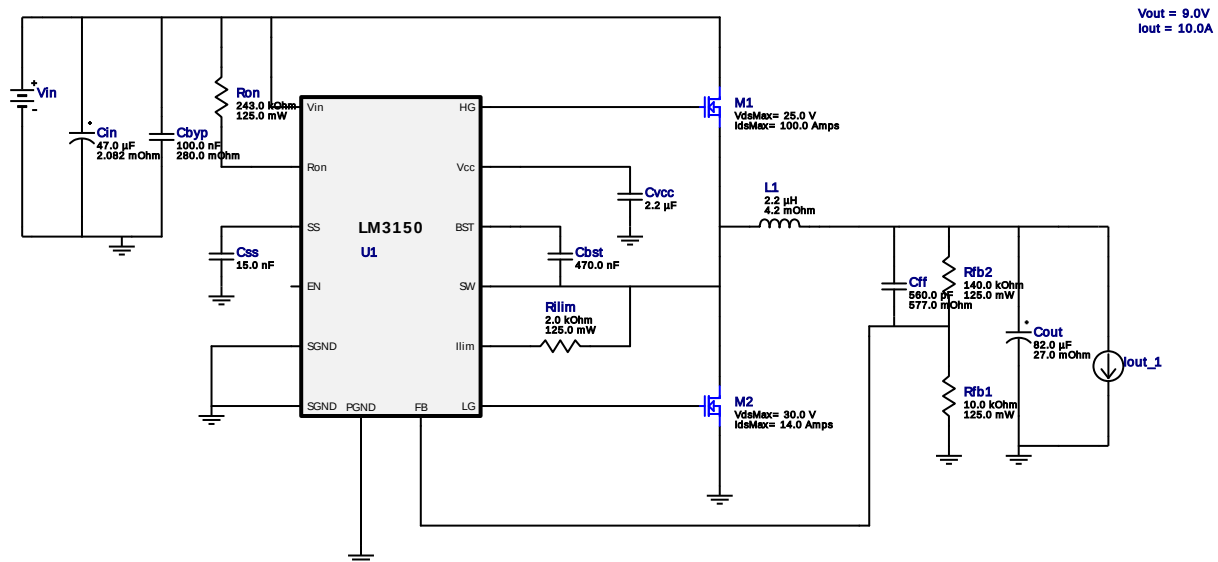


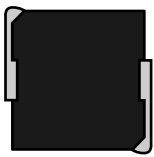
WEBENCH® Design Report

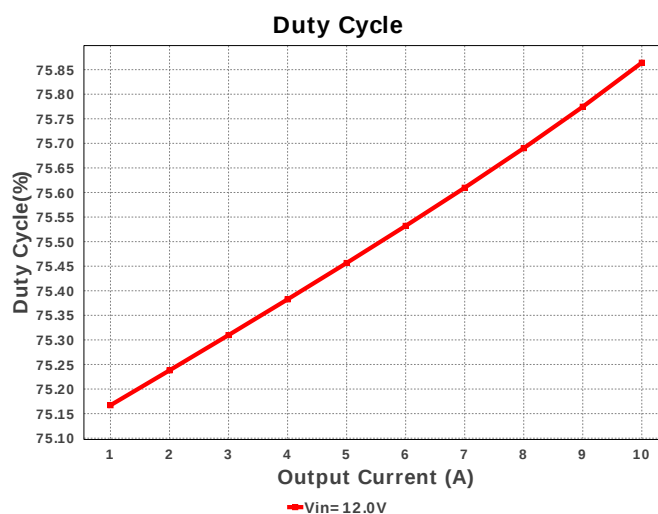
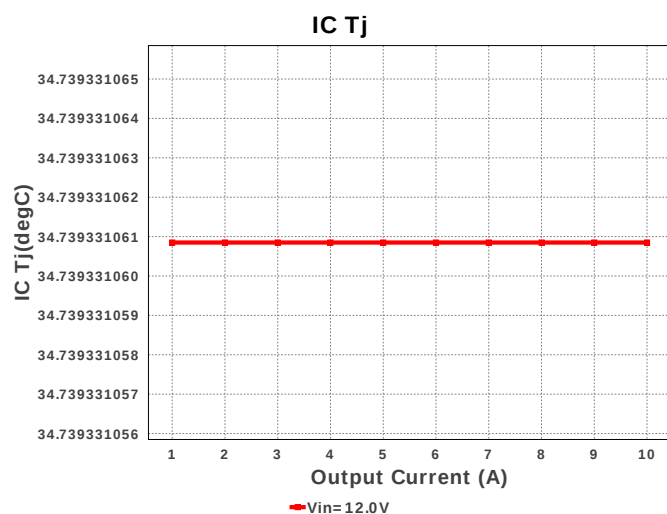
Design : 4406513/28 LM3150MH/NOPB
 LM3150MH/NOPB 12.0V-12.0V to 9.00V @ 10.0A

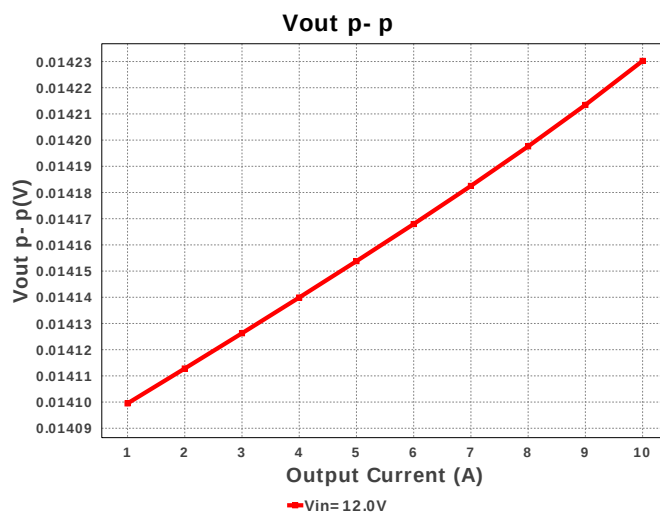
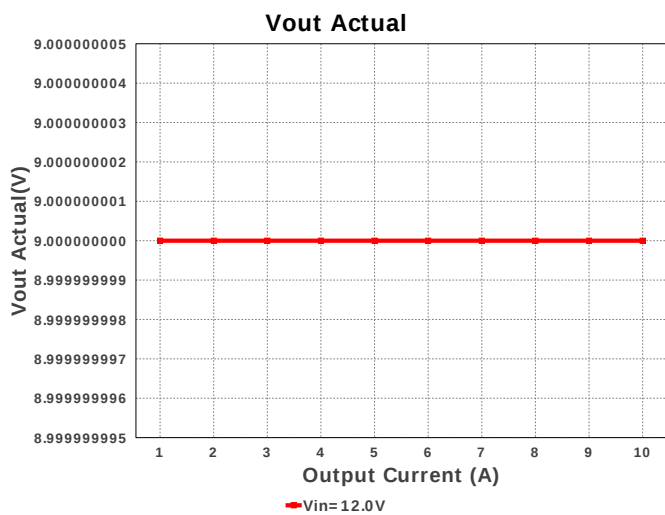
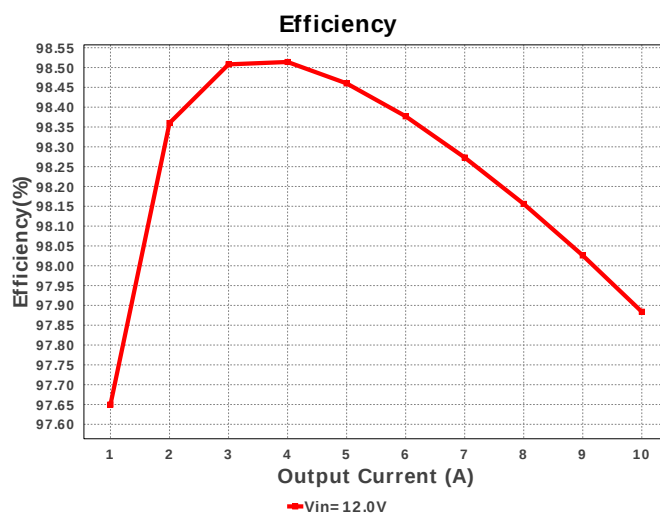
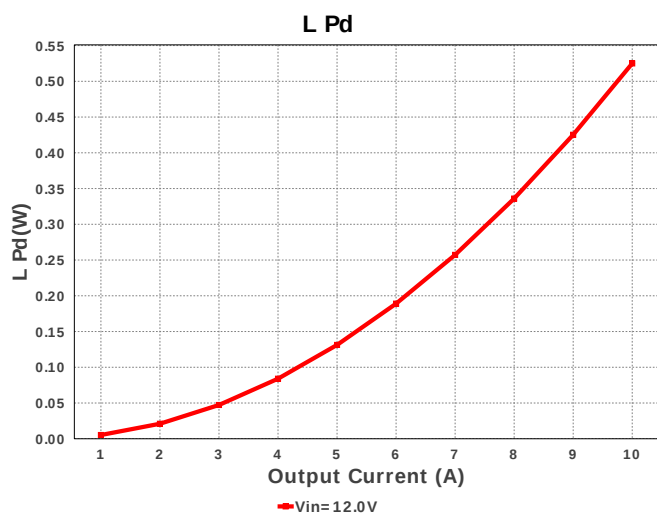
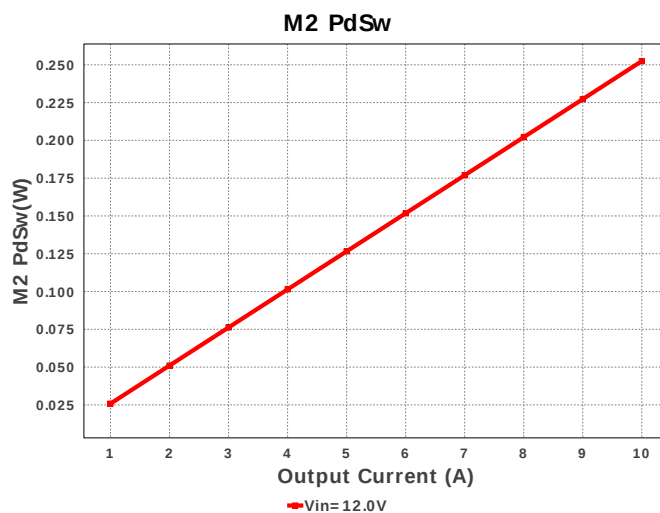
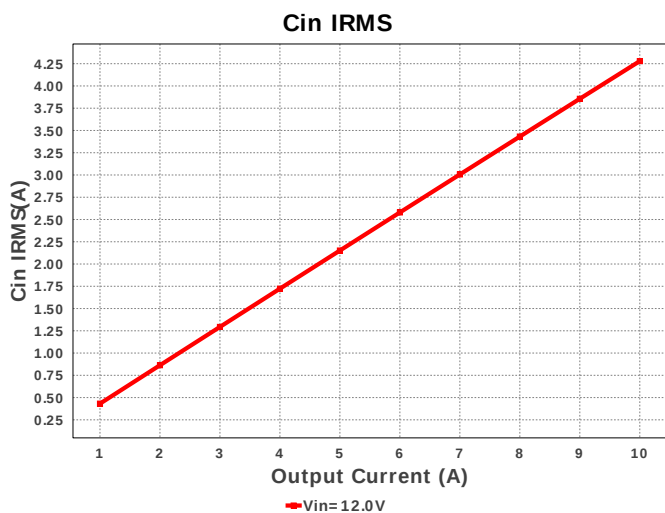


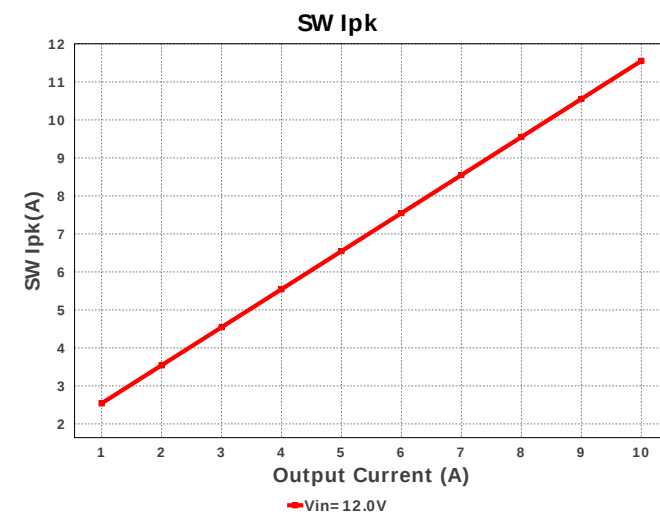
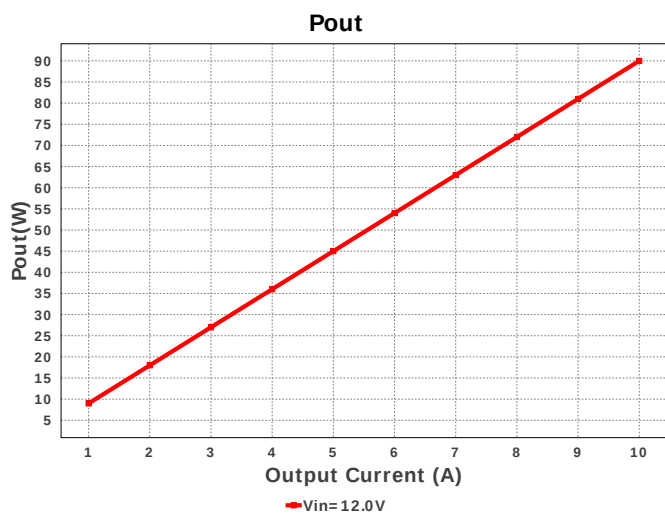
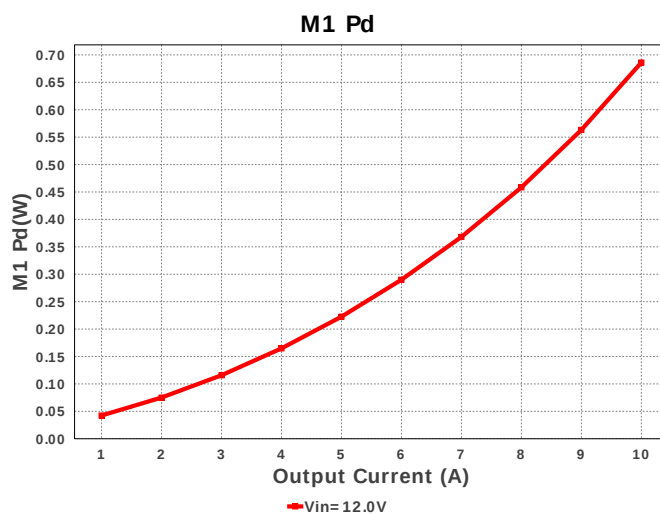
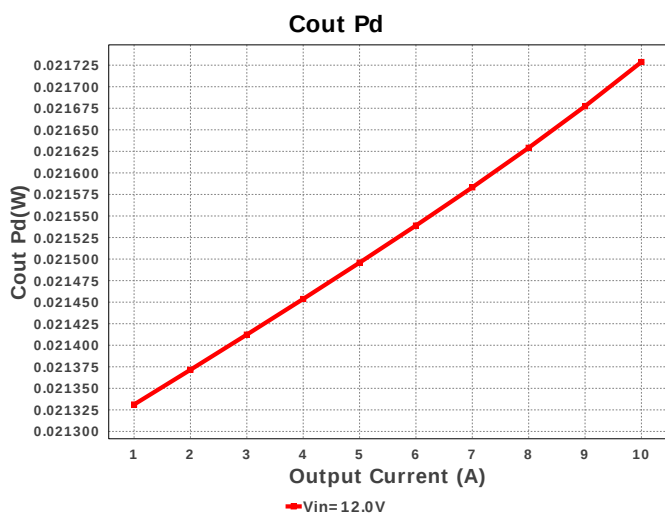
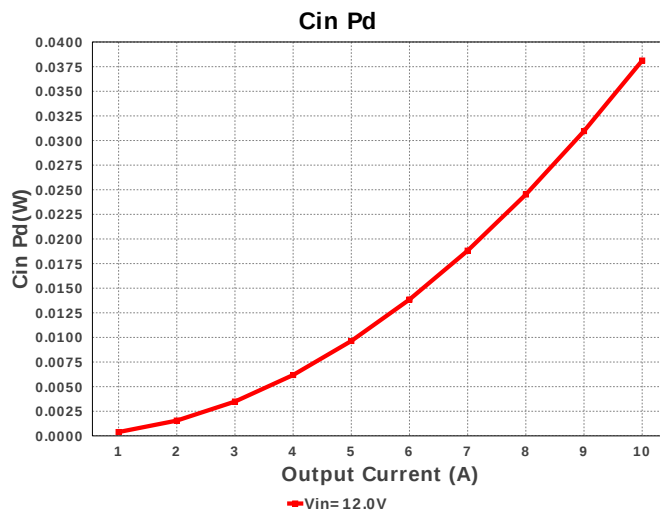
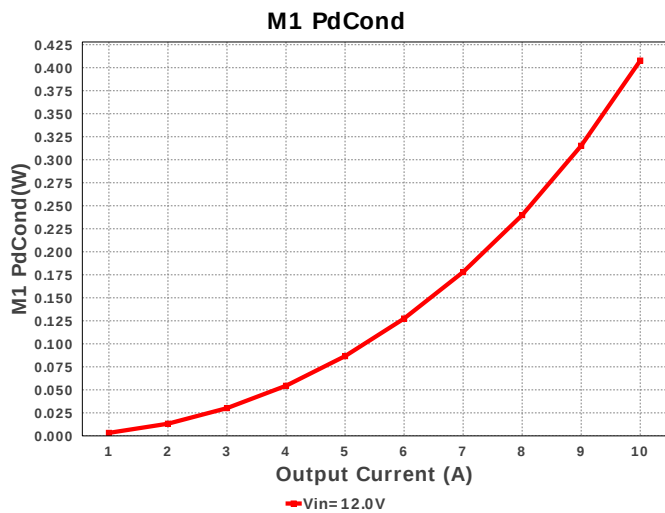
Electrical BOM

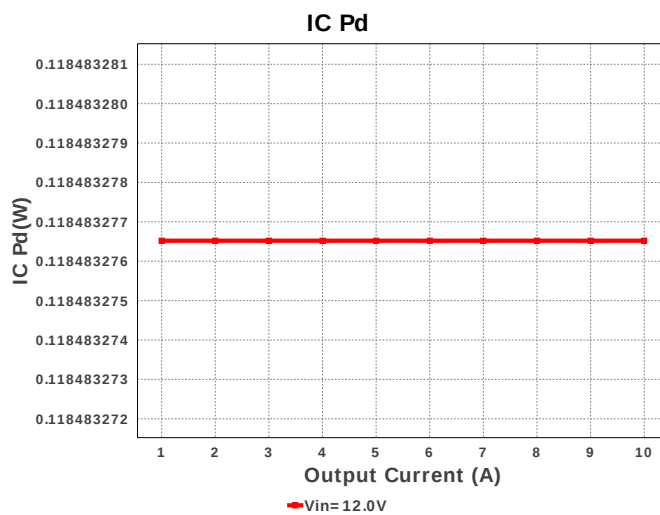
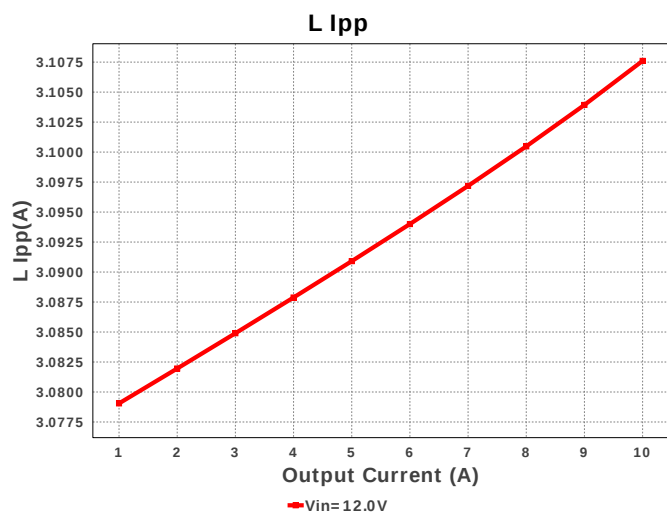
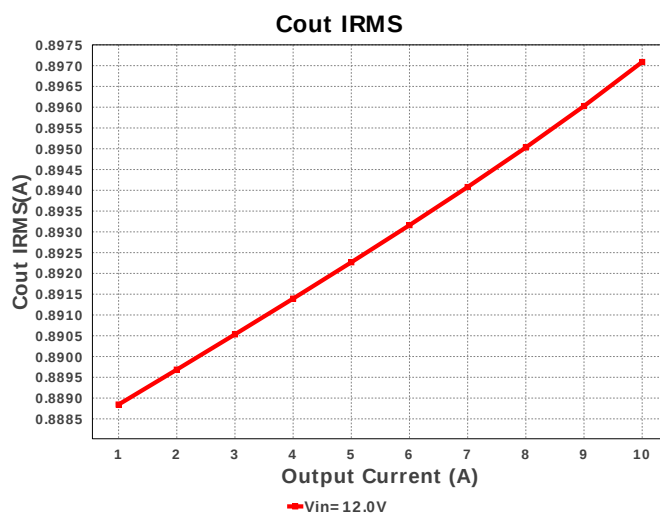
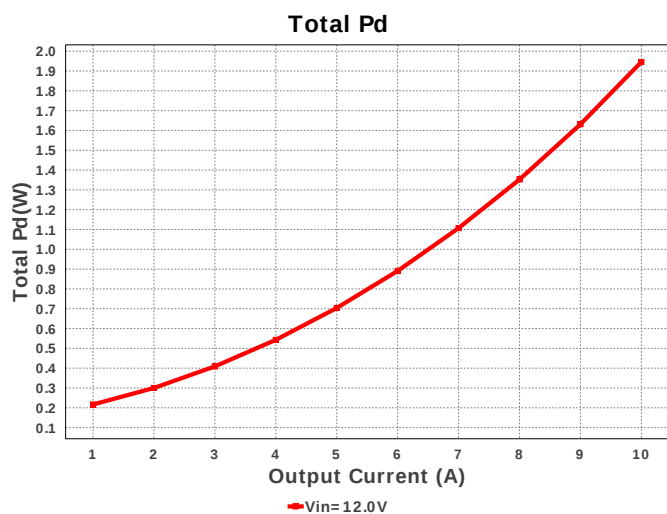
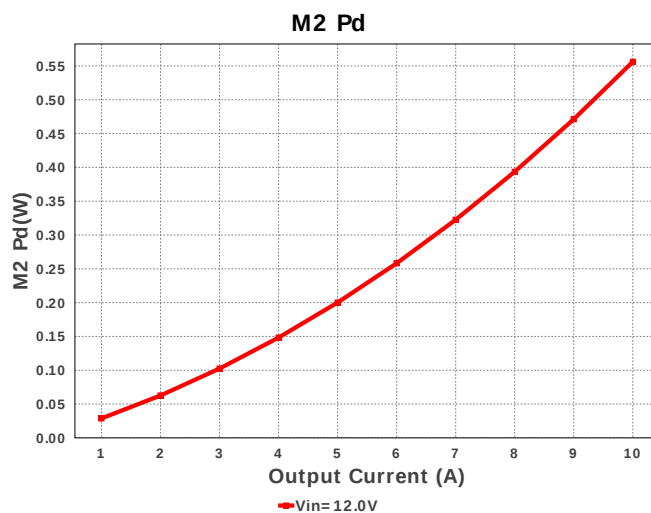
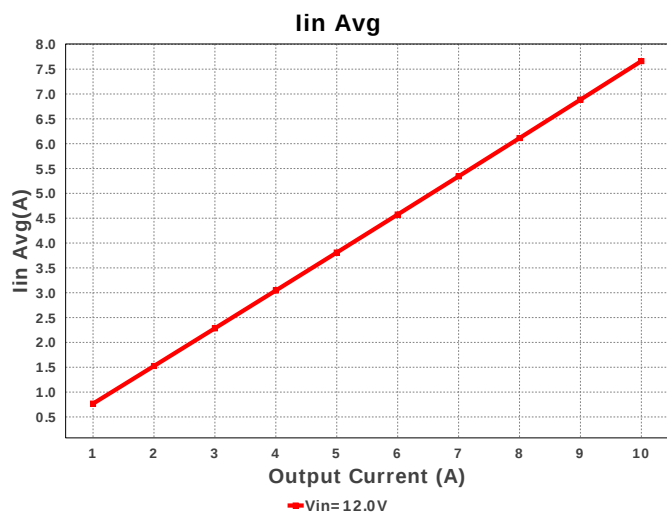
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cbst	MuRata	GRM21BR72A474KA73L Series= X7R	Cap= 470.0 nF VDC= 100.0 V IRMS= 0.0 A	1	\$0.13	 0805 7 mm²
2.	Cbyp	AVX	08053C104KAT2A Series= X7R	Cap= 100.0 nF ESR= 280.0 mOhm VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	 0805 7 mm²
3.	Cff	Kemet	C0805C561K5RACTU Series= X7R	Cap= 560.0 pF ESR= 577.0 mOhm VDC= 50.0 V IRMS= 234.0 mA	1	NA	 0805 7 mm²
4.	Cin	TDK	C3216X5R1E476M160AC Series= X5R	Cap= 47.0 uF ESR= 2.082 mOhm VDC= 25.0 V IRMS= 5.0279 A	1	\$0.35	 1206 11 mm²
5.	Cout	Panasonic	16SVPF82M Series= ?	Cap= 82.0 uF ESR= 27.0 mOhm VDC= 16.0 V IRMS= 3.0 A	1	\$0.35	 CAPSMT_62_E61 53 mm²
6.	Css	Yageo America	CC0805KRX7R9BB153 Series= X7R	Cap= 15.0 nF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	 0805 7 mm²
7.	Cvcc	Taiyo Yuden	EMK212B7225KG-T Series= X7R	Cap= 2.2 uF VDC= 16.0 V IRMS= 0.0 A	1	NA	 0805 7 mm²

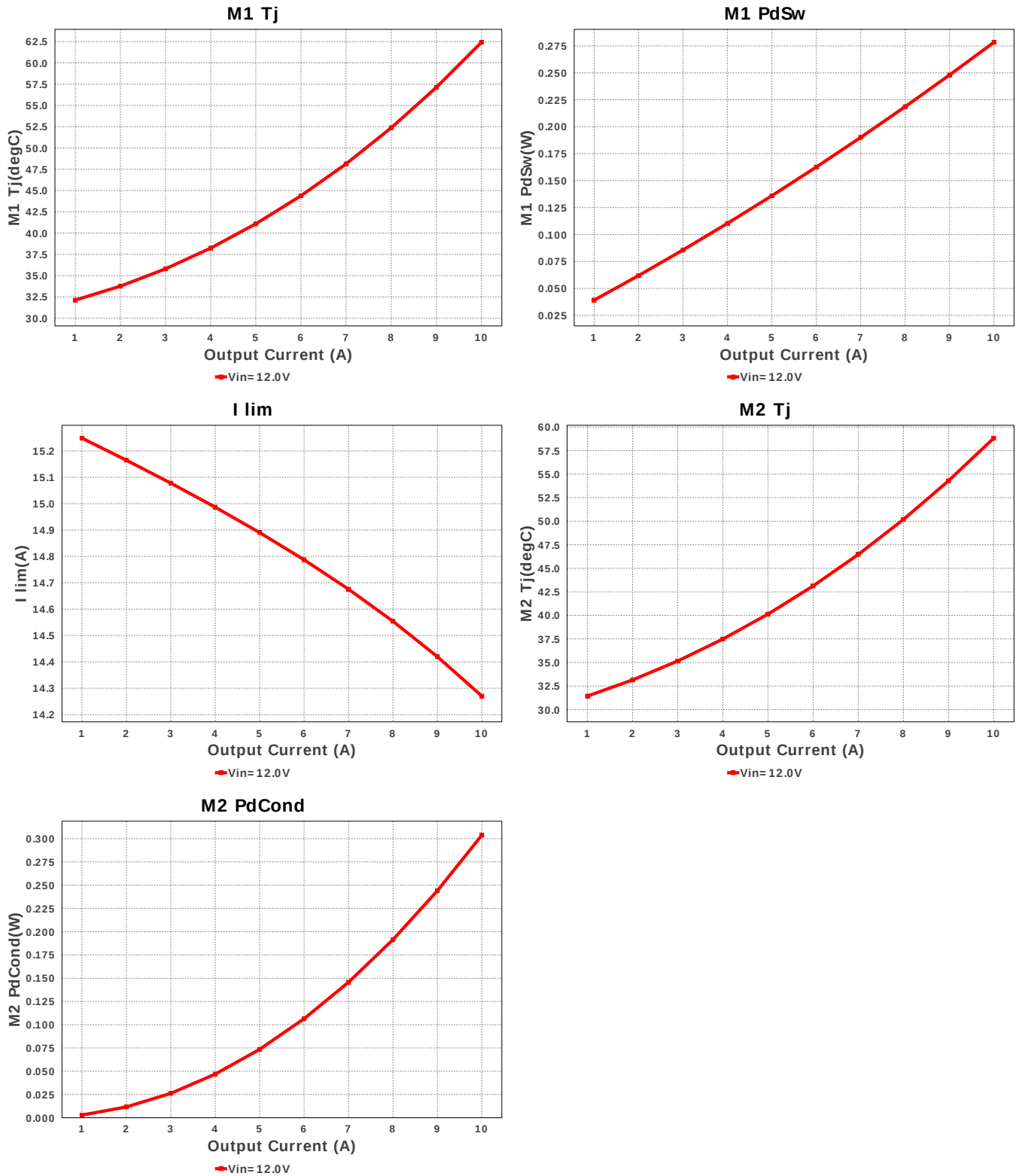
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
8.	L1	Bourns	SRP1270-2R2M	L= 2.2 μ H DCR= 4.2 mOhm	1	\$0.60	 SRP1270 246 mm ²
9.	M1	Texas Instruments	CSD16342Q5A	VdsMax= 25.0 V IdsMax= 100.0 Amps	1	\$0.47	 TRANS_NexFET_Q5A 55 mm ²
10.	M2	Texas Instruments	CSD17579Q5A	VdsMax= 30.0 V IdsMax= 14.0 Amps	1	\$0.25	 TRANS_NexFET_Q5A 55 mm ²
11.	Rfb1	Panasonic	ERJ-6ENF1002V Series= ERJ-6E	Res= 10.0 kOhm Power= 125.0 mW Tolerance= 1.0%	1	NA	 0805 7 mm ²
12.	Rfb2	Panasonic	ERJ-6ENF1403V Series= ERJ-6E	Res= 140.0 kOhm Power= 125.0 mW Tolerance= 1.0%	1	NA	 0805 7 mm ²
13.	Rilim	Panasonic	ERJ-6ENF2001V Series= ERJ-6E	Res= 2.0 kOhm Power= 125.0 mW Tolerance= 1.0%	1	NA	 0805 7 mm ²
14.	Ron	Panasonic	ERJ-6ENF2433V Series= ERJ-6E	Res= 243.0 kOhm Power= 125.0 mW Tolerance= 1.0%	1	NA	 0805 7 mm ²
15.	U1	Texas Instruments	LM3150MH/NOPB	Switcher	1	\$1.62	 MXA14A 59 mm ²











Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	4.279 A	Current	Input capacitor RMS ripple current
2.	Cout IRMS	897.103 mA	Current	Output capacitor RMS ripple current
3.	I lim	14.239 A	Current	Current limit threshold
4.	Iin Avg	7.663 A	Current	Average input current
5.	L Ipp	3.108 A	Current	Peak-to-peak inductor ripple current
6.	SW Ipk	11.554 A	Current	Peak switch current
7.	BOM Count	15	General	Total Design BOM count
8.	FootPrint	541.0 mm ²	General	Total Foot Print Area of BOM components
9.	Frequency	332.897 kHz	General	Switching frequency
10.	IC Tolerance	12.0 mV	General	IC Feedback Tolerance
11.	Pout	90.0 W	General	Total output power

#	Name	Value	Category	Description
12.	Total BOM	\$0.0	General	Total BOM Cost
13.	Vout Actual	9.0 V	Op_Point	Vout Actual calculated based on selected voltage divider resistors
14.	Duty Cycle	75.865 %	Op_point	Duty cycle
15.	Efficiency	97.87 %	Op_point	Steady state efficiency
16.	IC Tj	37.701 degC	Op_point	IC junction temperature
17.	IOUT_OP	10.0 A	Op_point	Iout operating point
18.	M1 Tj	62.428 degC	Op_point	M1 MOSFET junction temperature
19.	M2 Tj	59.418 degC	Op_point	M2 MOSFET junction temperature
20.	VIN_OP	12.0 V	Op_point	Vin operating point
21.	Vout p-p	14.23 mV	Op_point	Peak-to-peak output ripple voltage
22.	Cin Pd	38.121 mW	Power	Input capacitor power dissipation
23.	Cout Pd	21.729 mW	Power	Output capacitor power dissipation
24.	IC Pd	118.483 mW	Power	IC power dissipation
25.	L Pd	525.0 mW	Power	Inductor power dissipation
26.	M1 Pd	687.57 mW	Power	M1 MOSFET total power dissipation
27.	M1 PdCond	409.194 mW	Power	M1 MOSFET conduction losses
28.	M1 PdSw	278.375 mW	Power	M1 MOSFET switching losses
29.	M2 Pd	568.1 mW	Power	M2 MOSFET total power dissipation
30.	M2 PdCond	304.409 mW	Power	M2 MOSFET conduction losses
31.	M2 PdSw	263.691 mW	Power	M2 MOSFET switching losses
32.	Total Pd	1.959 W	Power	Total Power Dissipation
33.	Vout Tolerance	3.923 %		Vout Tolerance based on IC Tolerance (no load) and voltage divider resistors if applicable

Design Inputs

#	Name	Value	Description
1.	Iout	10.0	Maximum Output Current
2.	VinMax	12.0	Maximum input voltage
3.	VinMin	12.0	Minimum input voltage
4.	Vout	9.0	Output Voltage
5.	base_pn	LM3150	Texas Instruments Base Part Number
6.	source	DC	Input Source Type
7.	ta	30.0	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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