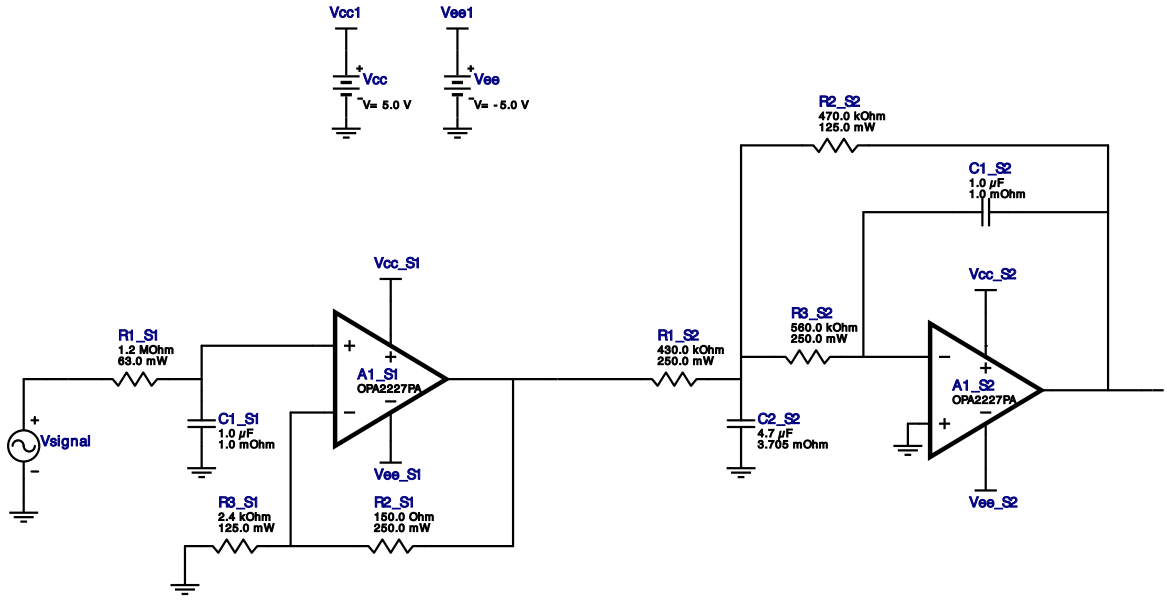
Type : Lowpass
Response : Bessel
Order : 3
Number of Stages : 0

Device = OPA2227PA
Created = Aug 17 2018 8:12AM

WEBENCH® Design Report

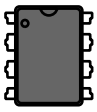
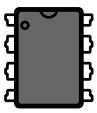
Design : OPA2227PA
Lowpass, Multiple_Feedback, Bessel



My Comments

No comments

Electrical BOM

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	A1_S1	Texas Instruments, Inc.	OPA2227PA	GbwTyp= 8.0MHz VccMin= 5.0 V VccMax= 36.0 V	1	$2.35	 P0008A 116 mm^2
2.	A1_S2	Texas Instruments, Inc.	OPA2227PA	GbwTyp= 8.0MHz VccMin= 5.0 V VccMax= 36.0 V	1	$2.35	 P0008A 116 mm^2
3.	C1_S1	Taiyo Yuden	TMK212B7105KG-T Series= X7R	Cap= 1.0 uF ESR= 1.0 mOhm VDC= 25.0 V Tolerance= 10.0 %	1	$0.03	 0805 7 mm^2
4.	C1_S2	Taiyo Yuden	TMK212B7105KG-T Series= X7R	Cap= 1.0 uF ESR= 1.0 mOhm VDC= 25.0 V Tolerance= 10.0 %	1	$0.03	 0805 7 mm^2
5.	C2_S2	MuRata	GRM31CR71E475KA88L Series= X7R	Cap= 4.7 uF ESR= 3.705 mOhm VDC= 25.0 V Tolerance= 10.0 %	1	$0.11	 1206_190 11 mm^2
6.	R1_S1	Vishay-Dale	CRCW04021M20JNED Series= CRCW..e3	Res= 1.2 MOhm Power= 63.0 mW Tolerance= 5.0%	1	$0.01	 0402 3 mm^2
7.	R1_S2	Vishay-Dale	CRCW1206430KJNEA Series= CRCW..e3	Res= 430.0 kOhm Power= 250.0 mW Tolerance= 5.0%	1	$0.01	 1206 11 mm^2

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
8.	R2_S1	Vishay-Dale	CRCW1206150RJNEA Series= CRCW..e3	Res= 150.0 Ohm Power= 250.0 mW Tolerance= 5.0%	1	$0.01	 1206 11 mm^2
9.	R2_S2	Panasonic	ERJ-6GEYJ474V Series= ERJ-6GE	Res= 470.0 kOhm Power= 125.0 mW Tolerance= 5.0%	1	$0.01	 0805 7 mm^2
10.	R3_S1	Panasonic	ERJ-6GEYJ242V Series= ERJ-6GE	Res= 2.4 kOhm Power= 125.0 mW Tolerance= 5.0%	1	$0.01	 0805 7 mm^2
11.	R3_S2	Vishay-Dale	CRCW1206560KJNEA Series= CRCW..e3	Res= 560.0 kOhm Power= 250.0 mW Tolerance= 5.0%	1	$0.01	 1206 11 mm^2

Design Inputs

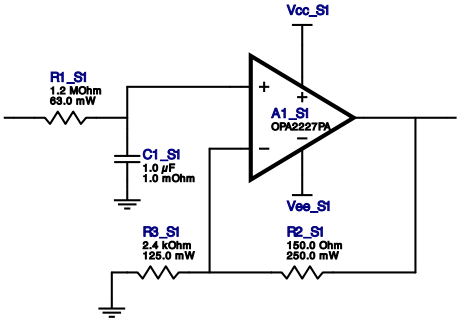
#	Name	Value	Description
1.	FilterType	Lowpass	
2.	FilterResponse	Bessel	
3.	FilterOrder	3.0	
4.	FilterTopology	Multiple_Feedback	
5.	NumberOfStages	0.0	
6.	PassbandFrequency	100.0 m	
7.	StopbandAttenuation	-45.0	
8.	StopbandFrequency	5.0 k	
9.	Gain	1.122	
10.	DualSupply	+/-5.00 V	Power supply(s) to active chips
11.	ResistorTolerance	E24	Resistor series - 5% Passive resistor tolerance
12.	CapacitorTolerance	E12	Capacitor series - 10% Passive capacitance tolerance
13.	SeedCapacitance	1.0 μ	Seed Capacitance to start design of filter

Design Assistance

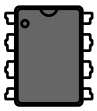
1. **OPA2227PA** Product Folder : http://www.ti.com//product/OPA2227 : contains the data sheet and other resources.

Filter Stage :1

Cutoff Frequency	132.7 mHz
Min GBW Reqd	7.028 Hz
Stage Gain	1.059 V/V
Stage Q	500.0 m
Stage Topology	Multiple_Feedback

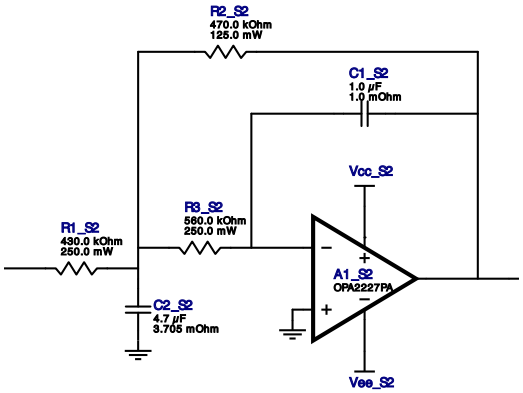


Electrical BOM

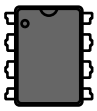
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	A1_S1	Texas Instruments, Inc.	OPA2227PA	GbwTyp= 8.0MHz VccMin= 5.0 V VccMax= 36.0 V	1	$2.35	 P0008A 116 mm^2
2.	C1_S1	Taiyo Yuden	TMK212B7105KG-T Series= X7R	Cap= 1.0 uF ESR= 1.0 mOhm VDC= 25.0 V Tolerance= 10.0 %	1	$0.03	 0805 7 mm^2
3.	R1_S1	Vishay-Dale	CRCW04021M20JNED Series= CRCW..e3	Res= 1.2 MOhm Power= 63.0 mW Tolerance= 5.0%	1	$0.01	 0402 3 mm^2
4.	R2_S1	Vishay-Dale	CRCW1206150RJNEA Series= CRCW..e3	Res= 150.0 Ohm Power= 250.0 mW Tolerance= 5.0%	1	$0.01	 1206 11 mm^2
5.	R3_S1	Panasonic	ERJ-6GEYJ242V Series= ERJ-6GE	Res= 2.4 kOhm Power= 125.0 mW Tolerance= 5.0%	1	$0.01	 0805 7 mm^2

Filter Stage :2

Cutoff Frequency	145.238 mHz
Min GBW Reqd	10.631 Hz
Stage Gain	1.059 V/V
Stage Q	691.015 m
Stage Topology	Multiple_Feedback



Electrical BOM

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	A1_S2	Texas Instruments, Inc.	OPA2227PA	GbwTyp= 8.0MHz VccMin= 5.0 V VccMax= 36.0 V	1	$2.35	 P0008A 116 mm²
2.	C1_S2	Taiyo Yuden	TMK212B7105KG-T Series= X7R	Cap= 1.0 uF ESR= 1.0 mOhm VDC= 25.0 V Tolerance= 10.0 %	1	$0.03	 0805 7 mm²
3.	C2_S2	MuRata	GRM31CR71E475KA88L Series= X7R	Cap= 4.7 uF ESR= 3.705 mOhm VDC= 25.0 V Tolerance= 10.0 %	1	$0.11	 1206_190 11 mm²
4.	R1_S2	Vishay-Dale	CRCW1206430KJNEA Series= CRCW..e3	Res= 430.0 kOhm Power= 250.0 mW Tolerance= 5.0%	1	$0.01	 1206 11 mm²
5.	R2_S2	Panasonic	ERJ-6GEYJ474V Series= ERJ-6GE	Res= 470.0 kOhm Power= 125.0 mW Tolerance= 5.0%	1	$0.01	 0805 7 mm²

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
6.	R3_S2	Vishay-Dale	CRCW1206560KJNEA Series= CRCW..e3	Res= 560.0 kOhm Power= 250.0 mW Tolerance= 5.0%	1	$0.01	 1206 11 mm^2