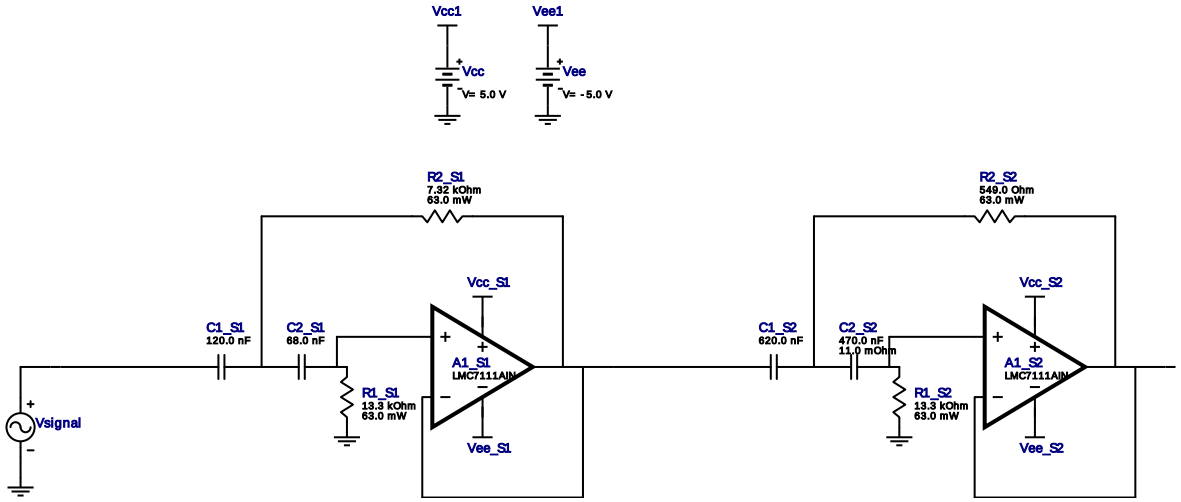
Type : Highpass
Response : Chebyshev
Order : 4
Number of Stages : 2

Device = LMC7111AIN
Created = Aug 05 2015 9:50PM

WEBENCH® Design Report

Design : 3989908/18 LMC7111AIN
Highpass, Sallen Key, Chebyshev 0.2 dB



Electrical BOM

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	A1_S1	Texas Instruments	LMC7111AIN	GbwTyp= 50.0 mMHz VccMin= 2.7 V VccMax= 11.0 V	1	$0.55	DIP 0 mm²
2.	A1_S2	Texas Instruments	LMC7111AIN	GbwTyp= 50.0 mMHz VccMin= 2.7 V VccMax= 11.0 V	1	$0.55	DIP 0 mm²
3.	C1_S1	Kemet	C1812C124J5GACTU Series= C0G/NP0	Cap= 120.0 nF VDC= 50.0 V Tolerance= 5.0 %	1	$0.73	1812 23 mm²
4.	C1_S2	CUSTOM	CUSTOM Series= ?	Cap= 620.0 nF VDC= 0.0 V Tolerance= 0.0 %	1	NA	CUSTOM 0 mm²
5.	C2_S1	AVX	12063A682JAT2A Series= C0G/NP0	Cap= 68.0 nF VDC= 25.0 V Tolerance= 5.0 %	1	$0.14	1206 11 mm²
6.	C2_S2	AVX	0805YC474JAT2A Series= X7R	Cap= 470.0 nF ESR= 11.0 mOhm VDC= 16.0 V Tolerance= 5.0 %	1	$0.12	0805 7 mm²
7.	R1_S1	Vishay-Dale	CRCW040213K3FKED Series= CRCW..e3	Res= 13.3 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm²
8.	R1_S2	Vishay-Dale	CRCW040213K3FKED Series= CRCW..e3	Res= 13.3 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm²
9.	R2_S1	Vishay-Dale	CRCW04027K32FKED Series= CRCW..e3	Res= 7.32 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm²
10.	R2_S2	Vishay-Dale	CRCW0402549RFKED Series= CRCW..e3	Res= 549.0 Ohm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm²

Design Inputs

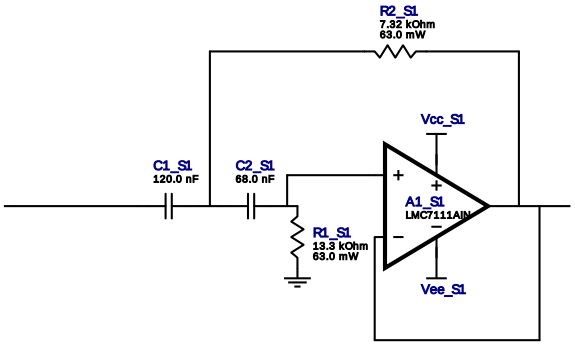
#	Name	Value	Description
1.	FilterType	Highpass	
2.	FilterResponse	Chebyshev	
3.	FilterOrder	4.0	
4.	FilterTopology	Sallen_Key	
5.	NumberOfStages	2.0	
6.	PassbandFrequency	120.0	
7.	StopbandAttenuation	-20.0	
8.	StopbandFrequency	60.0	
9.	Gain	1.0	
10.	DualSupply	+/-5.0 V	Power supply(s) to active chips
11.	ResistorTolerance	E96	Resistor series - 1% Passive resistor tolerance
12.	CapacitorTolerance	E24	Capacitor series - 5% Passive capacitance tolerance
13.	SeedCapacitance	100.0 n	Seed Capacitance to start design of filter

Design Assistance

1. **LMC7111AIN** Product Folder : http://www.ti.com//product/LMC7111 : contains the data sheet and other resources.

Filter Stage :1

Cutoff Frequency	171.157 Hz
Min GBW Reqd	11.057 kHz
Stage Gain	1.0 V/V
Stage Q	646.0 m
Stage Topology	Sallen_Key

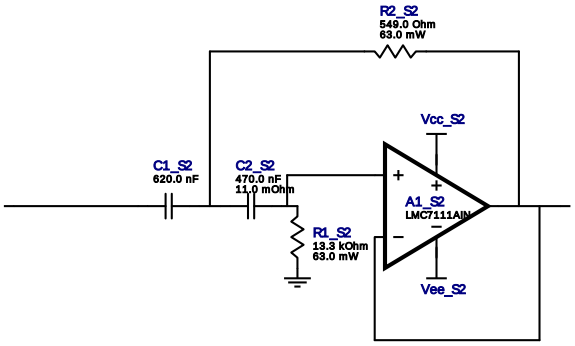


Electrical BOM

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	A1_S1	Texas Instruments	LMC7111AIN	GbwTyp= 50.0 mMHz VccMin= 2.7 V VccMax= 11.0 V	1	$0.55	DIP 0 mm²
2.	C1_S1	Kemet	C1812C124J5GACTU Series= C0G/NP0	Cap= 120.0 nF VDC= 50.0 V Tolerance= 5.0 %	1	$0.73	 1812 23 mm²
3.	C2_S1	AVX	12063A682JAT2A Series= C0G/NP0	Cap= 68.0 nF VDC= 25.0 V Tolerance= 5.0 %	1	$0.14	 1206 11 mm²
4.	R1_S1	Vishay-Dale	CRCW040213K3FKED Series= CRCW..e3	Res= 13.3 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm²
5.	R2_S1	Vishay-Dale	CRCW04027K32FKED Series= CRCW..e3	Res= 7.32 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm²

Filter Stage :2

Cutoff Frequency	109.606 Hz
Min GBW Reqd	26.689 kHz
Stage Gain	1.0 V/V
Stage Q	2.435
Stage Topology	Sallen_Key



Electrical BOM

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	A1_S2	Texas Instruments	LMC7111AIN	GbwTyp= 50.0 mMHz VccMin= 2.7 V VccMax= 11.0 V	1	$0.55	DIP 0 mm²
2.	C1_S2	CUSTOM	CUSTOM Series= ?	Cap= 620.0 nF VDC= 0.0 V Tolerance= 0.0 %	1	NA	CUSTOM 0 mm²
3.	C2_S2	AVX	0805YC474JAT2A Series= X7R	Cap= 470.0 nF ESR= 11.0 mOhm VDC= 16.0 V Tolerance= 5.0 %	1	$0.12	0805 7 mm²
4.	R1_S2	Vishay-Dale	CRCW040213K3FKED Series= CRCW..e3	Res= 13.3 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm²
5.	R2_S2	Vishay-Dale	CRCW0402549RFKED Series= CRCW..e3	Res= 549.0 Ohm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm²