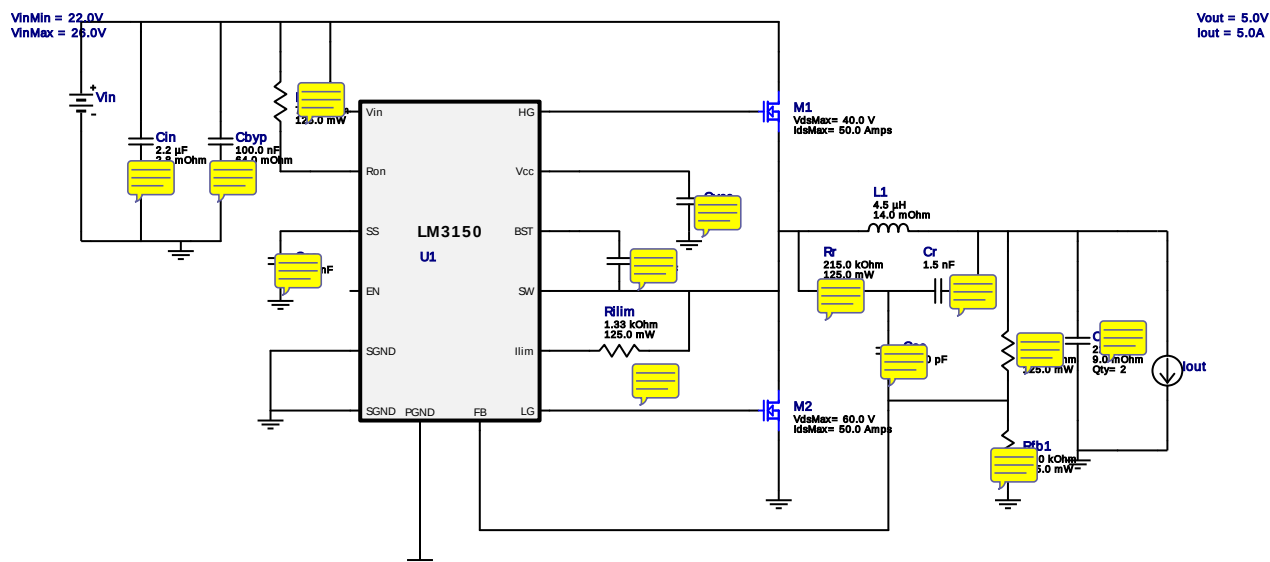


WEBENCH[®] Design Report

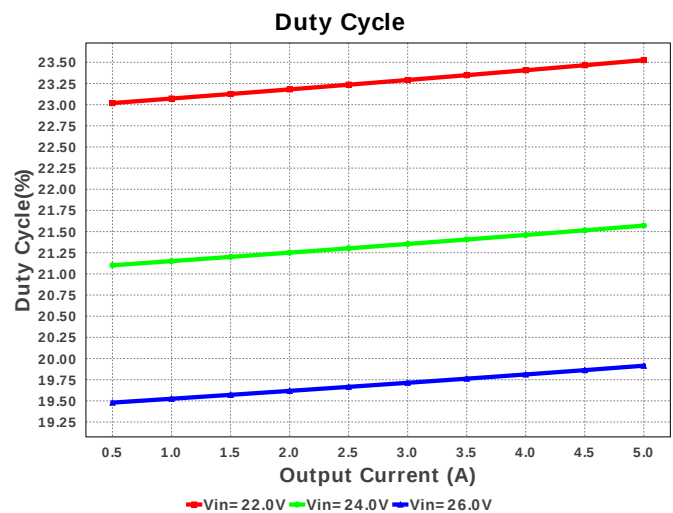
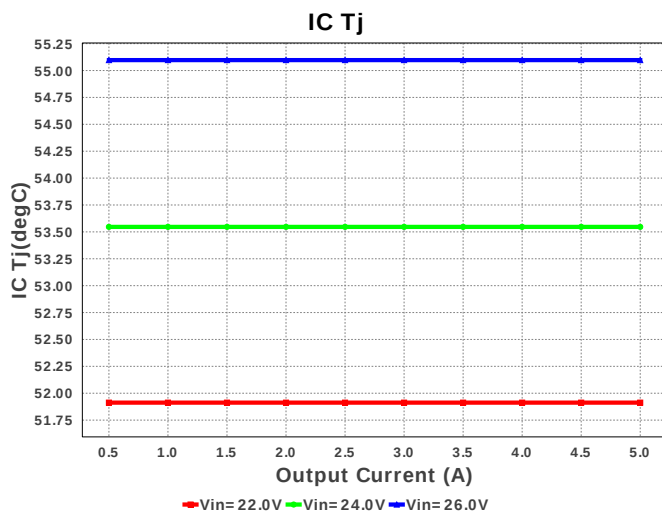
Design : 3822463/53 LM3150MH/NOPB
LM3150MH/NOPB 22.0V-26.0V to 5.00V @ 5.0A

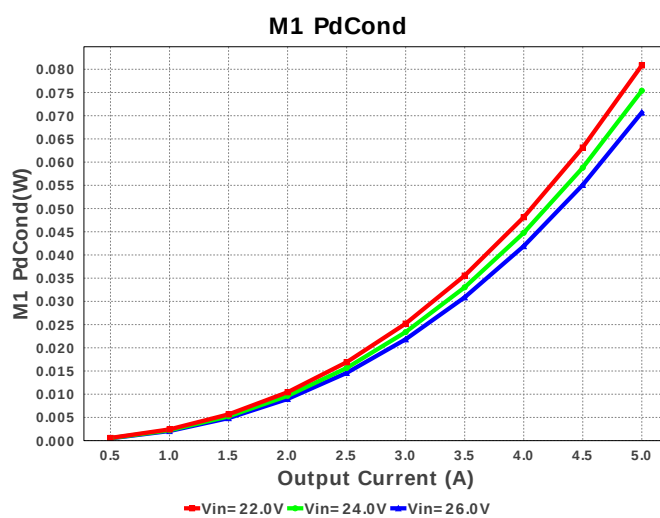
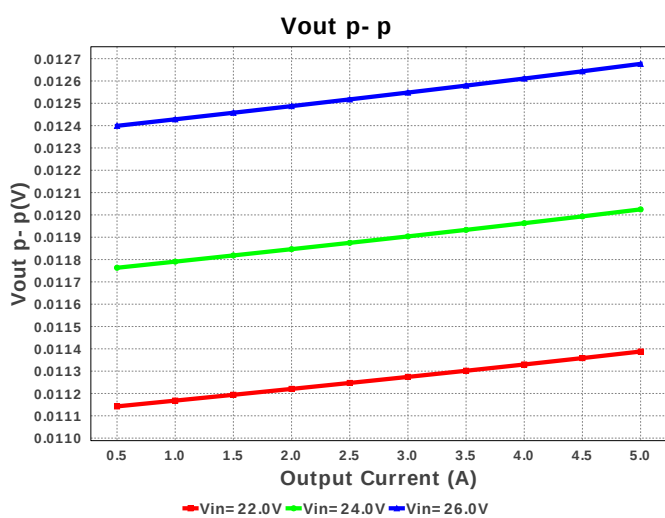
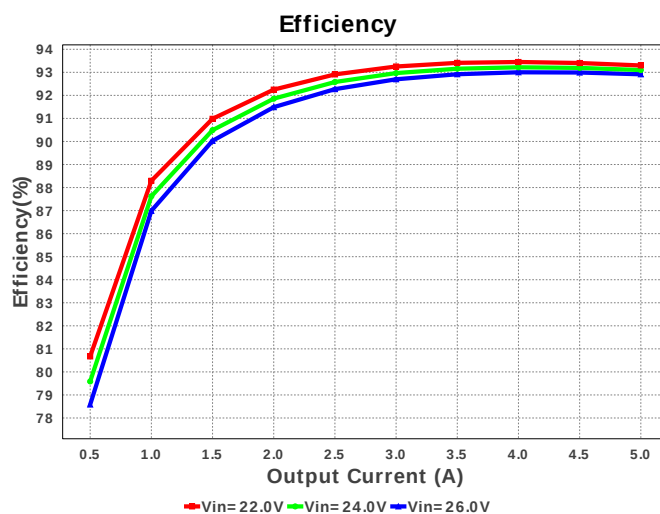
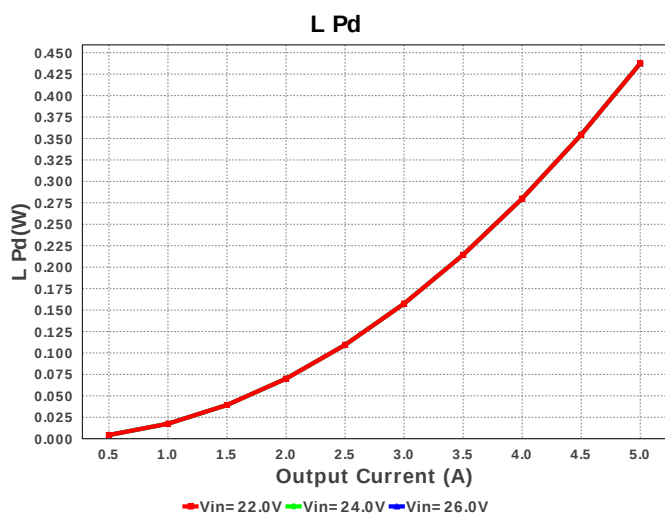
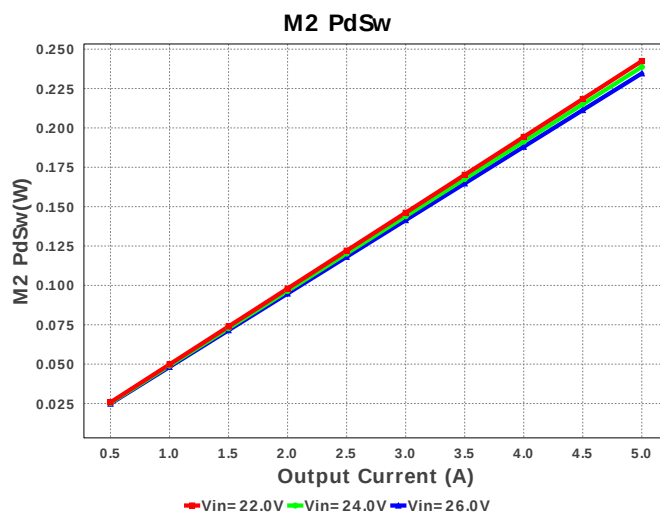
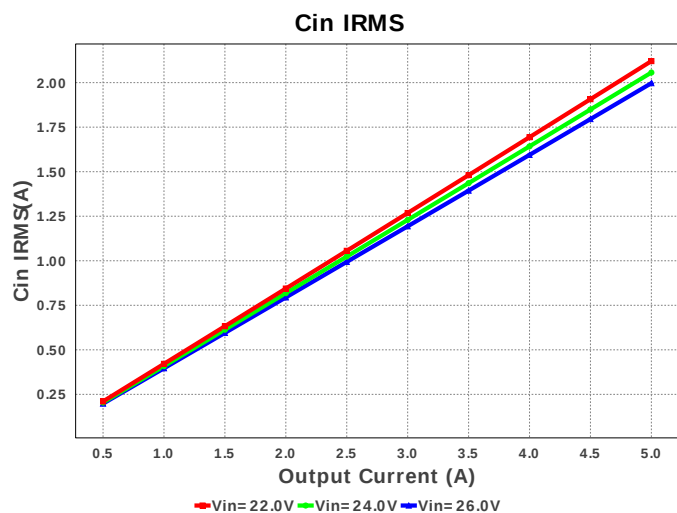


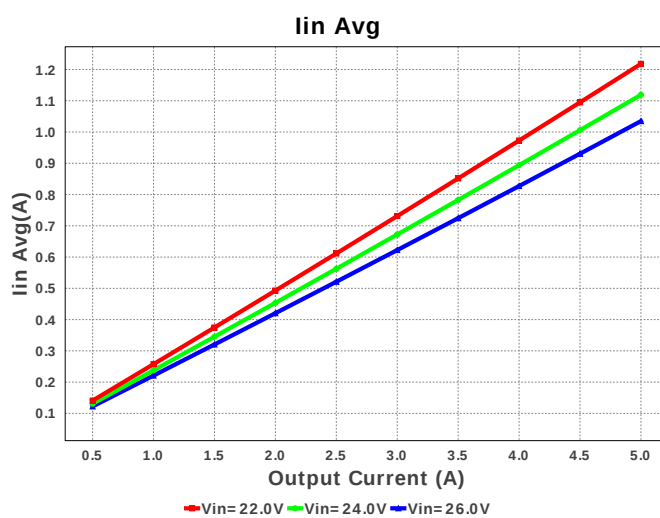
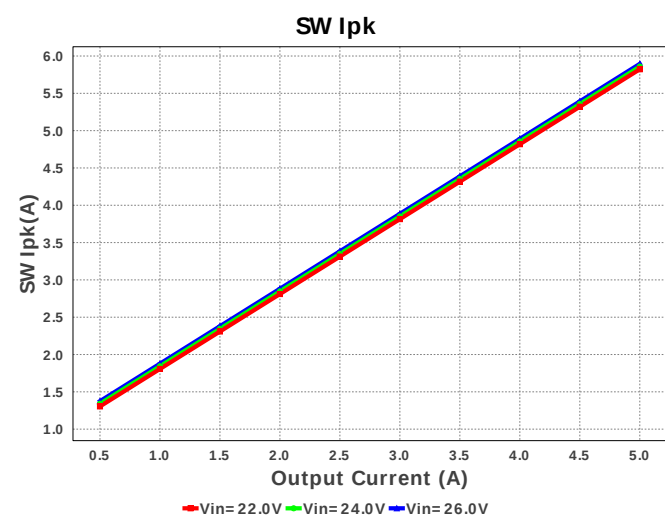
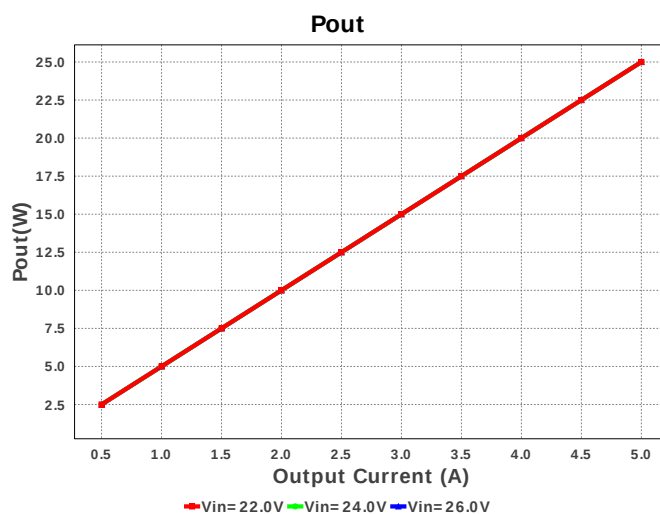
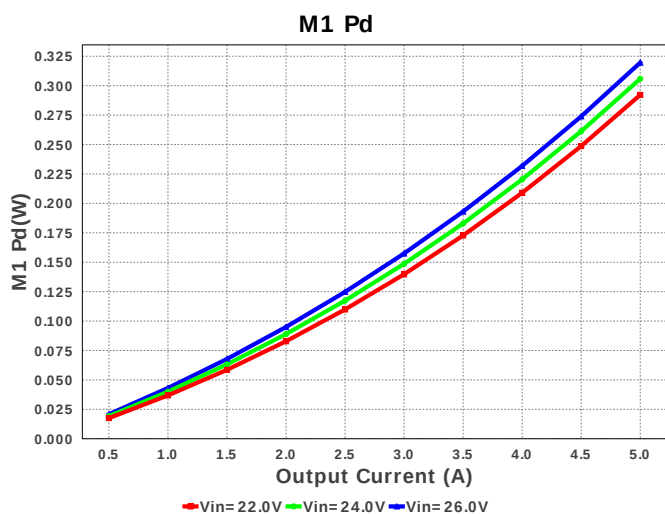
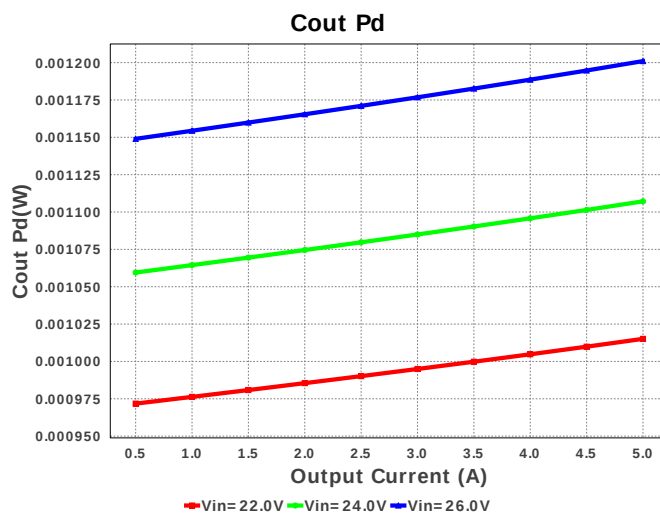
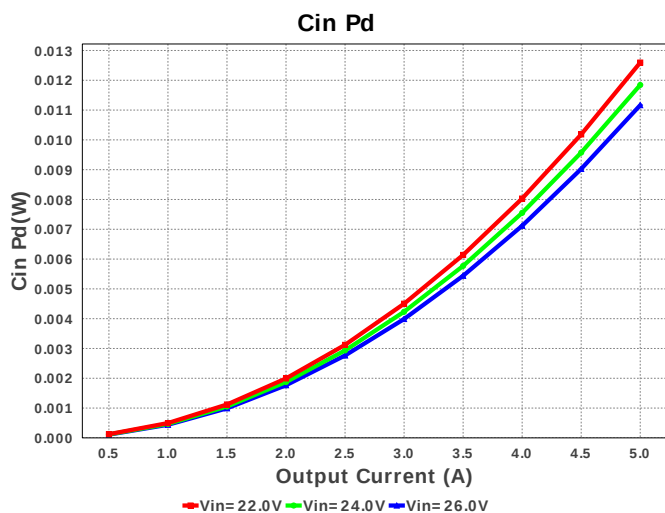
Electrical BOM

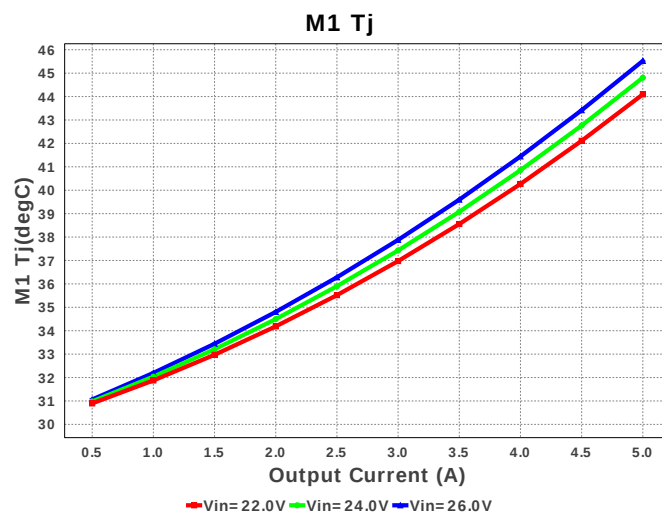
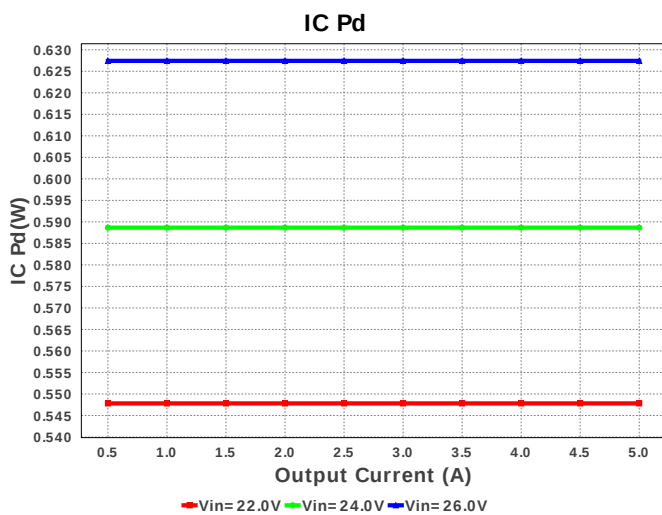
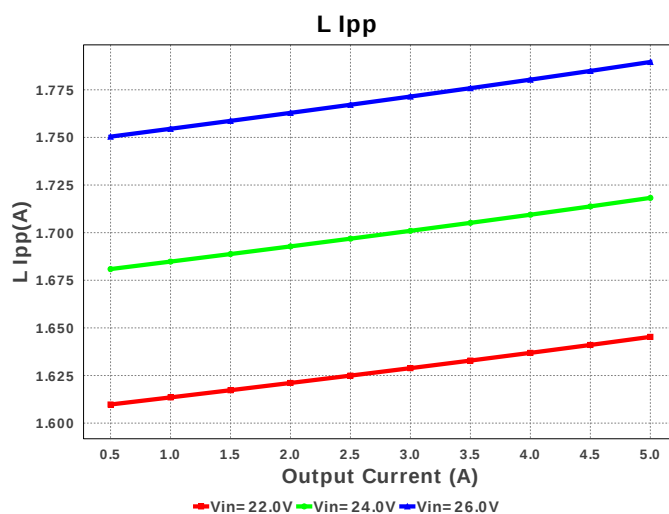
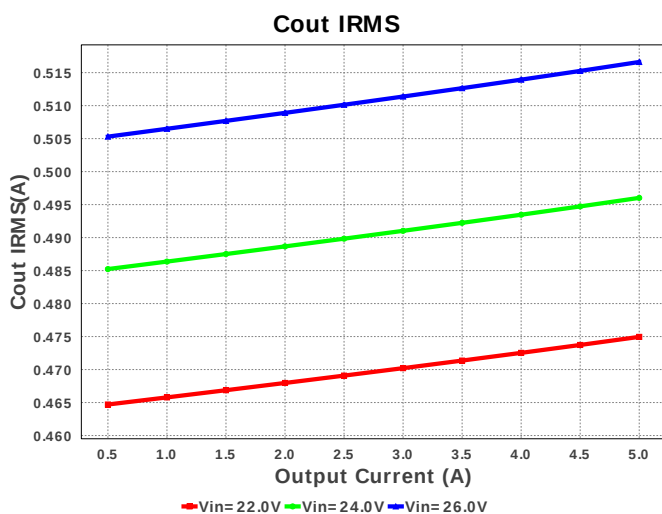
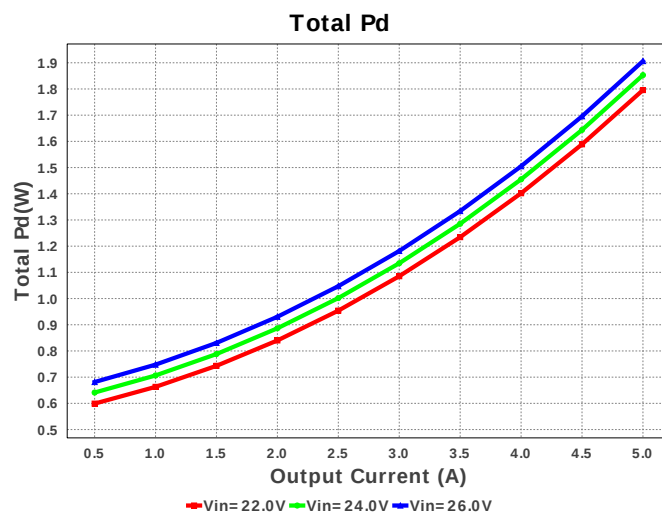
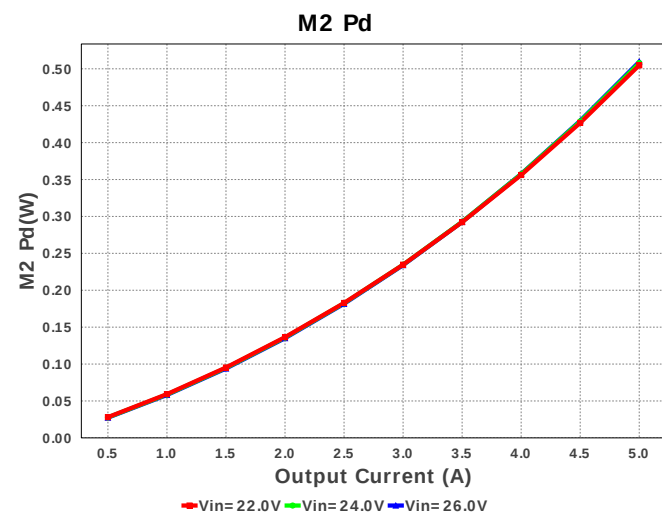
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cac	Yageo America	CC0805JRNPO9BN151 Series= C0G	Cap= 150.0 pF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	0805 7 mm ²
2.	Cbst	Taiyo Yuden	EMK212B7474KD-T Series= X7R	Cap= 470.0 nF VDC= 16.0 V IRMS= 0.0 A	1	\$0.02	0805 7 mm ²
3.	Cbyp	Kemet	C0805C104K5RACTU Series= X7R	Cap= 100.0 nF ESR= 64.0 mOhm VDC= 50.0 V IRMS= 1.64 A	1	\$0.01	0805 7 mm ²
4.	Cin	TDK	C3225X7R2A225K230AB Series= X7R	Cap= 2.2 uF ESR= 2.8 mOhm VDC= 100.0 V IRMS= 9.8247 A	1	\$0.19	1210 15 mm ²
5.	Cout	MuRata	GRM21BR60J226ME39L Series= X5R	Cap= 22.0 uF ESR= 9.0 mOhm VDC= 6.3 V IRMS= 3.5 A	2	\$0.05	0805 7 mm ²
6.	Cr	Yageo America	CC0805KRX7R9BB152 Series= X7R	Cap= 1.5 nF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	0805 7 mm ²
7.	Css	Yageo America	CC0805KRX7R9BB153 Series= X7R	Cap= 15.0 nF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	0805 7 mm ²
8.	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 ²

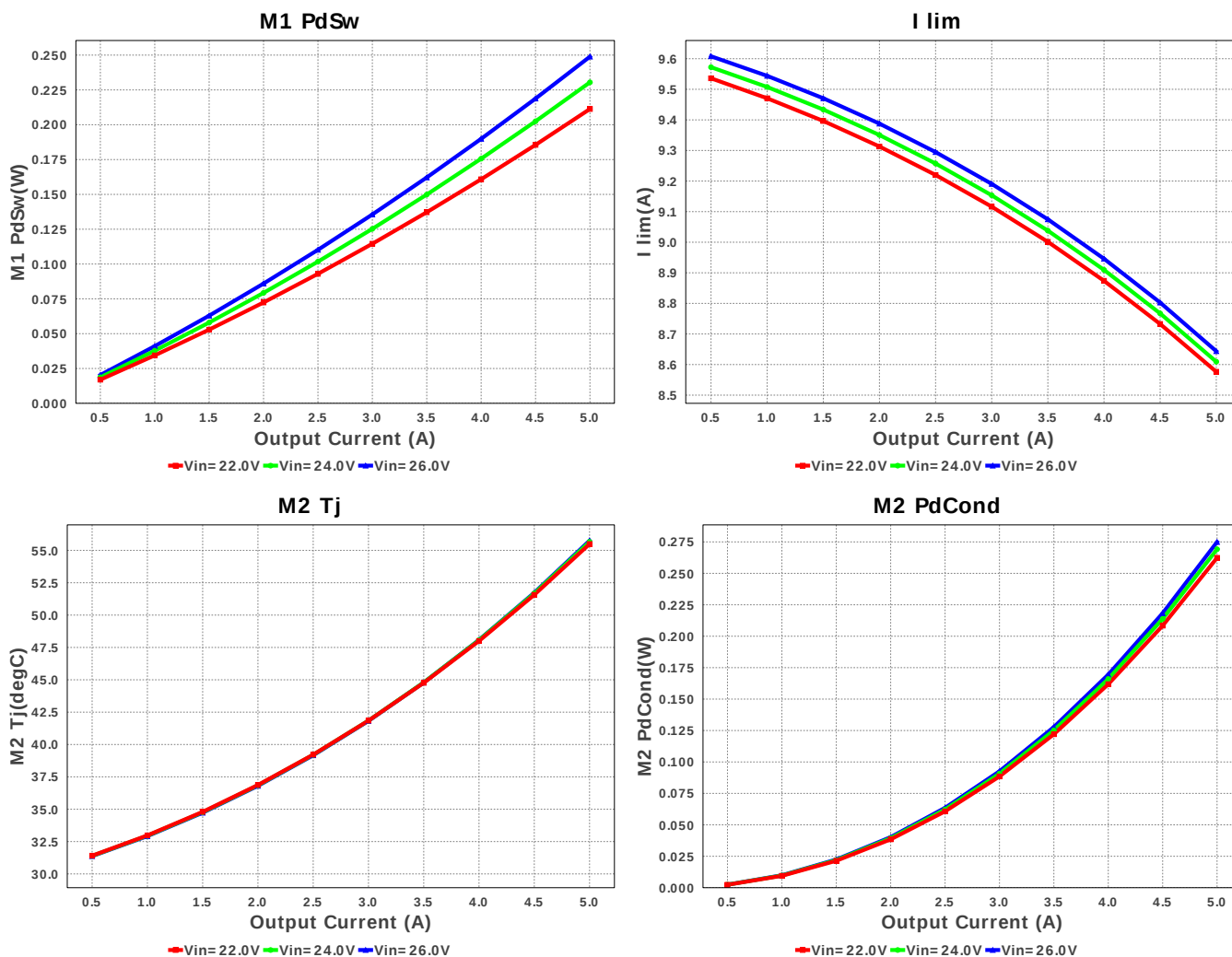
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
9.	L1	Bourns	SRR1208-4R5ML	L= 4.5 μ H DCR= 14.0 mOhm	1	\$0.37	 SRR1208 216 mm ²
10.	M1	Texas Instruments	CSD18504Q5A	VdsMax= 40.0 V IdsMax= 50.0 Amps	1	\$0.56	 TRANS_NexFET_Q5A 55 mm ²
11.	M2	Infineon Technologies	BSC067N06LS3 G	VdsMax= 60.0 V IdsMax= 50.0 Amps	1	\$0.43	 PG-TDSON-8 55 mm ²
12.	Rfb1	Panasonic	ERJ-6ENF1002V Series= 225	Res= 10.0 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7 mm ²
13.	Rfb2	Panasonic	ERJ-6ENF7322V Series= 225	Res= 73.2 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7 mm ²
14.	Rilim	Panasonic	ERJ-6ENF1331V Series= 225	Res= 1.33 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7 mm ²
15.	Ron	Panasonic	ERJ-6ENF7502V Series= 225	Res= 75.0 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7 mm ²
16.	Rr	Panasonic	ERJ-6ENF2153V Series= 225	Res= 215.0 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7 mm ²
17.	U1	Texas Instruments	LM3150MH/NOPB	Switcher	1	\$1.86	 MXA14A 59 mm ²











Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	1.997 A	Current	Input capacitor RMS ripple current
2.	Cout IRMS	516.608 mA	Current	Output capacitor RMS ripple current
3.	I lim	8.649 A	Current	Current limit threshold
4.	Iin Avg	1.035 A	Current	Average input current
5.	L Ipp	1.79 A	Current	Peak-to-peak inductor ripple current
6.	SW Ipk	5.895 A	Current	Peak switch current
7.	BOM Count	18	General	Total Design BOM count
8.	FootPrint	488.0 mm ²	General	Total Foot Print Area of BOM components
9.	Frequency	519.316 kHz	General	Switching frequency
10.	IC Tolerance	12.0 mV	General	IC Feedback Tolerance
11.	Pout	25.0 W	General	Total output power
12.	Total BOM	\$3.65	General	Total BOM Cost
13.	Duty Cycle	19.915 %	Op_point	Duty cycle
14.	Efficiency	92.927 %	Op_point	Steady state efficiency
15.	IC Tj	70.782 degC	Op_point	IC junction temperature
16.	IOUT_OP	5.0 A	Op_point	Iout operating point
17.	M1 Tj	45.525 degC	Op_point	M1 MOSFET junction temperature
18.	M2 Tj	55.591 degC	Op_point	M2 MOSFET junction temperature
19.	VIN_OP	26.0 V	Op_point	Vin operating point
20.	Vout p-p	12.677 mV	Op_point	Peak-to-peak output ripple voltage
21.	Cin Pd	11.164 mW	Power	Input capacitor power dissipation
22.	Cout Pd	1.201 mW	Power	Output capacitor power dissipation
23.	IC Pd	627.422 mW	Power	IC power dissipation
24.	L Pd	437.5 mW	Power	Inductor power dissipation
25.	M1 Pd	319.314 mW	Power	M1 MOSFET total power dissipation
26.	M1 PdCond	70.428 mW	Power	M1 MOSFET conduction losses
27.	M1 PdSw	248.886 mW	Power	M1 MOSFET switching losses
28.	M2 Pd	506.339 mW	Power	M2 MOSFET total power dissipation
29.	M2 PdCond	274.713 mW	Power	M2 MOSFET conduction losses
30.	M2 PdSw	231.626 mW	Power	M2 MOSFET switching losses
31.	Total Pd	1.903 W	Power	Total Power Dissipation

Design Inputs

#	Name	Value	Description
1.	Iout	5.0	Maximum Output Current
2.	Iout1	5.0	Output Current #1
3.	VinMax	26.0	Maximum input voltage
4.	VinMin	22.0	Minimum input voltage
5.	Vout	5.0	Output Voltage
6.	Vout1	5.0	Output Voltage #1
7.	base_pn	LM3150	Base Product Number
8.	source	DC	Input Source Type
9.	Ta	30.0	Ambient temperature

Design Assistance

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

Texas Instruments' WEBENCH simulation tools attempt to recreate the performance of a substantially equivalent physical implementation of the design. Simulations are created using Texas Instruments' published specifications as well as the published specifications of other device manufacturers. While Texas Instruments does update this information periodically, this information may not be current at the time the simulation is built. Texas Instruments does not warrant the accuracy or completeness of the specifications or any information contained therein. Texas Instruments does not warrant that any designs or recommended parts will meet the specifications you entered, will be suitable for your application or fit for any particular purpose, or will operate as shown in the simulation in a physical implementation. Texas Instruments does not warrant that the designs are production worthy.

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

Use of Texas Instruments' WEBENCH simulation tools is subject to [Texas Instruments' Site Terms and Conditions of Use](#). Prototype boards based on WEBENCH created designs are provided AS IS without warranty of any kind for evaluation and testing purposes and are subject to the terms of the [Evaluation License Agreement](#).