C_LR_4R_Ls+R_4+2R_L}$

Q: $\frac{C_4L_4\sqrt{\frac{1}{C_4L_4}}\left(R_4+2R_L\right)}{R_4R_L(2C_4+C_L)}$

ω_0: $\sqrt{\frac{1}{C_4L_4}}$

Bandwidth: $\frac{R_4R_L(2C_4+C_L)}{C_4L_4(R_4+2R_L)}$

Filter 794

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2s+\frac{1}{C_2s}\right)}{L_2s+R_2+\frac{1}{C_2s}},\ \infty,\ \frac{R_4\left(L_4s+\frac{1}{C_4s}\right)}{L_4s+R_4+\frac{1}{C_4s}},\ \infty,\ R_L+\frac{1}{C_Ls}\right)$

Filter 795

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2s+\frac{1}{C_2s}\right)}{L_2s+R_2+\frac{1}{C_2s}},\ \infty,\ \frac{R_4\left(L_4s+\frac{1}{C_4s}\right)}{L_4s+R_4+\frac{1}{C_4s}},\ \infty,\ L_Ls+\frac{1}{C_Ls}\right)$

Filter 796

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2 s+\frac{1}{C_2 s}\right)}{L_2 s+R_2+\frac{1}{C_2 s}},\ \infty,\ \frac{R_4\left(L_4 s+\frac{1}{C_4 s}\right)}{L_4 s+R_4+\frac{1}{C_4 s}},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}\right)$

Filter 797

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2 s+\frac{1}{C_2 s}\right)}{L_2 s+R_2+\frac{1}{C_2 s}},\ \infty,\ \frac{R_4\left(L_4 s+\frac{1}{C_4 s}\right)}{L_4 s+R_4+\frac{1}{C_4 s}},\ \infty,\ L_L s+R_L+\frac{1}{C_L s}\right)$

Filter 798

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2 s+\frac{1}{C_2 s}\right)}{L_2 s+R_2+\frac{1}{C_2 s}},\ \infty,\ \frac{R_4\left(L_4 s+\frac{1}{C_4 s}\right)}{L_4 s+R_4+\frac{1}{C_4 s}},\ \infty,\ \frac{1}{C_L s+\frac{1}{R_L}+\frac{1}{L_L s}}\right)$

Filter 799

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2 s+\frac{1}{C_2 s}\right)}{L_2 s+R_2+\frac{1}{C_2 s}},\ \infty,\ \frac{R_4\left(L_4 s+\frac{1}{C_4 s}\right)}{L_4 s+R_4+\frac{1}{C_4 s}},\ \infty,\ \frac{L_L s}{C_L L_L s^2+1}+R_L\right)$

Filter 800

Invalid filter

$Z(s)$: $\left(\infty,\ \frac{R_2\left(L_2 s+\frac{1}{C_2 s}\right)}{L_2 s+R_2+\frac{1}{C_2 s}},\ \infty,\ \frac{R_4\left(L_4 s+\frac{1}{C_4 s}\right)}{L_4 s+R_4+\frac{1}{C_4 s}},\ \infty,\ \frac{R_L\left(L_L s+\frac{1}{C_L s}\right)}{L_L s+R_L+\frac{1}{C_L s}}\right)$