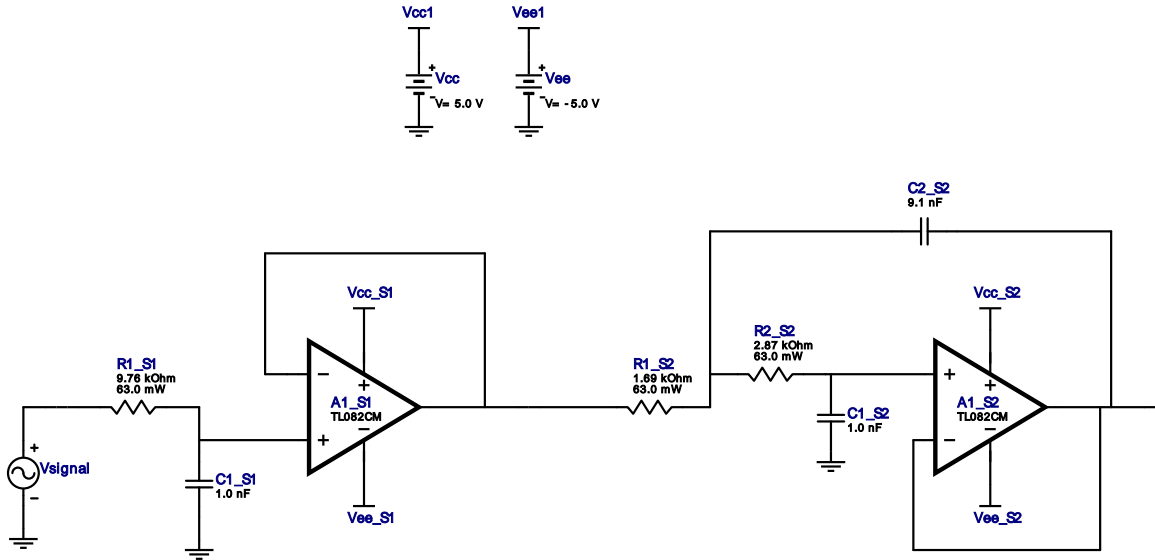


WEBENCH® Design Report

 Design : 4406314/8 TL082CM
 Lowpass, Sallen Key, Chebyshev 0.2 dB


Electrical BOM

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	A1_S1	Texas Instruments	TL082CM	GbwTyp= 4.0 MHz VccMin= 10.0 V VccMax= 36.0 V	1	\$0.21	SOIC 0 mm ²
2.	A1_S2	Texas Instruments	TL082CM	GbwTyp= 4.0 MHz VccMin= 10.0 V VccMax= 36.0 V	1	\$0.21	SOIC 0 mm ²
3.	C1_S1	Samsung Electro-Mechanics	CL05C102JO5NNNC Series= C0G/NP0	Cap= 1.0 nF VDC= 16.0 V Tolerance= 5.0 %	1	\$0.01	0402 3 mm ²
4.	C1_S2	Samsung Electro-Mechanics	CL05C102JO5NNNC Series= C0G/NP0	Cap= 1.0 nF VDC= 16.0 V Tolerance= 5.0 %	1	\$0.01	0402 3 mm ²
5.	C2_S2	MuRata	GRM2195C1H912JA01D Series= C0G/NP0	Cap= 9.1 nF VDC= 50.0 V Tolerance= 5.0 %	1	\$0.06	0805 7 mm ²
6.	R1_S1	Vishay-Dale	CRCW04029K76FKED Series= CRCW..e3	Res= 9.76 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
7.	R1_S2	Vishay-Dale	CRCW04021K69FKED Series= CRCW..e3	Res= 1.69 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
8.	R2_S2	Vishay-Dale	CRCW04022K87FKED Series= CRCW..e3	Res= 2.87 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²

Design Inputs

#	Name	Value	Description
1.	FilterType	Lowpass	
2.	FilterResponse	Chebyshev	
3.	FilterOrder	3.0	
4.	FilterTopology	Sallen_Key	

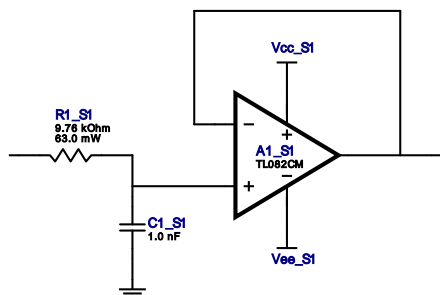
#	Name	Value	Description
5.	NumberOfStages	2.0	
6.	PassbandFrequency	20.0 k	
7.	StopbandAttenuation	-45.0	
8.	StopbandFrequency	350.0 k	
9.	Gain	1.0	
10.	DualSupply	+/-5.0 V	Power supply(s) to active chips
11.	ResistorTolerance	E96	Resistor series - 1% Passive resistor tolerance
12.	CapacitorTolerance	E24	Capacitor series - 5% Passive capacitance tolerance
13.	SeedCapacitance	1.0 n	Seed Capacitance to start design of filter

Design Assistance

1. **TL082CM** Product Folder : <http://www.ti.com//product/TL082-N> : contains the data sheet and other resources.

Filter Stage :1

Cutoff Frequency 16.293 kHz
 Min GBW Req'd 814.634 kHz
 Stage Gain 1.0 V/V
 Stage Q 500.0 m
 Stage Topology Real_Pole

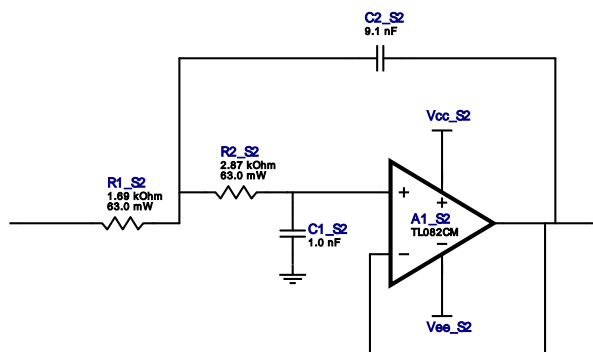


Electrical BOM

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	A1_S1	Texas Instruments	TL082CM	GbwTyp= 4.0 MHz VccMin= 10.0 V VccMax= 36.0 V	1	\$0.21	SOIC 0 mm ²
2.	C1_S1	Samsung Electro-Mechanics	CL05C102JO5NNNC Series= C0G/NP0	Cap= 1.0 nF VDC= 16.0 V Tolerance= 5.0 %	1	\$0.01	0402 3 mm ²
3.	R1_S1	Vishay-Dale	CRCW04029K76FKED Series= CRCW..e3	Res= 9.76 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²

Filter Stage :2

Cutoff Frequency	23.779 kHz
Min GBW Req'd	3.472 MHz
Stage Gain	1.0 V/V
Stage Q	1.46
Stage Topology	Sallen_Key



Electrical BOM

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	A1_S2	Texas Instruments	TL082CM	GbwTyp= 4.0 MHz VccMin= 10.0 V VccMax= 36.0 V	1	\$0.21	SOIC 0 mm ²
2.	C1_S2	Samsung Electro-Mechanics	CL05C102JO5NNNC Series= C0G/NP0	Cap= 1.0 nF VDC= 16.0 V Tolerance= 5.0 %	1	\$0.01	0402 3 mm ²
3.	C2_S2	MuRata	GRM2195C1H912JA01D Series= C0G/NP0	Cap= 9.1 nF VDC= 50.0 V Tolerance= 5.0 %	1	\$0.06	0805 7 mm ²
4.	R1_S2	Vishay-Dale	CRCW04021K69FKED Series= CRCW..e3	Res= 1.69 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
5.	R2_S2	Vishay-Dale	CRCW04022K87FKED Series= CRCW..e3	Res= 2.87 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²

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](#).