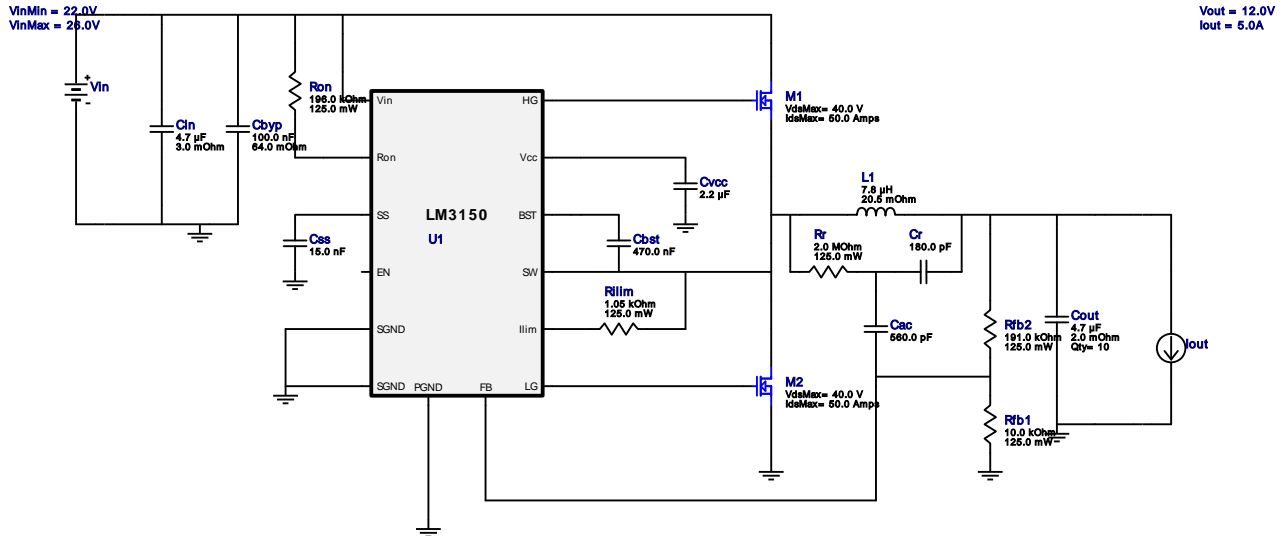








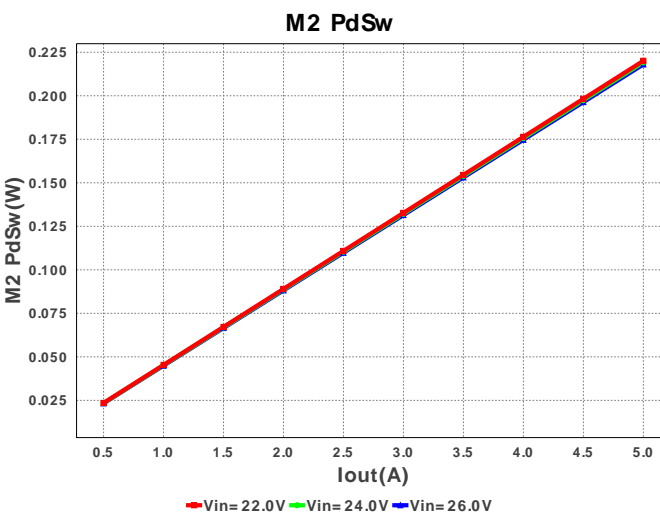
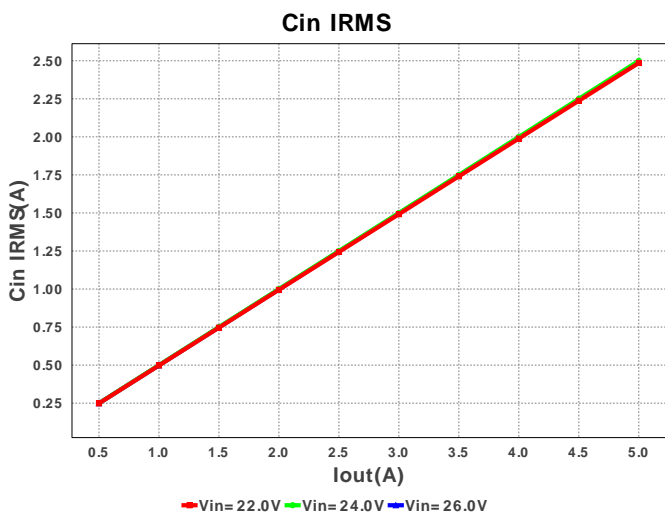
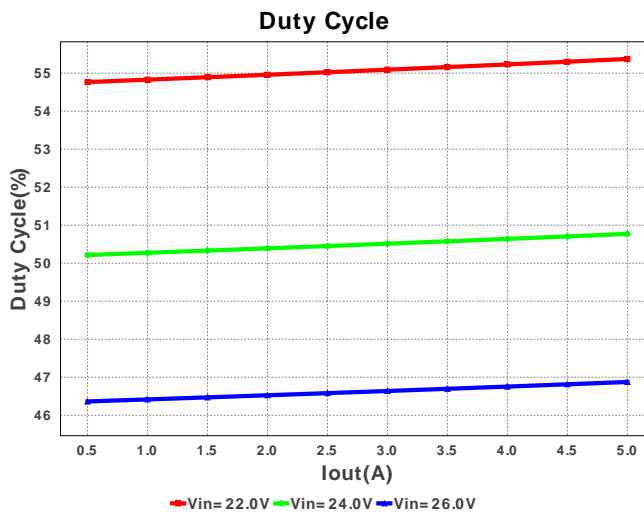
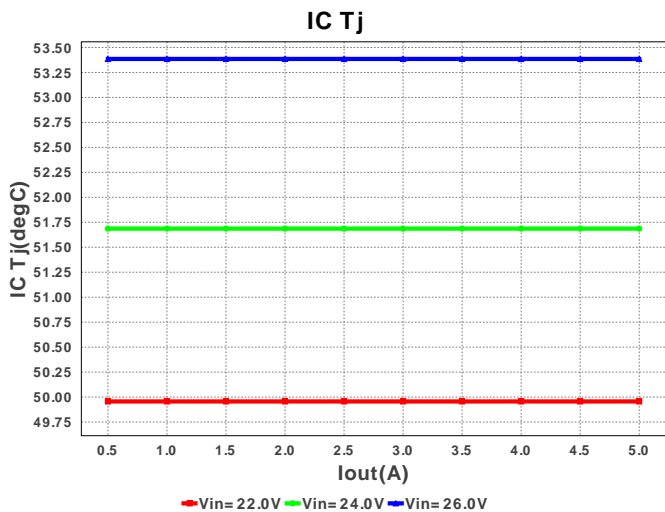


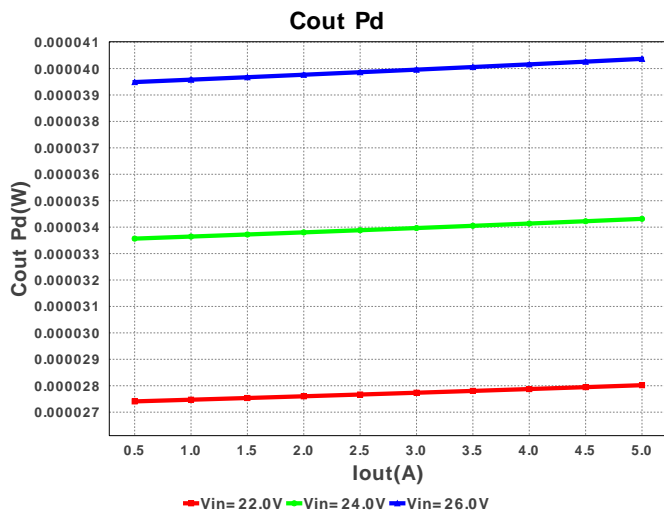
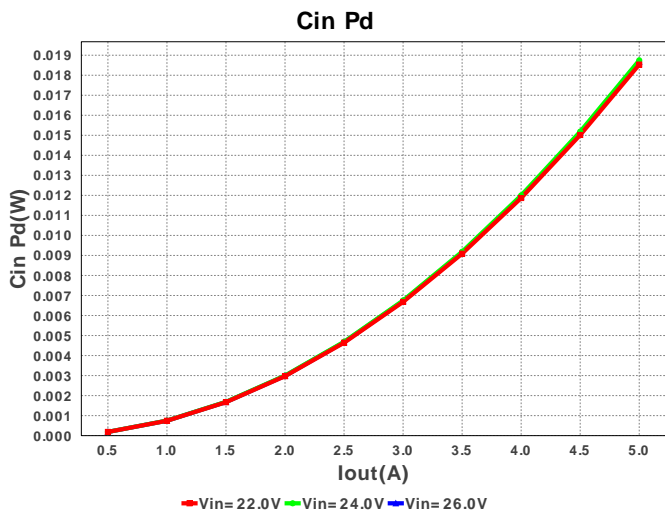
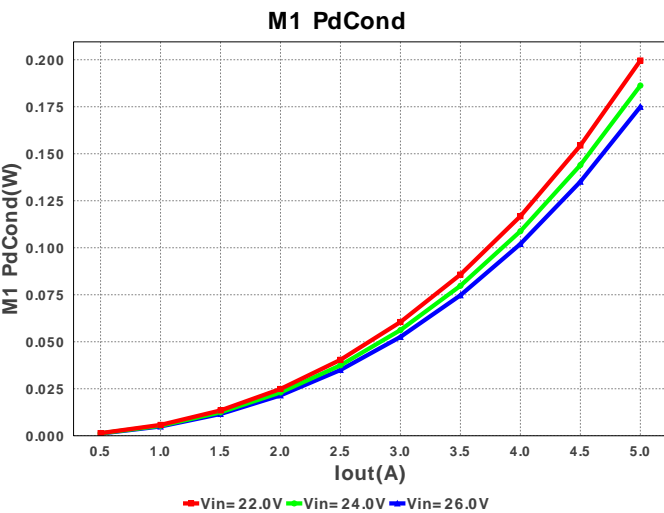
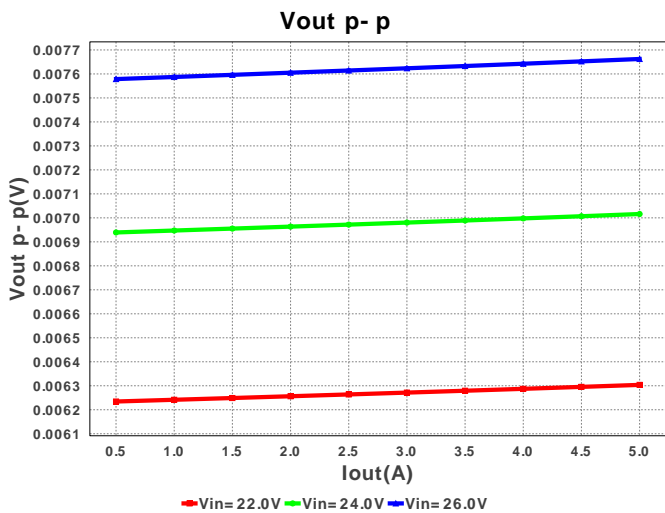
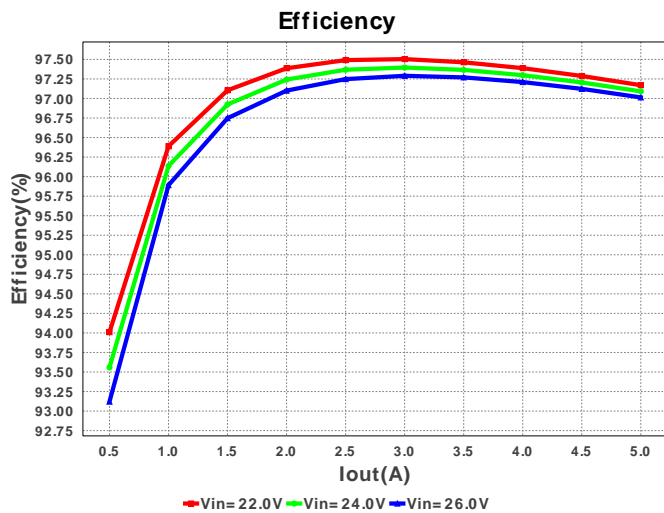
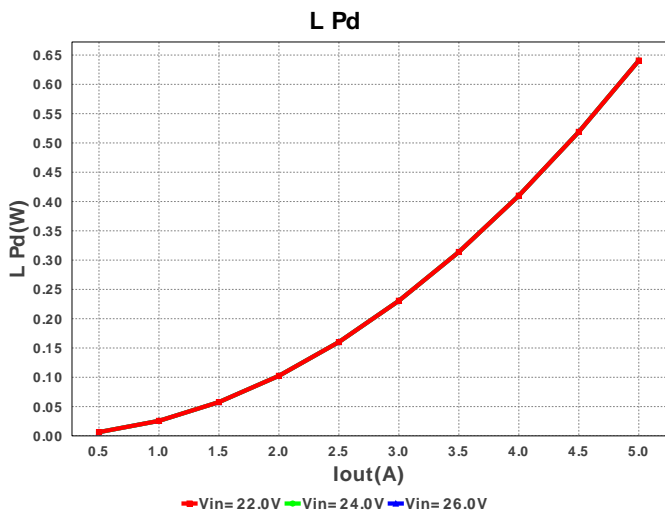
**WEBENCH<sup>®</sup> Design Report**

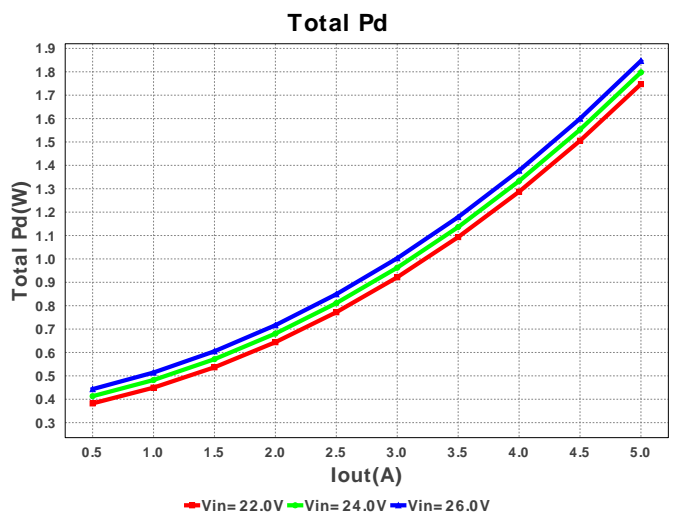
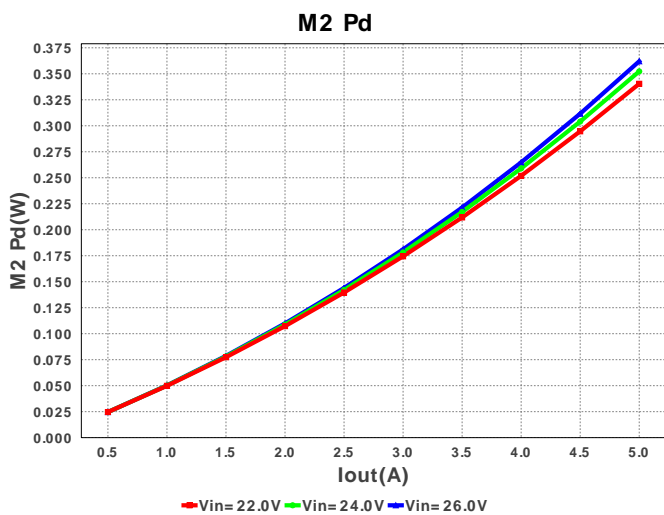
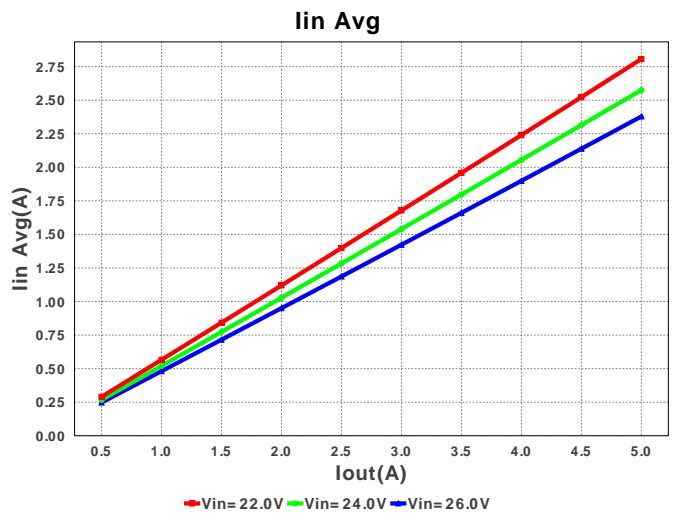
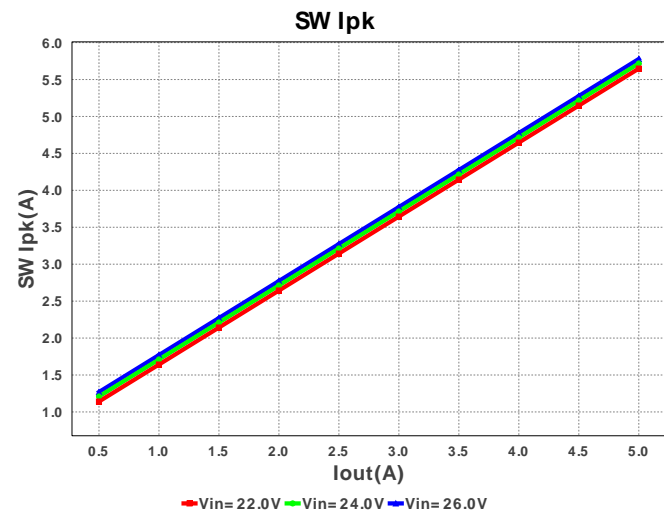
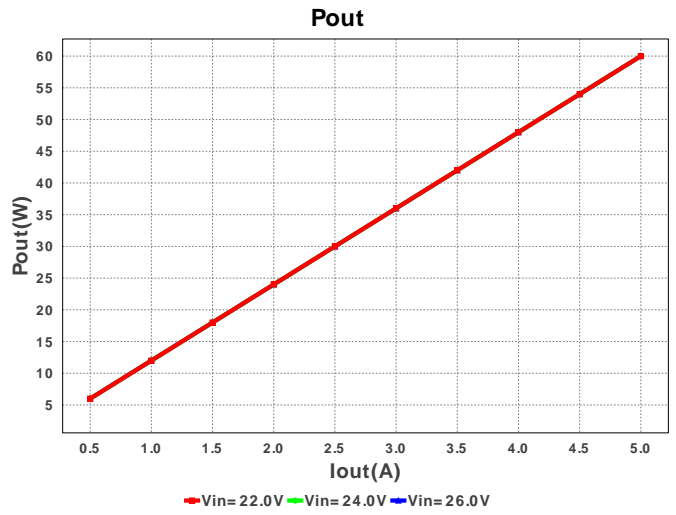
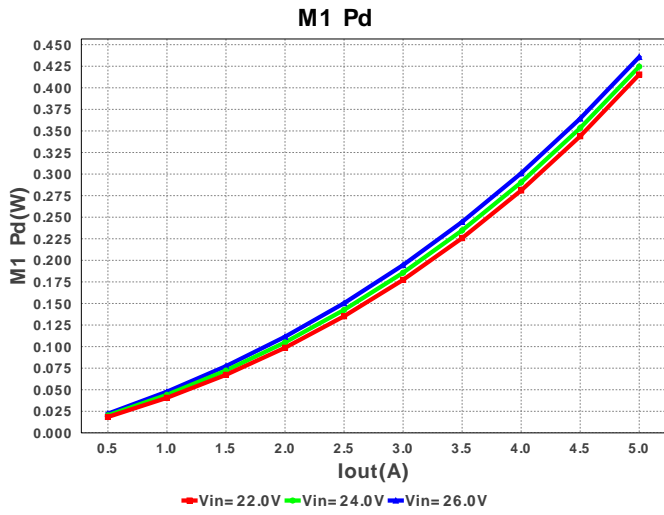
 Design : 3688708/81 LM3150MHX/NOPB  
 LM3150MHX/NOPB 22.0V-26.0V to 12.0V @ 5.0A

**Electrical BOM**

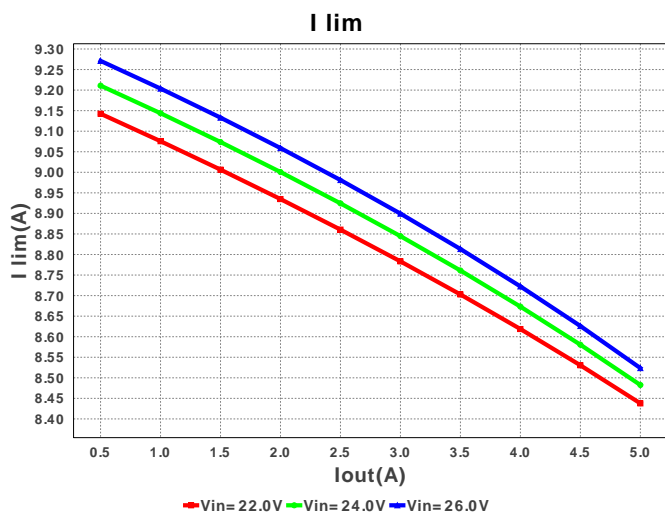
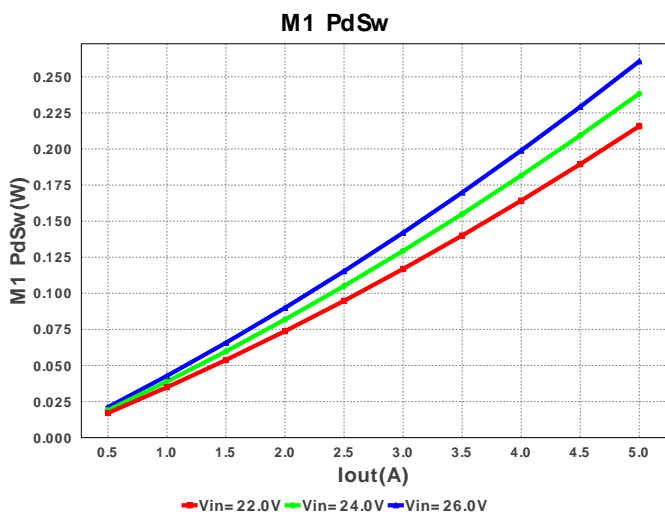
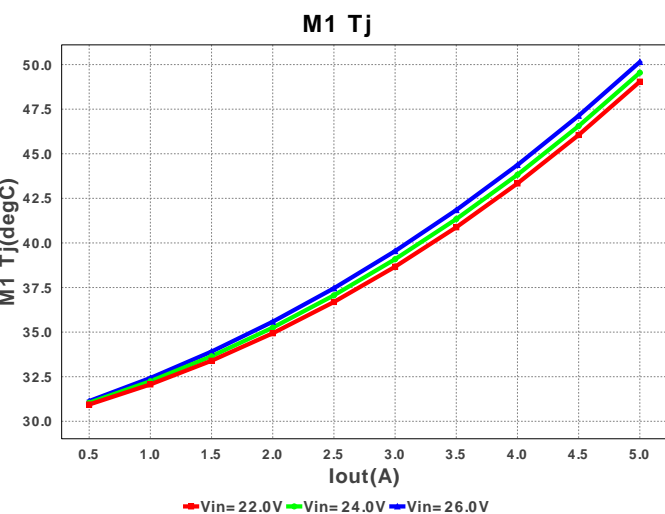
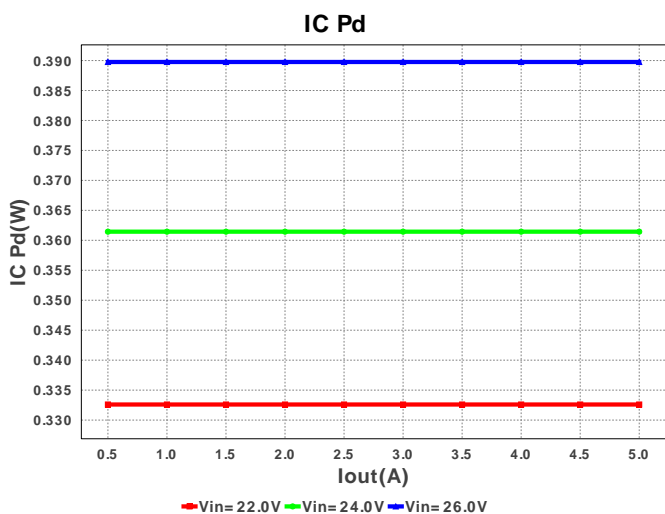
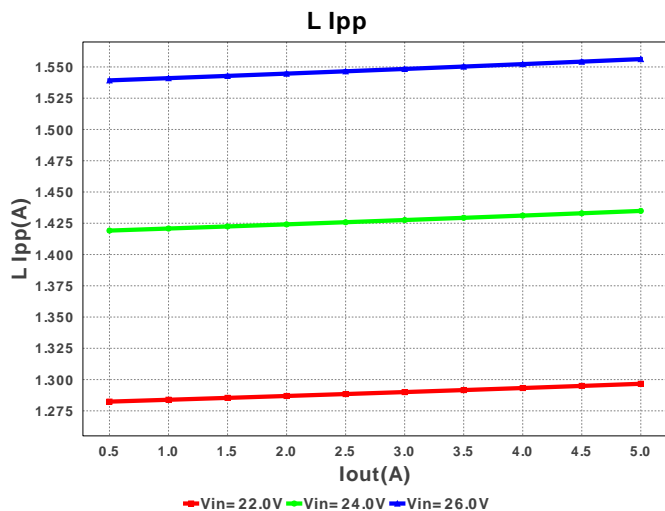
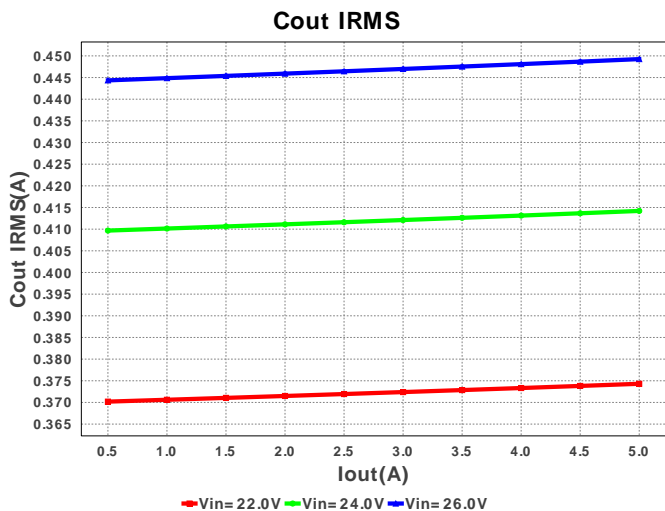
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cac	Yageo America	CC0805KRX7R9BB561 Series= X7R	Cap= 560.0 pF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	 0805 7mm2
2.	Cbst	Taiyo Yuden	EMK212B7474KD-T Series= X7R	Cap= 470.0 nF VDC= 16.0 V IRMS= 0.0 A	1	\$0.02	 0805 7mm2
3.	Cbyp	Kemet	C0805C104K5RACTU Series= X7R	Cap= 100.0 nF ESR= 64.0 mOhm VDC= 50.0 V IRMS= 1.64 A	1	\$0.01	 0805 7mm2
4.	Cin	MuRata	GRM31CR71H475KA12L Series= X7R	Cap= 4.7 µF ESR= 3.0 mOhm VDC= 50.0 V IRMS= 4.98 A	1	\$0.10	 1206 11mm2
5.	Cout	MuRata	GRM21BR61E475MA12L Series= X5R	Cap= 4.7 µF ESR= 2.0 mOhm VDC= 25.0 V IRMS= 7.29 A	10	\$0.06	 0805 7mm2
6.	Cr	Yageo America	CC0805JRNP09BN181 Series= C0G/NP0	Cap= 180.0 pF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	 0805 7mm2
7.	Css	Yageo America	CC0805KRX7R9BB153 Series= X7R	Cap= 15.0 nF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	 0805 7mm2
8.	Cvcc	Taiyo Yuden	EMK212B7225KG-T Series= X7R	Cap= 2.2 µF VDC= 16.0 V IRMS= 0.0 A	1	\$0.03	 0805 7mm2
9.	L1	Bourns	SRP1250-7R8M	L= 7.8 µH DCR= 20.5 mOhm	1	\$0.64	 SRP1250 253mm2

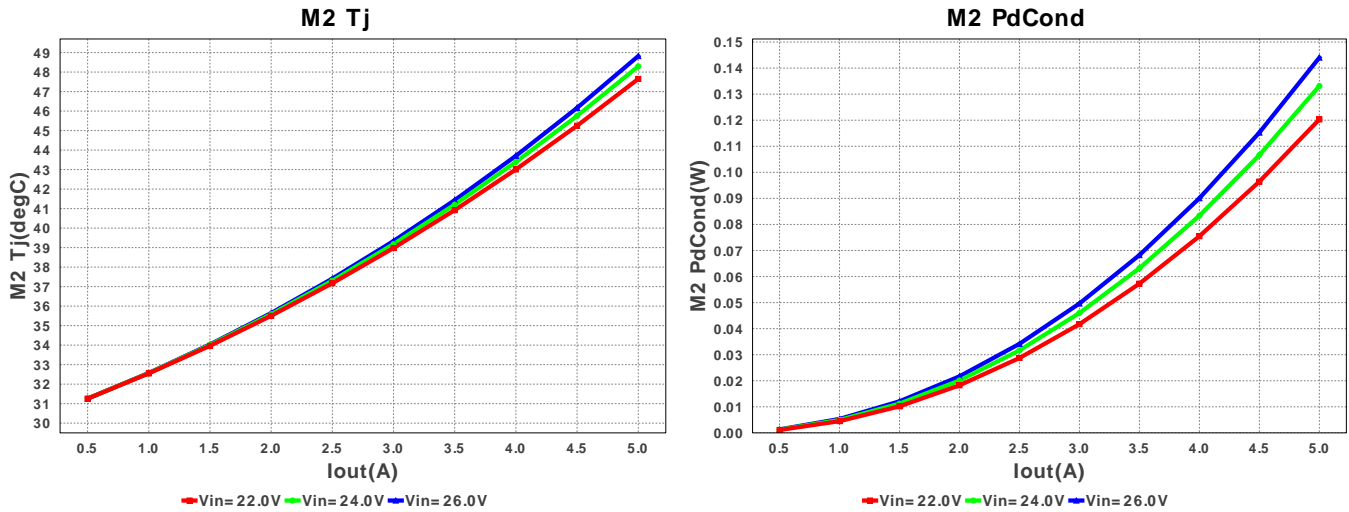
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
10.	M1	Texas Instruments	CSD18504Q5A	VdsMax= 40.0 V IdsMax= 50.0 Amps	1	\$0.56	 TRANS_NexFET_Q5A 55mm2
11.	M2	Texas Instruments	CSD18504Q5A	VdsMax= 40.0 V IdsMax= 50.0 Amps	1	\$0.56	 TRANS_NexFET_Q5A 55mm2
12.	Rfb1	Panasonic	ERJ-6ENF1002V Series= 225	Res= 10.0 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7mm2
13.	Rfb2	Panasonic	ERJ-6ENF1913V Series= 225	Res= 191.0 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7mm2
14.	Rilim	Panasonic	ERJ-6ENF1051V Series= 225	Res= 1.05 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7mm2
15.	Ron	Panasonic	ERJ-6ENF1963V Series= 225	Res= 196.0 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7mm2
16.	Rr	Vishay-Dale	CRCW08052M00FKEA Series= CRCW..e3	Res= 2.0 MOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7mm2
17.	U1	Texas Instruments	LM3150MHX/NOPB	Switcher	1	\$1.55	 MXA14A 59mm2











## Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	2.495 A	Current	Input capacitor RMS ripple current
2.	Cout IRMS	449.258 mA	Current	Output capacitor RMS ripple current
3.	I lim	8.521 A	Current	Current limit threshold
4.	Iin Avg	2.379 A	Current	Average input current
5.	L Ipp	1.556 A	Current	Peak-to-peak inductor ripple current
6.	SW Ipk	5.778 A	Current	Peak switch current
7.	BOM Count	26	General	Total Design BOM count
8.	FootPrint	575.0 mm2	General	Total Foot Print Area of BOM components
9.	Frequency	540.624 kHz	General	Switching frequency
10.	IC Tolerance	12.0 mV	General	IC Feedback Tolerance
11.	Pout	60.0 W	General	Total output power
12.	Total BOM	\$4.15	General	Total BOM Cost
13.	Duty Cycle	46.876 %	Op_point	Duty cycle
14.	Efficiency	97.012 %	Op_point	Steady state efficiency
15.	IC Tj	55.334 degC	Op_point	IC junction temperature
16.	IOUT_OP	5.0 A	Op_point	Iout operating point
17.	M1 Tj	50.146 degC	Op_point	M1 MOSFET junction temperature
18.	M2 Tj	48.871 degC	Op_point	M2 MOSFET junction temperature
19.	VIN_OP	26.0 V	Op_point	Vin operating point
20.	Vout p-p	7.662 mV	Op_point	Peak-to-peak output ripple voltage
21.	Cin Pd	18.677 mW	Power	Input capacitor power dissipation
22.	Cout Pd	40.367 $\mu$ W	Power	Output capacitor power dissipation
23.	IC Pd	389.759 mW	Power	IC power dissipation
24.	L Pd	640.625 mW	Power	Inductor power dissipation
25.	M1 Pd	435.968 mW	Power	M1 MOSFET total power dissipation
26.	M1 PdCond	175.209 mW	Power	M1 MOSFET conduction losses
27.	M1 PdSw	260.758 mW	Power	M1 MOSFET switching losses
28.	M2 Pd	363.058 mW	Power	M2 MOSFET total power dissipation
29.	M2 PdCond	144.078 mW	Power	M2 MOSFET conduction losses
30.	M2 PdSw	218.98 mW	Power	M2 MOSFET switching losses
31.	Total Pd	1.848 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	26.0 V	Maximum input voltage
4.	VinMin	22.0 V	Minimum input voltage
5.	Vout	12.0 V	Output Voltage
6.	Vout1	12.0 Volt	Output Voltage #1
7.	base_pn	LM3150	Texas Instruments Base Part Number
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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