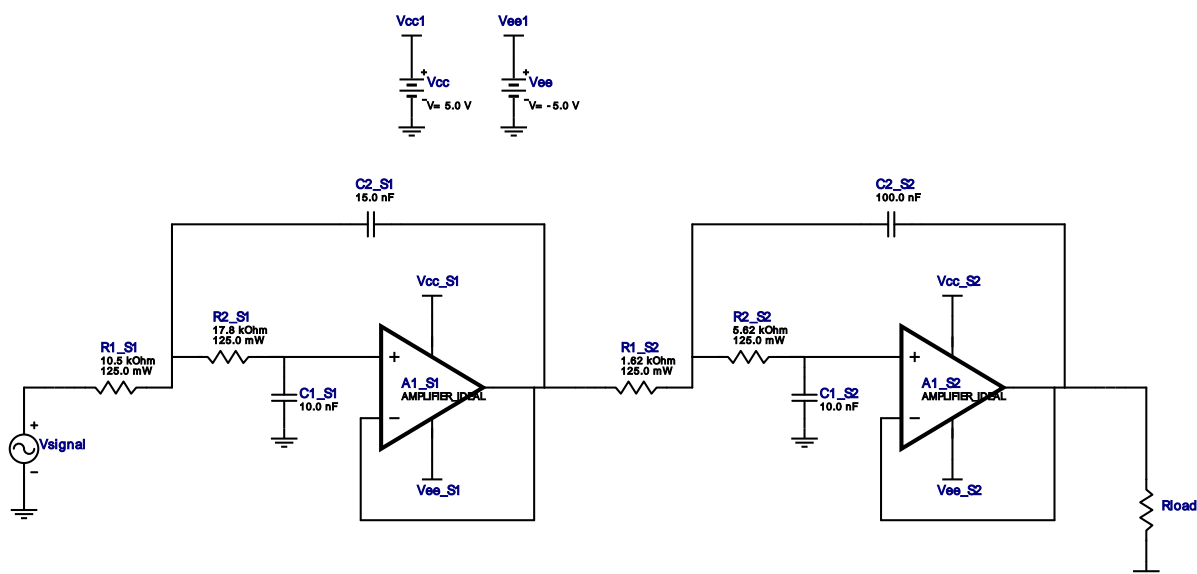





## WEBENCH® Design Report

Design : 1382630/455 AMPLIFIER\_IDEAL  
Lowpass, Sallen Key, Gaussian to 6 dB



## 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	0mm2
2.	A1_S2	Texas Instruments	AMPLIFIER_IDEAL	GbwTyp= 10.0 MMHz VccMin= 0.0 V VccMax= 100.0 V	1	NA	0mm2
3.	C1_S1	MuRata	GRM216R71H103KA01D Series= X7R	Cap= 10.0 nF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	 0805 7mm2
4.	C1_S2	MuRata	GRM216R71H103KA01D Series= X7R	Cap= 10.0 nF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	 0805 7mm2
5.	C2_S1	Yageo America	CC0805KRX7R9BB153 Series= X7R	Cap= 15.0 nF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	 0805 7mm2
6.	C2_S2	MuRata	GRM21BR71H104KA01L Series= X7R	Cap= 100.0 nF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	 0805 7mm2
7.	R1_S1	Panasonic	ERJ-6ENF1052V Series= 225	Res= 10.5 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7mm2
8.	R1_S2	Panasonic	ERJ-6ENF1621V Series= 225	Res= 1.62 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7mm2
9.	R2_S1	Panasonic	ERJ-6ENF1782V Series= 225	Res= 17.8 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7mm2
10.	R2_S2	Panasonic	ERJ-6ENF5621V Series= 225	Res= 5.62 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7mm2

## Design Inputs

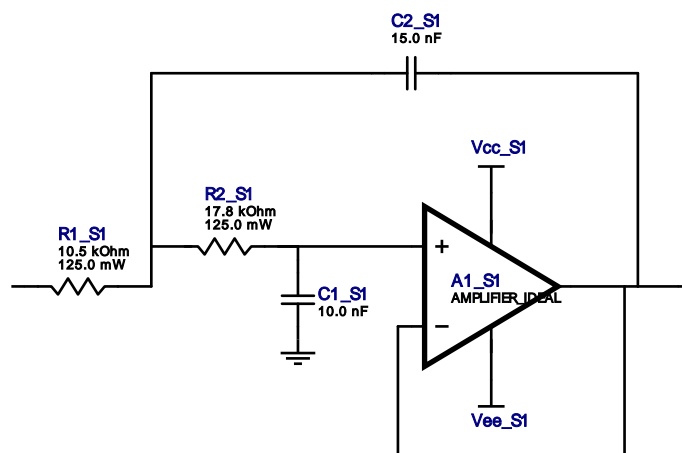
#	Name	Value	Description
1.	CapacitorTolerance	E6	Capacitor series - 20% Passive capacitance tolerance
2.	DualSupply	+/-5.0 V	DualSupply
3.	FilterOrder	4.0	
4.	FilterResponse	Gaussian_6dB	
5.	FilterTopology	Sallen_Key	
6.	FilterType	Lowpass	
7.	Gain	1.0 V/V	
8.	NumberOfStages	2.0	
9.	PassbandFrequency	1,000 Hz	
10.	ResistorTolerance	E192	Resistor series - 0.5% Passive resistor tolerance
11.	SeedCapacitance	10.0 nF	Seed Capacitance to start design of filter
12.	SettlingTimeErrorBand	100.0 m%	Settling Time Error Band
13.	SettlingTimeSpecification	100.0 µsec	Settling Time Specification
14.	StepResponseOvershootSpec	20.0 %	Step Response Overshoot
15.	StopbandAttenuation	-45.0 dB	
16.	StopbandFrequency	5.0 kHz	

## 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 940.0 Hz  
 Gain Bandwidth 55.46 kHz  
 Stage Gain 1.0 V/V  
 Stage Q 590.0 m  
 Stage Topology Sallen\_Key  
 StageNo 1.0

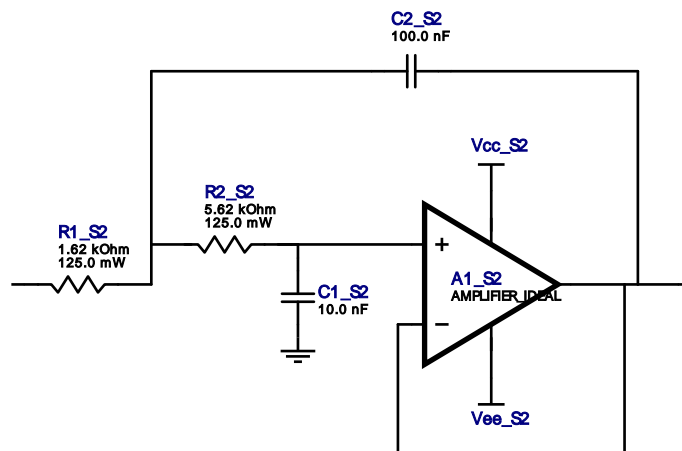


## Electrical BOM

#	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	0mm2
2.	C1_S1	MuRata	GRM216R71H103KA01D Series= X7R	Cap= 10.0 nF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	 0805 7mm2
3.	C2_S1	Yageo America	CC0805KRX7R9BB153 Series= X7R	Cap= 15.0 nF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	 0805 7mm2
4.	R1_S1	Panasonic	ERJ-6ENF1052V Series= 225	Res= 10.5 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7mm2
5.	R2_S1	Panasonic	ERJ-6ENF1782V Series= 225	Res= 17.8 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7mm2

## Filter Stage :2

Cutoff Frequency 1.665 kHz  
 Gain Bandwidth 219.78 kHz  
 Stage Gain 1.0 V/V  
 Stage Q 1.32  
 Stage Topology Sallen\_Key  
 StageNo 2.0



### 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	0mm2
2.	C1_S2	MuRata	GRM216R71H103KA01D Series= X7R	Cap= 10.0 nF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	0805 7mm2
3.	C2_S2	MuRata	GRM21BR71H104KA01L Series= X7R	Cap= 100.0 nF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	0805 7mm2
4.	R1_S2	Panasonic	ERJ-6ENF1621V Series= 225	Res= 1.62 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	0805 7mm2
5.	R2_S2	Panasonic	ERJ-6ENF5621V Series= 225	Res= 5.62 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	0805 7mm2

Texas Instruments' WEBENCH simulation tools attempt to recreate the performance of a substantially equivalent physical implementation of the design. Simulations are created using Texas Instruments' published specifications as well as the published specifications of other device manufacturers. While Texas Instruments does update this information periodically, this information may not be current at the time the simulation is built. Texas Instruments does not warrant the accuracy or completeness of the specifications or any information contained therein. Texas Instruments does not warrant that any designs or recommended parts will meet the specifications you entered, will be suitable for your application or fit for any particular purpose, or will operate as shown in the simulation in a physical implementation. Texas Instruments does not warrant that the designs are production worthy.

**You should completely validate and test your design implementation to confirm the system functionality for your application prior to production.**

Use of Texas Instruments' WEBENCH simulation tools is subject to [Texas Instruments' Site Terms and Conditions of Use](#). Prototype boards based on WEBENCH created designs are provided AS IS without warranty of any kind for evaluation and testing purposes and are subject to the terms of the [Evaluation License Agreement](#).