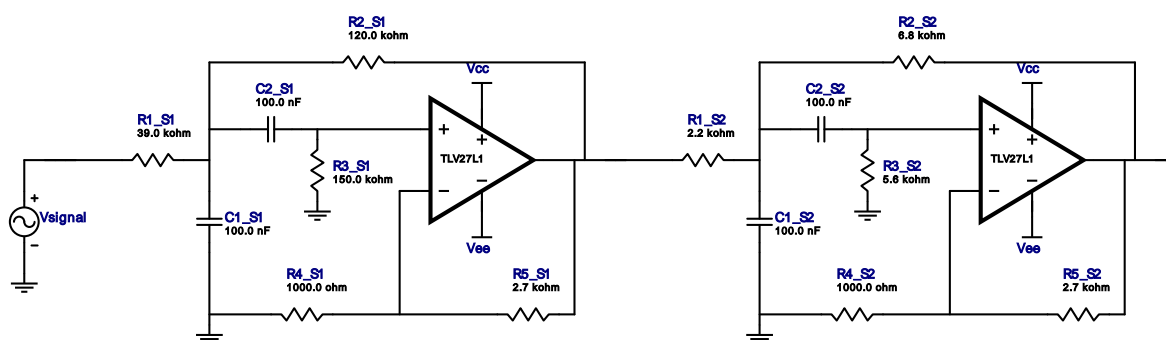


## Filter Design Report

Design : Bandpass Filter - 4th order Butterworth  
Design ID: 9



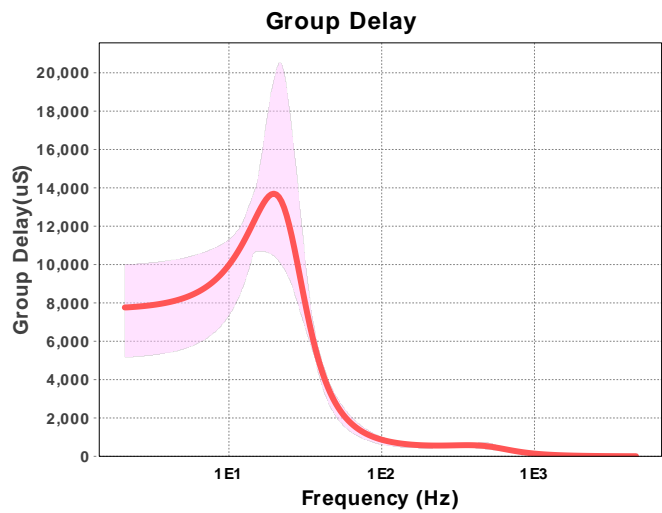
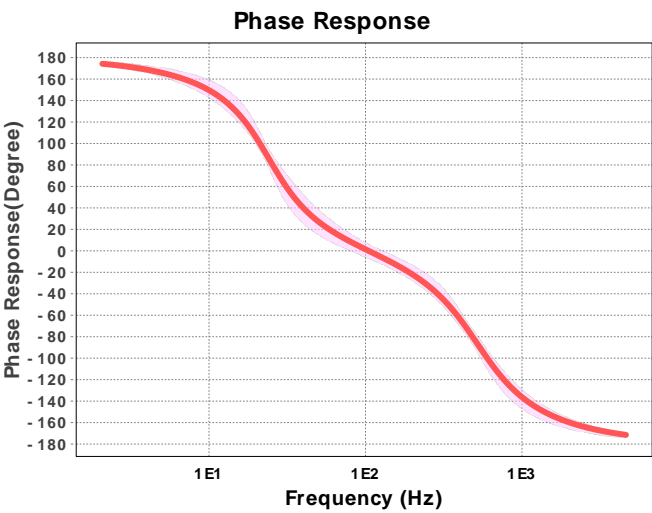
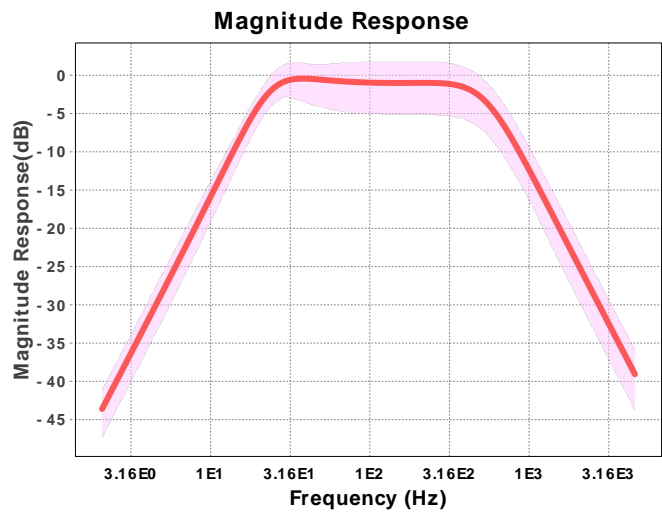
## Electrical BOM

#	Name	Manufacturer	Part Number	Properties	Qty
1.	A1_S1	Texas Instruments Inc.	TLV27L1	GbwTyp= 0.16MHz VccMax= 16V VccMin= 2.7V	1
2.	A1_S2	Texas Instruments Inc.	TLV27L1	GbwTyp= 0.16MHz VccMax= 16V VccMin= 2.7V	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= 39000.0ohm Tolerance= 10%	1
8.	R1_S2	Generic	Ideal	Res= 2200.0ohm Tolerance= 10%	1
9.	R2_S1	Generic	Ideal	Res= 120000.0ohm Tolerance= 10%	1
10.	R2_S2	Generic	Ideal	Res= 6800.0ohm Tolerance= 10%	1
11.	R3_S1	Generic	Ideal	Res= 150000.0ohm Tolerance= 10%	1
12.	R3_S2	Generic	Ideal	Res= 5600.0ohm Tolerance= 10%	1
13.	R4_S1	Generic	Ideal	Res= 1000.0ohm Tolerance= 10%	1

#	Name	Manufacturer	Part Number	Properties	Qty
14.	R4_S2	Generic	Ideal	Res= 1000.0ohm Tolerance= 10%	1
15.	R5_S1	Generic	Ideal	Res= 2700.0ohm Tolerance= 10%	1
16.	R5_S2	Generic	Ideal	Res= 2700.0ohm Tolerance= 10%	1

Sensitivity Analysis

#	Name	Series	Tolerance
1.	Cap	E48	2%
2.	Res	E12	10%



## Design Inputs

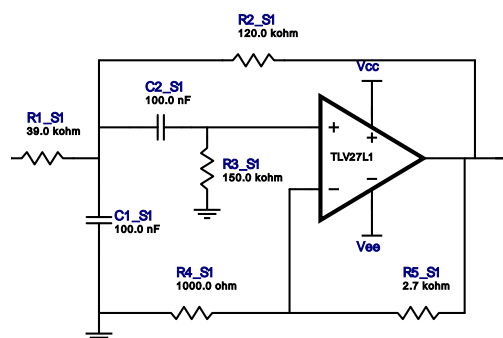
#	Name	Value	Description
1.	FilterType	bandpass	
2.	FilterResponse	Butterworth	
3.	FilterOrder	4.0	
4.	FilterTopology	Sallen-Key	
5.	NumberOfStages	2.0	
6.	CenterFrequency	100.0	
7.	StopbandAttenuation	-40.001	
8.	PassbandBandwidth	480.0	
9.	StopbandBandwidth	4.8 k	
10.	Gain	1.0	
11.	DualSupply	+/-5.00 V	Power supply(s) to active chips
12.	ResistorTolerance	E12	Resistor series - 10% Passive resistor tolerance
13.	CapacitorTolerance	E48	Capacitor series - 2% Passive capacitor tolerance

## Design Assistance

1. **TLV27L1** Product Folder : <http://www.ti.com/product/TLV27L1> : contains the data sheet and other resources.

## Filter Stage :1

Cutoff Frequency      23.952 Hz  
 Min GBW Req'd        5.456 kHz  
 Stage Gain             3.7 V/V  
 Stage Q                913.527 m  
 Stage Topology        Sallen-Key

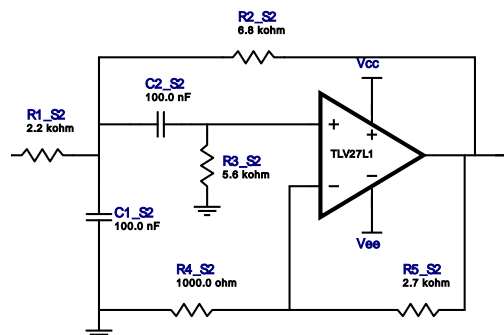


## Electrical BOM

#	Name	Manufacturer	Part Number	Properties	Qty
1.	A1_S1	Texas Instruments Inc.	TLV27L1	GbwTyp= 0.16MHz VccMax= 16V VccMin= 2.7V	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= 39000.0ohm Tolerance= 10%	1
5.	R2_S1	Generic	Ideal	Res= 120000.0ohm Tolerance= 10%	1
6.	R3_S1	Generic	Ideal	Res= 150000.0ohm Tolerance= 10%	1
7.	R4_S1	Generic	Ideal	Res= 1000.0ohm Tolerance= 10%	1
8.	R5_S1	Generic	Ideal	Res= 2700.0ohm Tolerance= 10%	1

## Filter Stage :2

Cutoff Frequency      521.653 Hz  
 Min GBW Req'd        126.412 kHz  
 Stage Gain             3.7 V/V  
 Stage Q                790.499 m  
 Stage Topology        Sallen-Key



## Electrical BOM

#	Name	Manufacturer	Part Number	Properties	Qty
1.	A1_S2	Texas Instruments Inc.	TLV27L1	GbwTyp= 0.16MHz VccMax= 16V VccMin= 2.7V	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= 2200.0ohm Tolerance= 10%	1
5.	R2_S2	Generic	Ideal	Res= 6800.0ohm Tolerance= 10%	1
6.	R3_S2	Generic	Ideal	Res= 5600.0ohm Tolerance= 10%	1
7.	R4_S2	Generic	Ideal	Res= 1000.0ohm Tolerance= 10%	1

#	Name	Manufacturer	Part Number	Properties	Qty
8.	R5_S2	Generic	Ideal	Res= 2700.0ohm Tolerance= 10%	1

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