


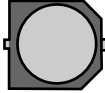



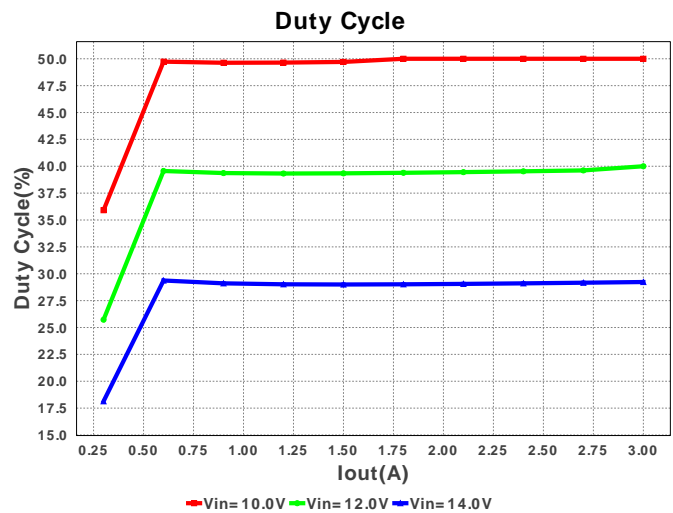
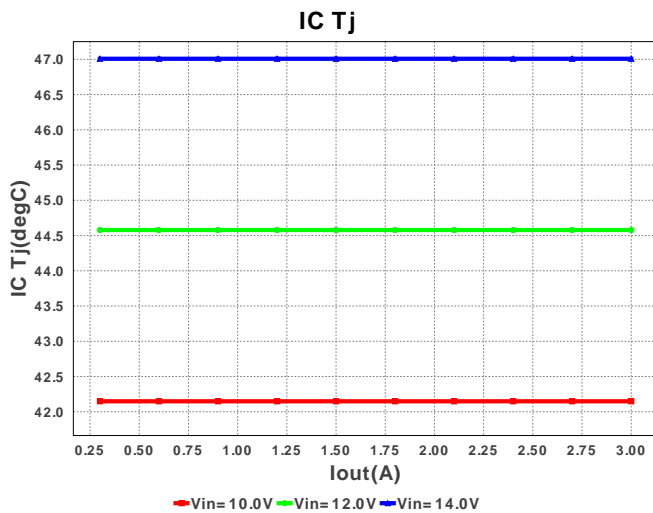


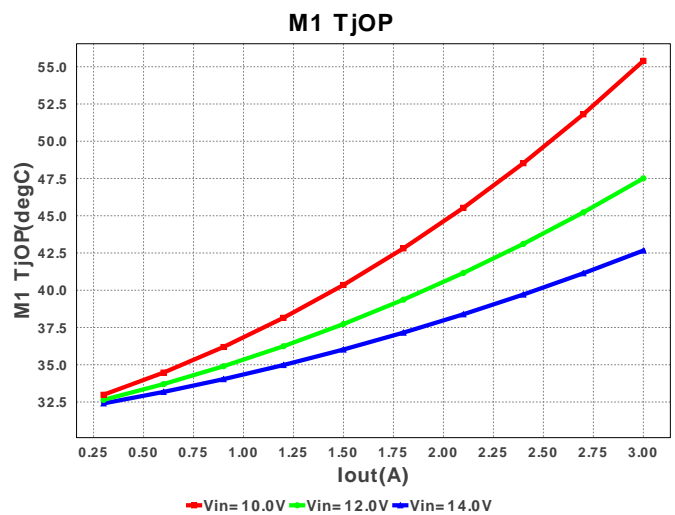
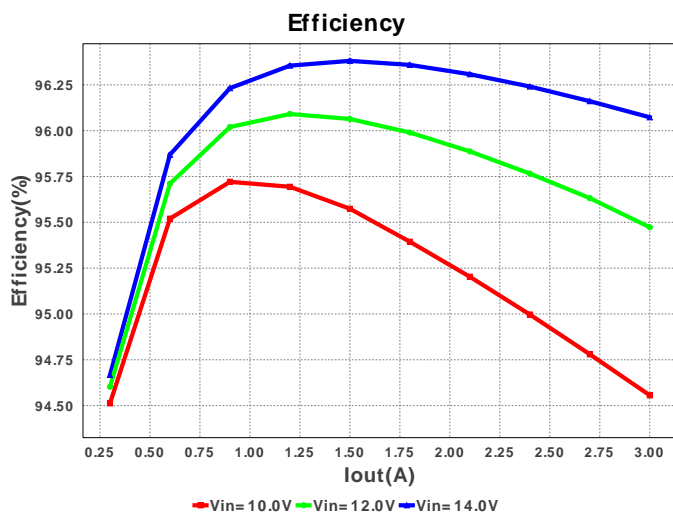
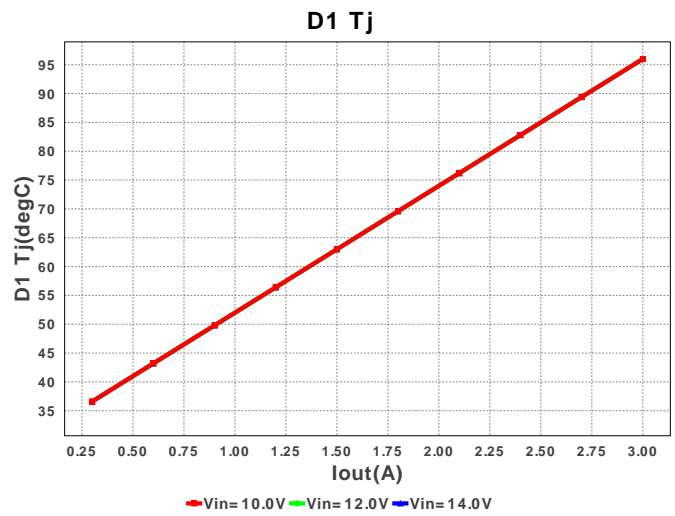
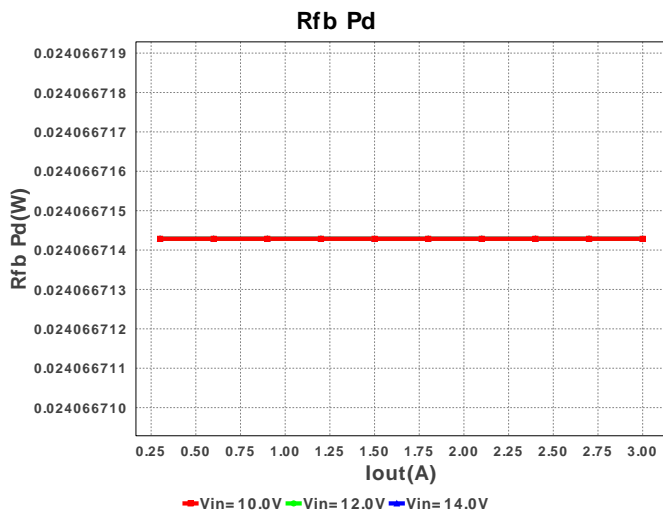
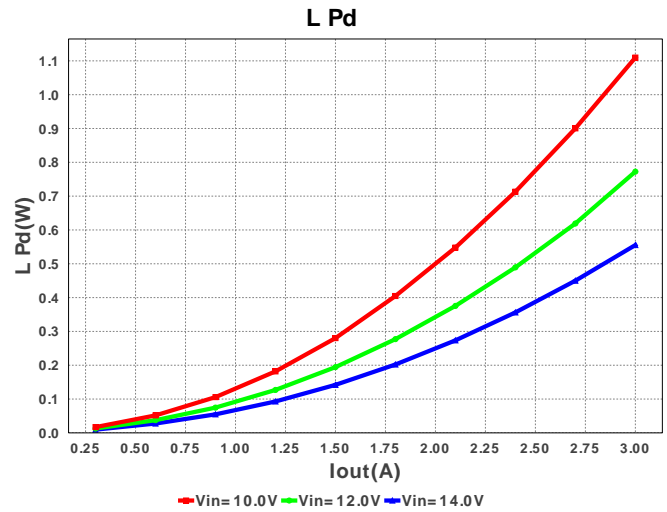
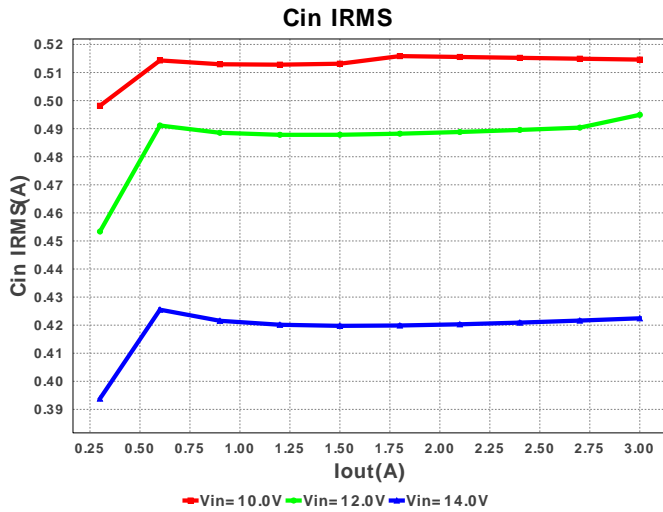
1. With the low turn of voltage of the LM34x8 your power supply may current limit before you reach your working input voltage. If this happens, or to preempt this from happening, you can include a low pass RC filter from input voltage to Vin on the IC. Make sure the rise time on the RC network is slower than your supply's rise time.

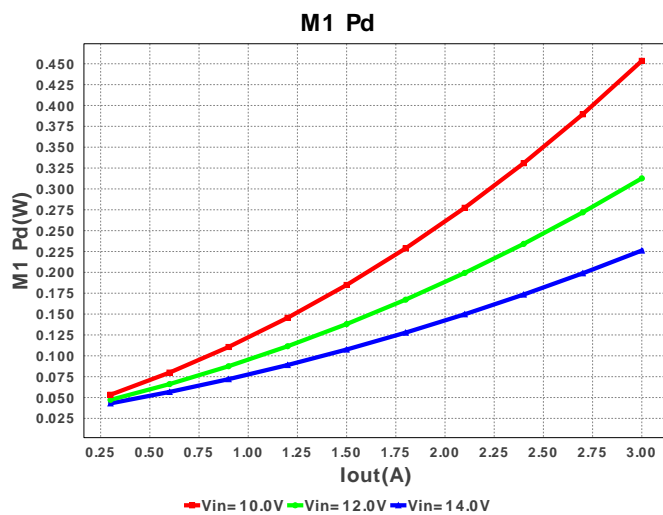
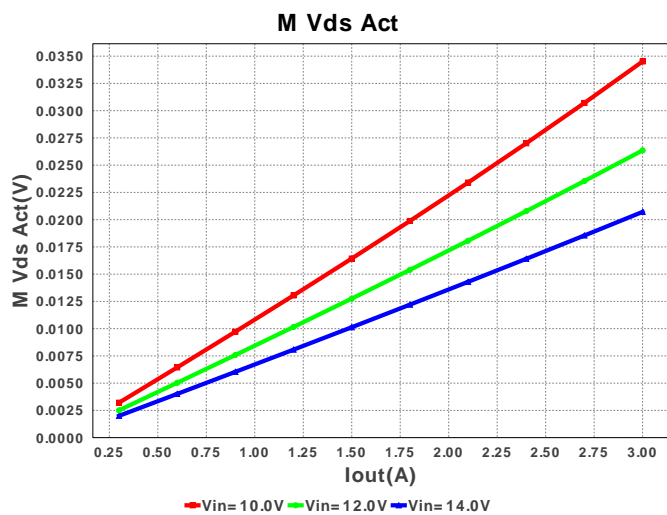
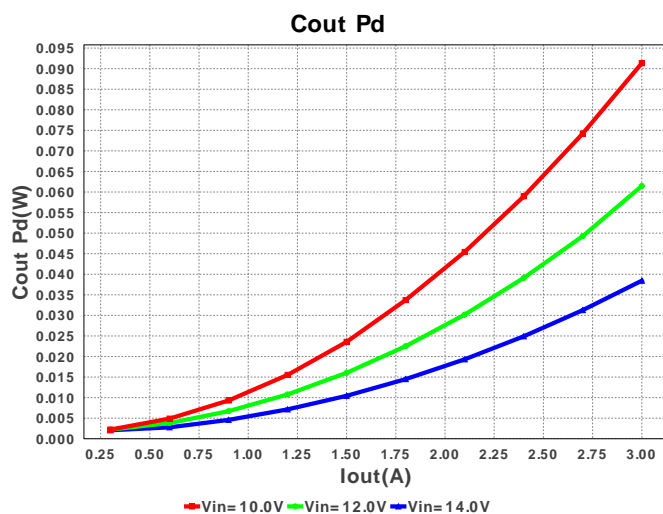
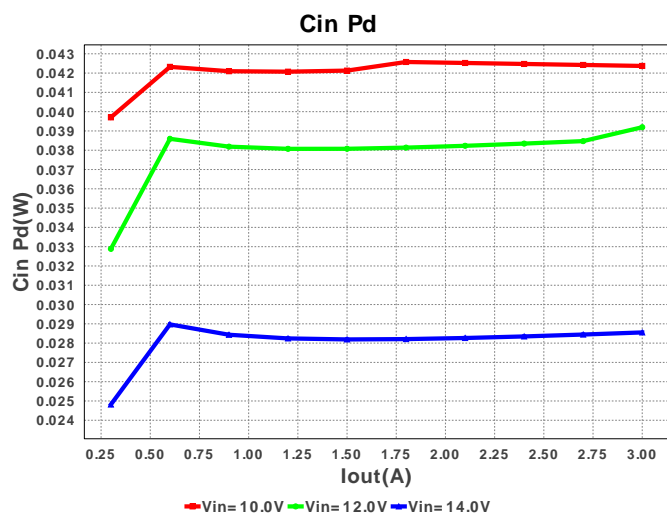
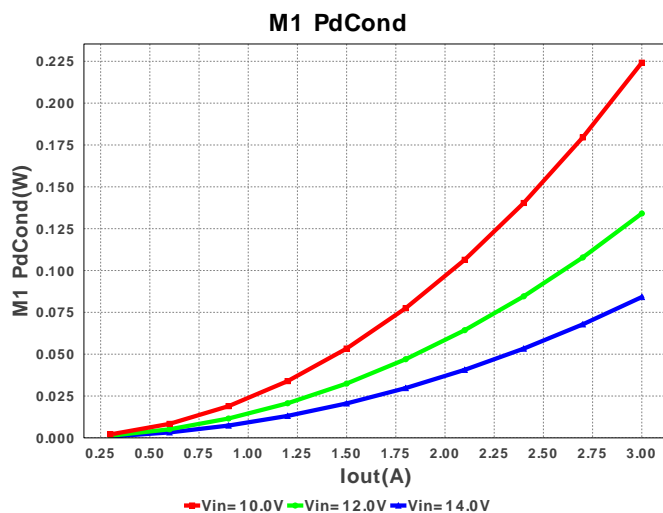
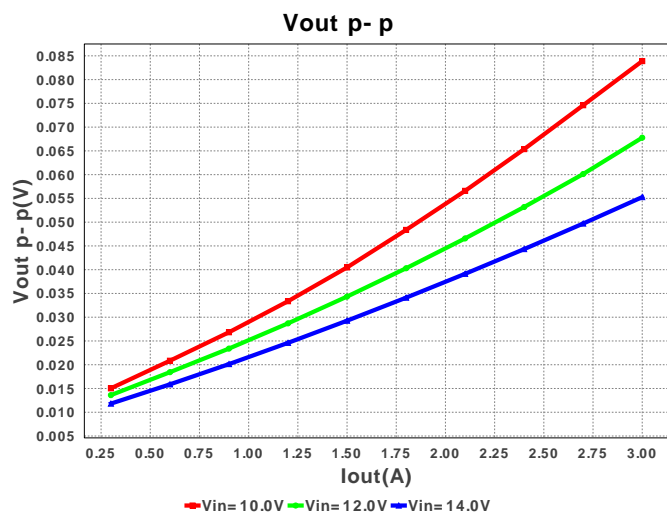
Electrical BOM

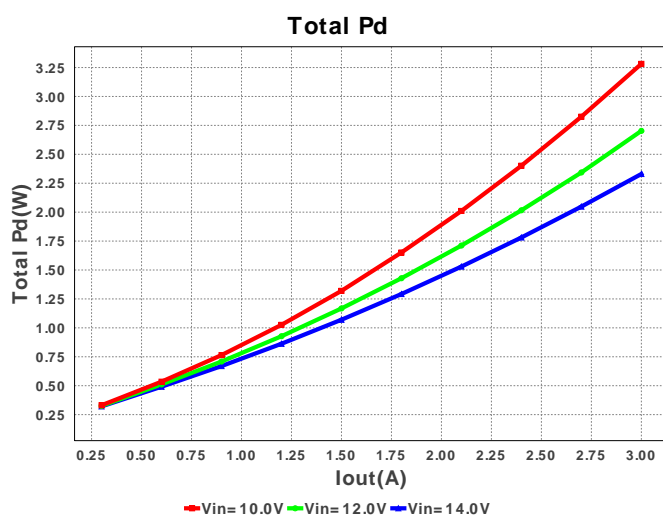
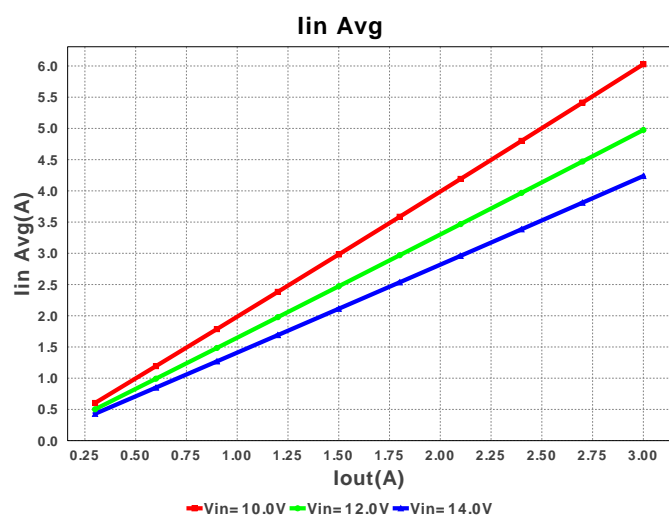
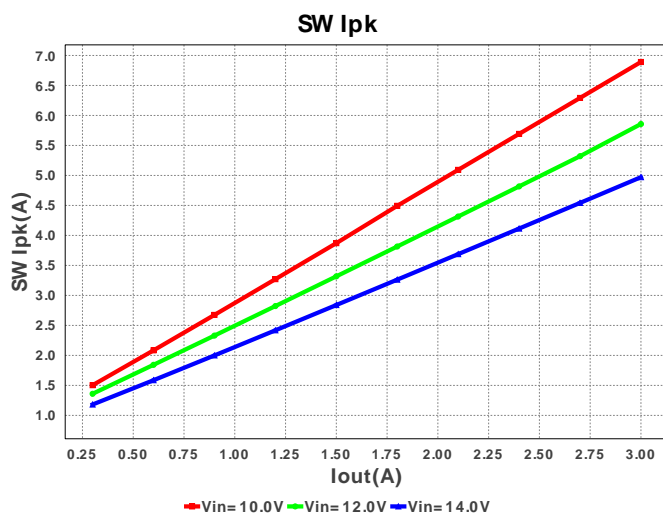
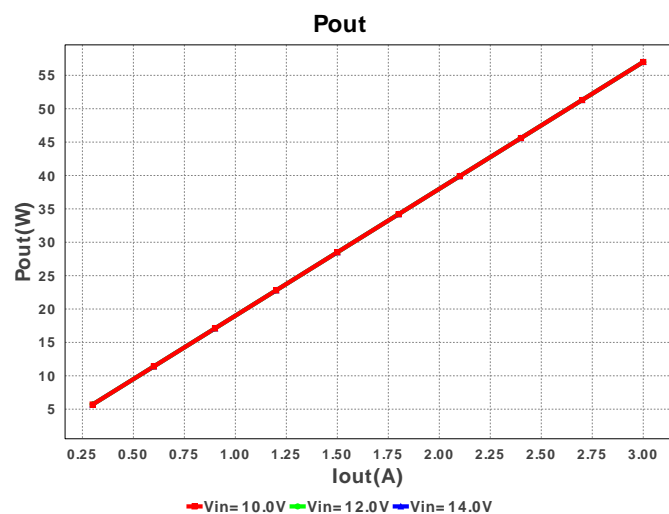
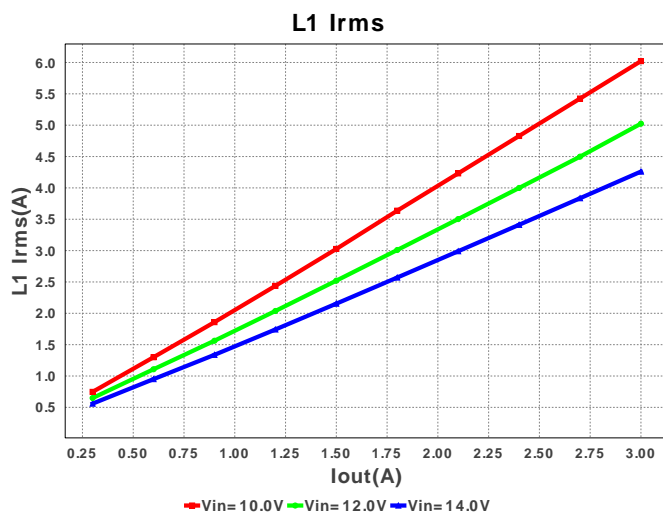
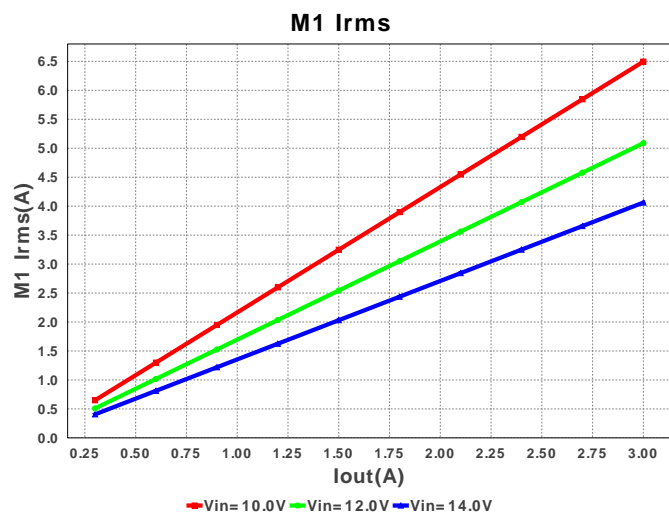
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cbyp	AVX	08053C104KAT2A Series= X7R	Cap= 100.0 nF ESR= 280.0 mOhm VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	 0805 7mm2
2.	Ccomp	Taiyo Yuden	TMK212B7473KD-T Series= X7R	Cap= 47.0 nF VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	 0805 7mm2
3.	Ccomp2	Yageo America	CC0805KRX7R9BB222 Series= X7R	Cap= 2.2 nF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	 0805 7mm2
4.	Cin	Panasonic	EEE-FK1E151P Series= FK	Cap= 150.0 uF ESR= 160.0 mOhm VDC= 25.0 V IRMS= 600.0 mA	1	\$0.24	 SM_RADIAL_F 124mm2
5.	Cout	Panasonic	35SVPF82M Series= 1273	Cap= 82.0 uF ESR= 20.0 mOhm VDC= 35.0 V IRMS= 4.0 A	2	\$0.61	 CAPSMT_62_E12 106mm2
6.	Csense	MuRata	GRM216R71H103KA01D Series= X7R	Cap= 10.0 nF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	 0805 7mm2
7.	D1	Vishay-Semiconductor	SL44-E3/57T	Vf@Io= 440.0 mV VRRM= 40.0 V	1	\$0.32	 SMC 83mm2

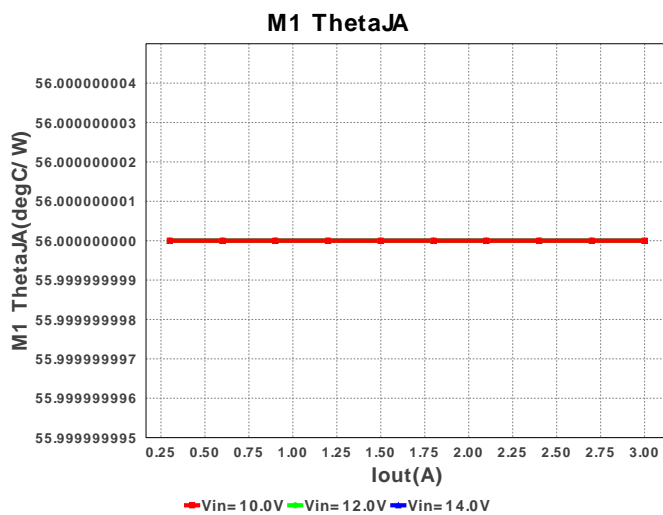
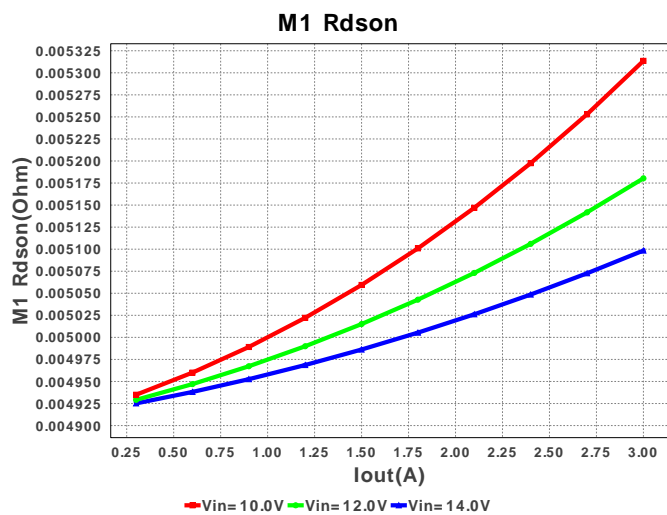
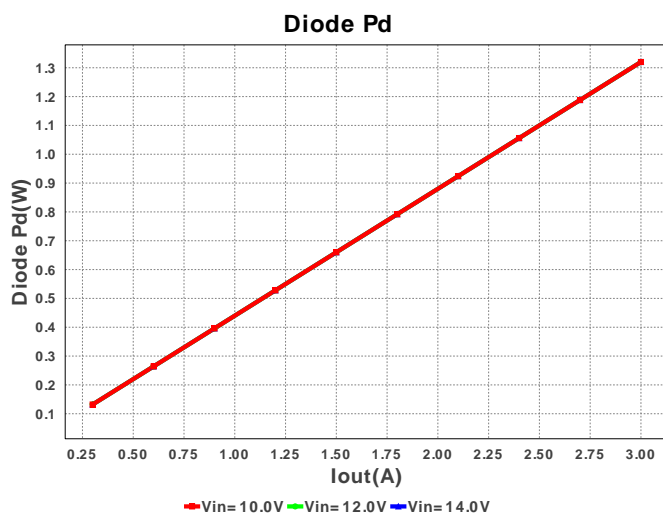
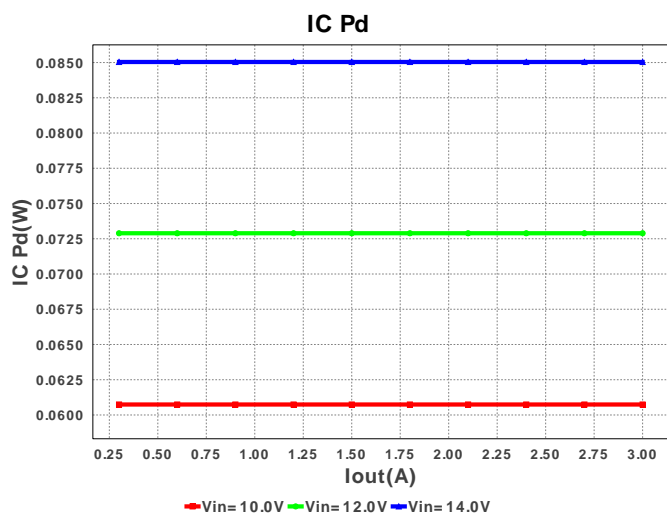
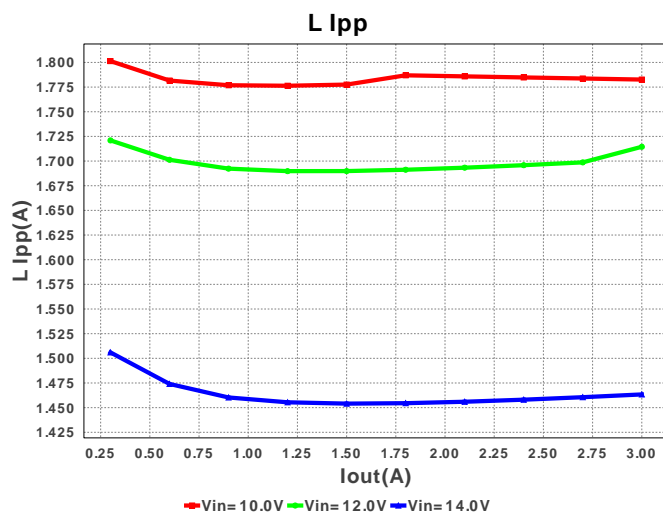
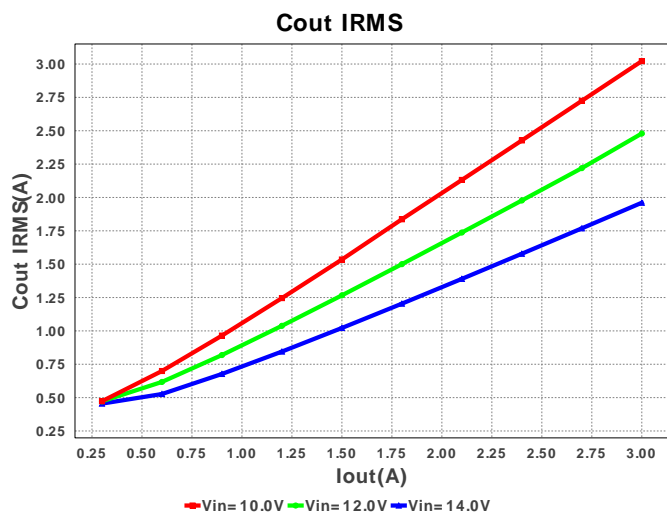
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
8.	L1	Bourns	SRP1250-100M	L= 10.0 μ H DCR= 25.5 mOhm	1	\$0.64	 SRP1250 253mm2
9.	M1	Texas Instruments	CSD16327Q3	VdsMax= 25.0 V IdsMax= 60.0 Amps	1	\$0.44	 TRANS_NexFET_Q3 19mm2
10.	Rcomp	Vishay-Dale	CRCW04022K55FKED Series= CRCW..e3	Res= 2.55 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3mm2
11.	Rfadj	Vishay-Dale	CRCW040261K9FKED Series= CRCW..e3	Res= 61.9 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3mm2
12.	Rfb1	Vishay-Dale	CRCW04021K00FKED Series= CRCW..e3	Res= 1,000 Ohm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3mm2
13.	Rfb2	Vishay-Dale	CRCW040214K0FKED Series= CRCW..e3	Res= 14.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3mm2
14.	Rs1	Vishay-Dale	CRCW0402100RFKED Series= CRCW..e3	Res= 100.0 Ohm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3mm2
15.	Rsense	Stackpole Electronics Inc	CSR1206FK10L0 Series= ?	Res= 10.0 mOhm Power= 500.0 mW Tolerance= 1.0%	1	\$0.11	 1206 11mm2
16.	U1	Texas Instruments	LM3478MM/NOPB	Switcher	1	\$0.80	 MUA08A 24mm2

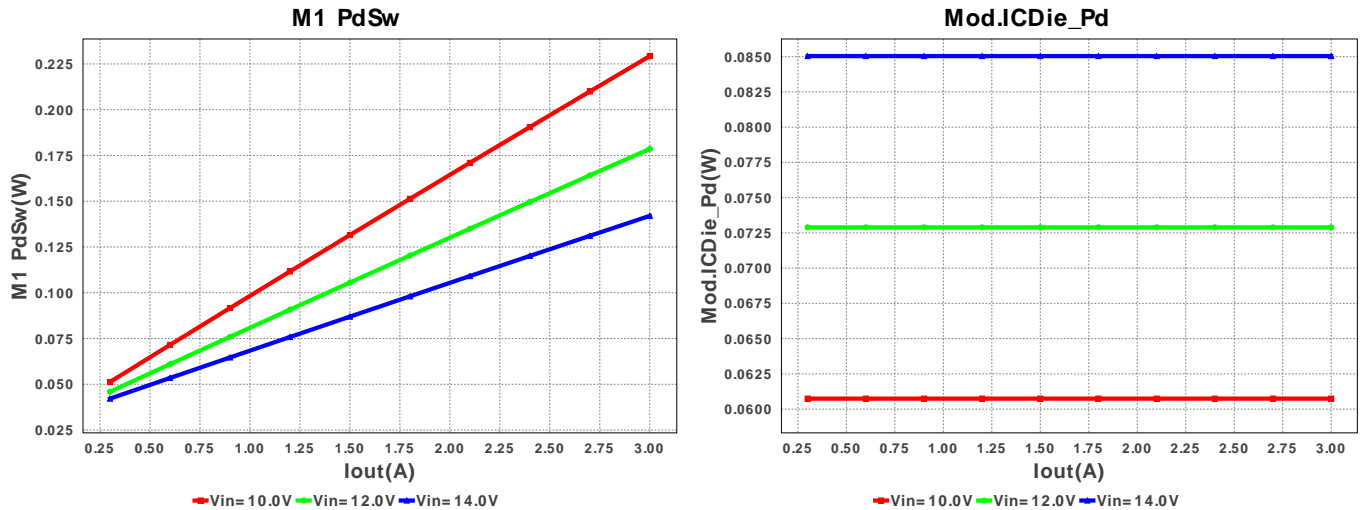












Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	514.602 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	3.022 A	Current	Output capacitor RMS ripple current
3.	Iin Avg	6.028 A	Current	Average input current
4.	L Ipp	1.783 A	Current	Peak-to-peak inductor ripple current
5.	L1 Irms	6.022 A	Current	Inductor ripple current
6.	M1 Irms	6.482 A	Current	M1 MOSFET Irms
7.	SW Ipk	6.891 A	Current	Peak switch current
8.	BOM Count	17	General	Total Design BOM count
9.	FootPrint	768.0 mm2	General	Total Foot Print Area of BOM components
10.	Frequency	278.801 kHz	General	Switching frequency
11.	IC Tolerance	24.3 mV	General	IC Feedback Tolerance
12.	M Vds Act	34.422 mV	General	M Vds
13.	M1 Rdson	5.31 mOhm	General	Drain-Source On-resistance
14.	M1 ThetaJA	56.0 degC/W	General	MOSFET junction-to-ambient thermal resistance
15.	Pout	57.0 W	General	Total output power
16.	Total BOM	\$3.86	General	Total BOM Cost
17.	D1 Tj	96.0 degC	Op_Point	D1 junction temperature
18.	Vout OP	19.0 V	Op_Point	Operational Output Voltage
19.	Cross Freq	3.352 kHz	Op_point	Bode plot crossover frequency
20.	Duty Cycle	50.0 %	Op_point	Duty cycle
21.	Efficiency	94.562 %	Op_point	Steady state efficiency
22.	IC Tj	42.138 degC	Op_point	IC junction temperature
23.	ICThetaJA	200.0 degC/W	Op_point	IC junction-to-ambient thermal resistance
24.	IOUT_OP	3.0 A	Op_point	Iout operating point
25.	M1 TjOP	55.203 degC	Op_point	M1 MOSFET junction temperature
26.	Phase Marg	54.233 deg	Op_point	Bode Plot Phase Margin
27.	VIN_OP	10.0 V	Op_point	Vin operating point
28.	Vout p-p	83.893 mV	Op_point	Peak-to-peak output ripple voltage
29.	Cin Pd	42.37 mW	Power	Input capacitor power dissipation
30.	Cout Pd	91.324 mW	Power	Output capacitor power dissipation
31.	Diode Pd	1.32 W	Power	Diode power dissipation
32.	IC Pd	60.688 mW	Power	IC power dissipation
33.	L Pd	1.11 W	Power	Inductor power dissipation
34.	M1 Pd	450.061 mW	Power	M1 MOSFET total power dissipation
35.	M1 PdCond	223.124 mW	Power	M1 MOSFET conduction losses
36.	M1 PdSw	226.937 mW	Power	M1 MOSFET switching losses
37.	Rfb Pd	24.067 mW	Power	Rfb Power Dissipation
38.	Total Pd	3.278 W	Power	Total Power Dissipation

Design Inputs

#	Name	Value	Description
1.	Iout	3.0 A	Maximum Output Current
2.	Iout1	3.0 Amps	Output Current #1
3.	VinMax	14.0 V	Maximum input voltage
4.	VinMin	10.0 V	Minimum input voltage
5.	Vout	19.0 V	Output Voltage
6.	Vout1	19.0 Volt	Output Voltage #1
7.	base_pn	LM3478	Texas Instruments Base Part Number
8.	source	DC	Input Source Type
9.	ta	30.0 degC	Ambient temperature

Design Assistance

1. LM3478 Product Folder : <http://www.ti.com/product/lm3478> : contains the data sheet and other resources.

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