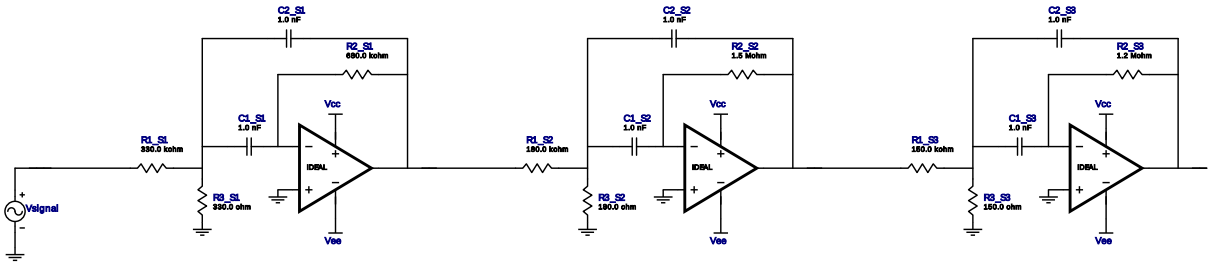
Type : Bandpass
Response : Chebyshev
Order : 6
Number of Stages : 3

Filter Design Report

Design : Bandpass Filter - 6th order Chebyshev
Design ID: 29



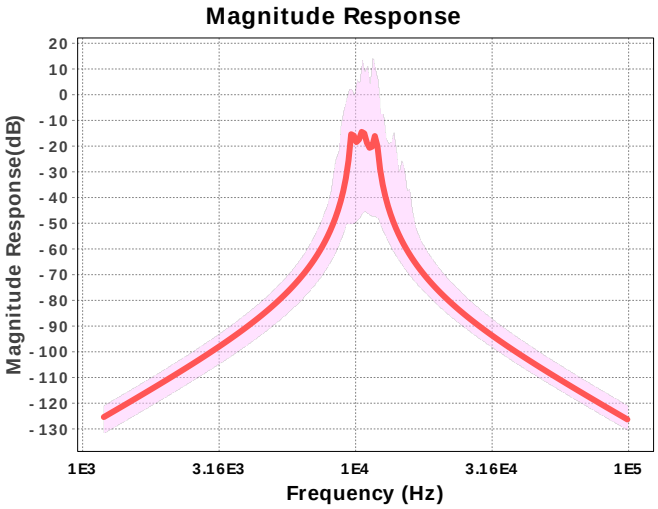
Electrical BOM

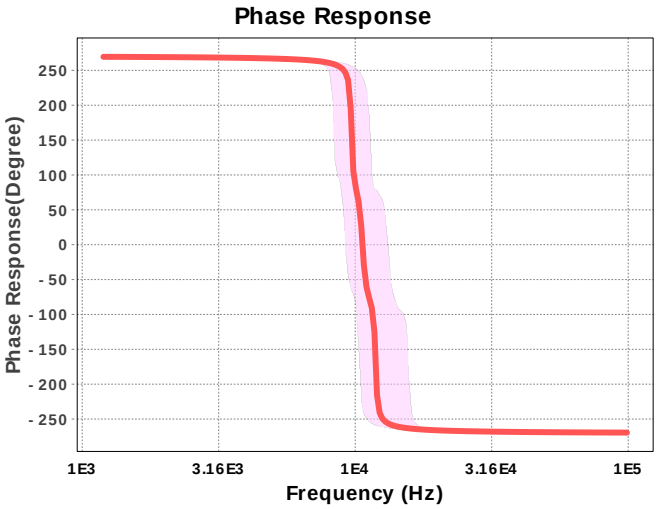
#	Name	Manufacturer	Part Number	Properties	Qty
1.	A1_S1	Texas Instruments Inc.	IDEAL	GbwTyp= 0MHz VccMax= 0V VccMin= 0V	1
2.	A1_S2	Texas Instruments Inc.	IDEAL	GbwTyp= 0MHz VccMax= 0V VccMin= 0V	1
3.	A1_S3	Texas Instruments Inc.	IDEAL	GbwTyp= 0MHz VccMax= 0V VccMin= 0V	1
4.	C1_S1	Generic	Ideal	Cap= 1.0 nF Tolerance= 20.0 %	1
5.	C1_S2	Generic	Ideal	Cap= 1.0 nF Tolerance= 20.0 %	1
6.	C1_S3	Generic	Ideal	Cap= 1.0 nF Tolerance= 20.0 %	1
7.	C2_S1	Generic	Ideal	Cap= 1.0 nF Tolerance= 20.0 %	1
8.	C2_S2	Generic	Ideal	Cap= 1.0 nF Tolerance= 20.0 %	1
9.	C2_S3	Generic	Ideal	Cap= 1.0 nF Tolerance= 20.0 %	1
10.	R1_S1	Generic	Ideal	Res= 330000.0ohm Tolerance= 10%	1
11.	R1_S2	Generic	Ideal	Res= 180000.0ohm Tolerance= 10%	1
12.	R1_S3	Generic	Ideal	Res= 150000.0ohm Tolerance= 10%	1
13.	R2_S1	Generic	Ideal	Res= 680000.0ohm Tolerance= 10%	1
14.	R2_S2	Generic	Ideal	Res= 1500000.0ohm Tolerance= 10%	1
15.	R2_S3	Generic	Ideal	Res= 1200000.0ohm Tolerance= 10%	1
16.	R3_S1	Generic	Ideal	Res= 330.0ohm Tolerance= 10%	1

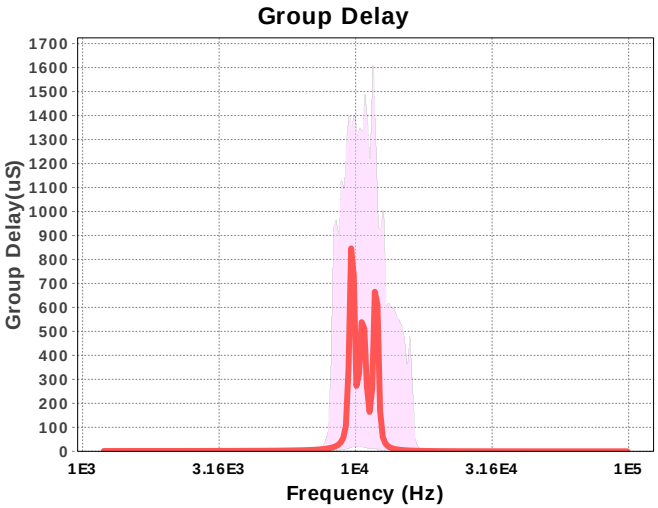
#	Name	Manufacturer	Part Number	Properties	Qty
17.	R3_S2	Generic	Ideal	Res= 180.0ohm Tolerance= 10%	1
18.	R3_S3	Generic	Ideal	Res= 150.0ohm Tolerance= 10%	1

Sensitivity Analysis

#	Name	Series	Tolerance
1.	Cap	E6	20%
2.	Res	E12	10%







Design Inputs

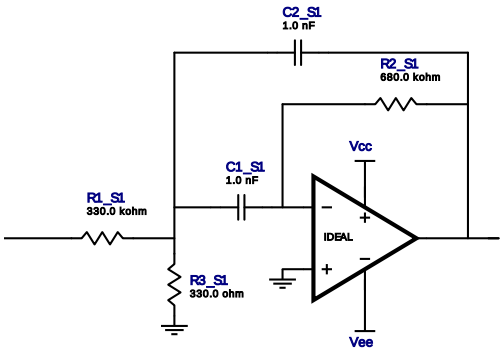
#	Name	Value	Description
1.	FilterType	bandpass	
2.	FilterResponse	Chebyshev	
3.	FilterOrder	6.0	
4.	FilterTopology	Multiple Feedback	
5.	NumberOfStages	3.0	
6.	CenterFrequency	11.0 k	
7.	StopbandAttenuation	-66.108	
8.	PassbandBandwidth	1,000.0	
9.	StopbandBandwidth	10.0 k	
10.	Gain	1.0	
11.	DualSupply	+/-5.00 V	Power supply(s) to active chips
12.	ResistorTolerance	E12	Resistor series - 10% Passive resistor tolerance
13.	CapacitorTolerance	E6	Capacitor series - 20% Passive capacitor tolerance

Design Assistance

1. **IDEAL** Product Folder : http://www.ti.com/product/IDEAL : contains the data sheet and other resources.

Filter Stage :1

Cutoff Frequency	10.63 kHz
Min GBW Reqd	24.485 MHz
Stage Gain	1.03 V/V
Stage Q	22.708
Stage Topology	Multiple Feedback

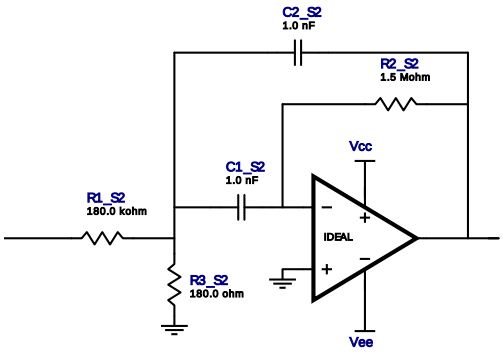


Electrical BOM

#	Name	Manufacturer	Part Number	Properties	Qty
1.	A1_S1	Texas Instruments Inc.	IDEAL	GbwTyp= 0MHz VccMax= 0V VccMin= 0V	1
2.	C1_S1	Generic	Ideal	Cap= 1.0 nF Tolerance= 20.0 %	1
3.	C2_S1	Generic	Ideal	Cap= 1.0 nF Tolerance= 20.0 %	1
4.	R1_S1	Generic	Ideal	Res= 330000.0ohm Tolerance= 10%	1
5.	R2_S1	Generic	Ideal	Res= 680000.0ohm Tolerance= 10%	1
6.	R3_S1	Generic	Ideal	Res= 330.0ohm Tolerance= 10%	1

Filter Stage :2

Cutoff Frequency	9.691 kHz
Min GBW Reqd	189.492 MHz
Stage Gain	4.167 V/V
Stage Q	45.666
Stage Topology	Multiple Feedback

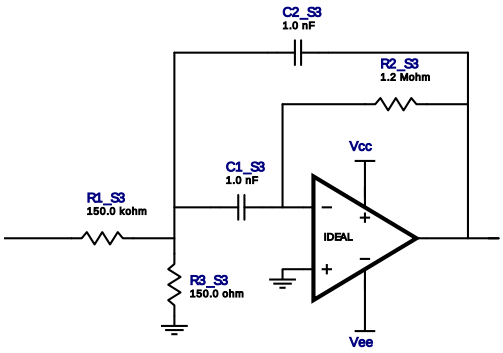


Electrical BOM

#	Name	Manufacturer	Part Number	Properties	Qty
1.	A1_S2	Texas Instruments Inc.	IDEAL	GbwTyp= 0MHz VccMax= 0V VccMin= 0V	1
2.	C1_S2	Generic	Ideal	Cap= 1.0 nF Tolerance= 20.0 %	1
3.	C2_S2	Generic	Ideal	Cap= 1.0 nF Tolerance= 20.0 %	1
4.	R1_S2	Generic	Ideal	Res= 180000.0ohm Tolerance= 10%	1
5.	R2_S2	Generic	Ideal	Res= 1500000.0ohm Tolerance= 10%	1
6.	R3_S2	Generic	Ideal	Res= 180.0ohm Tolerance= 10%	1

Filter Stage :3

Cutoff Frequency	11.869 kHz
Min GBW Reqd	206.88 MHz
Stage Gain	4.0 V/V
Stage Q	44.744
Stage Topology	Multiple Feedback



Electrical BOM

#	Name	Manufacturer	Part Number	Properties	Qty
1.	A1_S3	Texas Instruments Inc.	IDEAL	GbwTyp= 0MHz VccMax= 0V VccMin= 0V	1
2.	C1_S3	Generic	Ideal	Cap= 1.0 nF Tolerance= 20.0 %	1
3.	C2_S3	Generic	Ideal	Cap= 1.0 nF Tolerance= 20.0 %	1
4.	R1_S3	Generic	Ideal	Res= 150000.0ohm Tolerance= 10%	1
5.	R2_S3	Generic	Ideal	Res= 1200000.0ohm Tolerance= 10%	1
6.	R3_S3	Generic	Ideal	Res= 150.0ohm Tolerance= 10%	1