

## WEBENCH® Design Report

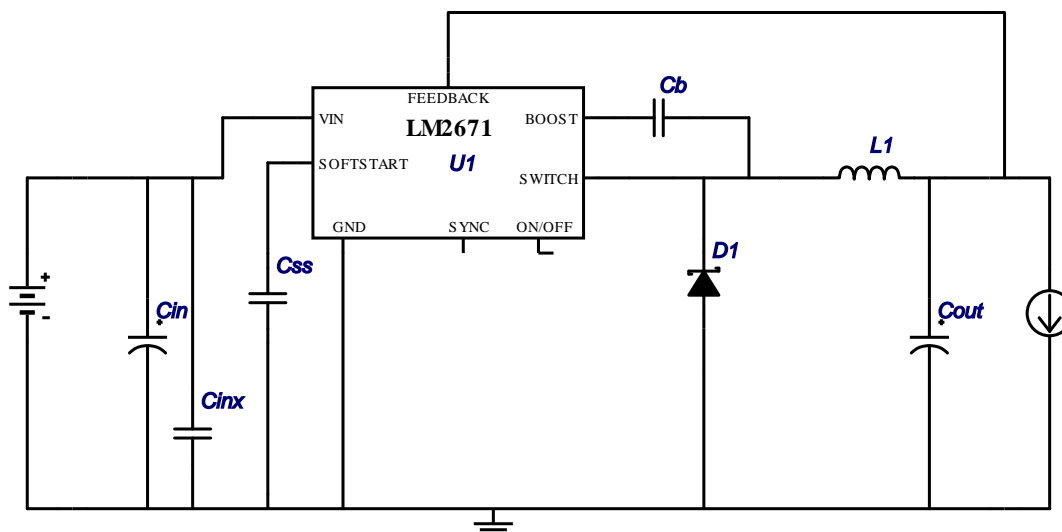
Design : 1171656/3 LM2671M-5.0

Design 3 - LM2671M-5.0


WEBENCH® Design : LM2671\_5.0\_Buck\_None

VinMin = 11.0V  
VinMax = 29.0V  
Vout = 5.0V  
Iout = 0.07A

Device = LM2671M-5.0  
Topology = Buck  
Creation date = 10/27/10 10:35:45 AM  
Total BOM Cost = \$2.21  
Total Pd = 0.14 W  
Footprint = 193.0 mm2  
BOM Count = 10



## Electrical BOM

#	Name	Manufacturer	Part Number	Qty	Price	Properties	Footprint
1.	Cb	Yageo America	CC0805KRX7R9BB103 Series= X7R	1	\$0.01	Cap= 10.0 nF ESR= 0.0 Ohm VDC= 50.0 V IRMS= 0.0 A	 0805 13mm2
2.	Cin	TDK	C3216X7R1H105K Series= X7R	1	\$0.05	Cap= 1.0 µF ESR= 10.0 mOhm VDC= 50.0 V IRMS= 3.2 A	 1206 19mm2
3.	Cinx	Kemet	C0805C104K5RACTU Series= X7R	1	\$0.01	Cap= 100.0 nF ESR= 64.0 mOhm VDC= 50.0 V IRMS= 1.64 A	 0805 13mm2
4.	Cout	AVX	TPSA335K025R1000 Series= TPS	1	\$0.31	Cap= 3.3 µF ESR= 1.0 Ohm VDC= 25.0 V IRMS= 246.0 mA	 3216-18 19mm2
5.	Css	Yageo America	CC0805KRX7R9BB392 Series= X7R	1	\$0.01	Cap= 3.9 nF ESR= 0.0 Ohm VDC= 50.0 V IRMS= 0.0 A	 0805 13mm2
6.	D1	Diodes Inc.	SDM10U45-7-F	1	\$0.06	VF@Io= 580.0 mA VRRM= 45.0 V	 SOD-523 11mm2
7.	L1	Bourns	SDR6603-681M	1	\$0.36	L= 680.0 µH DCR= 360.0 mOhm	 SDR6603 55mm2
8.	U1	National Semiconductor	LM2671M-5.0	1	\$1.38	Switcher	 M08A 55mm2

## Op Vals

#	Name	Value	Category	Description
1.	BOM Count	10.0		Total Design BOM count
2.	Total BOM	\$2.21		Total BOM Cost
3.	Cin IRMS	21.88 mA	Current	Input capacitor RMS ripple current
4.	Cout IRMS	4.806 mA	Current	Output capacitor RMS ripple current
5.	IC Ipk	78.325 mA	Current	Peak switch current in IC
6.	Iin Avg	17.06 mA	Current	Average input current
7.	L Ipp	16.649 mA	Current	Peak-to-peak inductor ripple current
8.	M Irms	30.407 mA	Current	Q lavg
9.	FootPrint	193.0 mm2	General	Total Foot Print Area of BOM components
10.	Frequency	400.0 kHz	General	Switching frequency
11.	M Vds Act	8.205 mV	General	
12.	Mode	CCM	General	Conduction Mode
13.	Pout	350.0 mW	General	Total output power
14.	D1 Tj	30.0 degC	Op_Point	D1 junction temperature
15.	Cross Freq	31.649 kHz	Op_point	Bode plot crossover frequency
16.	Duty Cycle	18.869 %	Op_point	Duty cycle
17.	Efficiency	70.75 %	Op_point	Steady state efficiency
18.	IC Tj	41.525 degC	Op_point	IC junction temperature
19.	ICThetaJA	105.0 degC/W	Op_point	IC junction-to-ambient thermal resistance
20.	IOUT_OP	70.0 mA	Op_point	Iout operating point
21.	Phase Marg	67.562 deg	Op_point	Bode Plot Phase Margin
22.	VIN_OP	29.0 V	Op_point	Vin operating point
23.	Vout p-p	16.724 mV	Op_point	Peak-to-peak output ripple voltage
24.	Cin Pd	4.788 $\mu$ W	Power	Input capacitor power dissipation
25.	Cout Pd	23.1 $\mu$ W	Power	Output capacitor power dissipation
26.	Diode Pd	32.939 mW	Power	Diode power dissipation
27.	IC Pd	109.764 mW	Power	IC power dissipation
28.	L Pd	1.94 mW	Power	Inductor power dissipation
29.	Total Pd	144.711 mW	Power	Total Power Dissipation

## Design Inputs

#	Name	Value	Description
1.	ErrorFeature	I	Error feature
2.	Iout	70.0 mA	Maximun Output Current
3.	Iout1	70.0 mAmps	Output Current #1
4.	NumOutPuts	2.0	Number of Output
5.	SoftStart	1.0 ms	Soft Start Time (ms)
6.	SyncFeature	I	External Sync feature
7.	VinMax	29.0 V	Maximum input voltage
8.	VinMin	11.0 V	Minimum input voltage
9.	Vout	5.0 V	Output Voltage
10.	Vout1	5.0 Volt	Output Voltage #1
11.	base_pn	LM2671	National Based Product Number
12.	customfreq	Y	Use Customer Frequency
13.	onOff	I	On/Off feature
14.	optfactor	2.0	Optimization factor to tune up the design
15.	pricefactor	0.0	Price factor to tune up the design cost
16.	ta	30.0 degC	Ambient temperature

## Design Assist

1. Warning! With certain softstart capacitor values and operating conditions, the LM267X can exhibit an overshoot on the output voltage during turn on. Especially when starting up into no load or low load, the softstart function may not be effective in preventing a larger voltage overshoot on the output. With larger loads or lower input voltages during startup this effect is minimized. In particular, avoid using softstart capacitors between 0.033uF and 1uF.