

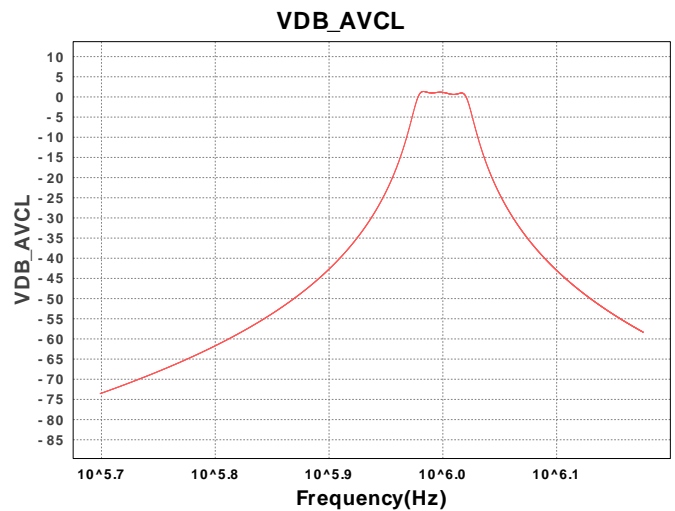
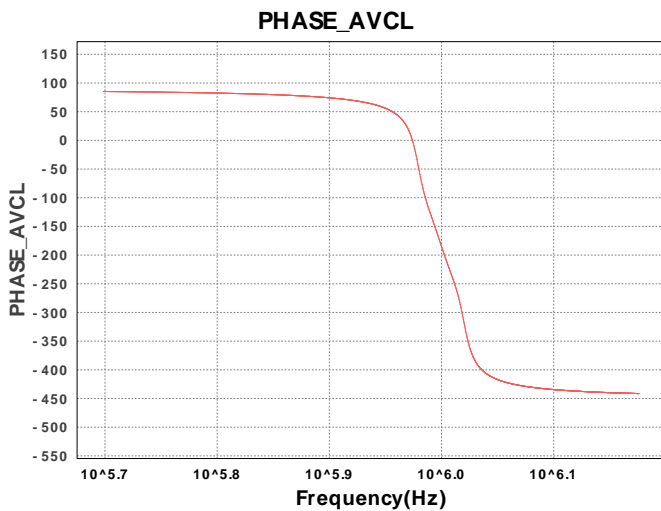
## Electrical BOM

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	A1_S1	Texas Instruments	AMPLIFIER_IDEAL	GbwTyp= 10.0 MMHz VccMin= 0.0 V VccMax= 100.0 V	1	NA	0 mm <sup>2</sup>
2.	A1_S2	Texas Instruments	AMPLIFIER_IDEAL	GbwTyp= 10.0 MMHz VccMin= 0.0 V VccMax= 100.0 V	1	NA	0 mm <sup>2</sup>
3.	A1_S3	Texas Instruments	AMPLIFIER_IDEAL	GbwTyp= 10.0 MMHz VccMin= 0.0 V VccMax= 100.0 V	1	NA	0 mm <sup>2</sup>
4.	C1_S1	Kemet	C0402C100J3GACTU Series= C0G/NP0	Cap= 10.0 pF VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	0402 3 mm <sup>2</sup>
5.	C1_S2	Kemet	C0402C100J3GACTU Series= C0G/NP0	Cap= 10.0 pF VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	0402 3 mm <sup>2</sup>
6.	C1_S3	Kemet	C0402C100J3GACTU Series= C0G/NP0	Cap= 10.0 pF VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	0402 3 mm <sup>2</sup>
7.	C2_S1	Kemet	C0402C100J3GACTU Series= C0G/NP0	Cap= 10.0 pF VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	0402 3 mm <sup>2</sup>
8.	C2_S2	Kemet	C0402C100J3GACTU Series= C0G/NP0	Cap= 10.0 pF VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	0402 3 mm <sup>2</sup>
9.	C2_S3	Kemet	C0402C100J3GACTU Series= C0G/NP0	Cap= 10.0 pF VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	0402 3 mm <sup>2</sup>
10.	R1_S1	Vishay-Dale	CRCW0402255KFKED Series= CRCW..e3	Res= 255.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm <sup>2</sup>
11.	R1_S2	Vishay-Dale	CRCW0402158KFKED Series= CRCW..e3	Res= 158.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm <sup>2</sup>
12.	R1_S3	Vishay-Dale	CRCW0402143KFKED Series= CRCW..e3	Res= 143.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm <sup>2</sup>
13.	R2_S1	Vishay-Dale	CRCW0402511KFKED Series= CRCW..e3	Res= 511.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm <sup>2</sup>

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
14.	R2_S2	Vishay-Dale	CRCW04021M07FKED Series= CRCW..e3	Res= 1.07 MOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm <sup>2</sup>
15.	R2_S3	Vishay-Dale	CRCW0402976KFKED Series= CRCW..e3	Res= 976.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm <sup>2</sup>
16.	R3_S1	Vishay-Dale	CRCW0402499RFKED Series= CRCW..e3	Res= 499.0 Ohm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm <sup>2</sup>
17.	R3_S2	Vishay-Dale	CRCW0805261RFKEA Series= CRCW..e3	Res= 261.0 Ohm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	0805 7 mm <sup>2</sup>
18.	R3_S3	Panasonic	ERJ-8ENF2370V Series= ERJ-8E	Res= 237.0 Ohm Power= 250.0 mW Tolerance= 1.0%	1	\$0.01	1206 11 mm <sup>2</sup>

### Simulation Parameters

#	Name	Parameter Name	Description	Values
1.	Vsignal	AC DC	AC Voltage Source Amplitude AC Voltage Source DC Offset	1 V 0.0 V
2.	Vcc	V	Vcc Supply Rail Value	5.0 V
3.	Vee	V	Vee Supply Rail Value	-5.0 V



### Design Inputs

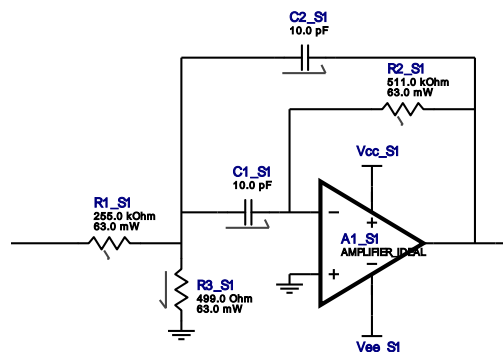
#	Name	Value	Description
1.	FilterType	Bandpass	
2.	FilterResponse	Chebyshev_05dB	
3.	FilterOrder	6.0	
4.	FilterTopology	Multiple_Feedback	
5.	NumberOfStages	3.0	
6.	CenterFrequency	1000.0 kHz	
7.	StopbandAttenuation	-45.0 dB	
8.	PassbandBandwidth	100.0 kHz	
9.	StopbandBandwidth	1.5 MHz	
10.	Gain	1.0 V/V	
11.	DualSupply	+/-5.0 V	Power supply(s) to active chips
12.	ResistorTolerance	E96	Resistor series - 1% Passive resistor tolerance
13.	CapacitorTolerance	E24	Capacitor series - 5% Passive capacitance tolerance
14.	SeedCapacitance	10.0 pF	Seed Capacitance to start design of filter

### Design Assistance

1. **AMPLIFIER\_IDEAL** Product Folder : [http://www.ti.com/product/AMPLIFIER\\_IDEAL](http://www.ti.com/product/AMPLIFIER_IDEAL) : contains the data sheet and other resources.

## Filter Stage :1

Cutoff Frequency 1000.0 kHz  
 Min GBW Req'd 1.596 GHz  
 Stage Gain 1.0 V/V  
 Stage Q 15.963  
 Stage Topology Multiple\_Feedback

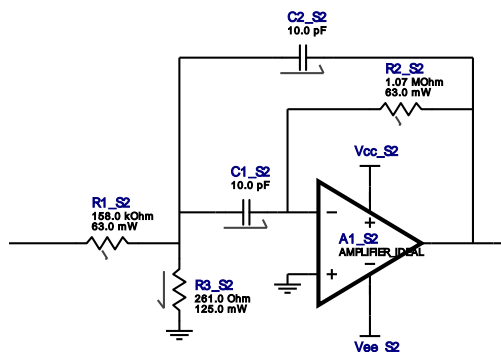


## Electrical BOM

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	A1_S1	Texas Instruments	AMPLIFIER_IDEAL	GbwTyp= 10.0 MMHz VccMin= 0.0 V VccMax= 100.0 V	1	NA	0 mm <sup>2</sup>
2.	C1_S1	Kemet	C0402C100J3GACTU Series= C0G/NP0	Cap= 10.0 pF VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	0402 3 mm <sup>2</sup>
3.	C2_S1	Kemet	C0402C100J3GACTU Series= C0G/NP0	Cap= 10.0 pF VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	0402 3 mm <sup>2</sup>
4.	R1_S1	Vishay-Dale	CRCW0402255KFKED Series= CRCW..e3	Res= 255.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm <sup>2</sup>
5.	R2_S1	Vishay-Dale	CRCW0402511KFKED Series= CRCW..e3	Res= 511.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm <sup>2</sup>
6.	R3_S1	Vishay-Dale	CRCW0402499RFKED Series= CRCW..e3	Res= 499.0 Ohm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm <sup>2</sup>

## Filter Stage :2

Cutoff Frequency 950.202 kHz  
 Min GBW Req'd 3.038 GHz  
 Stage Gain 1.0 V/V  
 Stage Q 31.967  
 Stage Topology Multiple\_Feedback

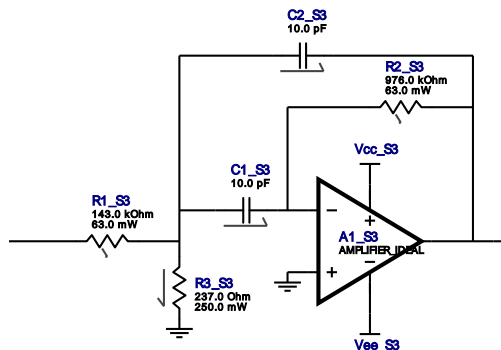


### Electrical BOM

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	A1_S2	Texas Instruments	AMPLIFIER_IDEAL	GbwTyp= 10.0 MMHz VccMin= 0.0 V VccMax= 100.0 V	1	NA	0 mm <sup>2</sup>
2.	C1_S2	Kemet	C0402C100J3GACTU Series= C0G/NP0	Cap= 10.0 pF VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	0402 3 mm <sup>2</sup>
3.	C2_S2	Kemet	C0402C100J3GACTU Series= C0G/NP0	Cap= 10.0 pF VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	0402 3 mm <sup>2</sup>
4.	R1_S2	Vishay-Dale	CRCW0402158KFKED Series= CRCW..e3	Res= 158.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm <sup>2</sup>
5.	R2_S2	Vishay-Dale	CRCW04021M07FKED Series= CRCW..e3	Res= 1.07 MOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm <sup>2</sup>
6.	R3_S2	Vishay-Dale	CRCW0805261RFKEA Series= CRCW..e3	Res= 261.0 Ohm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	0805 7 mm <sup>2</sup>


## Filter Stage :3

Cutoff Frequency 1.052 MHz  
 Min GBW Req'd 3.364 GHz  
 Stage Gain 1.0 V/V  
 Stage Q 31.967  
 Stage Topology Multiple\_Feedback



### Electrical BOM

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	A1_S3	Texas Instruments	AMPLIFIER_IDEAL	GbwTyp= 10.0 MMHz VccMin= 0.0 V VccMax= 100.0 V	1	NA	0 mm <sup>2</sup>
2.	C1_S3	Kemet	C0402C100J3GACTU Series= C0G/NP0	Cap= 10.0 pF VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	0402 3 mm <sup>2</sup>
3.	C2_S3	Kemet	C0402C100J3GACTU Series= C0G/NP0	Cap= 10.0 pF VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	0402 3 mm <sup>2</sup>
4.	R1_S3	Vishay-Dale	CRCW0402143KFKED Series= CRCW..e3	Res= 143.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm <sup>2</sup>
5.	R2_S3	Vishay-Dale	CRCW0402976KFKED Series= CRCW..e3	Res= 976.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm <sup>2</sup>

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
6.	R3_S3	Panasonic	ERJ-8ENF2370V Series= ERJ-8E	Res= 237.0 Ohm Power= 250.0 mW Tolerance= 1.0%	1	\$0.01	 1206 11 mm <sup>2</sup>

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