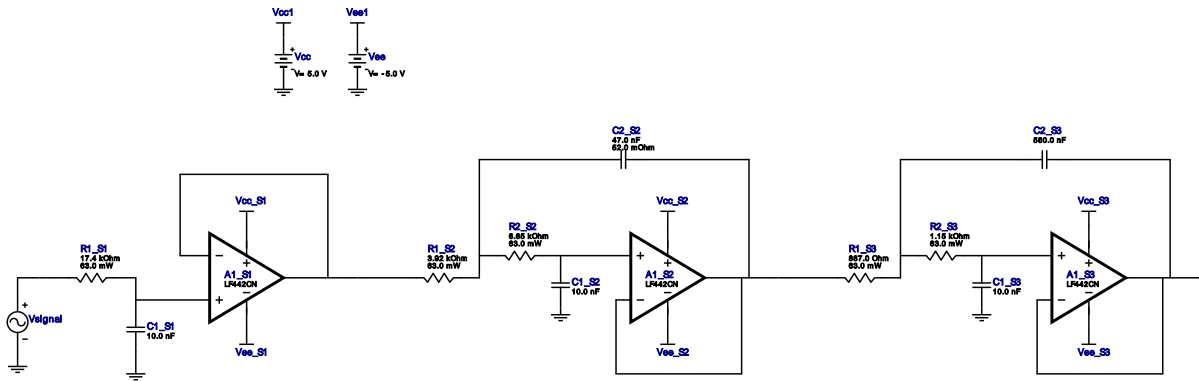


WEBENCH® Design Report

 Design : 3989908/14 LF442CN
 Lowpass, Sallen Key, Chebyshev 0.2 dB


Electrical BOM

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	A1_S1	Texas Instruments	LF442CN	GbwTyp= 1.0 MHz VccMin= 6.0 V VccMax= 36.0 V	1	\$0.55	DIP 0 mm ²
2.	A1_S2	Texas Instruments	LF442CN	GbwTyp= 1.0 MHz VccMin= 6.0 V VccMax= 36.0 V	1	\$0.55	DIP 0 mm ²
3.	A1_S3	Texas Instruments	LF442CN	GbwTyp= 1.0 MHz VccMin= 6.0 V VccMax= 36.0 V	1	\$0.55	DIP 0 mm ²
4.	C1_S1	Kemet	C0603C103J5RACTU Series= X7R	Cap= 10.0 nF VDC= 50.0 V Tolerance= 5.0 %	1	\$0.01	0603 5 mm ²
5.	C1_S2	Kemet	C0603C103J5RACTU Series= X7R	Cap= 10.0 nF VDC= 50.0 V Tolerance= 5.0 %	1	\$0.01	0603 5 mm ²
6.	C1_S3	Kemet	C0603C103J5RACTU Series= X7R	Cap= 10.0 nF VDC= 50.0 V Tolerance= 5.0 %	1	\$0.01	0603 5 mm ²
7.	C2_S2	AVX	06033C473JAT2A Series= X7R	Cap= 47.0 nF ESR= 52.0 mOhm VDC= 25.0 V Tolerance= 5.0 %	1	\$0.09	0603 5 mm ²
8.	C2_S3	CUSTOM	CUSTOM Series= ?	Cap= 560.0 nF VDC= 0.0 V Tolerance= 0.0 %	1	NA	CUSTOM 0 mm ²
9.	R1_S1	Vishay-Dale	CRCW040217K4FKED Series= CRCW..e3	Res= 17.4 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
10.	R1_S2	Vishay-Dale	CRCW04023K92FKED Series= CRCW..e3	Res= 3.92 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
11.	R1_S3	Vishay-Dale	CRCW0402887RFKED Series= CRCW..e3	Res= 887.0 Ohm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
12.	R2_S2	Vishay-Dale	CRCW04026K65FKED Series= CRCW..e3	Res= 6.65 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
13.	R2_S3	Vishay-Dale	CRCW04021K15FKED Series= CRCW..e3	Res= 1.15 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²

Design Inputs

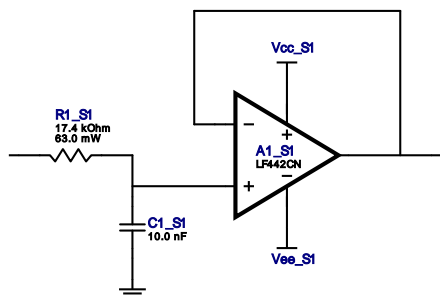
#	Name	Value	Description
1.	FilterType	Lowpass	
2.	FilterResponse	Chebyshev	
3.	FilterOrder	5.0	
4.	FilterTopology	Sallen_Key	
5.	NumberOfStages	3.0	
6.	PassbandFrequency	2.0 k	
7.	StopbandAttenuation	-20.0	
8.	StopbandFrequency	3.0 k	
9.	Gain	1.0	
10.	DualSupply	+/-5.0 V	Power supply(s) to active chips
11.	ResistorTolerance	E96	Resistor series - 1% Passive resistor tolerance
12.	CapacitorTolerance	E24	Capacitor series - 5% Passive capacitance tolerance
13.	SeedCapacitance	10.0 n	Seed Capacitance to start design of filter

Design Assistance

1. **LF442CN** Product Folder : <http://www.ti.com/product/LF442> : contains the data sheet and other resources.

Filter Stage :1

Cutoff Frequency 922.821 Hz
 Min GBW Req'd 46.141 kHz
 Stage Gain 1.0 V/V
 Stage Q 500.0 m
 Stage Topology Real_Pole

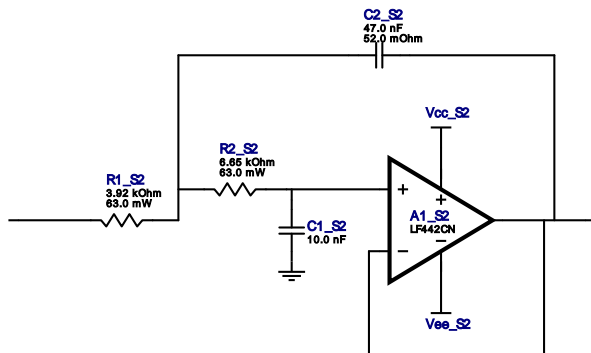


Electrical BOM

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	A1_S1	Texas Instruments	LF442CN	GbwTyp= 1.0 MHz VccMin= 6.0 V VccMax= 36.0 V	1	\$0.55	DIP 0 mm ²
2.	C1_S1	Kemet	C0603C103J5RACTU Series= X7R	Cap= 10.0 nF VDC= 50.0 V Tolerance= 5.0 %	1	\$0.01	0603 5 mm ²
3.	R1_S1	Vishay-Dale	CRCW040217K4FKED Series= CRCW..e3	Res= 17.4 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²

Filter Stage :2

Cutoff Frequency 1.495 kHz
 Min GBW Req'd 149.601 kHz
 Stage Gain 1.0 V/V
 Stage Q 1.001
 Stage Topology Sallen_Key

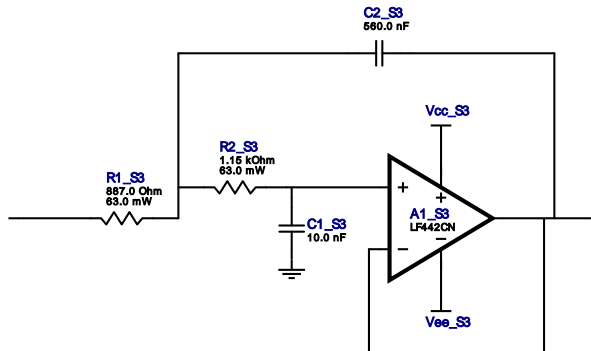


Electrical BOM

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	A1_S2	Texas Instruments	LF442CN	GbwTyp= 1.0 MHz VccMin= 6.0 V VccMax= 36.0 V	1	\$0.55	DIP 0 mm ²
2.	C1_S2	Kemet	C0603C103J5RACTU Series= X7R	Cap= 10.0 nF VDC= 50.0 V Tolerance= 5.0 %	1	\$0.01	0603 5 mm ²
3.	C2_S2	AVX	06033C473JAT2A Series= X7R	Cap= 47.0 nF ESR= 52.0 mOhm VDC= 25.0 V Tolerance= 5.0 %	1	\$0.09	0603 5 mm ²
4.	R1_S2	Vishay-Dale	CRCW04023K92FKED Series= CRCW..e3	Res= 3.92 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
5.	R2_S2	Vishay-Dale	CRCW04026K65FKED Series= CRCW..e3	Res= 6.65 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²

Filter Stage :3

Cutoff Frequency	2.114 kHz
Min GBW Req'd	783.716 kHz
Stage Gain	1.0 V/V
Stage Q	3.707
Stage Topology	Sallen_Key



Electrical BOM

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	A1_S3	Texas Instruments	LF442CN	GbwTyp= 1.0 MHz VccMin= 6.0 V VccMax= 36.0 V	1	\$0.55	DIP 0 mm ²
2.	C1_S3	Kemet	C0603C103J5RACTU Series= X7R	Cap= 10.0 nF VDC= 50.0 V Tolerance= 5.0 %	1	\$0.01	0603 5 mm ²
3.	C2_S3	CUSTOM	CUSTOM Series= ?	Cap= 560.0 nF VDC= 0.0 V Tolerance= 0.0 %	1	NA	CUSTOM 0 mm ²
4.	R1_S3	Vishay-Dale	CRCW0402887RFKED Series= CRCW..e3	Res= 887.0 Ohm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
5.	R2_S3	Vishay-Dale	CRCW04021K15FKED Series= CRCW..e3	Res= 1.15 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²

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