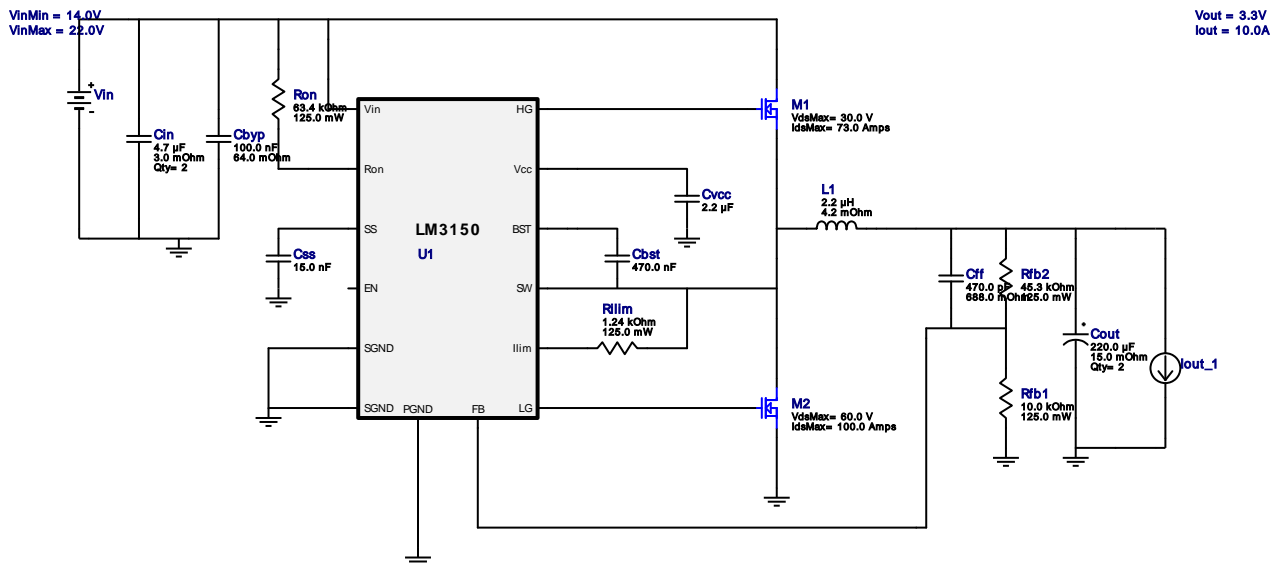







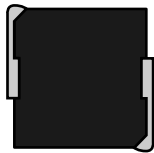







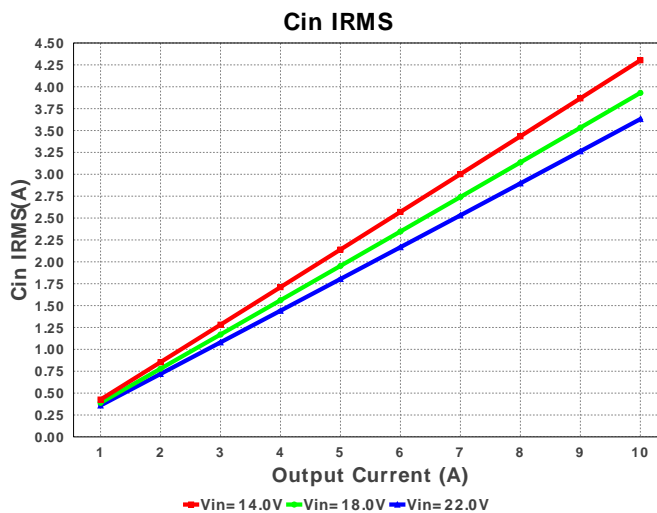
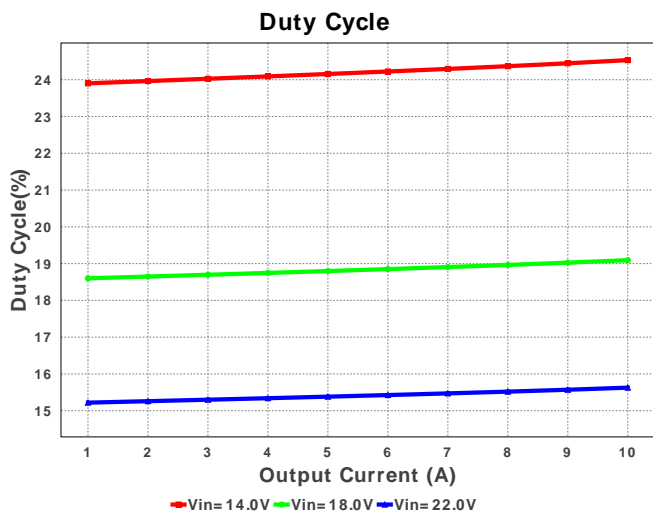


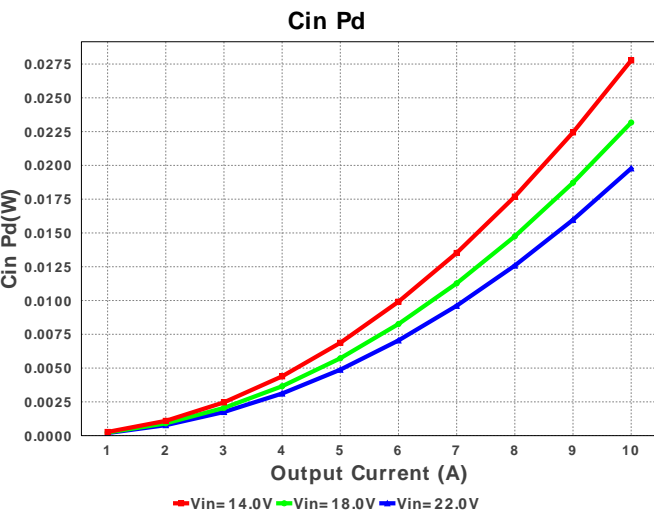
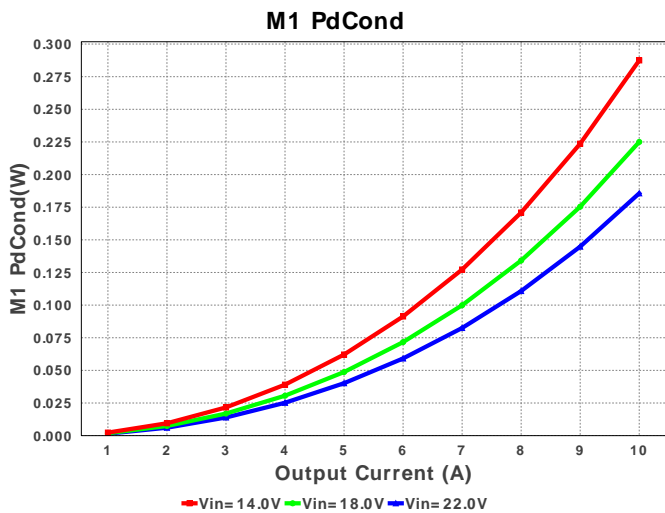
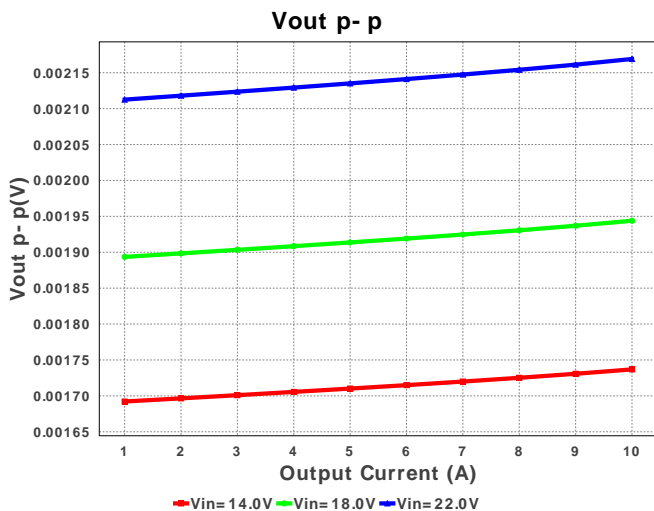
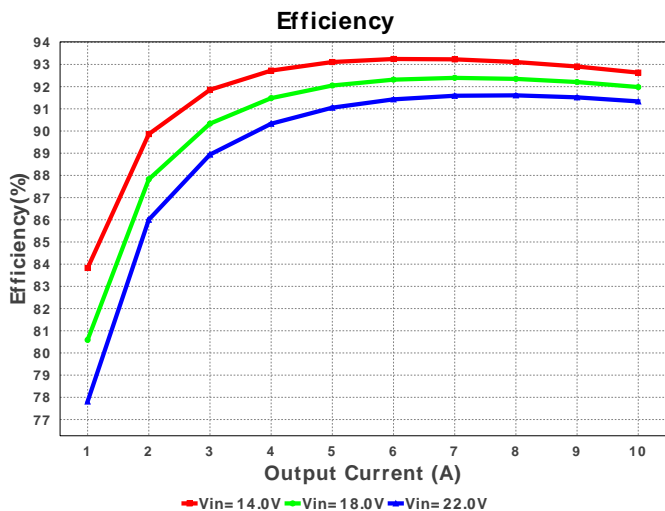
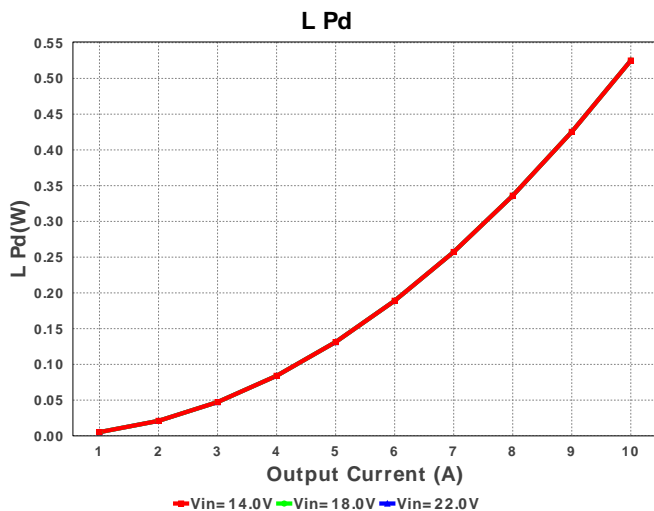
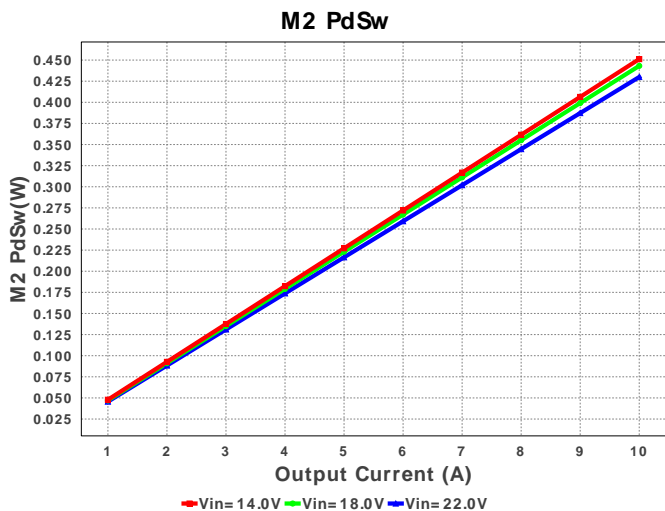
**WEBENCH<sup>®</sup> Design Report**

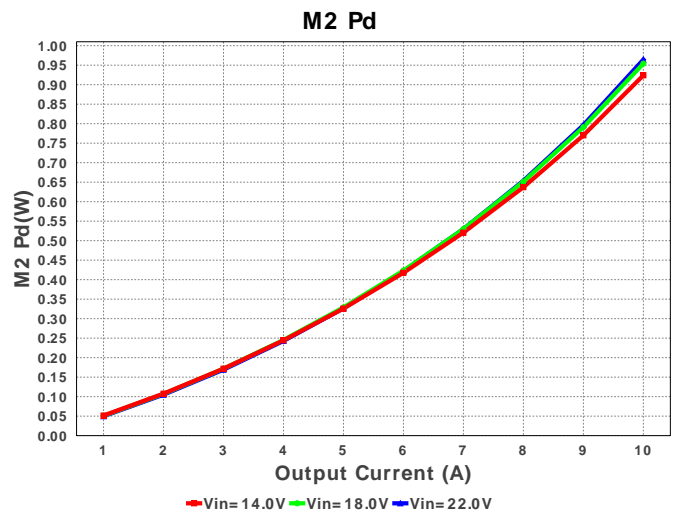
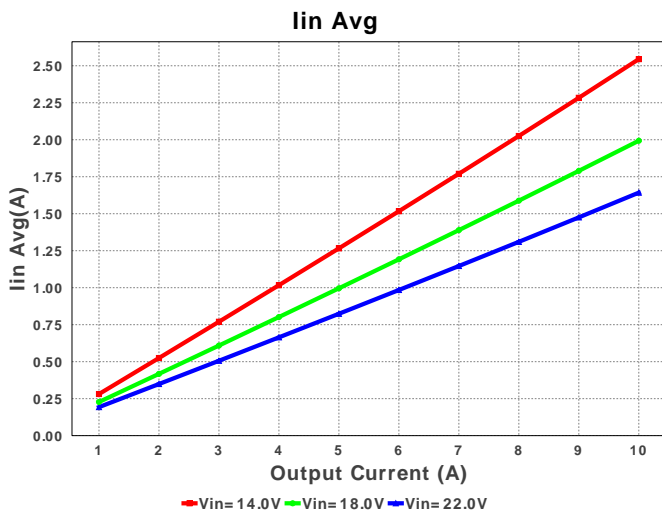
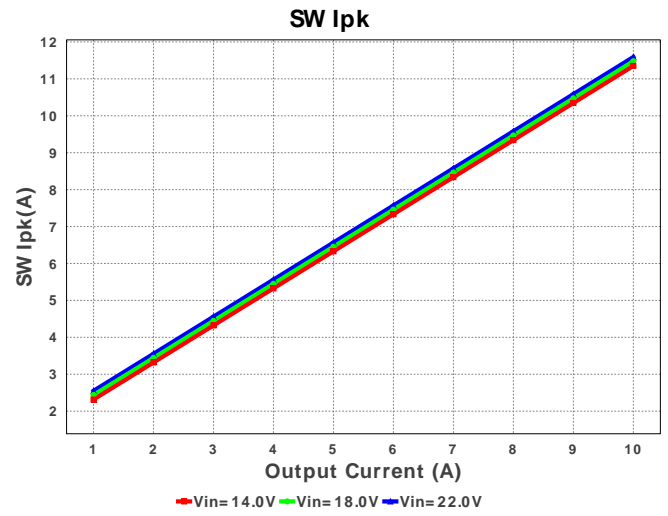
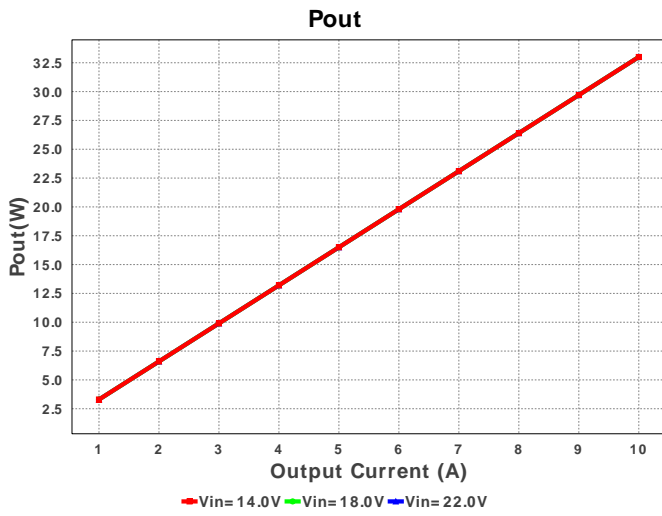
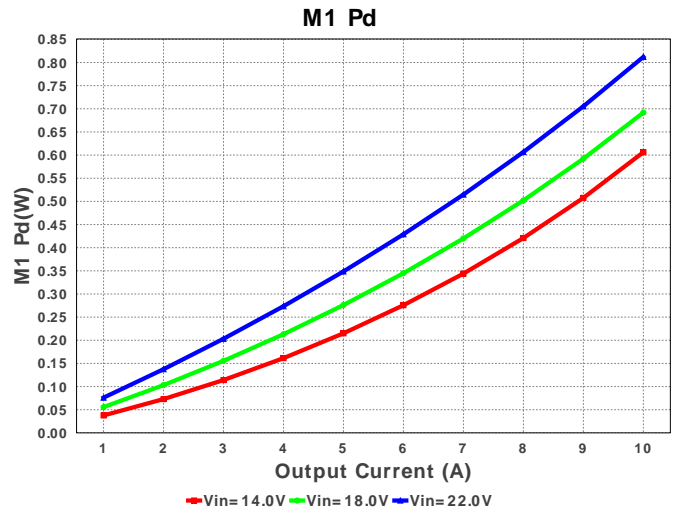
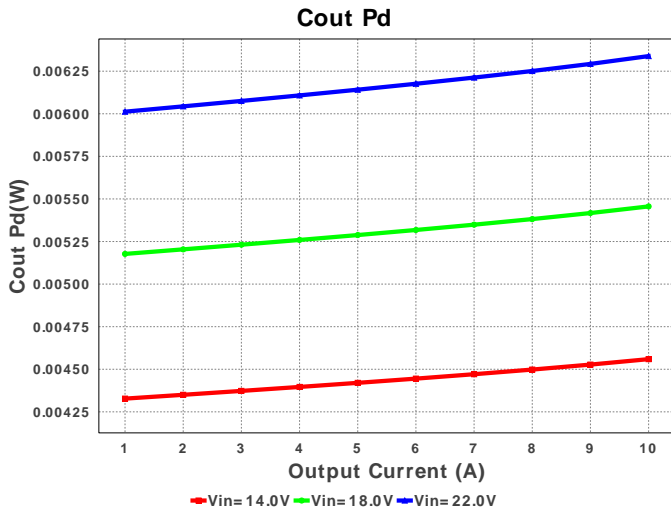
 Design : 4391609/1 LM3150MH/NOPB  
 LM3150MH/NOPB 14.0V-22.0V to 3.30V @ 10.0A

**Electrical BOM**

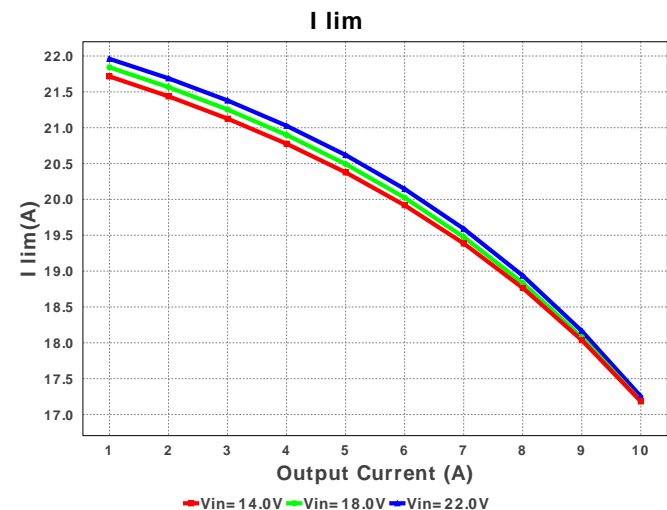
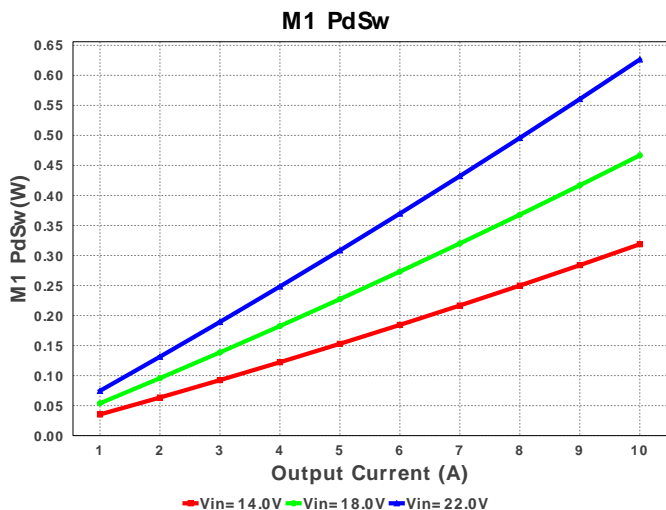
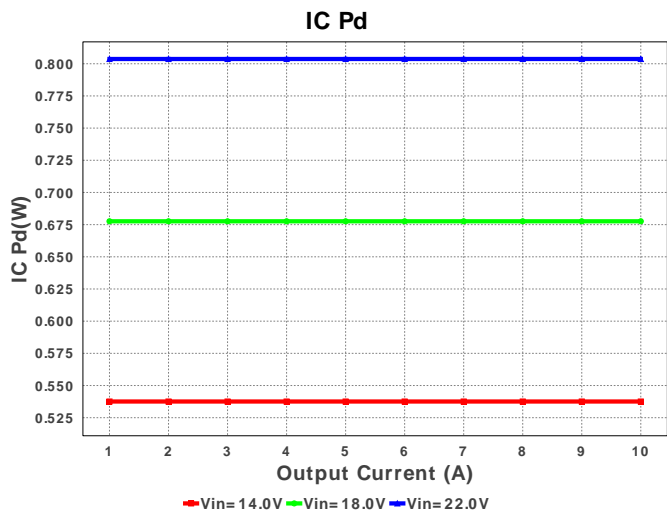
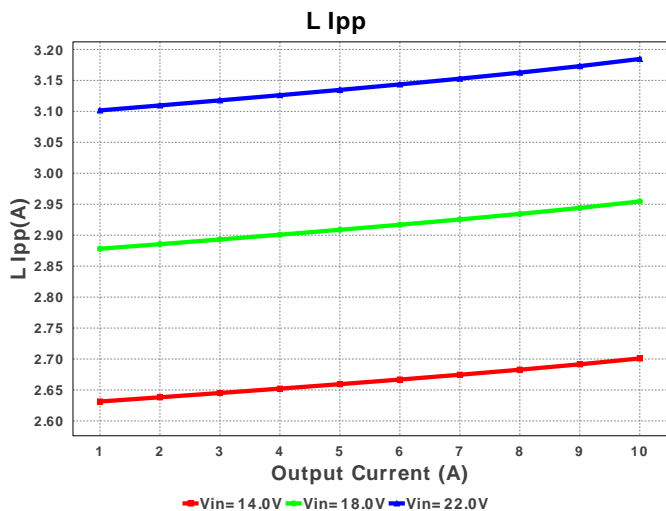
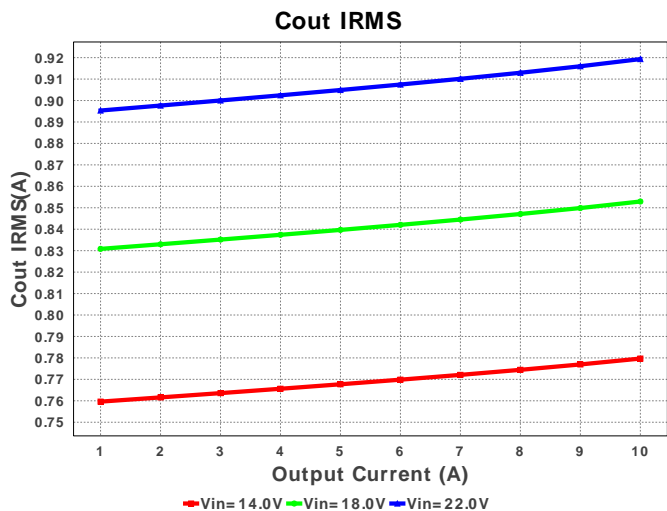
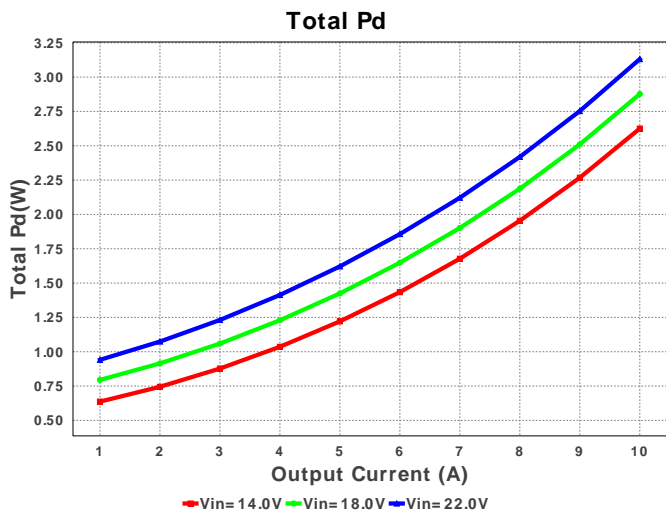
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cbst	Taiyo Yuden	EMK212B7474KD-T Series= X7R	Cap= 470.0 nF VDC= 16.0 V IRMS= 0.0 A	1	\$0.02	 0805 7 mm <sup>2</sup>
2.	Cbyp	Kemet	C0805C104K5RACTU Series= X7R	Cap= 100.0 nF ESR= 64.0 mOhm VDC= 50.0 V IRMS= 1.64 A	1	\$0.01	 0805 7 mm <sup>2</sup>
3.	Cff	Kemet	C0805C471K5RACTU Series= X7R	Cap= 470.0 pF ESR= 688.0 mOhm VDC= 50.0 V IRMS= 213.0 mA	1	\$0.01	 0805 7 mm <sup>2</sup>
4.	Cin	MuRata	GRM31CR71H475KA12L Series= X7R	Cap= 4.7 uF ESR= 3.0 mOhm VDC= 50.0 V IRMS= 4.98 A	2	\$0.07	 1206 11 mm <sup>2</sup>
5.	Cout	Panasonic	6SVPE220MW Series= 259	Cap= 220.0 uF ESR= 15.0 mOhm VDC= 6.3 V IRMS= 3.15 A	2	\$0.14	 CAPSMT_62_E61 53 mm <sup>2</sup>
6.	Css	Yageo America	CC0805KRX7R9BB153 Series= X7R	Cap= 15.0 nF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	 0805 7 mm <sup>2</sup>
7.	Cvcc	Taiyo Yuden	EMK212B7225KG-T Series= X7R	Cap= 2.2 uF VDC= 16.0 V IRMS= 0.0 A	1	\$0.03	 0805 7 mm <sup>2</sup>

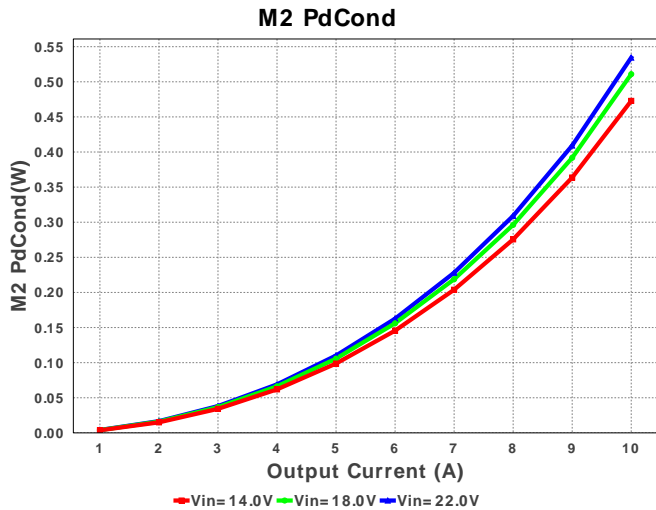
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
8.	L1	Bourns	SRP1270-2R2M	L= 2.2 $\mu$ H DCR= 4.2 mOhm	1	\$0.60	 SRP1270 246 mm <sup>2</sup>
9.	M1	Texas Instruments	CSD17307Q5A	VdsMax= 30.0 V IdsMax= 73.0 Amps	1	\$0.34	 TRANS_NexFET_Q5A 55 mm <sup>2</sup>
10.	M2	Infineon Technologies	BSC028N06LS3 G	VdsMax= 60.0 V IdsMax= 100.0 Amps	1	\$0.89	 PG-TDSON-8 55 mm <sup>2</sup>
11.	Rfb1	Panasonic	ERJ-6ENF1002V Series= 225	Res= 10.0 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7 mm <sup>2</sup>
12.	Rfb2	Panasonic	ERJ-6ENF4532V Series= 225	Res= 45.3 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7 mm <sup>2</sup>
13.	Rilim	Panasonic	ERJ-6ENF1241V Series= 225	Res= 1.24 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7 mm <sup>2</sup>
14.	Ron	Panasonic	ERJ-6ENF6342V Series= 225	Res= 63.4 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7 mm <sup>2</sup>
15.	U1	Texas Instruments	LM3150MH/NOPB	Switcher	1	\$1.86	 MXA14A 59 mm <sup>2</sup>











## Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	3.631 A	Current	Input capacitor RMS ripple current
2.	Cout IRMS	919.32 mA	Current	Output capacitor RMS ripple current
3.	I lim	17.25 A	Current	Current limit threshold
4.	Iin Avg	1.642 A	Current	Average input current
5.	L Ipp	3.185 A	Current	Peak-to-peak inductor ripple current
6.	SW Ipk	11.592 A	Current	Peak switch current
7.	BOM Count	17	General	Total Design BOM count
8.	FootPrint	605.0 mm <sup>2</sup>	General	Total Foot Print Area of BOM components
9.	Frequency	417.088 kHz	General	Switching frequency
10.	IC Tolerance	12.0 mV	General	IC Feedback Tolerance
11.	Pout	33.0 W	General	Total output power
12.	Total BOM	\$4.23	General	Total BOM Cost
13.	Duty Cycle	15.627 %	Op_point	Duty cycle
14.	Efficiency	91.331 %	Op_point	Steady state efficiency
15.	IOUT_OP	10.0 A	Op_point	Iout operating point
16.	VIN_OP	22.0 V	Op_point	Vin operating point
17.	Vout p-p	2.169 mV	Op_point	Peak-to-peak output ripple voltage
18.	Cin Pd	19.777 mW	Power	Input capacitor power dissipation
19.	Cout Pd	6.339 mW	Power	Output capacitor power dissipation
20.	IC Pd	803.7 mW	Power	IC power dissipation
21.	L Pd	525.0 mW	Power	Inductor power dissipation
22.	M1 Pd	812.144 mW	Power	M1 MOSFET total power dissipation
23.	M1 PdCond	185.692 mW	Power	M1 MOSFET conduction losses
24.	M1 PdSw	626.452 mW	Power	M1 MOSFET switching losses
25.	M2 Pd	965.493 mW	Power	M2 MOSFET total power dissipation
26.	M2 PdCond	534.567 mW	Power	M2 MOSFET conduction losses
27.	M2 PdSw	430.925 mW	Power	M2 MOSFET switching losses
28.	Total Pd	3.132 W	Power	Total Power Dissipation

## Design Inputs

#	Name	Value	Description
1.	Iout	10.0	Maximum Output Current
2.	Iout1	10.0	Output Current #1
3.	VinMax	22.0	Maximum input voltage
4.	VinMin	14.0	Minimum input voltage
5.	Vout	3.3	Output Voltage
6.	Vout1	3.3	Output Voltage #1
7.	base_pn	LM3150	Texas Instruments Base Part Number
8.	source	DC	Input Source Type
9.	ta	30.0	Ambient temperature

## Design Assistance

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

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**You should completely validate and test your design implementation to confirm the system functionality for your application prior to production.**

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