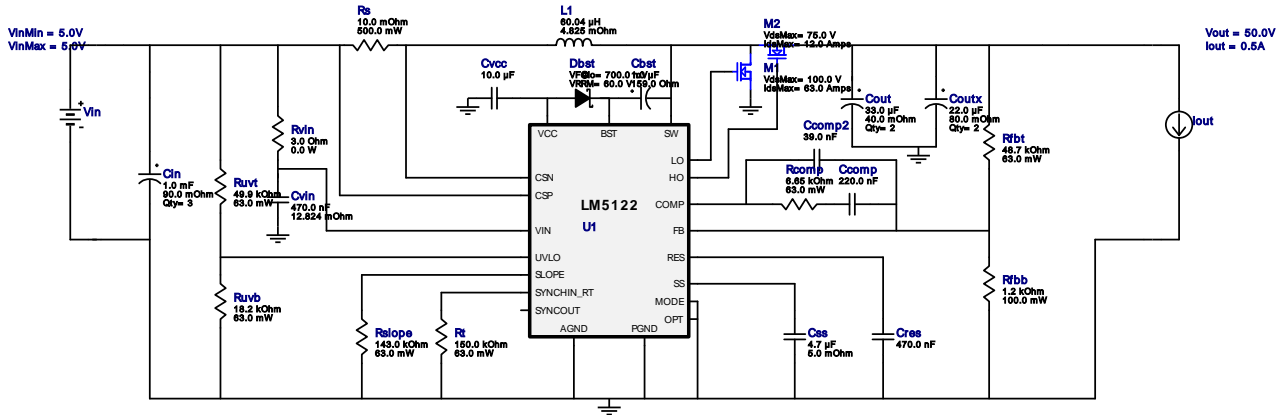
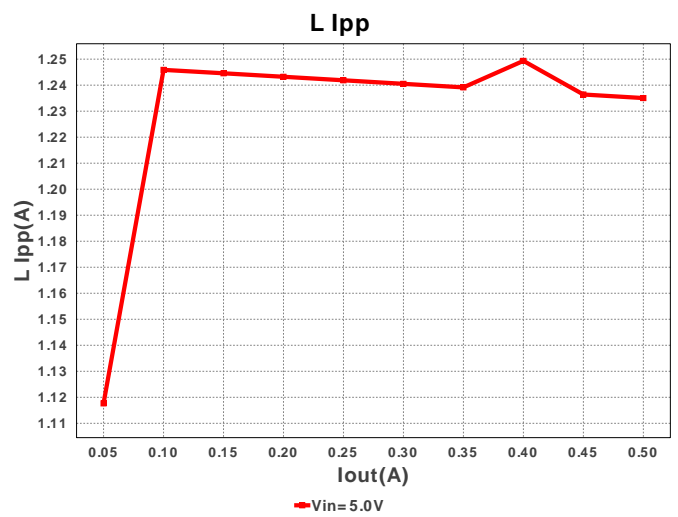
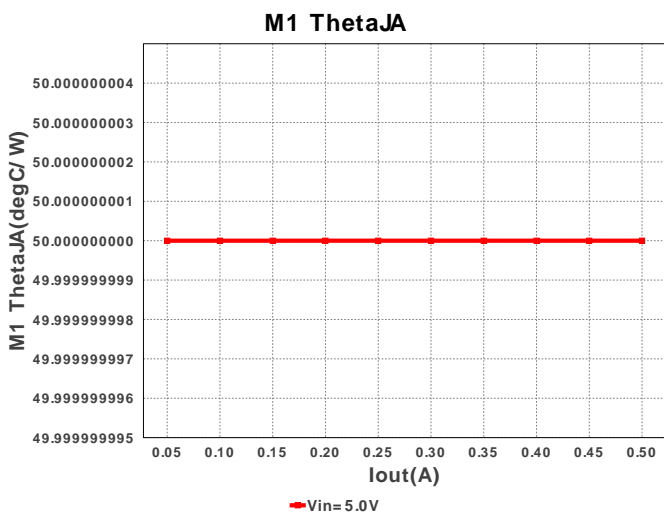
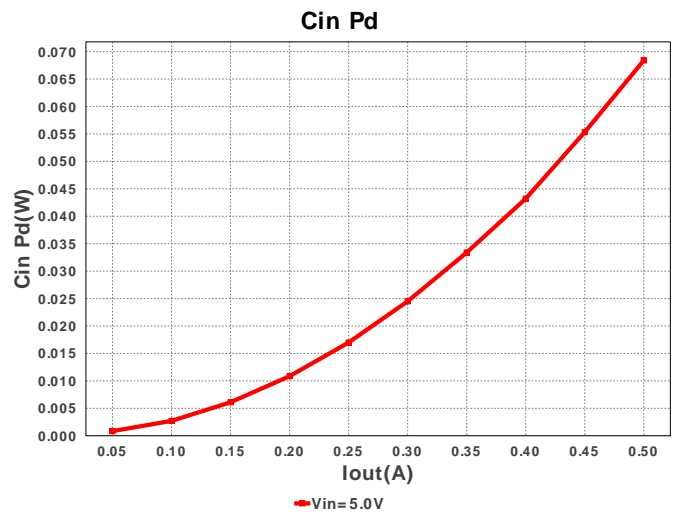
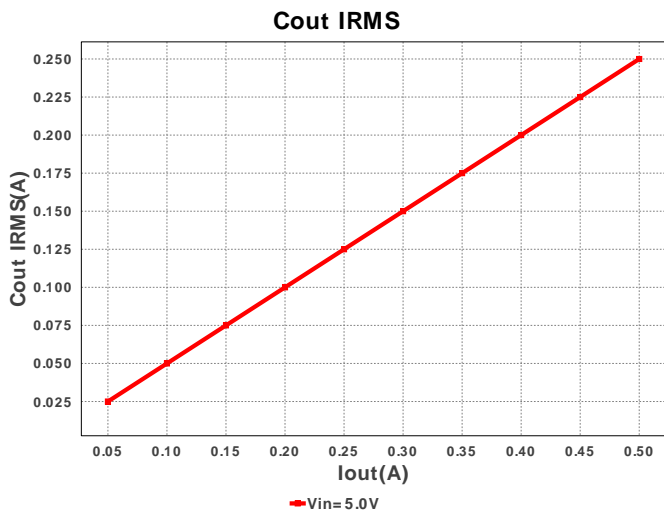
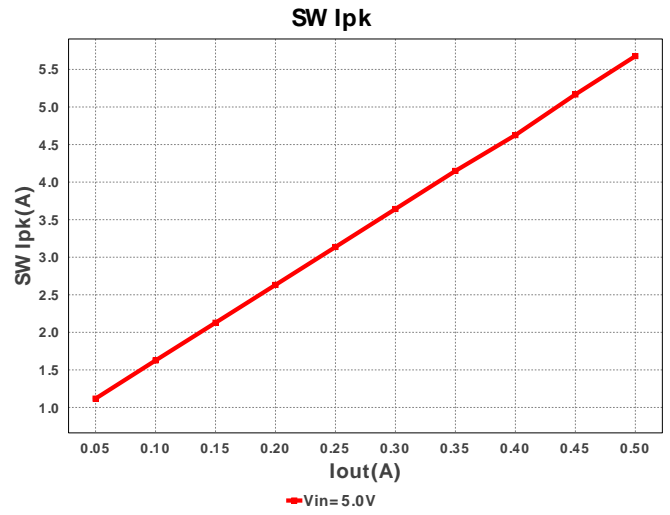
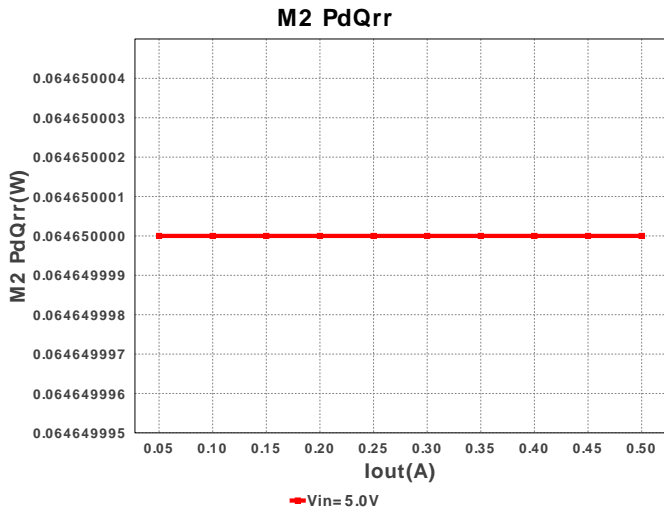


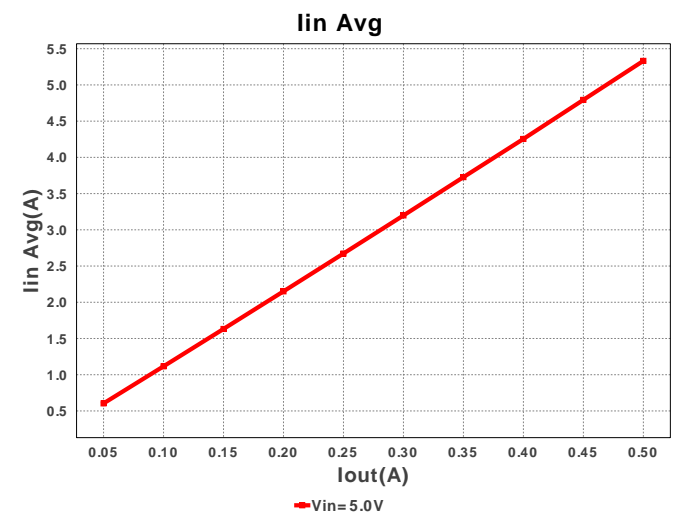
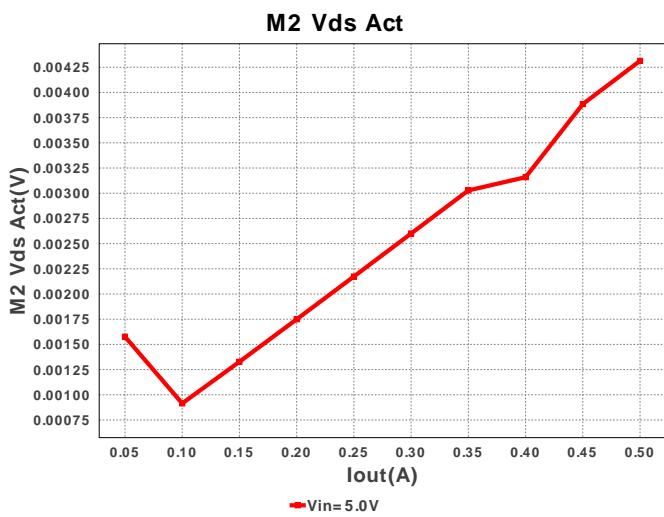
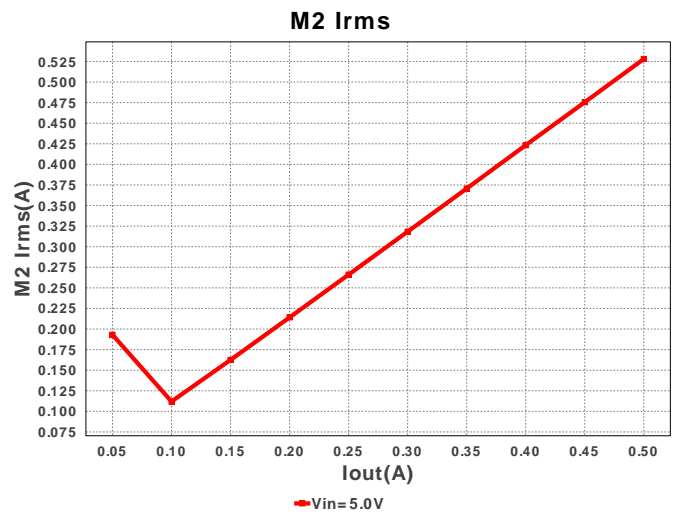
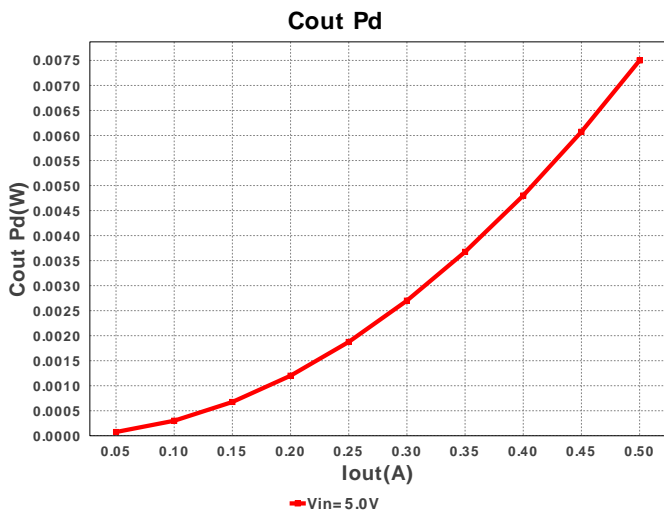
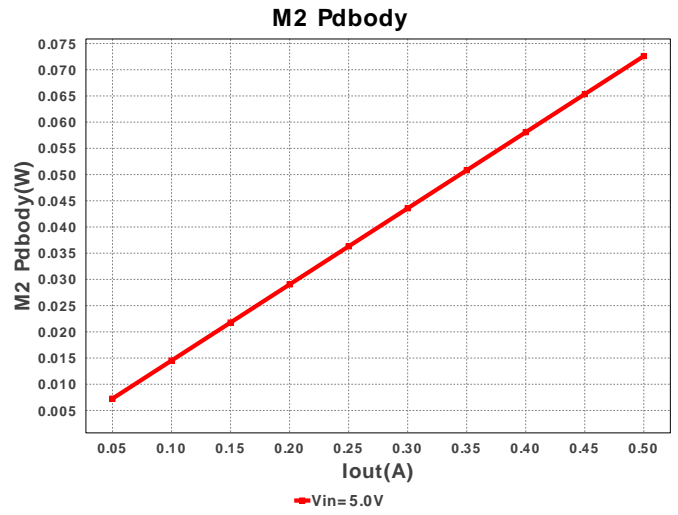
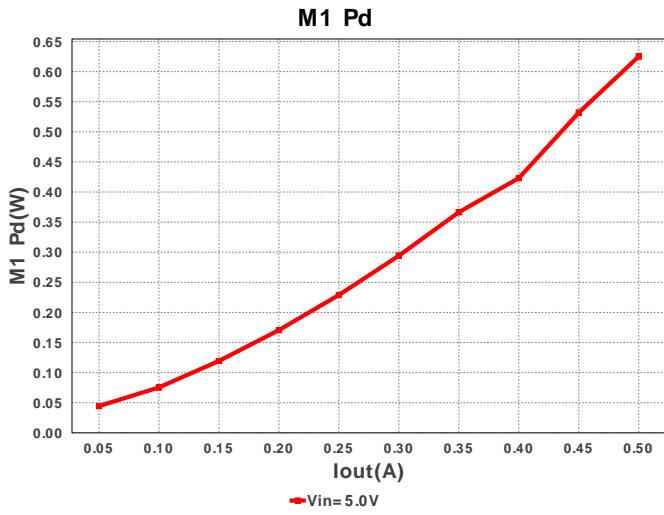
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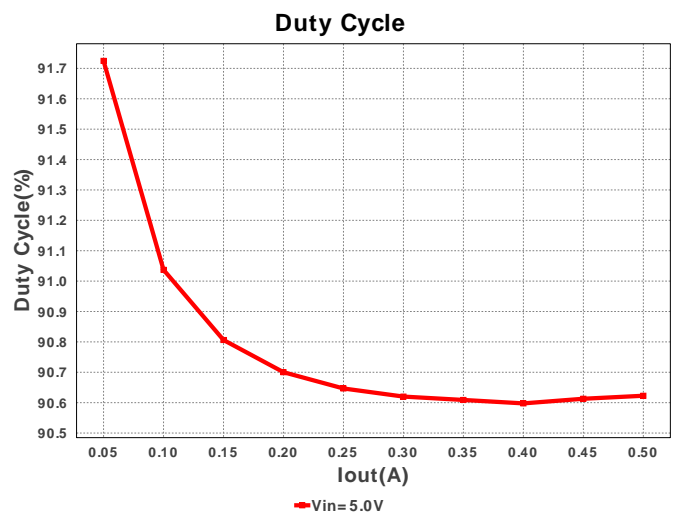
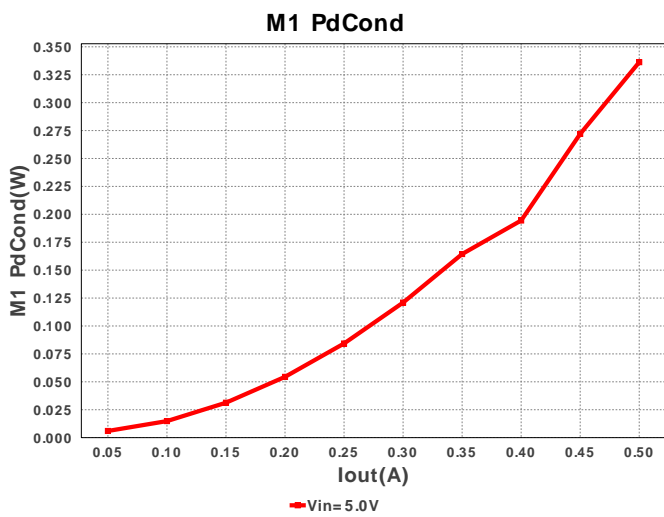
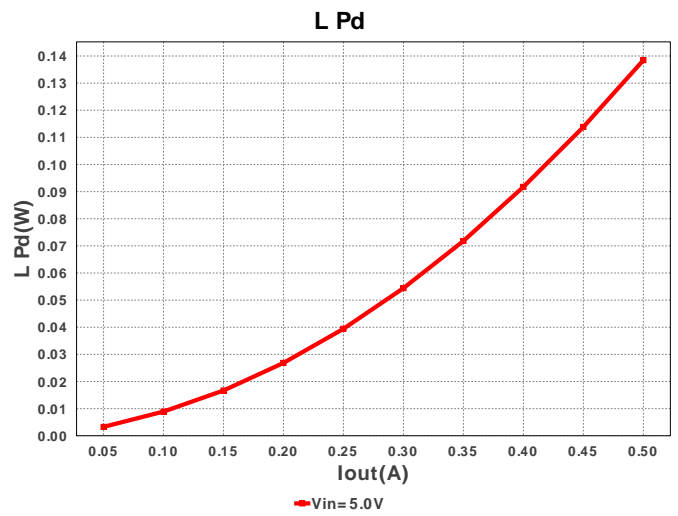
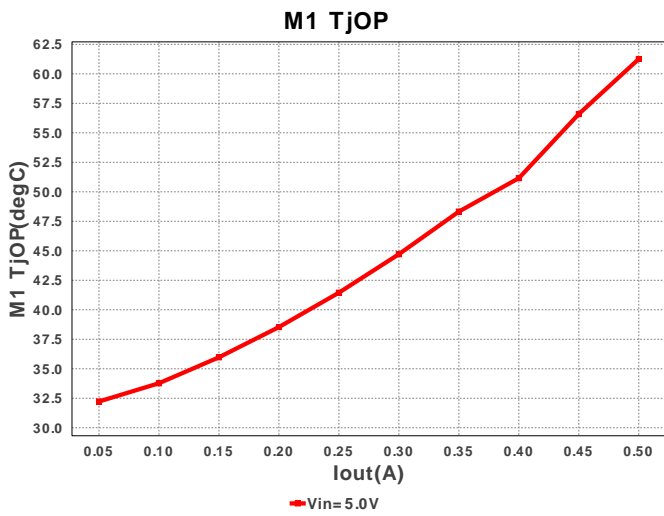
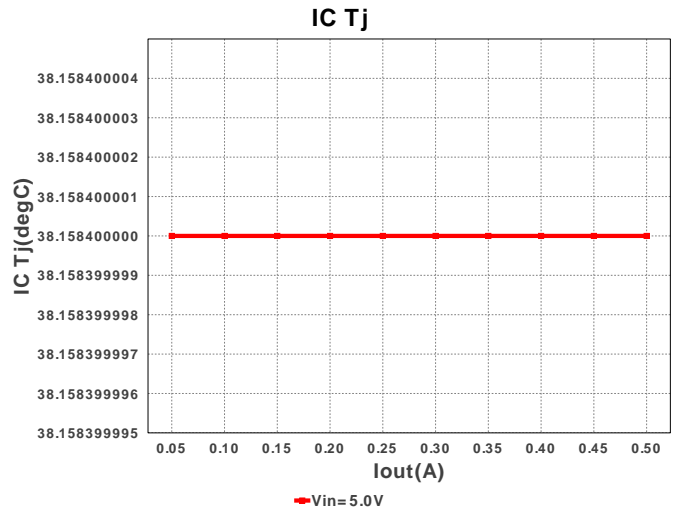
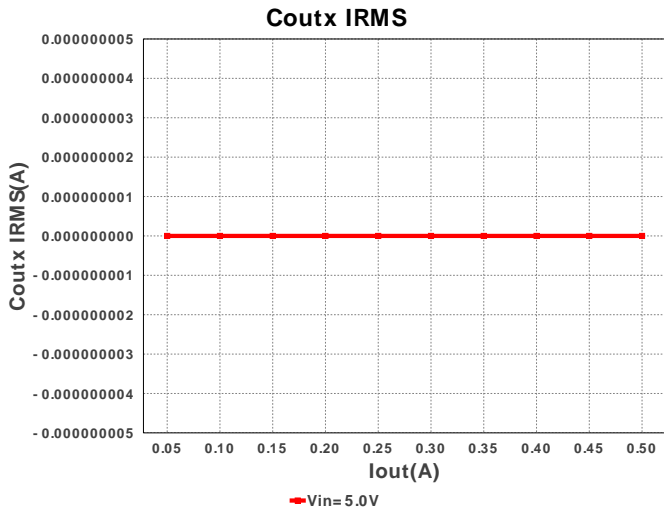
 Design : 3779120/532 LM5122MH/NOPB
 LM5122MH/NOPB 5.0V-5.0V to 50.0V @ 0.5A

Electrical BOM

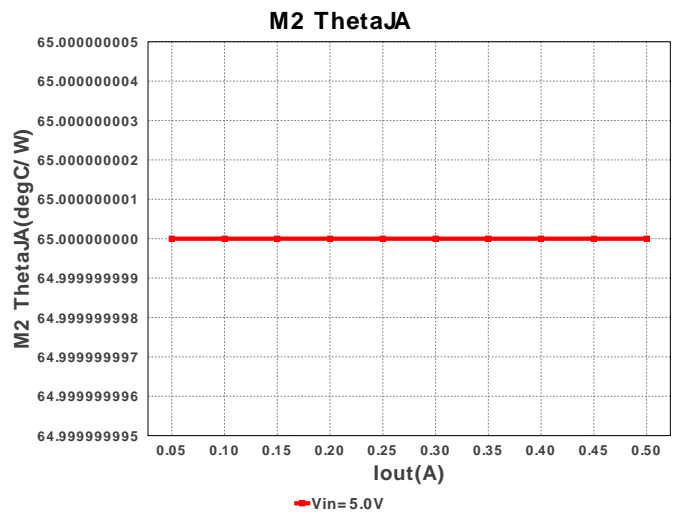
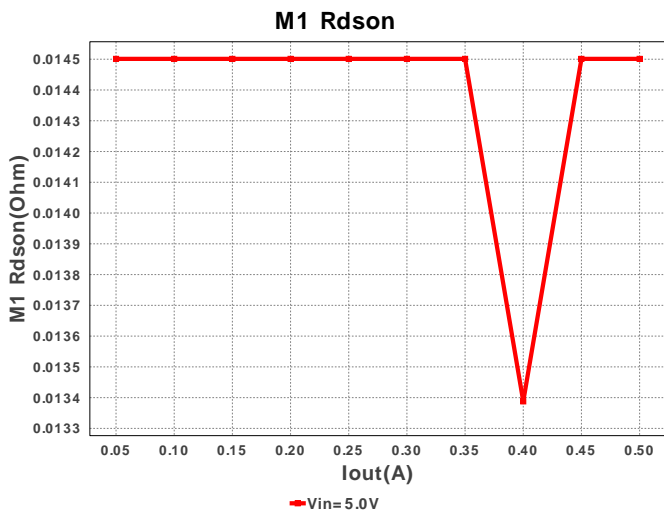
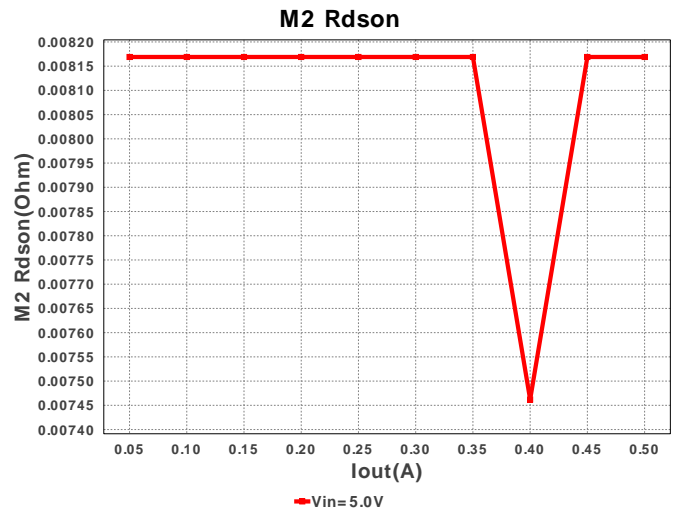
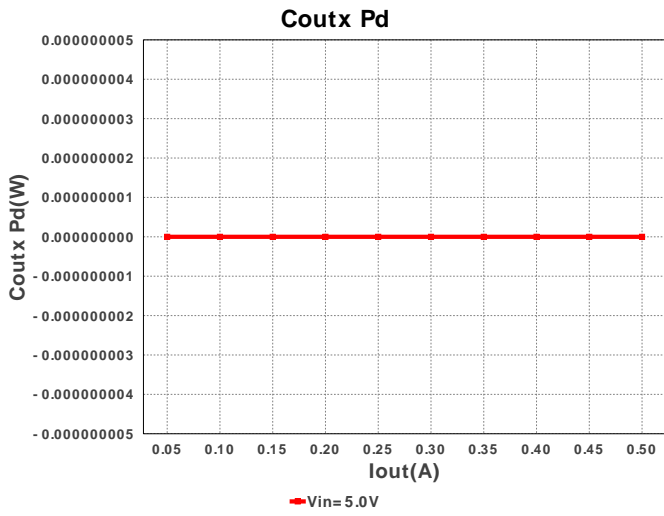
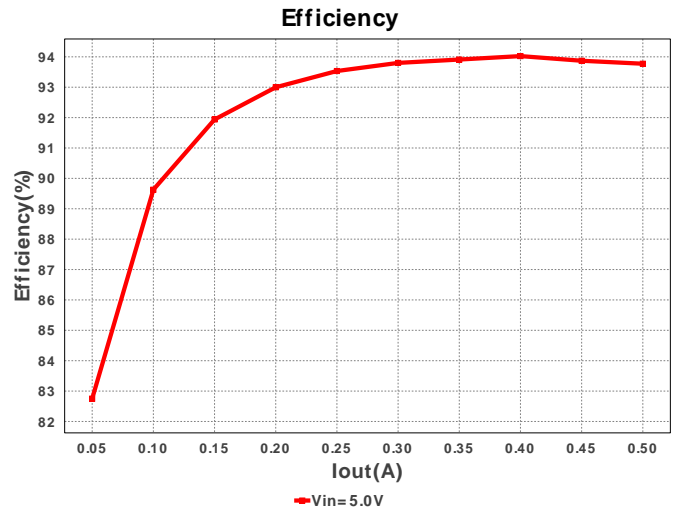
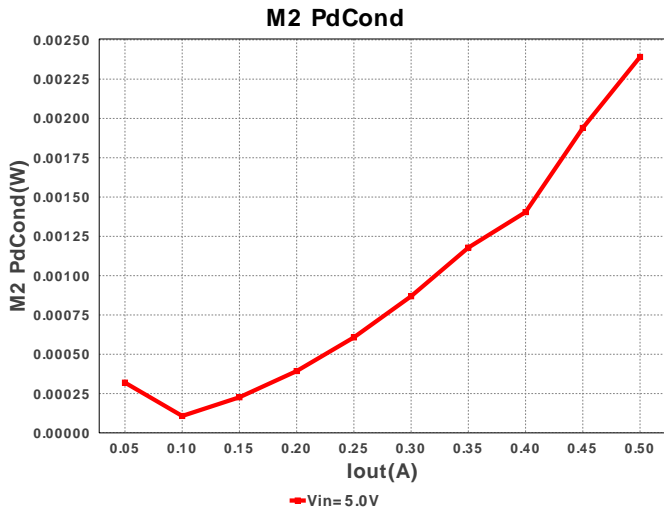
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cbst	United Chemi-Con	EMVE630ADA1R0MD55G Series= MVE	Cap= 1.0 μ F ESR= 159.0 Ohm VDC= 63.0 V IRMS= 8.0 mA	1	\$0.07	 CAPSMT_62_D55 28mm2
2.	Ccomp	MuRata	GRM155C80G224KE01D Series= 379	Cap= 220.0 nF VDC= 4.0 V IRMS= 0.0 A	1	\$0.01	 0402 3mm2
3.	Ccomp2	MuRata	GRM155R61A393KA01D Series= X5R	Cap= 39.0 nF VDC= 10.0 V IRMS= 0.0 A	1	\$0.01	 0402 3mm2
4.	Cin	Nichicon	UUD1A102MNL1GS Series= uD	Cap= 1.0 mF ESR= 90.0 mOhm VDC= 10.0 V IRMS= 670.0 mA	3	\$0.25	 SM_RADIAL_10BMM 160mm2
5.	Cout	Panasonic	EEHZA1J330P Series= ?	Cap= 33.0 μ F ESR= 40.0 mOhm VDC= 63.0 V IRMS= 1.7 A	2	\$0.97	 SM_RADIAL_8MM 113mm2
6.	Coutx	Panasonic	EEHZA1J220XP Series= ?	Cap= 22.0 μ F ESR= 80.0 mOhm VDC= 63.0 V IRMS= 1.5 A	2	\$0.70	 SM_RADIAL_6.3BMM 80mm2
7.	Cres	Taiyo Yuden	TMK212BJ474KD-T Series= X5R	Cap= 470.0 nF VDC= 20.0 V IRMS= 0.0 A	1	\$0.02	 0805 7mm2
8.	Css	MuRata	GRM21BR61C475KA88L Series= X5R	Cap= 4.7 μ F ESR= 5.0 mOhm VDC= 16.0 V IRMS= 0.0 A	1	\$0.04	 0805 7mm2
9.	Cvcc	MuRata	GRM219R61E106KA12 Series= ?	Cap= 10.0 μ F VDC= 25.0 V IRMS= 0.0 A	1	\$0.05	 0805 7mm2

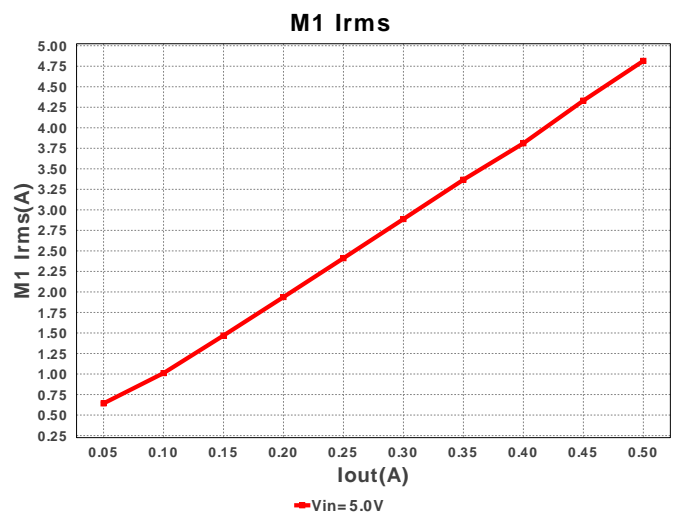
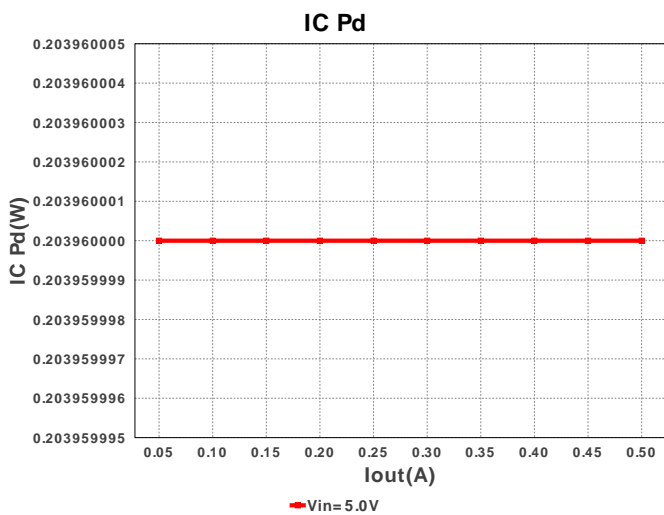
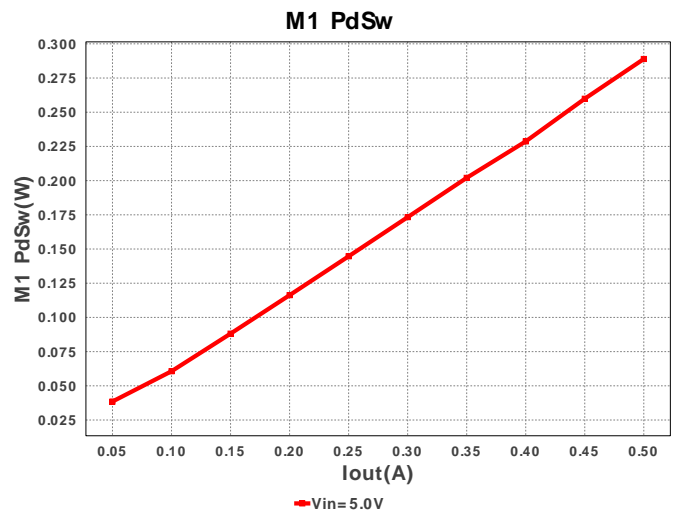
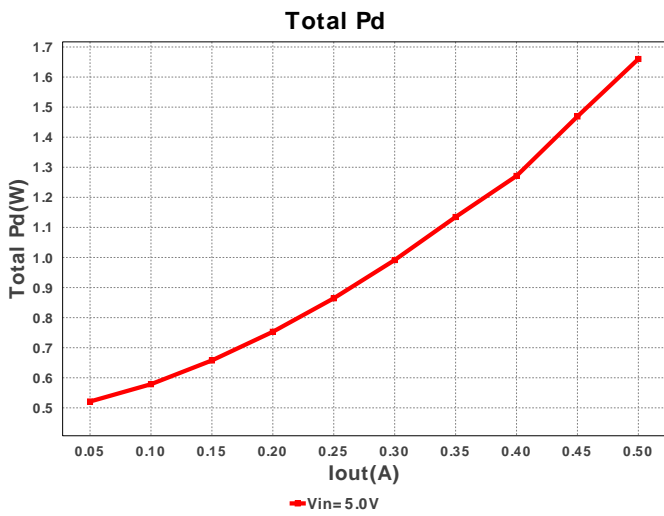
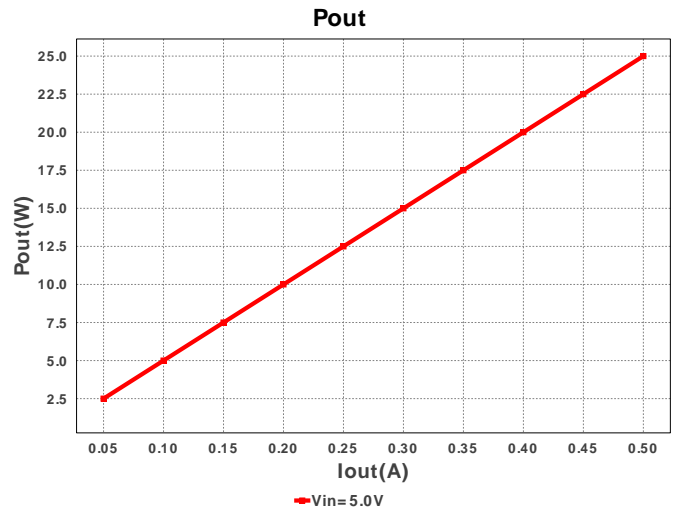
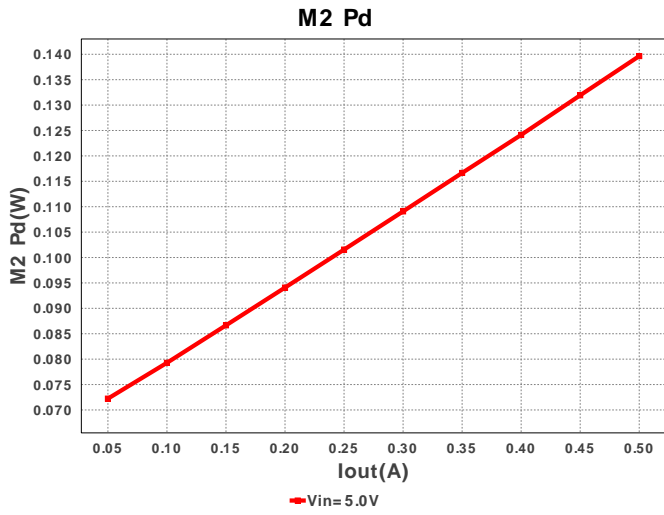
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
10.	Cvin	TDK	C1608X5R1A474K Series= 285	Cap= 470.0 nF ESR= 12.824 mOhm VDC= 10.0 V IRMS= 0.0 A	1	\$0.01	 0603 5mm2
11.	Dbst	Diodes Inc.	B160-13-F	VF@Io= 700.0 mV VRRM= 60.0 V	1	\$0.06	 SMA 37mm2
12.	L1	CUSTOM	CUSTOM	L= 60.04 µH DCR= 4.825 mOhm	1	NA	CUSTOM 0mm2
13.	M1	Infineon Technologies	BSC159N10LSF G	VdsMax= 100.0 V IdsMax= 63.0 Amps	1	\$1.05	 PG-TDSON-8 55mm2
14.	M2	Vishay-Siliconix	SI7148DP	VdsMax= 75.0 V IdsMax= 12.0 Amps	1	\$0.79	 PowerPAK_SO-8 55mm2
15.	Rcomp	Vishay-Dale	CRCW04026K65FKED Series= CRCW..e3	Res= 6.65 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3mm2
16.	Rfbb	Susumu Co Ltd	RR1220P-122-D Series= 264	Res= 1.2 kOhm Power= 100.0 mW Tolerance= 0.5%	1	\$0.01	 0805 7mm2
17.	Rfbt	Vishay-Dale	CRCW040248K7FKED Series= CRCW..e3	Res= 48.7 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3mm2
18.	Rs	Stackpole Electronics Inc	CSR1206FK10L0 Series= ?	Res= 10.0 mOhm Power= 500.0 mW Tolerance= 1.0%	1	\$0.11	 1206 11mm2
19.	Rslope	Vishay-Dale	CRCW0402143KFKED Series= CRCW..e3	Res= 143.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3mm2
20.	Rt	Vishay-Dale	CRCW0402150KFKED Series= CRCW..e3	Res= 150.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3mm2
21.	Ruvb	Vishay-Dale	CRCW040218K2FKED Series= CRCW..e3	Res= 18.2 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3mm2
22.	Ruvt	Vishay-Dale	CRCW040249K9FKED Series= CRCW..e3	Res= 49.9 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3mm2
23.	Rvin	CUSTOM	CUSTOM Series= ?	Res= 3.0 Ohm Power= 0.0 W Tolerance= 0.0%	1	NA	CUSTOM 0mm2
24.	U1	Texas Instruments	LM5122MH/NOPB	Switcher	1	\$2.16	 MXA20A 71mm2

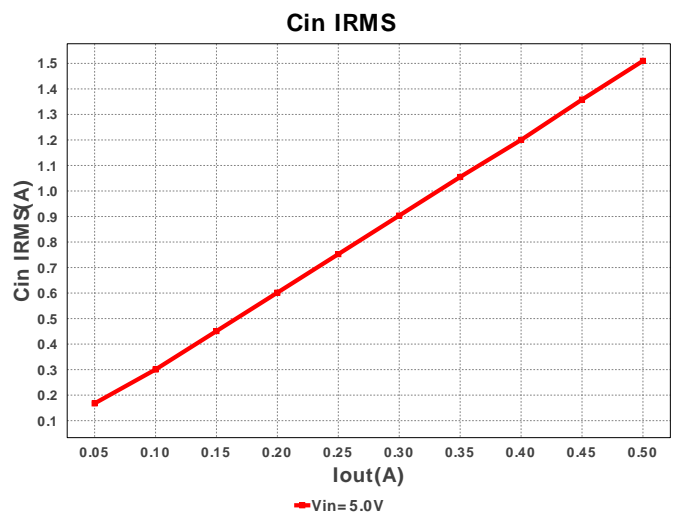
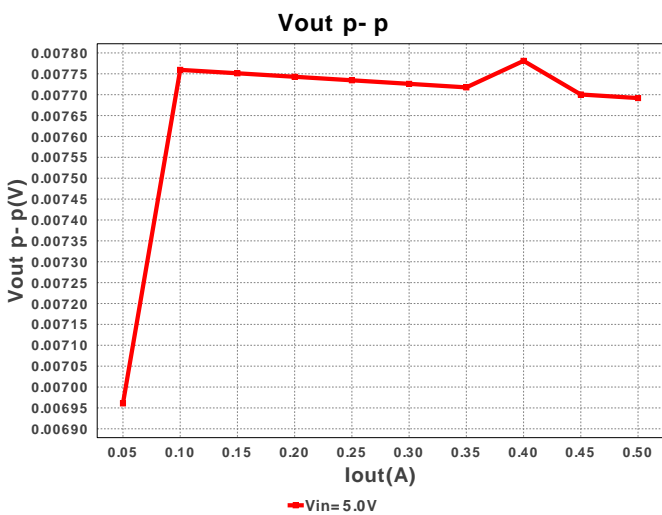
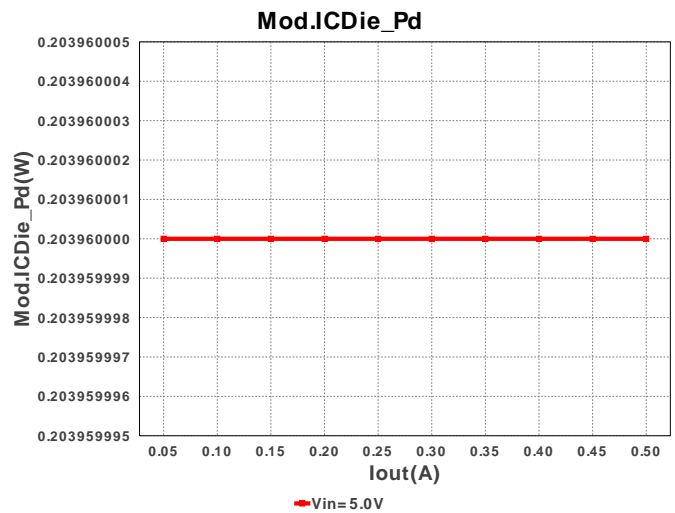
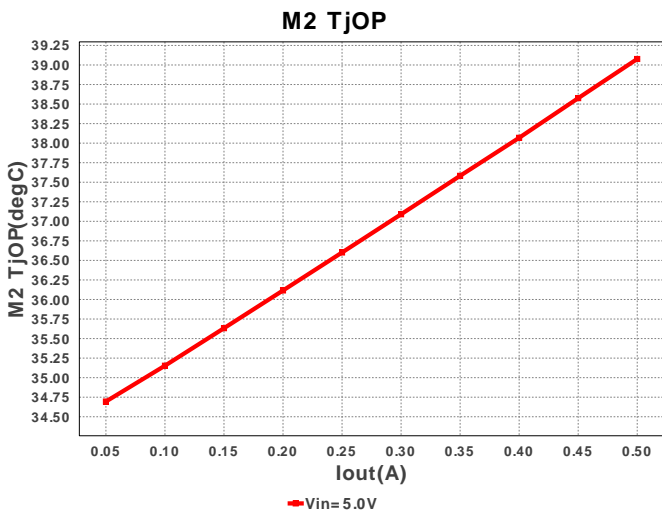
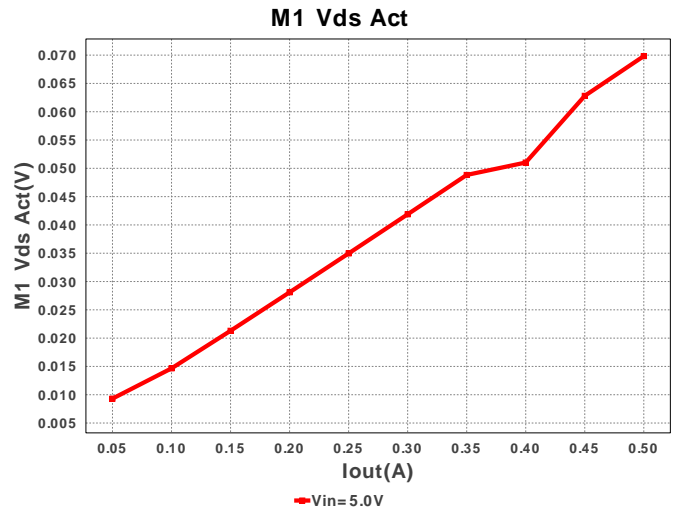
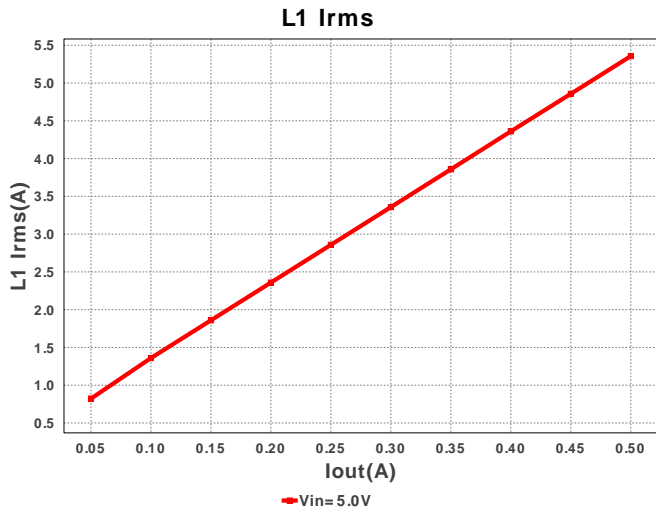












Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	1.51 A	Current	Input capacitor RMS ripple current
2.	Cout IRMS	949.567 mA	Current	Output capacitor RMS ripple current
3.	Iin Avg	5.345 A	Current	Average input current
4.	L Ipp	1.235 A	Current	Peak-to-peak inductor ripple current
5.	L1 Irms	5.357 A	Current	Inductor ripple current
6.	M1 Irms	4.815 A	Current	MOSFET RMS ripple current
7.	M2 Irms	528.006 mA	Current	MOSFET RMS ripple current
8.	SW Ipk	5.677 A	Current	Peak switch current
9.	BOM Count	28	General	Total Design BOM count
10.	FootPrint	1.3 kmm2	General	Total Foot Print Area of BOM components
11.	Frequency	60.0 kHz	General	Switching frequency

#	Name	Value	Category	Description
12.	IC Tolerance	18.0 mV	General	IC Feedback Tolerance
13.	M1 Rdson	14.632 mOhm	General	Drain-Source On-resistance
14.	M1 ThetaJA	50.0 degC/W	General	MOSFET junction-to-ambient thermal resistance
15.	M2 Rdson	8.252 mOhm	General	Drain-Source On-resistance
16.	M2 ThetaJA	65.0 degC/W	General	MOSFET junction-to-ambient thermal resistance
17.	M2 Vds Act	4.357 mV	General	M Vds
18.	Pout	25.0 W	General	Total output power
19.	Total BOM	\$0.0	General	Total BOM Cost
20.	Vout OP	50.0 V	Op_Point	Operational Output Voltage
21.	Duty Cycle	90.645 %	Op_point	Duty cycle
22.	Efficiency	93.547 %	Op_point	Steady state efficiency
23.	IC Tj	39.702 degC	Op_point	IC junction temperature
24.	ICThetaJA	40.0 degC/W	Op_point	IC junction-to-ambient thermal resistance
25.	IOUT_OP	500.0 mA	Op_point	Iout operating point
26.	M1 TjOP	61.41 degC	Op_point	M1 MOSFET junction temperature
27.	M2 TjOP	39.078 degC	Op_point	MOSFET junction temperature
28.	VIN_OP	5.0 V	Op_point	Vin operating point
29.	Vout p-p	29.762 mV	Op_point	Peak-to-peak output ripple voltage
30.	Cin Pd	68.399 mW	Power	Input capacitor power dissipation
31.	Cout Pd	30.153 mW	Power	Output capacitor power dissipation
32.	IC Pd	242.538 mW	Power	IC power dissipation
33.	L Pd	138.452 mW	Power	Inductor power dissipation
34.	M1 Pd	628.192 mW	Power	MOSFET power dissipation
35.	M1 Pd	628.192 mW	Power	MOSFET power dissipation
36.	M1 PdCond	339.272 mW	Power	M1 MOSFET conduction losses
37.	M1 PdSw	288.92 mW	Power	M1 MOSFET switching losses
38.	M2 Pd	139.666 mW	Power	MOSFET power dissipation
39.	M2 PdCond	2.416 mW	Power	M2 MOSFET conduction losses
40.	M2 PdQrr	64.65 mW	Power	Synchronous Boost High Side Reverse Recovery
41.	M2 Pdbody	72.6 mW	Power	Power dissipation through lower FET
42.	Total Pd	1.725 W	Power	Total Power Dissipation
43.	M1 Vds Act	70.457 mV	Unknown	M Vds

Design Inputs

#	Name	Value	Description
1.	Iout	500.0 mA	Maximum Output Current
2.	Iout1	500.0 mAmps	Output Current #1
3.	VinMax	5.0 V	Maximum input voltage
4.	VinMin	5.0 V	Minimum input voltage
5.	Vout	50.0 V	Output Voltage
6.	Vout1	50.0 Volt	Output Voltage #1
7.	base_pn	LM5122	Base Product Number
8.	source	DC	Input Source Type
9.	Ta	30.0 degC	Ambient temperature

Design Assistance

1. The LM5122 is a wide range boost controller which is operable in an ultra wide input range of 4.5 to 65V. A boost regulator can maintain regulation for input voltages lower than the output voltage.

2. **LM5122** Product Folder : <http://www.ti.com/product/lm5122> : contains the data sheet and other resources.

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