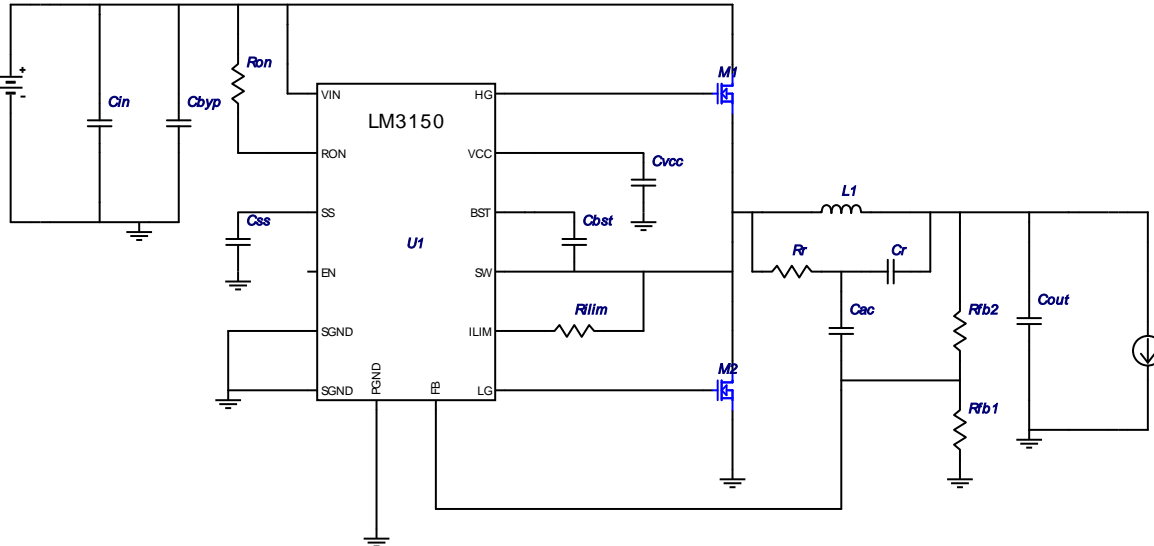


WEBENCH® Design Report

 Design : 3488861/10 LM3150MH
 LM3150MH 21.0V-32.0V to 12.0V @ 5.0A

Electrical BOM

#	Name	Manufacturer	Part Number	Quantity	Price	Properties	Footprint
1.	Cac	Yageo America	CC0805KRX7R9BB681 Series= X7R	1	\$0.01	Cap= 680.0 pF VDC= 50.0 V IRMS= 0.0 A	0805 13mm2
2.	Cbst	Taiyo Yuden	EMK212B7474KD-T Series= X7R	1	\$0.02	Cap= 470.0 nF VDC= 16.0 V IRMS= 0.0 A	0805 13mm2
3.	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
4.	Cin	TDK	C5750X7R1H106M Series= X7R	1	\$0.68	Cap= 10.0 µF ESR= 3.0 mOhm VDC= 50.0 V IRMS= 5.5 A	2220 60mm2
5.	Cout	TDK	C3216X5R1C106M Series= X5R	2	\$0.06	Cap= 10.0 µF ESR= 4.6 mOhm VDC= 16.0 V IRMS= 2.7 A	1206 19mm2
6.	Cr	MuRata	GRM2165C2A201JA01D Series= COG/NP0	1	\$0.03	Cap= 200.0 pF VDC= 100.0 V IRMS= 0.0 A	0805 13mm2
7.	Css	Yageo America	CC0805KRX7R9BB153 Series= X7R	1	\$0.01	Cap= 15.0 nF VDC= 50.0 V IRMS= 0.0 A	0805 13mm2
8.	Cvcc	Taiyo Yuden	LMK212B7225KG-T Series= X7R	1	\$0.02	Cap= 2.2 µF VDC= 10.0 V IRMS= 0.0 A	0805 13mm2

#	Name	Manufacturer	Part Number	Quantity	Price	Properties	Footprint
9.	L1	Bourns	SRP1250-100M	1	\$0.70	L= 10.0 μ H DCR= 25.5 mOhm	 SRP1250 253mm2
10.	M1	Fairchild Semiconductor	FDD8647L	1	\$0.38	VdsMax= 40.0 V IdsMax= 14.0 Amps	 DPAK 102mm2
11.	M2	Fairchild Semiconductor	FDD8647L	1	\$0.38	VdsMax= 40.0 V IdsMax= 14.0 Amps	 DPAK 102mm2
12.	Rfb1	Vishay-Dale	CRCW080510K0FKEA Series= CRCW..e3	1	\$0.01	Res= 10.0 kOhm Power= 125.0 mW Tolerance= 1.0%	 0805 13mm2
13.	Rfb2	Vishay-Dale	CRCW0805191KFKEA Series= CRCW..e3	1	\$0.01	Res= 191.0 kOhm Power= 125.0 mW Tolerance= 1.0%	 0805 13mm2
14.	Rilim	Vishay-Dale	CRCW08051K02FKEA Series= CRCW..e3	1	\$0.01	Res= 1.02 kOhm Power= 125.0 mW Tolerance= 1.0%	 0805 13mm2
15.	Ron	Vishay-Dale	CRCW0805221KFKEA Series= CRCW..e3	1	\$0.01	Res= 221.0 kOhm Power= 125.0 mW Tolerance= 1.0%	 0805 13mm2
16.	Rr	Vishay-Dale	CRCW08053M16FKEA Series= CRCW..e3	1	\$0.01	Res= 3.16 MOhm Power= 125.0 mW Tolerance= 1.0%	 0805 13mm2
17.	U1	Texas Instruments	LM3150MH	1	\$1.55	Switcher	 MXA14A 59mm2

Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	2.429 A	Current	Input capacitor RMS ripple current
2.	Cout IRMS	476.94 m A	Current	Output capacitor RMS ripple current
3.	I lim	8.543 A	Current	Current limit threshold
4.	Iin Avg	1.959 A	Current	Average input current
5.	L Ipp	1.652 A	Current	Peak-to-peak inductor ripple current
6.	SW Ipk	5.826 A	Current	Peak switch current
7.	BOM Count	18.0	General	Total Design BOM count
8.	FootPrint	755.0 mm2	General	Total Foot Print Area of BOM components
9.	Frequency	461.604 k Hz	General	Switching frequency
10.	IC Tolerance	12.0 m V	General	IC Feedback Tolerance
11.	Mode	CCM	General	Conduction Mode
12.	Pout	60.0 W	General	Total output power
13.	Total BOM	\$3.96	General	Total BOM Cost
14.	Duty Cycle	38.132 %	Op_point	Duty cycle
15.	Efficiency	95.717 %	Op_point	Steady state efficiency
16.	IC Tj	89.965 degC	Op_point	IC junction temperature
17.	IOUT_OP	5.0 A	Op_point	Iout operating point
18.	M1 Tj	78.855 degC	Op_point	M1 MOSFET junction temperature
19.	M2 Tj	58.655 degC	Op_point	M2 MOSFET junction temperature
20.	VIN_OP	32.0 V	Op_point	Vin operating point
21.	Vout p-p	22.69 m V	Op_point	Peak-to-peak output ripple voltage
22.	Cin Pd	17.694 m W	Power	Input capacitor power dissipation
23.	Cout Pd	523.185 μ W	Power	Output capacitor power dissipation
24.	IC Pd	691.768 m W	Power	IC power dissipation
25.	L Pd	796.875 m W	Power	Inductor power dissipation
26.	M1 Pd	858.692 m W	Power	M1 MOSFET total power dissipation
27.	M1 PdCond	138.815 m W	Power	M1 MOSFET conduction losses
28.	M1 PdSw	719.877 m W	Power	M1 MOSFET switching losses
29.	M2 Pd	319.225 m W	Power	M2 MOSFET total power dissipation
30.	M2 PdCond	163.551 m W	Power	M2 MOSFET conduction losses
31.	M2 PdSw	155.674 m W	Power	M2 MOSFET switching losses

#	Name	Value	Category	Description
32.	Total Pd	2.685 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.	SoftStart	1.0 ms	Soft Start Time (ms)
4.	VinMax	32.0 V	Maximum input voltage
5.	VinMin	21.0 V	Minimum input voltage
6.	Vout	12.0 V	Output Voltage
7.	Vout1	12.0 Volt	Output Voltage #1
8.	base_pn	LM3150	National Based Product Number
9.	Ta	45.0 degC	Ambient temperature
10.	UserFsw	461.01 kHz	Customer Selected Frequency

Design Assistance

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

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