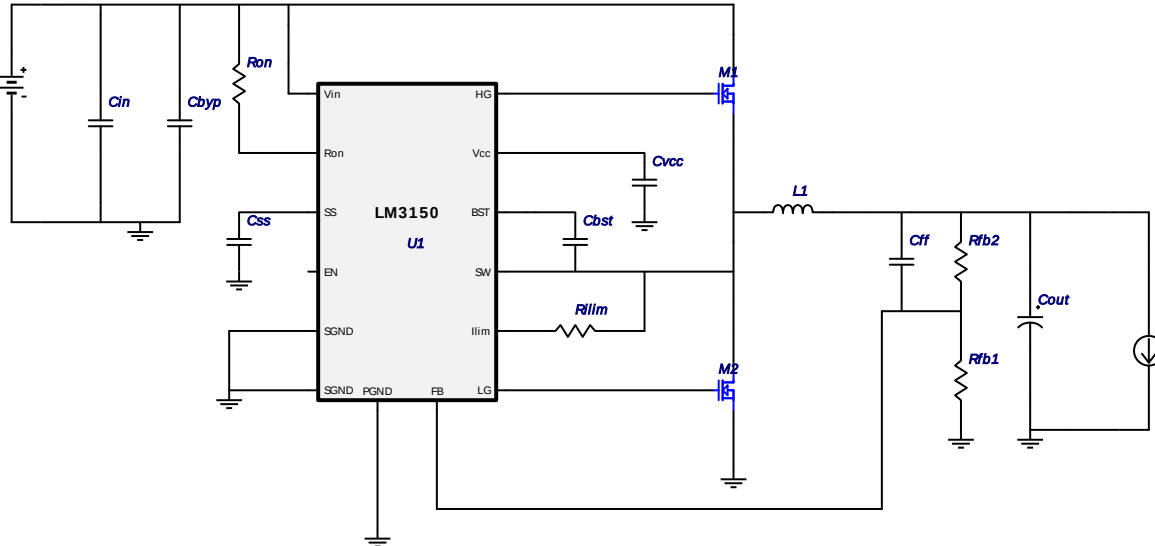
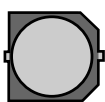


WEBENCH® Design Report

Design : 1235383/46 LM3150MH/NOPB
LM3150MH/NOPB 24.0V-36.0V to 5.0V @ 5.0A



Electrical BOM

#	Name	Manufacturer	Part Number	Quantity	Price	Properties	Footprint
1.	Cbst	Taiyo Yuden	EMK212B7474KD-T Series= X7R	1	\$0.02	Cap= 470.0 nF VDC= 16.0 V IRMS= 0.0 A	 0805 13mm2
2.	Cbyp	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
3.	Cff	Kemet	C0805C471K5RACTU Series= X7R	1	\$0.01	Cap= 470.0 pF ESR= 688.0 mOhm VDC= 50.0 V IRMS= 213.0 mA	 0805 13mm2
4.	Cin	TDK	C3216X7R1H105K Series= X7R	3	\$0.04	Cap= 1.0 µF ESR= 10.0 mOhm VDC= 50.0 V IRMS= 3.2 A	 1206 19mm2
5.	Cout	Sanyo	20SVP100M Series= 261	2	\$0.00	Cap= 100.0 µF ESR= 24.0 mOhm VDC= 20.0 V IRMS= 3.32 A	 SM_RADIAL_8MM 113mm2
6.	Css	Yageo America	CC0805KRX7R9BB153 Series= X7R	1	\$0.01	Cap= 15.0 nF VDC= 50.0 V IRMS= 0.0 A	 0805 13mm2
7.	Cvcc	Taiyo Yuden	EMK212B7225KG-T Series= X7R	1	\$0.03	Cap= 2.2 µF VDC= 16.0 V IRMS= 0.0 A	 0805 13mm2
8.	L1	Coilcraft	XAL6060-562MEB	1	\$0.76	L= 5.6 µH DCR= 20.0 mOhm	 XAL6060 72mm2

#	Name	Manufacturer	Part Number	Quantity	Price	Properties	Footprint
9.	M1	AOS	AOD2610	1	\$0.33	VdsMax= 60.0 V IdsMax= 10.0 Amps	 DPAK 102mm2
10.	M2	AOS	AOD2610	1	\$0.33	VdsMax= 60.0 V IdsMax= 10.0 Amps	 DPAK 102mm2
11.	Rfb1	Vishay-Dale	CRCW080510K0FKEA Series= CRCW..e3	1	\$0.01	Res= 10.0 kOhm Power= 125.0 mW Tolerance= 1.0%	 0805 13mm2
12.	Rfb2	Vishay-Dale	CRCW080573K2FKEA Series= CRCW..e3	1	\$0.01	Res= 73.2 kOhm Power= 125.0 mW Tolerance= 1.0%	 0805 13mm2
13.	Rilim	Vishay-Dale	CRCW08051K58FKEA Series= CRCW..e3	1	\$0.01	Res= 1.58 kOhm Power= 125.0 mW Tolerance= 1.0%	 0805 13mm2
14.	Ron	Vishay-Dale	CRCW080582K5FKEA Series= CRCW..e3	1	\$0.01	Res= 82.5 kOhm Power= 125.0 mW Tolerance= 1.0%	 0805 13mm2
15.	U1	Texas Instruments	LM3150MH/NOPB	1	\$1.55	Switcher	 MXA14A 59mm2

Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	1.758 A	Current	Input capacitor RMS ripple current
2.	Cout IRMS	590.291 m A	Current	Output capacitor RMS ripple current
3.	I lim	8.729 A	Current	Current limit threshold
4.	Iin Avg	762.92 m A	Current	Average input current
5.	L Ipp	2.045 A	Current	Peak-to-peak inductor ripple current
6.	SW Ipk	6.022 A	Current	Peak switch current
7.	BOM Count	18.0	General	Total Design BOM count
8.	FootPrint	734.0 mm2	General	Total Foot Print Area of BOM components
9.	Frequency	391.4 k Hz	General	Switching frequency
10.	IC Tolerance	12.0 m V	General	IC Feedback Tolerance
11.	Mode	CCM	General	Conduction Mode
12.	Pout	25.0 W	General	Total output power
13.	Total BOM	\$0.0	General	Total BOM Cost
14.	Duty Cycle	14.458 %	Op_point	Duty cycle
15.	Efficiency	91.024 %	Op_point	Steady state efficiency
16.	IC Tj	86.981 degC	Op_point	IC junction temperature
17.	IOUT_OP	5.0 A	Op_point	Iout operating point
18.	M1 Tj	53.037 degC	Op_point	M1 MOSFET junction temperature
19.	M2 Tj	53.891 degC	Op_point	M2 MOSFET junction temperature
20.	VIN_OP	36.0 V	Op_point	Vin operating point
21.	Vout p-p	24.754 m V	Op_point	Peak-to-peak output ripple voltage
22.	Cin Pd	10.306 m W	Power	Input capacitor power dissipation
23.	Cout Pd	4.181 m W	Power	Output capacitor power dissipation
24.	IC Pd	876.629 m W	Power	IC power dissipation
25.	L Pd	625.0 m W	Power	Inductor power dissipation
26.	M1 Pd	481.47 m W	Power	M1 MOSFET total power dissipation
27.	M1 PdCond	81.385 m W	Power	M1 MOSFET conduction losses
28.	M1 PdSw	400.085 m W	Power	M1 MOSFET switching losses
29.	M2 Pd	467.583 m W	Power	M2 MOSFET total power dissipation
30.	M2 PdCond	350.762 m W	Power	M2 MOSFET conduction losses
31.	M2 PdSw	116.82 m W	Power	M2 MOSFET switching losses
32.	Total Pd	2.465 W	Power	Total Power Dissipation

Design Inputs

#	Name	Value	Description
1.	Iout	5.0 A	Maximum Output Current
2.	Iout1	5.0 Amps	Output Current #1
3.	VinMax	36.0 V	Maximum input voltage
4.	VinMin	24.0 V	Minimum input voltage
5.	Vout	5.0 V	Output Voltage
6.	Vout1	5.0 Volt	Output Voltage #1
7.	base_pn	LM3150	National Based Product Number

#	Name	Value	Description
8.	source	DC	Input Source Type
9.	Ta	30.0 degC	Ambient temperature

Design Assistance

1. **LM3150** Product Folder : <http://www.ti.com/product/lm3150> : contains the data sheet and other resources.

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