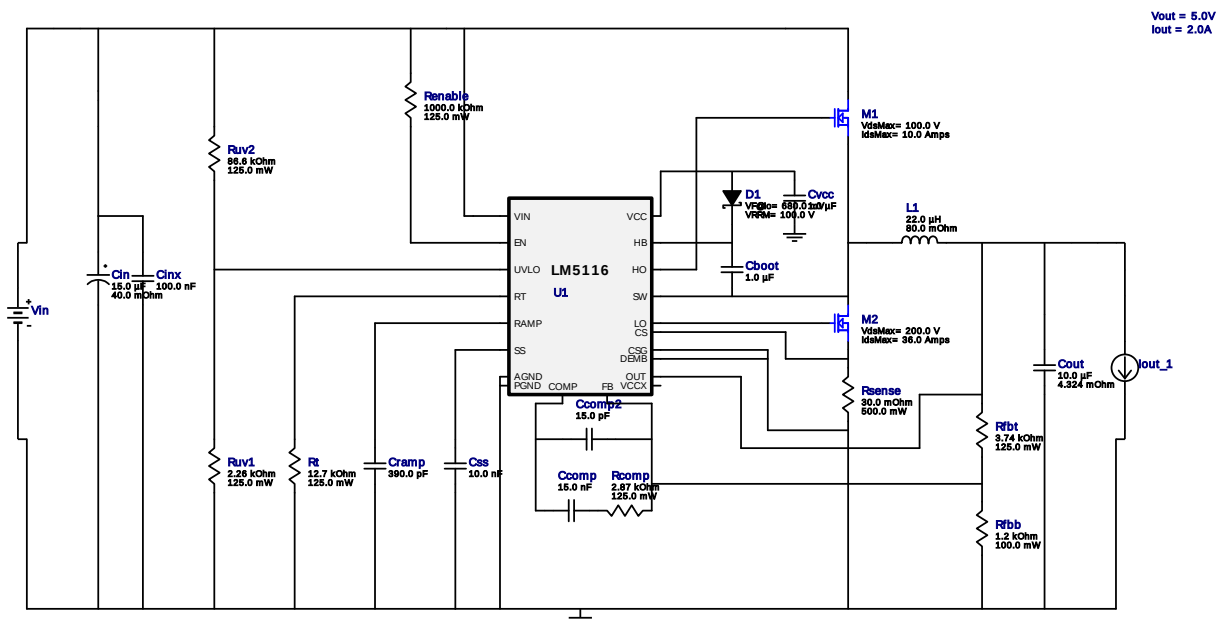
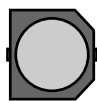


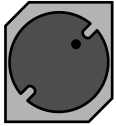
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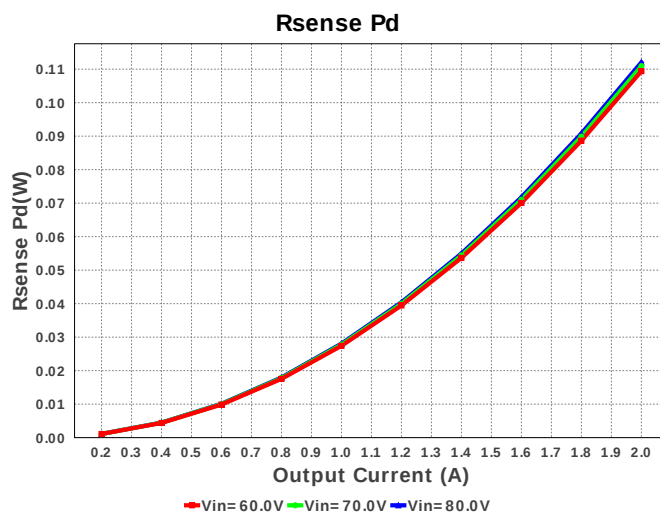
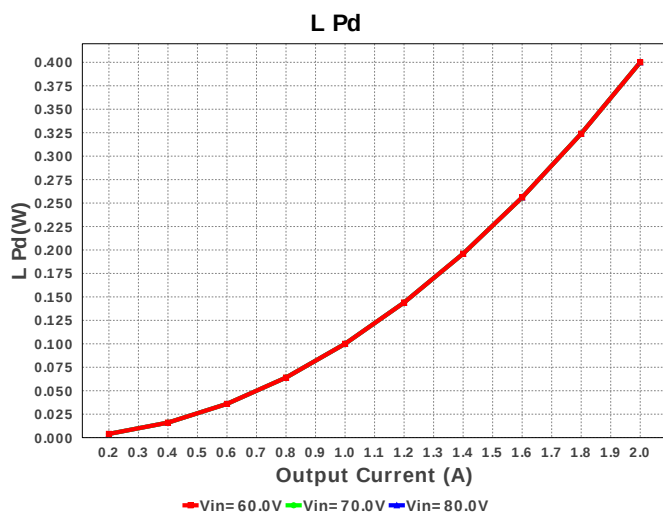
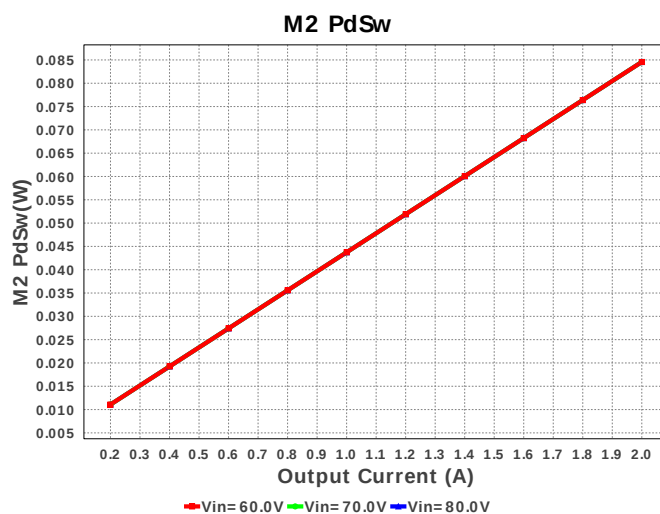
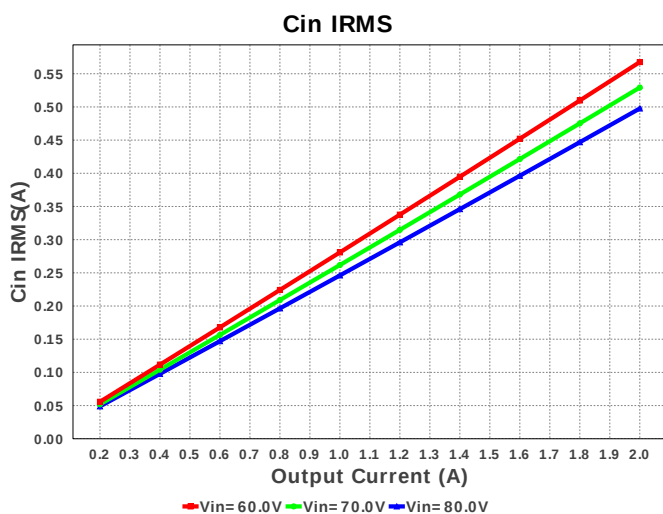
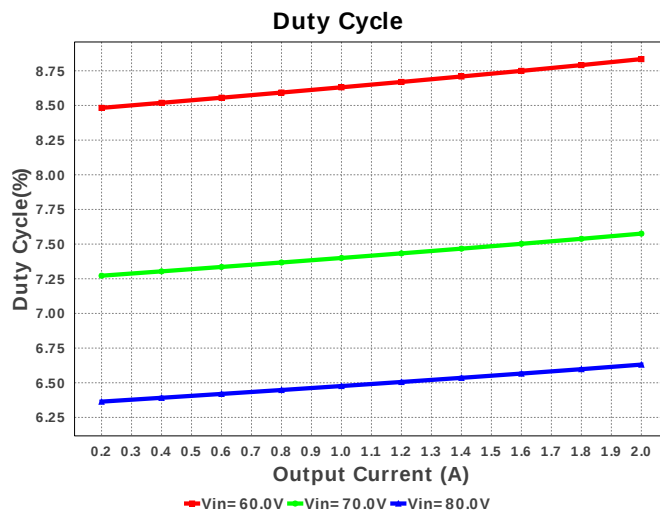
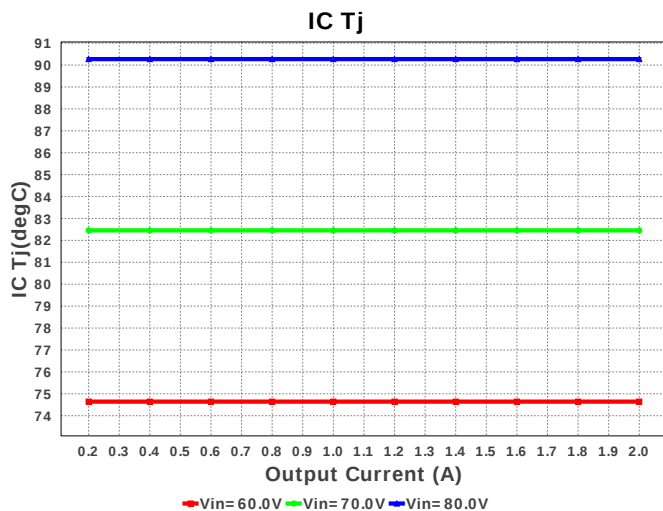
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LM5116MHX/NOPB 60.0V-80.0V to 5.00V @ 2.0A

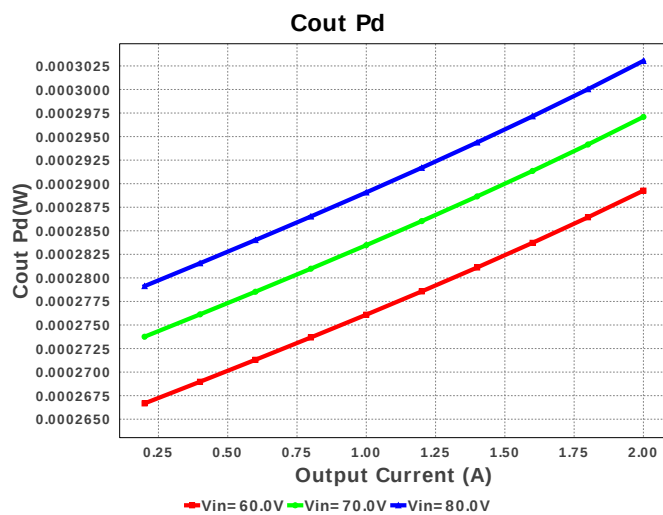
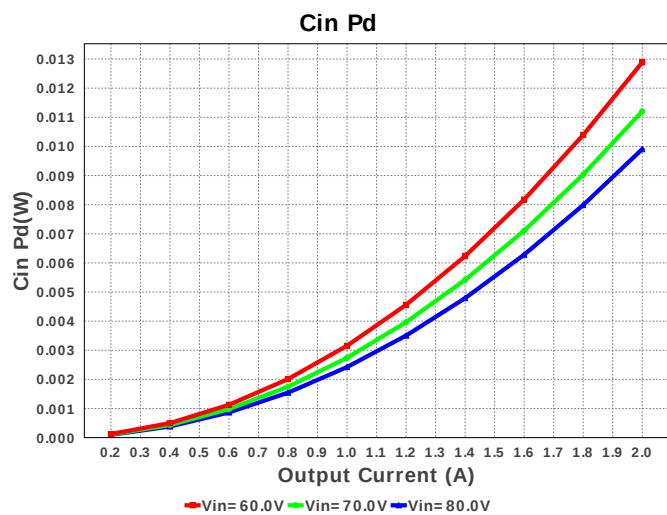
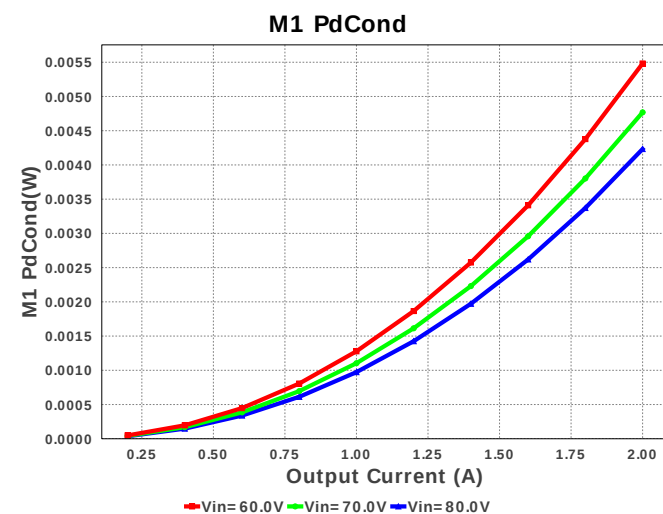
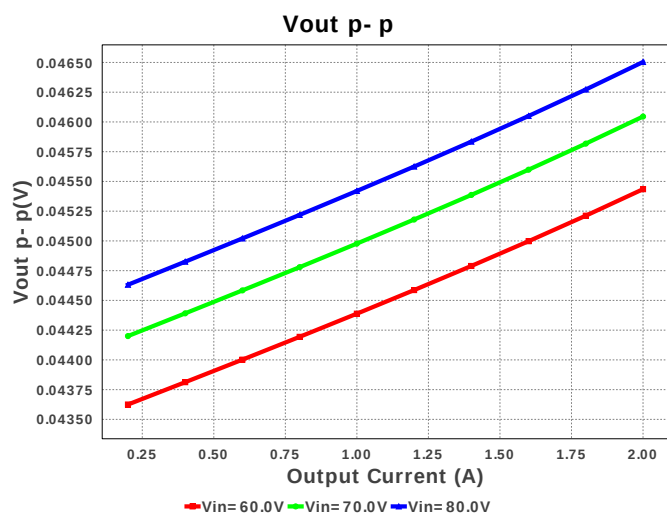
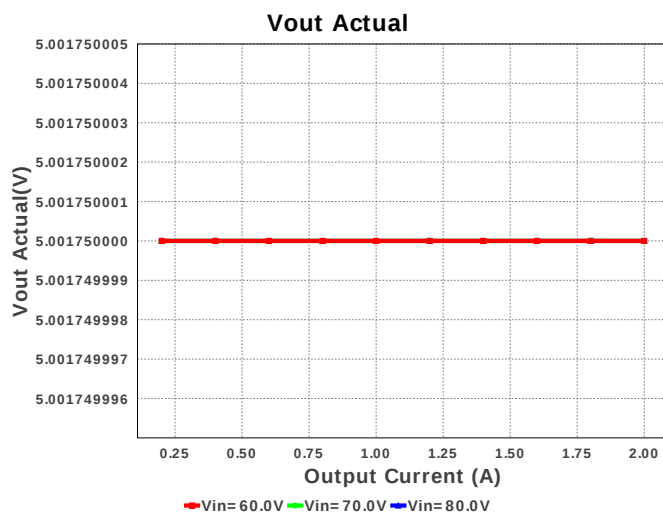
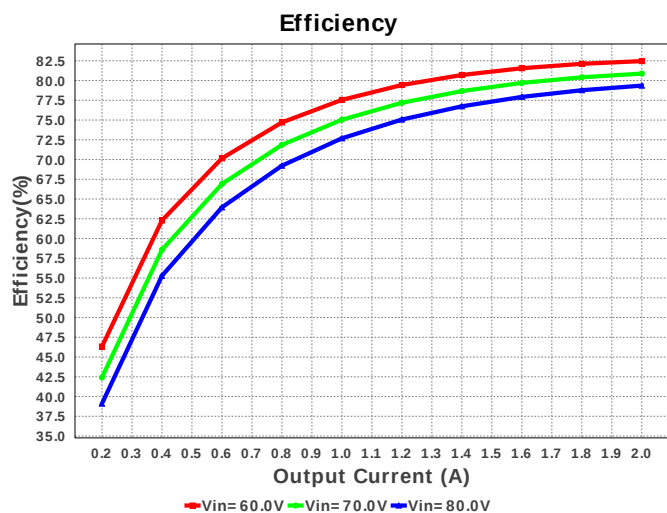


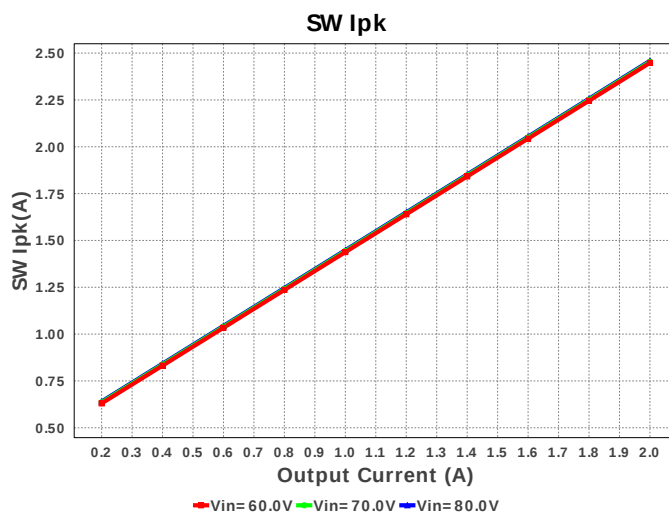
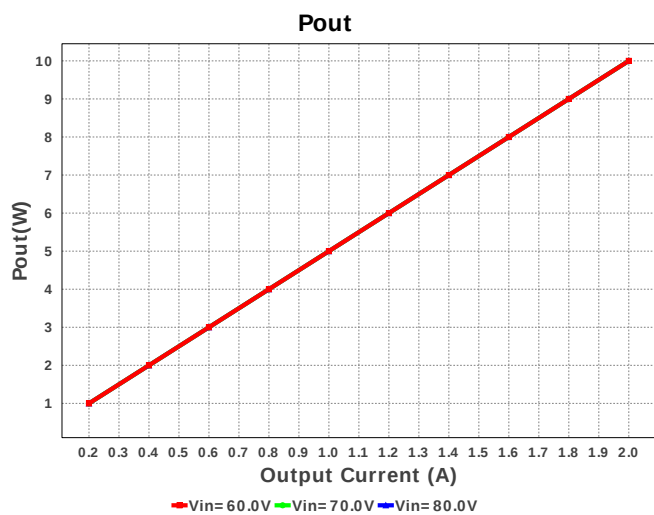
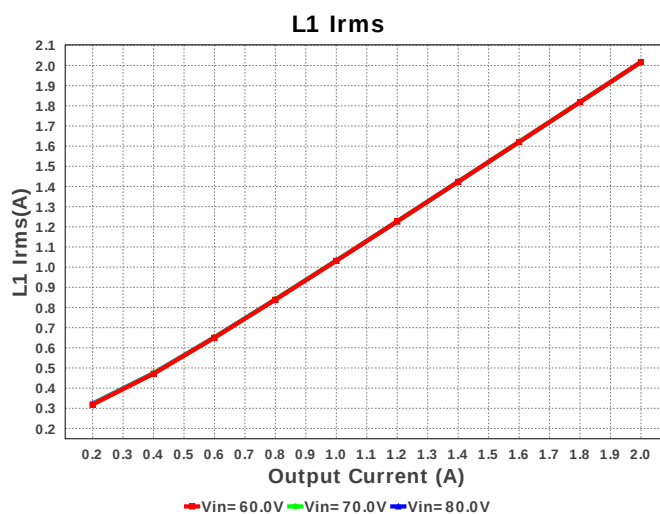
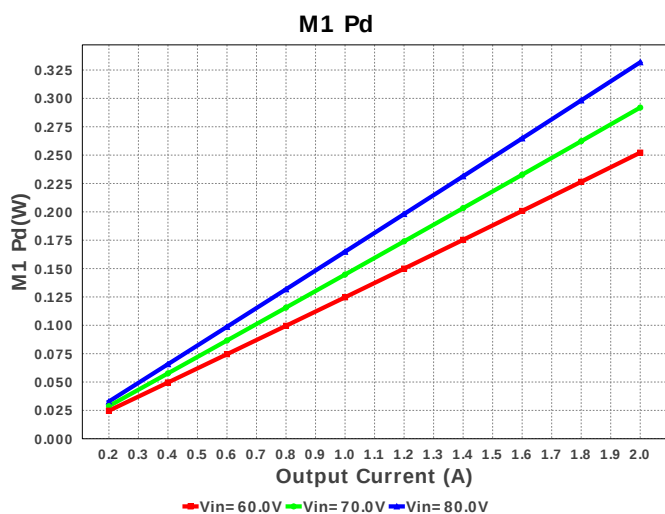
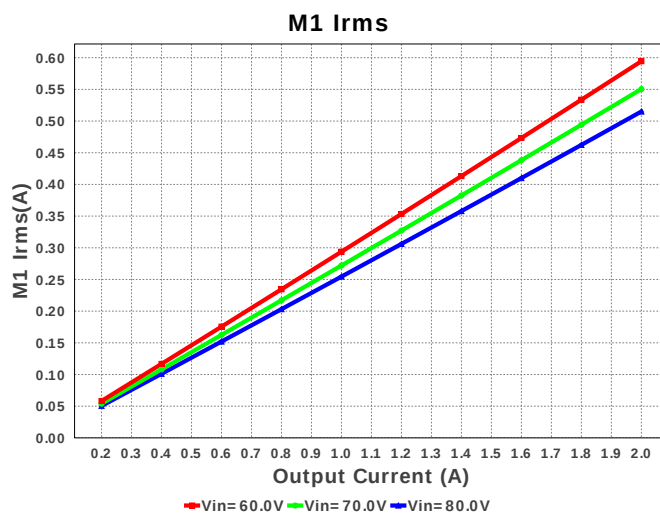
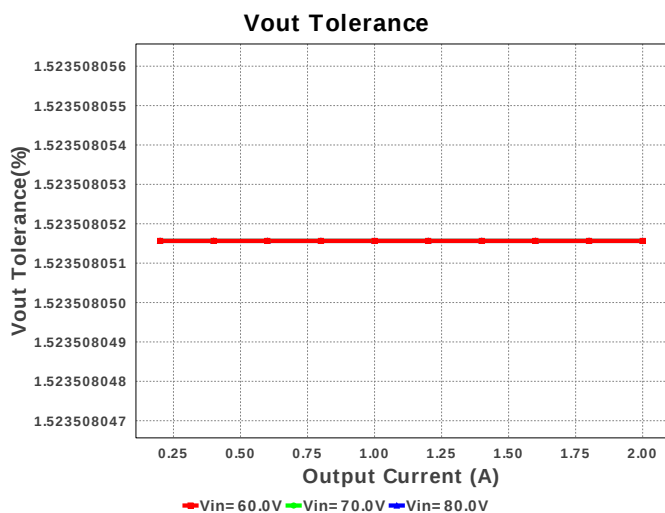
Electrical BOM

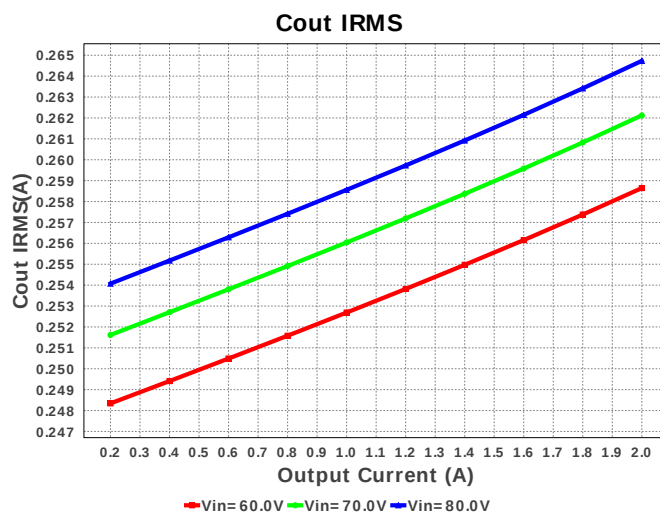
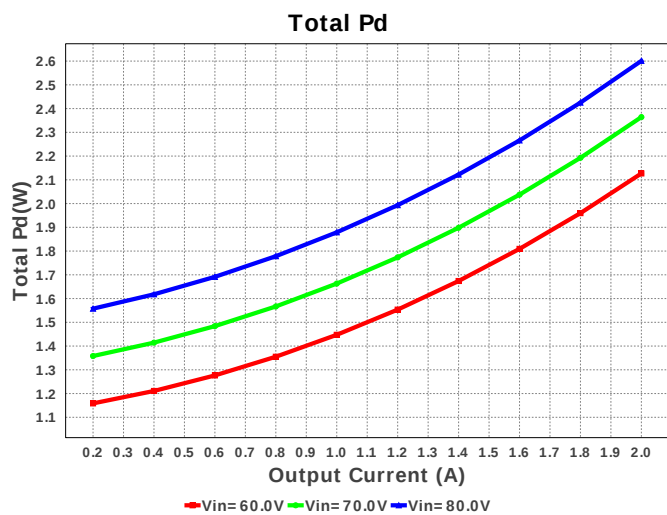
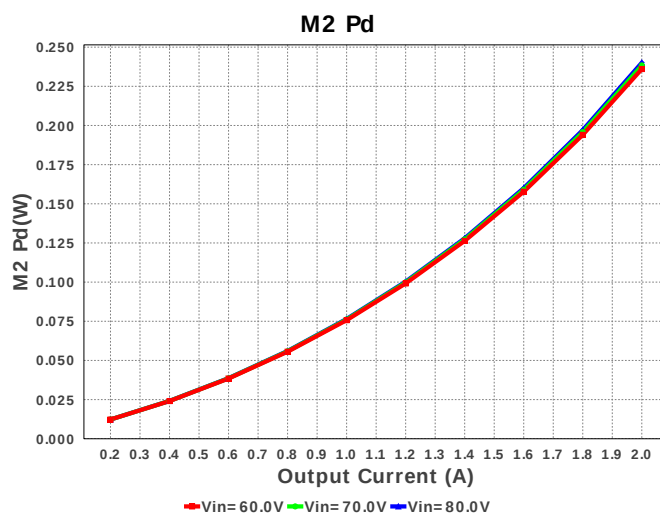
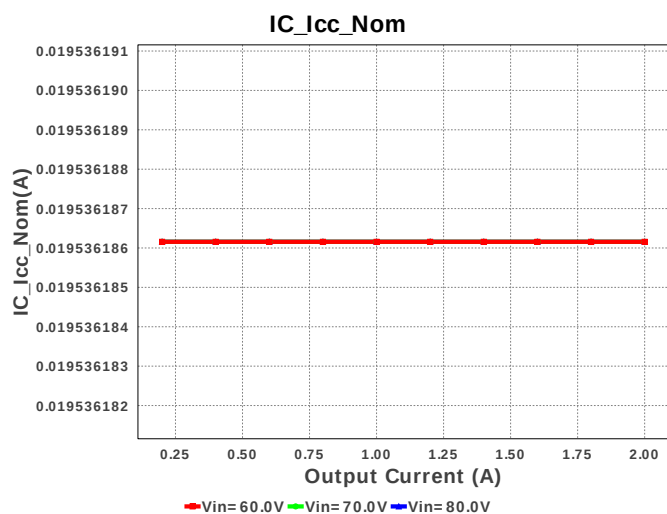
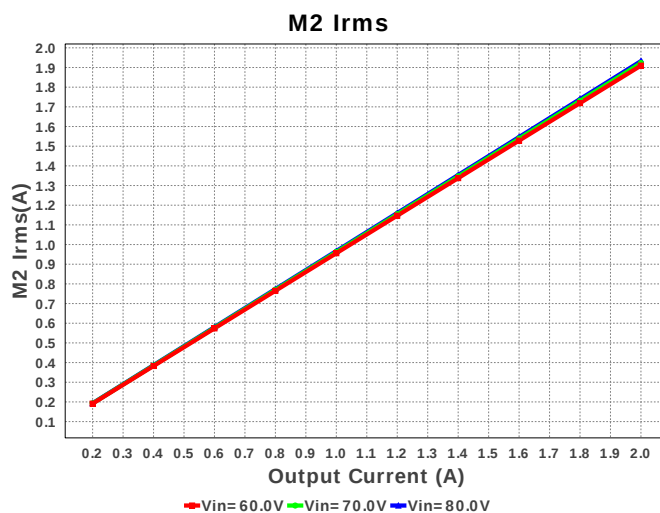
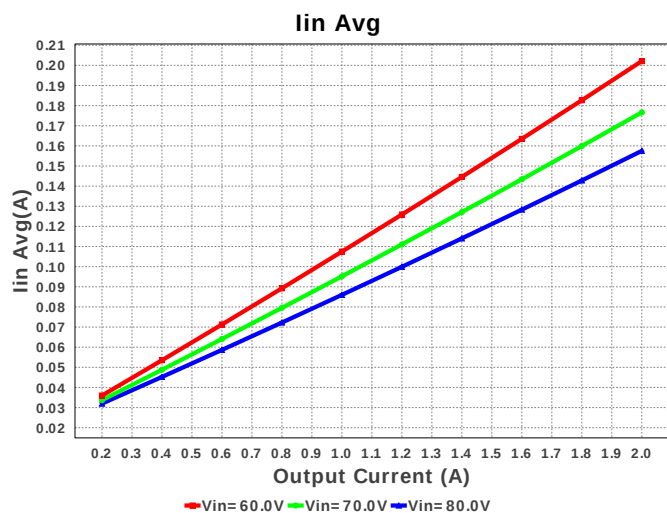
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cboot	Taiyo Yuden	EMK212B7105KG-T Series= X7R	Cap= 1.0 uF VDC= 16.0 V IRMS= 0.0 A	1	\$0.02	0805 7 mm ²
2.	Ccomp	Yageo America	CC0805KRX7R9BB153 Series= X7R	Cap= 15.0 nF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	0805 7 mm ²
3.	Ccomp2	Yageo America	CC0805JRNPO9BN150 Series= C0G/NP0	Cap= 15.0 pF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	0805 7 mm ²
4.	Cin	Panasonic	100SXV15M Series= SXV	Cap= 15.0 uF ESR= 40.0 mOhm VDC= 100.0 V IRMS= 2.35 A	1	\$1.25	 CAPSMT_62_E12 106 mm ²
5.	Cinx	Taiyo Yuden	HMK212B7104KG-T Series= X7R	Cap= 100.0 nF VDC= 100.0 V IRMS= 0.0 A	1	\$0.03	0805 7 mm ²
6.	Cout	MuRata	GRM219R60J106KE19D Series= X5R	Cap= 10.0 uF ESR= 4.324 mOhm VDC= 6.3 V IRMS= 2.8728 A	1	\$0.02	0805 7 mm ²
7.	Cramp	Yageo America	CC0805KRX7R9BB391 Series= X7R	Cap= 390.0 pF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	0805 7 mm ²
8.	Css	MuRata	GRM216R71H103KA01D Series= X7R	Cap= 10.0 nF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	0805 7 mm ²

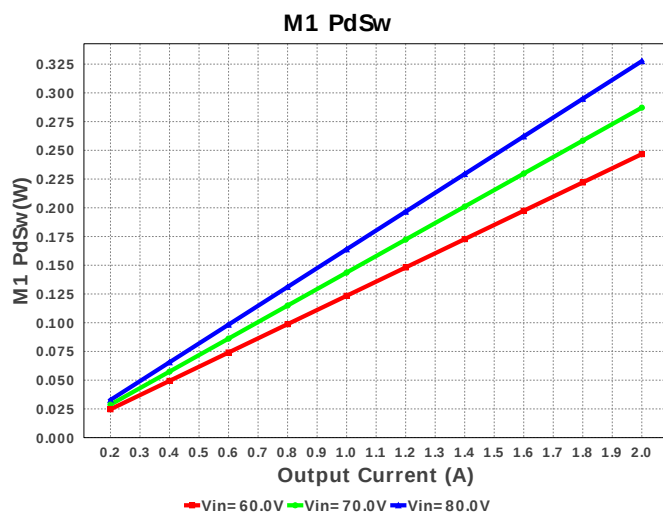
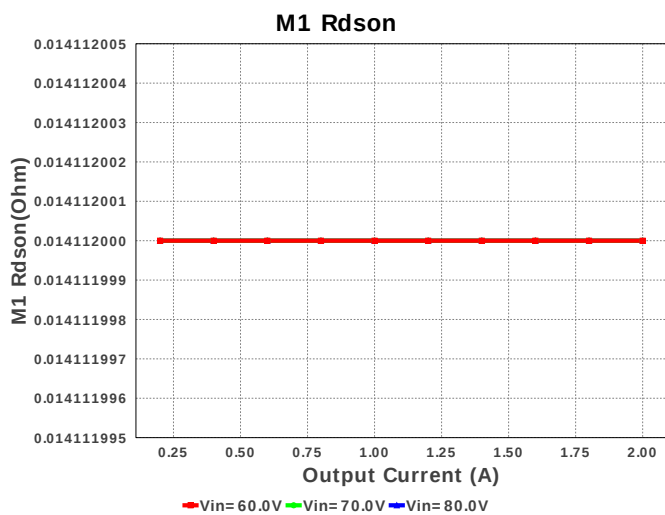
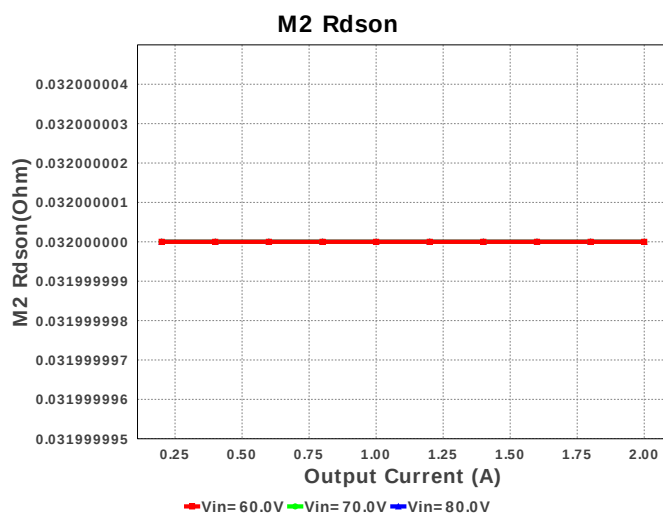
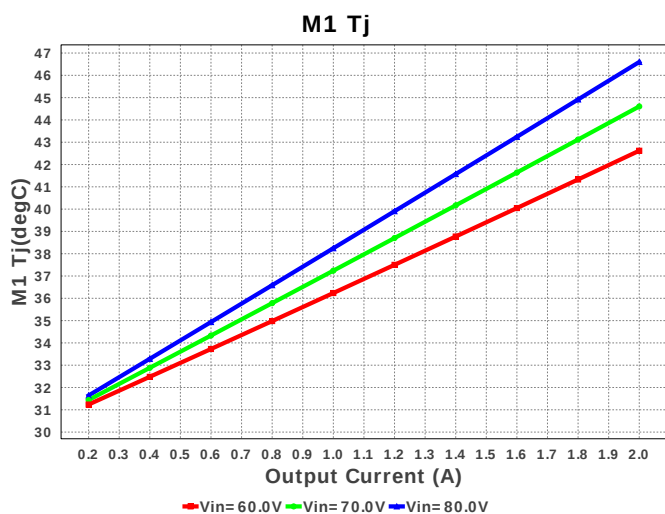
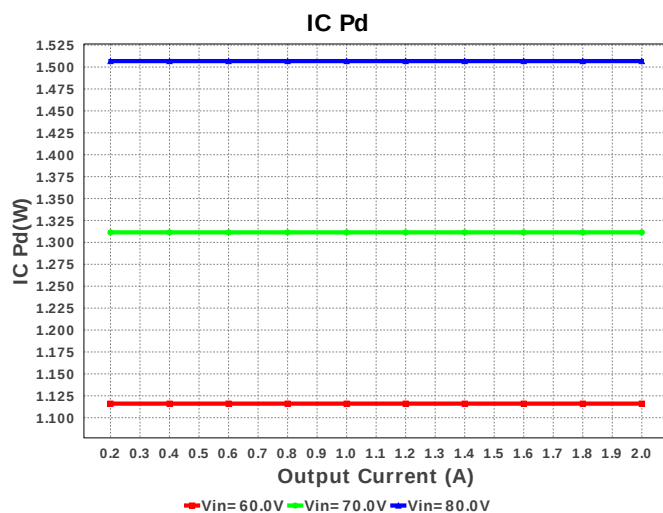
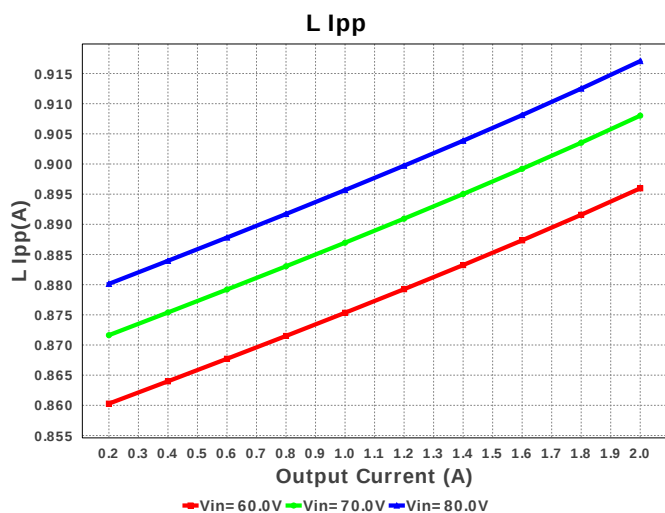
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
9.	Cvcc	Taiyo Yuden	EMK212B7105KG-T Series= X7R	Cap= 1.0 uF VDC= 16.0 V IRMS= 0.0 A	1	\$0.02	 0805 7 mm ²
10.	D1	International Rectifier	10MQ100NTRPBF	VF@Io= 680.0 mV VRRM= 100.0 V	1	\$0.10	 SMA 37 mm ²
11.	L1	Bourns	SDR1105-220ML	L= 22.0 uH DCR= 80.0 mOhm	1	\$0.29	 SDR1105 157 mm ²
12.	M1	Texas Instruments	CSD19534Q5A	VdsMax= 100.0 V IdsMax= 10.0 Amps	1	\$0.68	 TRANS_NexFET_Q5A 55 mm ²
13.	M2	Infineon Technologies	BSC320N20NS3 G	VdsMax= 200.0 V IdsMax= 36.0 Amps	1	\$1.32	 PG-TDSON-8 55 mm ²
14.	Rcomp	Panasonic	ERJ-6ENF2871V Series= ERJ-6E	Res= 2.87 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7 mm ²
15.	Renable	Panasonic	ERJ-6ENF1004V Series= ERJ-6E	Res= 1000.0 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7 mm ²
16.	Rfbb	Yageo America	RC0603FR-071K2L Series= ?	Res= 1.2 kOhm Power= 100.0 mW Tolerance= 1.0%	1	\$0.01	 0603 5 mm ²
17.	Rfbt	Panasonic	ERJ-6ENF3741V Series= ERJ-6E	Res= 3.74 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7 mm ²
18.	Rsense	Stackpole Electronics Inc	CSR1206FK30L0 Series= ?	Res= 30.0 mOhm Power= 500.0 mW Tolerance= 1.0%	1	\$0.10	 1206 11 mm ²
19.	Rt	Panasonic	ERJ-6ENF1272V Series= ERJ-6E	Res= 12.7 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7 mm ²
20.	Ruv1	Panasonic	ERJ-6ENF2261V Series= ERJ-6E	Res= 2.26 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7 mm ²
21.	Ruv2	Panasonic	ERJ-6ENF8662V Series= ERJ-6E	Res= 86.6 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7 mm ²
22.	U1	Texas Instruments	LM5116MHX/NOPB	Switcher	1	\$2.42	 MXA20A 71 mm ²

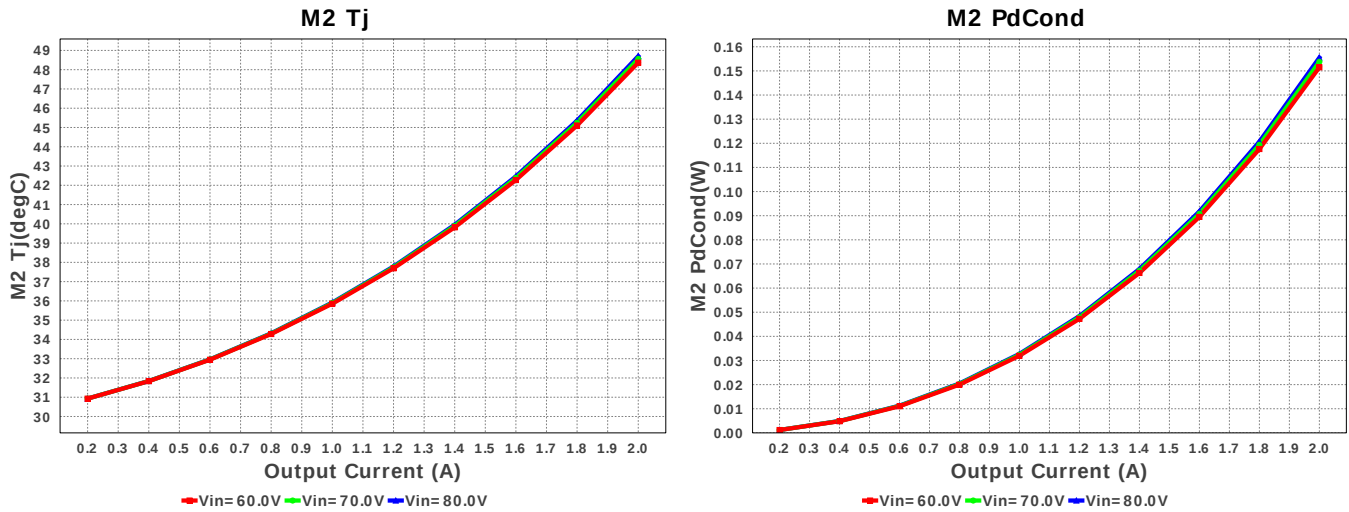












Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	497.642 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	264.729 mA	Current	Output capacitor RMS ripple current
3.	Iin Avg	157.54 mA	Current	Average input current
4.	L Ipp	917.05 mA	Current	Peak-to-peak inductor ripple current
5.	L1 Irms	2.017 A	Current	Inductor ripple current
6.	M1 Irms	515.009 mA	Current	MOSFET RMS ripple current
7.	M2 Irms	1.933 A	Current	MOSFET RMS ripple current
8.	SW Ipk	2.459 A	Current	Peak switch current
9.	BOM Count	22	General	Total Design BOM count
10.	FootPrint	592.0 mm ²	General	Total Foot Print Area of BOM components
11.	Frequency	246.5 kHz	General	Switching frequency
12.	IC Tolerance	16.0 mV	General	IC Feedback Tolerance
13.	M1 Rdson	14.112 mOhm	General	Drain-Source On-resistance
14.	M2 Rdson	32.0 mOhm	General	Drain-Source On-resistance
15.	Pout	10.0 W	General	Total output power
16.	Total BOM	\$6.36	General	Total BOM Cost
17.	Low Freq Gain	83.537 dB	Op_Point	Gain at 10Hz
18.	Vout Actual	5.002 V	Op_Point	Vout Actual calculated based on selected voltage divider resistors
19.	Cross Freq	41.016 kHz	Op_point	Bode plot crossover frequency
20.	Duty Cycle	6.631 %	Op_point	Duty cycle
21.	Efficiency	79.343 %	Op_point	Steady state efficiency
22.	Gain Marg	-12.624 dB	Op_point	Bode Plot Gain Margin
23.	IC Tj	90.272 degC	Op_point	IC junction temperature
24.	IOUT_OP	2.0 A	Op_point	Iout operating point
25.	M1 Tj	46.929 degC	Op_point	M1 MOSFET junction temperature
26.	M2 Tj	48.354 degC	Op_point	M2 MOSFET junction temperature
27.	Phase Marg	69.983 deg	Op_point	Bode Plot Phase Margin
28.	VIN_OP	80.0 V	Op_point	Vin operating point
29.	Vout p-p	46.504 mV	Op_point	Peak-to-peak output ripple voltage
30.	Cin Pd	9.906 mW	Power	Input capacitor power dissipation
31.	Cout Pd	303.033 μW	Power	Output capacitor power dissipation
32.	IC Pd	1.507 W	Power	IC power dissipation
33.	L Pd	400.0 mW	Power	Inductor power dissipation
34.	M1 Pd	338.413 mW	Power	M1 MOSFET total power dissipation
35.	M1 PdCond	4.229 mW	Power	M1 MOSFET conduction losses
36.	M1 PdSw	334.184 mW	Power	M1 MOSFET switching losses
37.	M2 Pd	235.983 mW	Power	M2 MOSFET total power dissipation
38.	M2 PdCond	155.43 mW	Power	M2 MOSFET conduction losses
39.	M2 PdSw	80.554 mW	Power	M2 MOSFET switching losses
40.	Rsense Pd	112.043 mW	Power	Rsense Power Dissipation
41.	Total Pd	2.603 W	Power	Total Power Dissipation
42.	IC_licc_Nom	19.536 mA		IC Icc gate driver current
43.	Vout Tolerance	1.524 %		Vout Tolerance based on IC Tolerance and voltage divider resistors if applicable

Design Inputs

#	Name	Value	Description
1.	Iout	2.0	Maximum Output Current
2.	VinMax	80.0	Maximum input voltage
3.	VinMin	60.0	Minimum input voltage
4.	Vout	5.0	Output Voltage

#	Name	Value	Description
5.	base_pn	LM5116	Texas Instruments Base Part Number
6.	source	DC	Input Source Type
7.	ta	30.0	Ambient temperature

Design Assistance

1. LM5116 Product Folder : <http://www.ti.com/product/LM5116> : contains the data sheet and other resources.

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