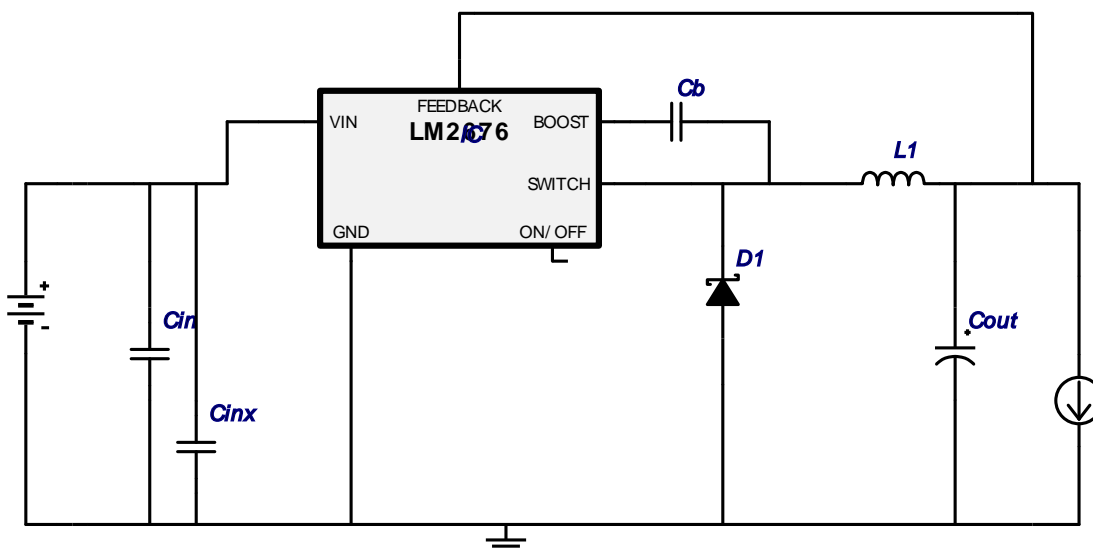


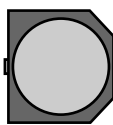

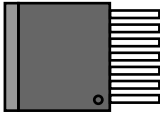



WEBENCH® Design Report

Design : 1168082/2 LM2676S-5.0
Design 2 - LM2676S-5.0



Electrical BOM

#	Name	Manufacturer	Part Number	Quantity	Price	Properties	Footprint
1.	Cb	MuRata	GRM216R71H103KA01D 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	C3225X7R1E106M Series= X7R	1	\$0.18	Cap= 10.0 µF ESR= 2.7 mOhm VDC= 25.0 V IRMS= 3.0 A	 1210 23mm2
3.	Cinx	AVX	08053C104KAT2A Series= X7R	1	\$0.01	Cap= 100.0 nF ESR= 280.0 mOhm VDC= 25.0 V IRMS= 0.0 A	 0805 13mm2
4.	Cout	Nippon Chemi-Con	APXA160ARA151MJ80G Series= PXA	1	\$0.38	Cap= 150.0 µF ESR= 26.0 mOhm VDC= 16.0 V IRMS= 3.43 A	 CAPSMT_62_J80 156mm2
5.	D1	Diodes Inc.	B340A-13-F	1	\$0.13	VF@Io= 500.0 mV VRRM= 40.0 V	 SMA 37mm2
6.	IC	Texas Instruments	LM2676S-5.0	1	\$2.22		 TS7B 199mm2

#	Name	Manufacturer	Part Number	Quantity	Price	Properties	Footprint
7.	L1	Bourns	SRR1210-270M	1	\$0.44	L= 27.0 μ H DCR= 40.0 mOhm	 SRR1210 196mm2

Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	934.684 m A	Current	Input capacitor RMS ripple current
2.	Cout IRMS	160.974 m A	Current	Output capacitor RMS ripple current
3.	IC Ipk	2.779 A	Current	Peak switch current in IC
4.	Iin Avg	785.54 m A	Current	Average input current
5.	L Ipp	557.631 m A	Current	Peak-to-peak inductor ripple current
6.	M1 Irms	1.372 A	Current	Q Iavg
7.	BOM Count	7.0	General	Total Design BOM count
8.	FootPrint	638.0 mm2	General	Total Foot Print Area of BOM components
9.	Frequency	260.0 k Hz	General	Switching frequency
10.	IC Tolerance	100.0 m V	General	IC Feedback Tolerance
11.	M Vds Act	234.899 m V	General	
12.	Mode	CCM	General	Conduction Mode
13.	Pout	12.5 W	General	Total output power
14.	Total BOM	\$3.07	General	Total BOM Cost
15.	D1 Tj	117.36 degC	Op_Point	D1 junction temperature
16.	Vout OP	5.0 V	Op_Point	Operational Output Voltage
17.	Cross Freq	21.308 k Hz	Op_point	Bode plot crossover frequency
18.	Duty Cycle	30.112 %	Op_point	Duty cycle
19.	Efficiency	88.404 %	Op_point	Steady state efficiency
20.	IC Tj	42.689 degC	Op_point	IC junction temperature
21.	ICThetaJA	26.0 degC/W	Op_point	IC junction-to-ambient thermal resistance
22.	IOUT_OP	2.5 A	Op_point	Iout operating point
23.	Phase Marg	64.229 deg	Op_point	Bode Plot Phase Margin
24.	VIN_OP	18.0 V	Op_point	Vin operating point
25.	Vout p-p	14.608 m V	Op_point	Peak-to-peak output ripple voltage
26.	Cin Pd	2.359 m W	Power	Input capacitor power dissipation
27.	Cout Pd	673.73 μ W	Power	Output capacitor power dissipation
28.	Diode Pd	873.599 m W	Power	Diode power dissipation
29.	IC Pd	488.032 m W	Power	IC power dissipation
30.	L Pd	275.0 m W	Power	Inductor power dissipation
31.	Total Pd	1.64 W	Power	Total Power Dissipation
32.	Input Load Capacitance	10.0 μ F	Unknown	Input load capacitance seen by upstream circuit

Design Inputs

#	Name	Value	Description
1.	Iout	2.5 A	Maximum Output Current
2.	Iout1	2.5 Amps	Output Current #1
3.	VinMax	18.0 V	Maximum input voltage
4.	VinMin	10.0 V	Minimum input voltage
5.	Vout	5.0 V	Output Voltage
6.	Vout1	5.0 Volt	Output Voltage #1
7.	base_pn	LM2676	National Based Product Number
8.	Ta	30.0 degC	Ambient temperature

Design Assistance

1. **LM2676** Product Folder : <http://www.national.com/pf/LM/LM2676.html> : contains the data sheet and other resources.

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