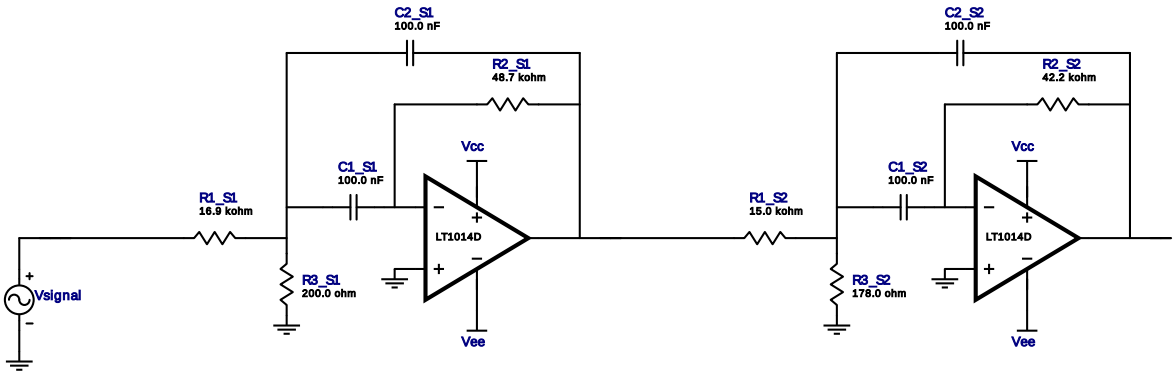
Type : Bandpass
Response : Butterworth
Order : 4
Number of Stages : 2

Filter Design Report

Design : Bandpass Filter - 4th order Butterworth
Design ID: 16



Electrical BOM

#	Name	Manufacturer	Part Number	Properties	Qty
1.	A1_S1	Texas Instruments Inc.	LT1014D	GbwTyp= 0.7MHz VccMax= 44V VccMin= 5V	1
2.	A1_S2	Texas Instruments Inc.	LT1014D	GbwTyp= 0.7MHz VccMax= 44V VccMin= 5V	1
3.	C1_S1	Generic	Ideal	Cap= 100.0 nF Tolerance= 2.0 %	1
4.	C1_S2	Generic	Ideal	Cap= 100.0 nF Tolerance= 2.0 %	1
5.	C2_S1	Generic	Ideal	Cap= 100.0 nF Tolerance= 2.0 %	1
6.	C2_S2	Generic	Ideal	Cap= 100.0 nF Tolerance= 2.0 %	1
7.	R1_S1	Generic	Ideal	Res= 16900.0ohm Tolerance= 1%	1
8.	R1_S2	Generic	Ideal	Res= 15000.0ohm Tolerance= 1%	1
9.	R2_S1	Generic	Ideal	Res= 48700.0ohm Tolerance= 1%	1
10.	R2_S2	Generic	Ideal	Res= 42200.0ohm Tolerance= 1%	1
11.	R3_S1	Generic	Ideal	Res= 200.0ohm Tolerance= 1%	1
12.	R3_S2	Generic	Ideal	Res= 178.0ohm Tolerance= 1%	1

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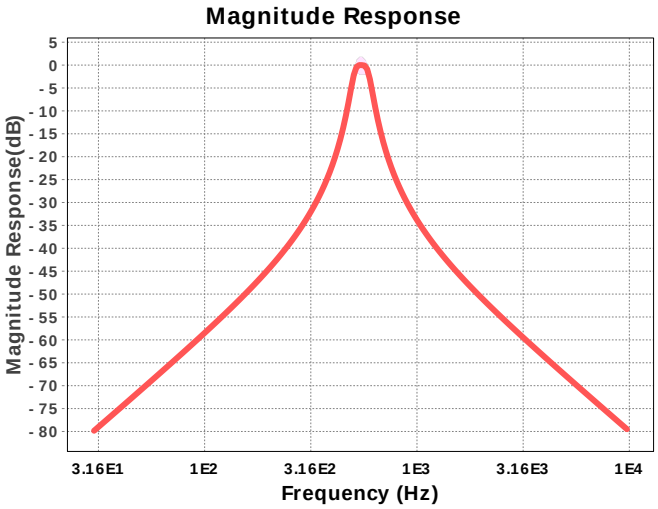
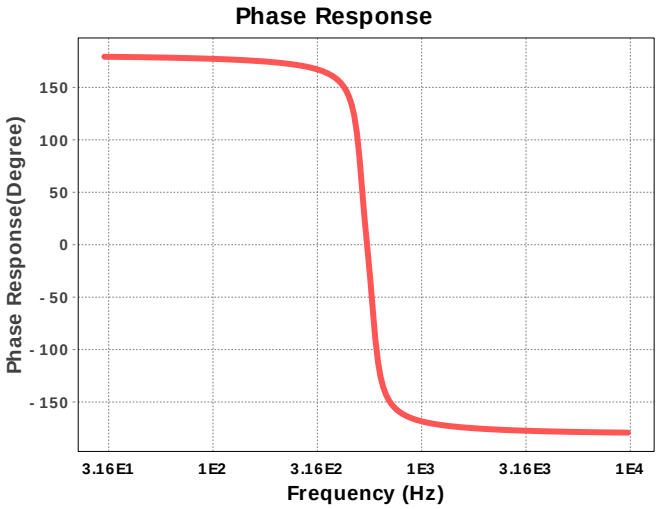
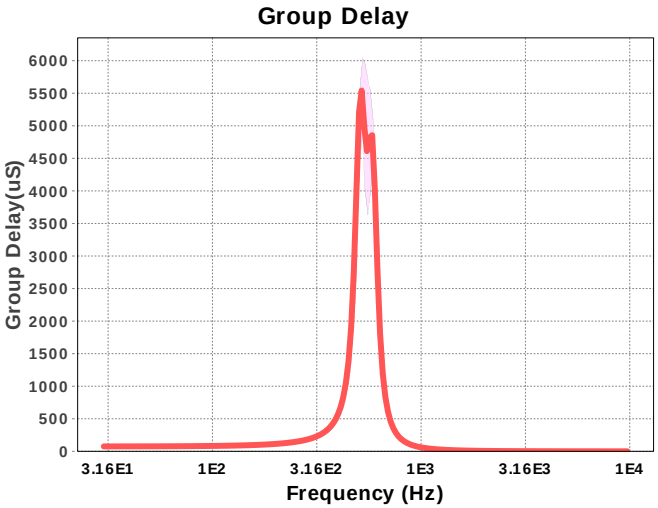
Sensitivity Analysis

#	Name	Series	Tolerance
1.	Cap	E48	2%
2.	Res	E96	1%







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Design Inputs

#	Name	Value	Description
1.	FilterType	bandpass	
2.	FilterResponse	Butterworth	
3.	FilterOrder	4.0	
4.	FilterTopology	Multiple Feedback	
5.	NumberOfStages	2.0	
6.	CenterFrequency	550.0	
7.	StopbandAttenuation	-40.001	
8.	PassbandBandwidth	100.0	
9.	StopbandBandwidth	1,000.0	
10.	Gain	1.0	
11.	DualSupply	+/-5.00 V	Power supply(s) to active chips
12.	ResistorTolerance	E96	Resistor series - 1% Passive resistor tolerance
13.	CapacitorTolerance	E48	Capacitor series - 2% Passive capacitor tolerance

Design Assistance

1. **LT1014D** Product Folder : http://www.ti.com/product/LT1014D : contains the data sheet and other resources.

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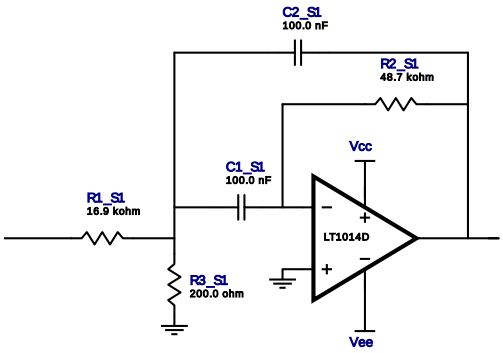
Filter Stage :1

Cutoff Frequency	512.974 Hz
Min GBW Reqd	569.642 kHz
Stage Gain	1.441 V/V
Stage Q	7.848
Stage Topology	Multiple Feedback



Electrical BOM

#	Name	Manufacturer	Part Number	Properties	Qty
1.	A1_S1	Texas Instruments Inc.	LT1014D	GbwTyp= 0.7MHz VccMax= 44V VccMin= 5V	1
2.	C1_S1	Generic	Ideal	Cap= 100.0 nF Tolerance= 2.0 %	1
3.	C2_S1	Generic	Ideal	Cap= 100.0 nF Tolerance= 2.0 %	1
4.	R1_S1	Generic	Ideal	Res= 16900.0ohm Tolerance= 1%	1
5.	R2_S1	Generic	Ideal	Res= 48700.0ohm Tolerance= 1%	1
6.	R3_S1	Generic	Ideal	Res= 200.0ohm Tolerance= 1%	1

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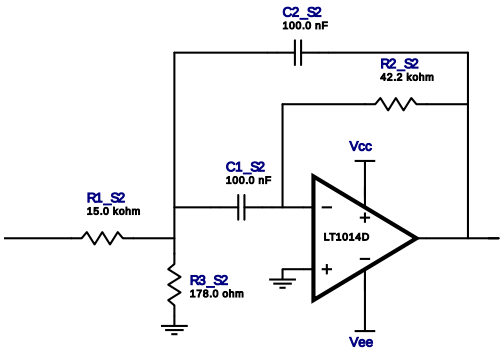
Filter Stage :2

Cutoff Frequency	584.138 Hz
Min GBW Reqd	647.908 kHz
Stage Gain	1.407 V/V
Stage Q	7.744
Stage Topology	Multiple Feedback



Electrical BOM

#	Name	Manufacturer	Part Number	Properties	Qty
1.	A1_S2	Texas Instruments Inc.	LT1014D	GbwTyp= 0.7MHz VccMax= 44V VccMin= 5V	1
2.	C1_S2	Generic	Ideal	Cap= 100.0 nF Tolerance= 2.0 %	1
3.	C2_S2	Generic	Ideal	Cap= 100.0 nF Tolerance= 2.0 %	1
4.	R1_S2	Generic	Ideal	Res= 15000.0ohm Tolerance= 1%	1
5.	R2_S2	Generic	Ideal	Res= 42200.0ohm Tolerance= 1%	1
6.	R3_S2	Generic	Ideal	Res= 178.0ohm Tolerance= 1%	1

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