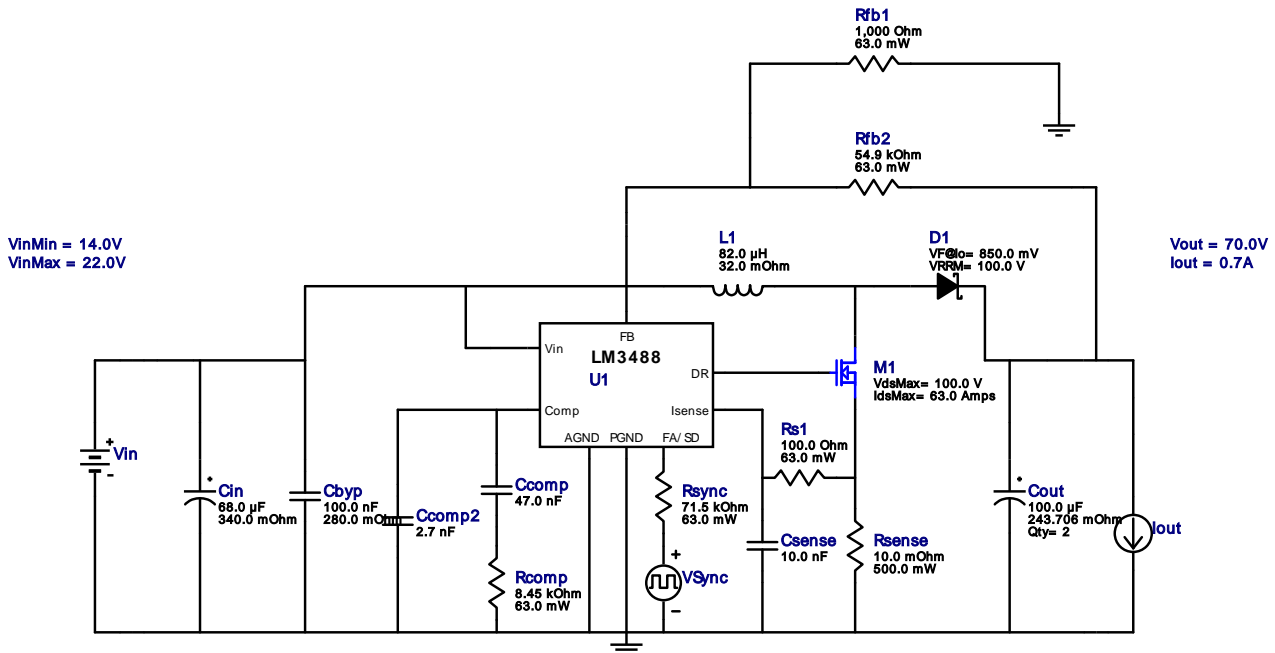

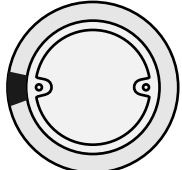


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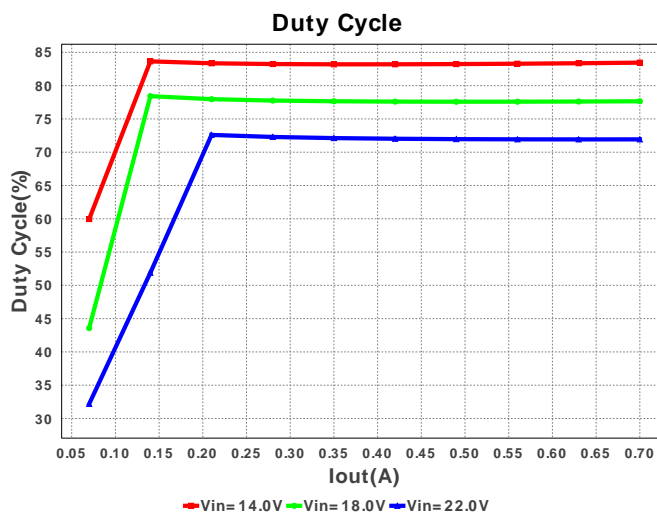
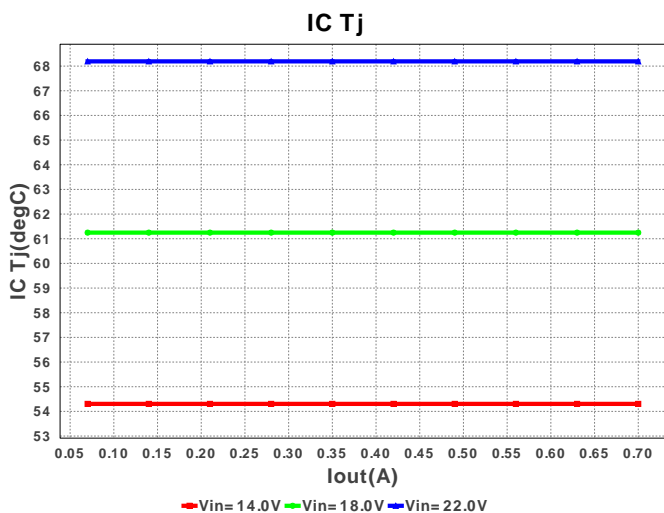
 Design : 3610905/3 LM3488MM/NOPB
 LM3488MM/NOPB 14.0V-22.0V to 70.0V @ 0.7A


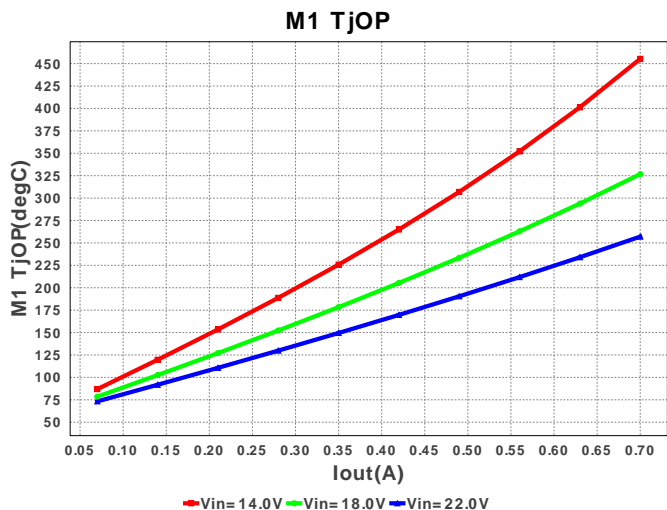
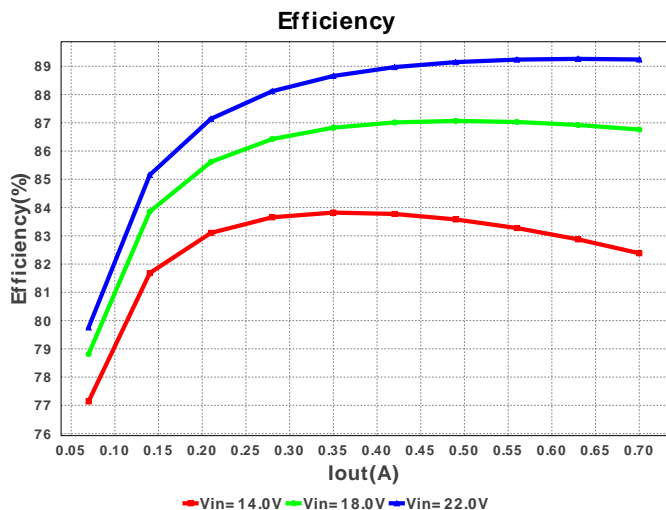
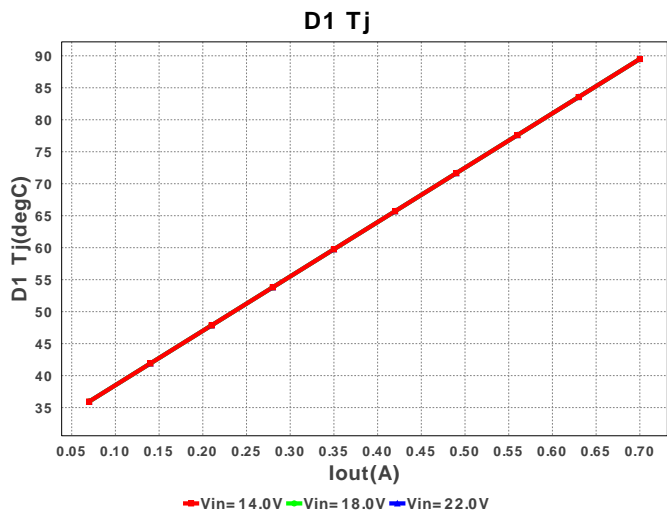
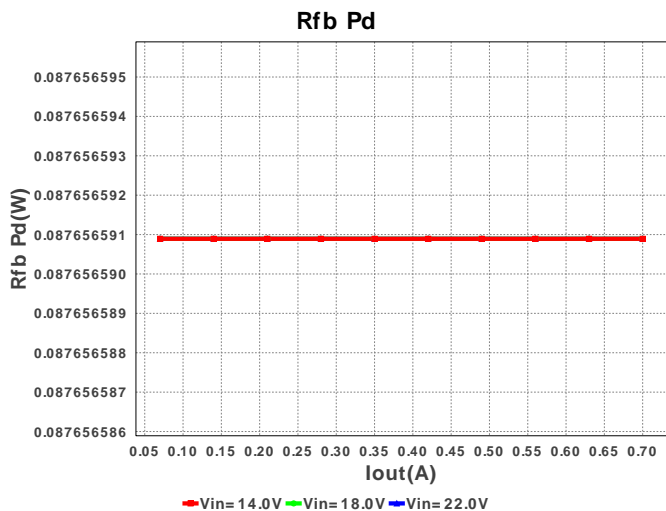
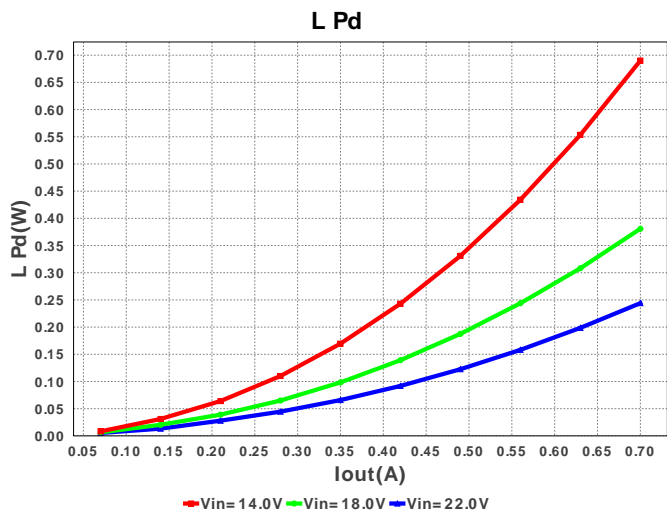
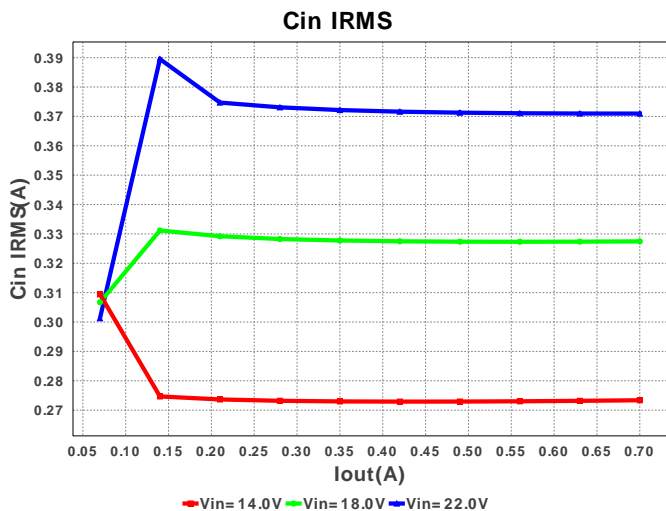
1. With the low turn of voltage of the LM34x8 your power supply may current limit before you reach your working input voltage. If this happens, or to preempt this from happening, you can include a low pass RC filter from input voltage to Vin on the IC. Make sure the rise time on the RC network is slower than your supply's rise time. If you are not using the synchronization feature of the part use the LM3478.

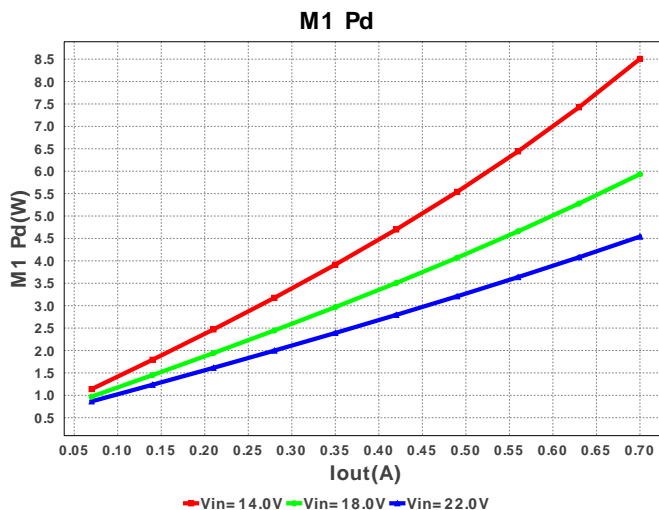
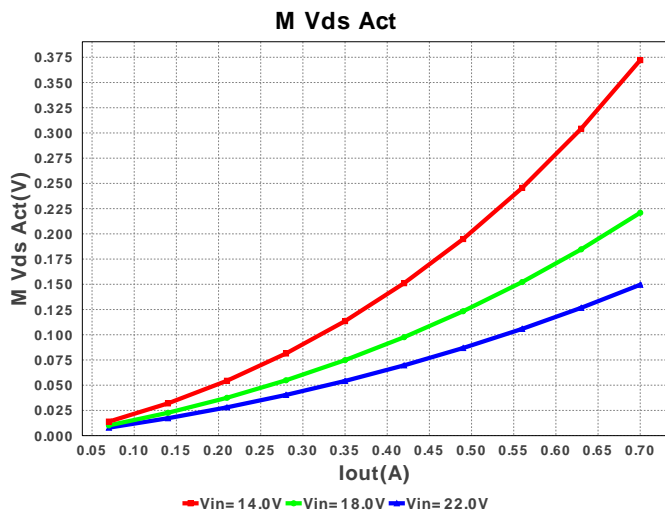
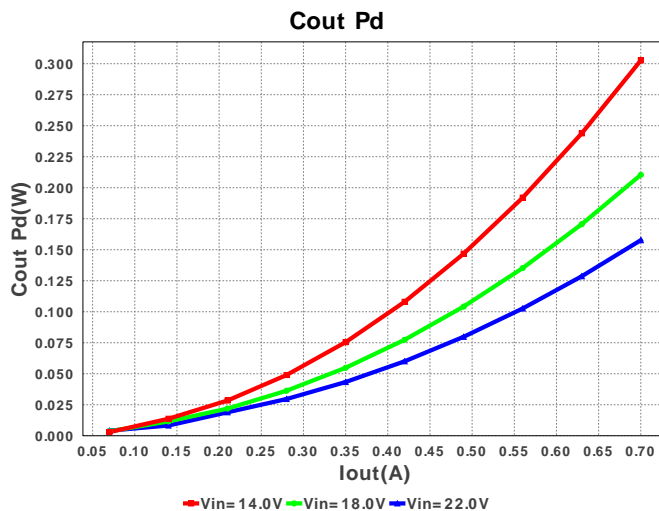
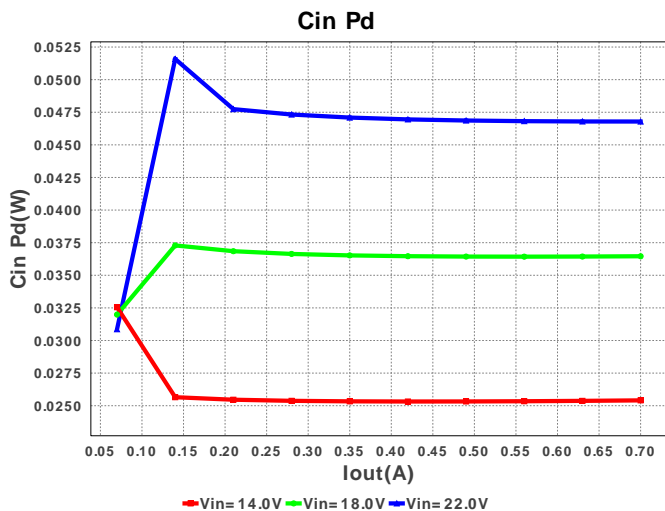
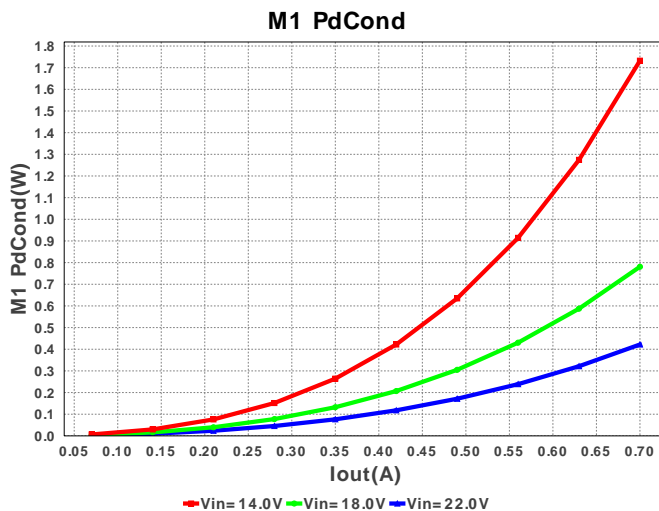
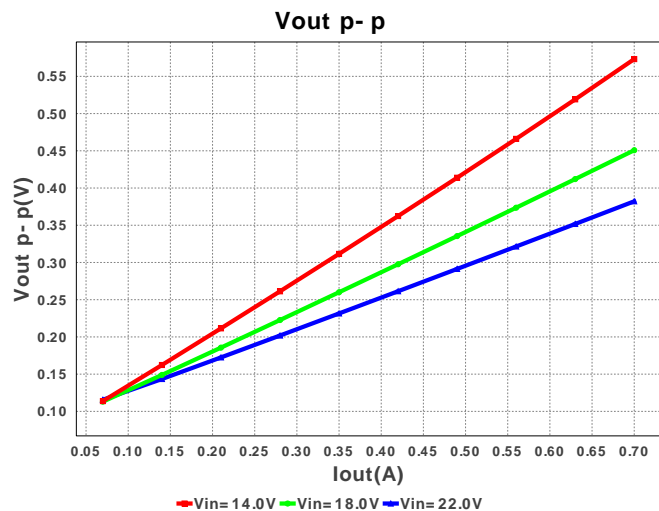
Electrical BOM

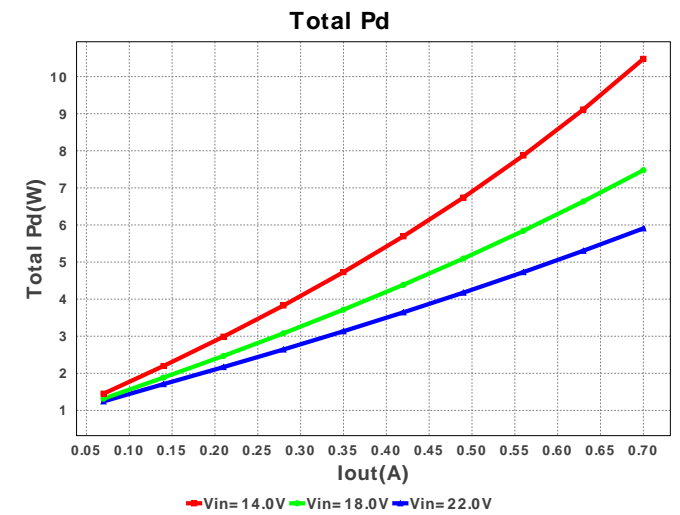
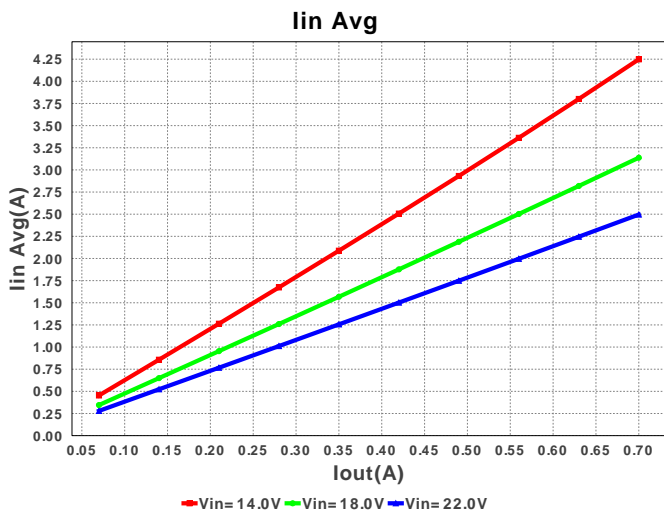
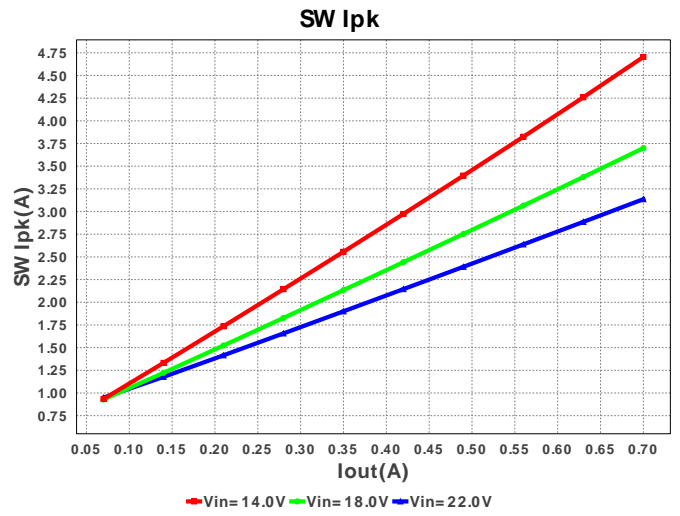
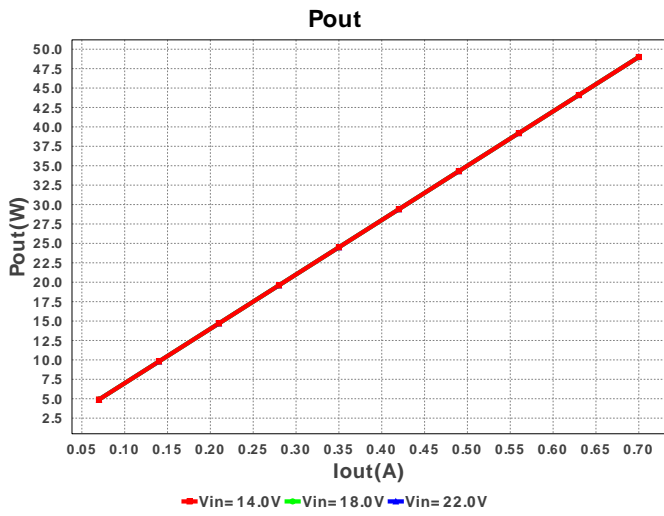
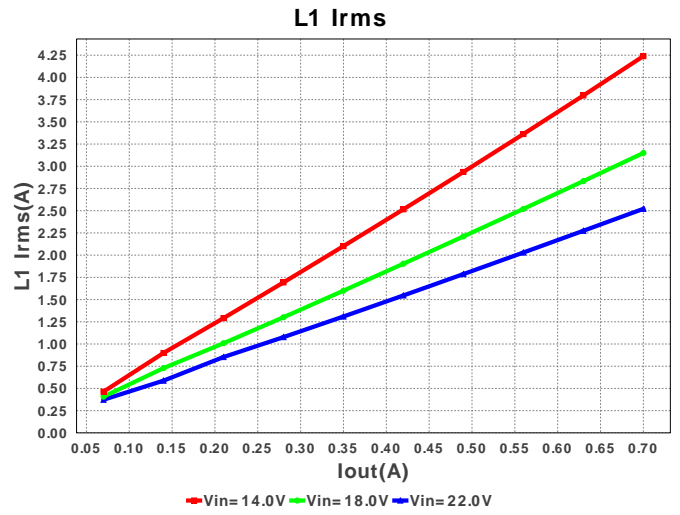
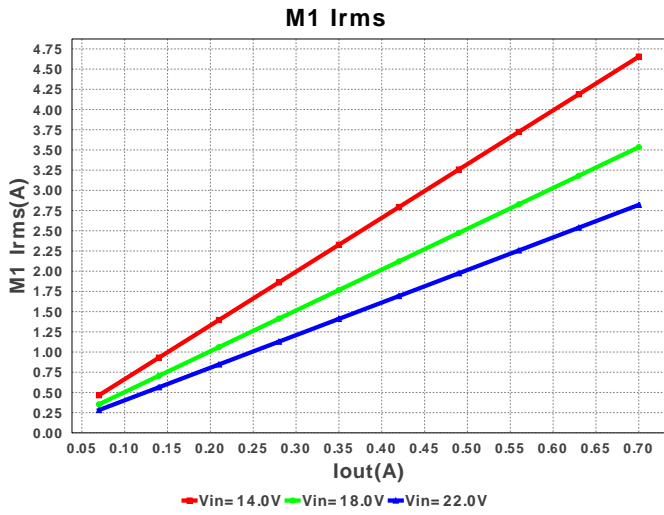
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cbyp	AVX	08053C104KAT2A Series= X7R	Cap= 100.0 nF ESR= 280.0 mOhm VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	0805 7mm2
2.	Ccomp	Taiyo Yuden	TMK212B7473KD-T Series= X7R	Cap= 47.0 nF VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	0805 7mm2
3.	Ccomp2	Yageo America	CC0805KRX7R9BB272 Series= X7R	Cap= 2.7 nF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	0805 7mm2
4.	Cin	United Chemi-Con	EMVY350ADA680MF80G Series= MVY	Cap= 68.0 µF ESR= 340.0 mOhm VDC= 35.0 V IRMS= 280.0 mA	1	\$0.13	 CAPSMT_62_F80 74mm2
5.	Cout	Panasonic	EEUED2D101 Series= 286	Cap= 100.0 µF ESR= 243.706 mOhm VDC= 200.0 V IRMS= 1.3 A	2	\$0.51	 CAPPR7.5-16X25 324mm2
6.	Csense	MuRata	GRM216R71H103KA01D Series= X7R	Cap= 10.0 nF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	0805 7mm2

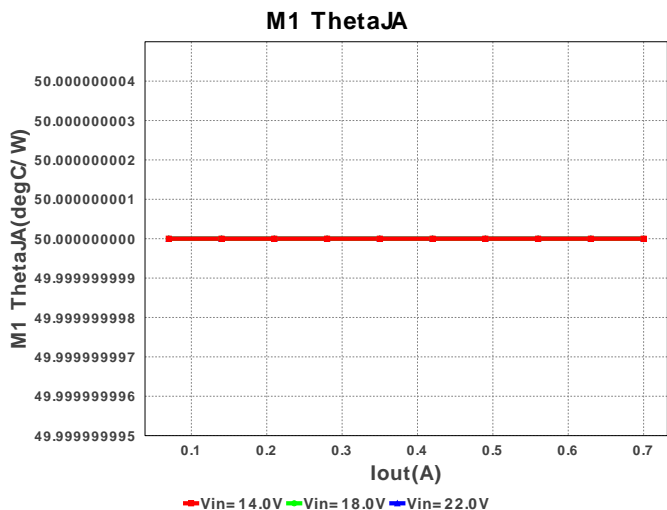
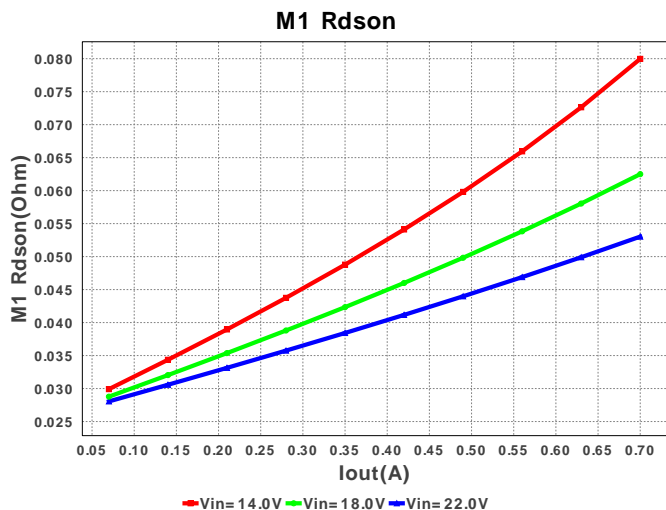
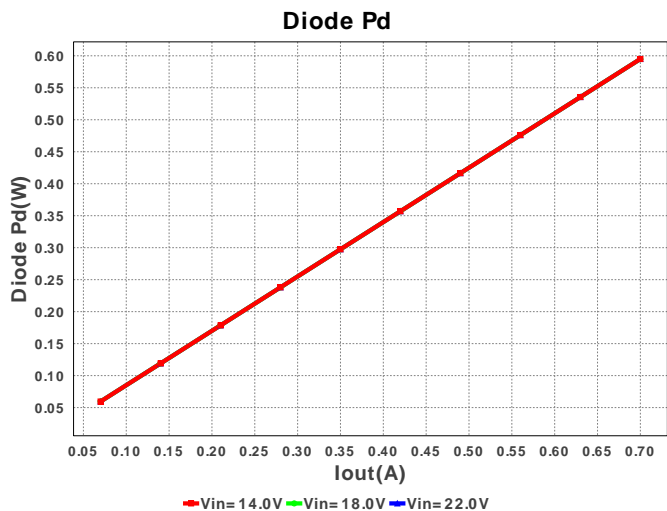
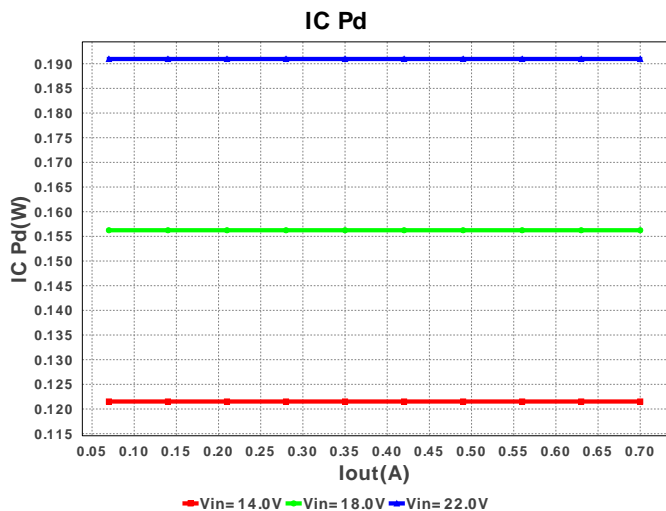
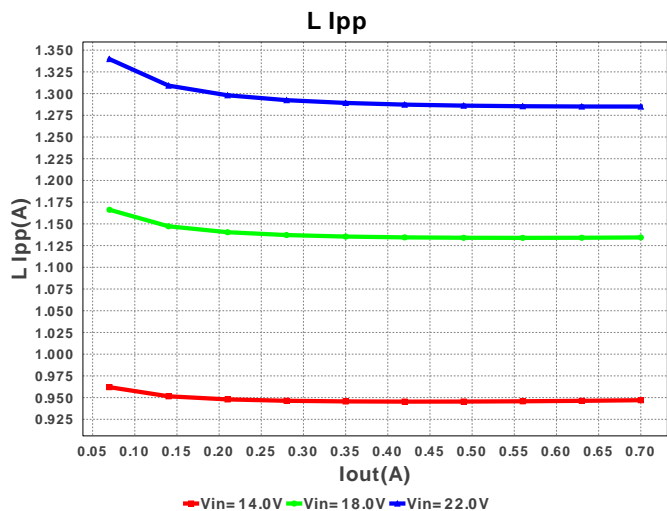
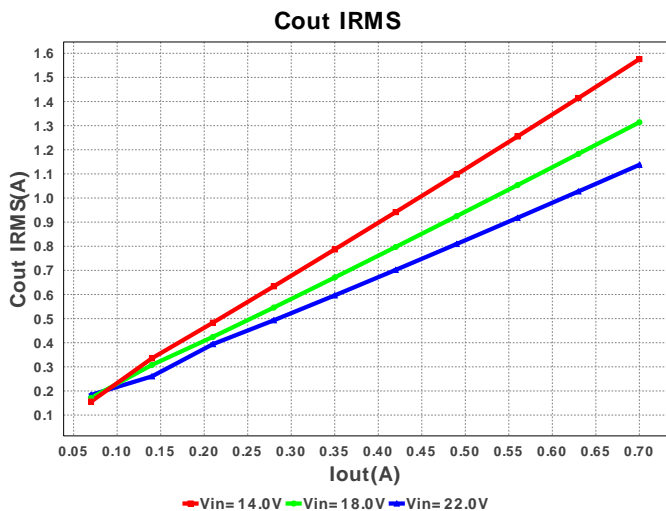
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
7.	D1	Micro Commercial Components	SK310A-TP	VF@Io= 850.0 mV VRRM= 100.0 V	1	\$0.10	 SMA 37mm2
8.	L1	Bourns	PM2120-820K-RC	L= 82.0 µH DCR= 32.0 mOhm	1	\$1.33	 PM2120 890mm2
9.	M1	Infineon Technologies	BSC159N10LSF G	VdsMax= 100.0 V IdsMax= 63.0 Amps	1	\$1.05	 PG-TDSON-8 55mm2
10.	Rcomp	Vishay-Dale	CRCW04028K45FKED Series= CRCW..e3	Res= 8.45 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3mm2
11.	Rfb1	Vishay-Dale	CRCW04021K00FKED Series= CRCW..e3	Res= 1,000 Ohm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3mm2
12.	Rfb2	Vishay-Dale	CRCW040254K9FKED Series= CRCW..e3	Res= 54.9 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3mm2
13.	Rs1	Vishay-Dale	CRCW0402100RFKED Series= CRCW..e3	Res= 100.0 Ohm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3mm2
14.	Rsense	Stackpole Electronics Inc	CSR1206FK10L0 Series= ?	Res= 10.0 mOhm Power= 500.0 mW Tolerance= 1.0%	1	\$0.11	 1206 11mm2
15.	Rsync	Vishay-Dale	CRCW040271K5FKED Series= CRCW..e3	Res= 71.5 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3mm2
16.	U1	Texas Instruments	LM3488MM/NOPB	Switcher	1	\$0.80	 MUA08A 24mm2

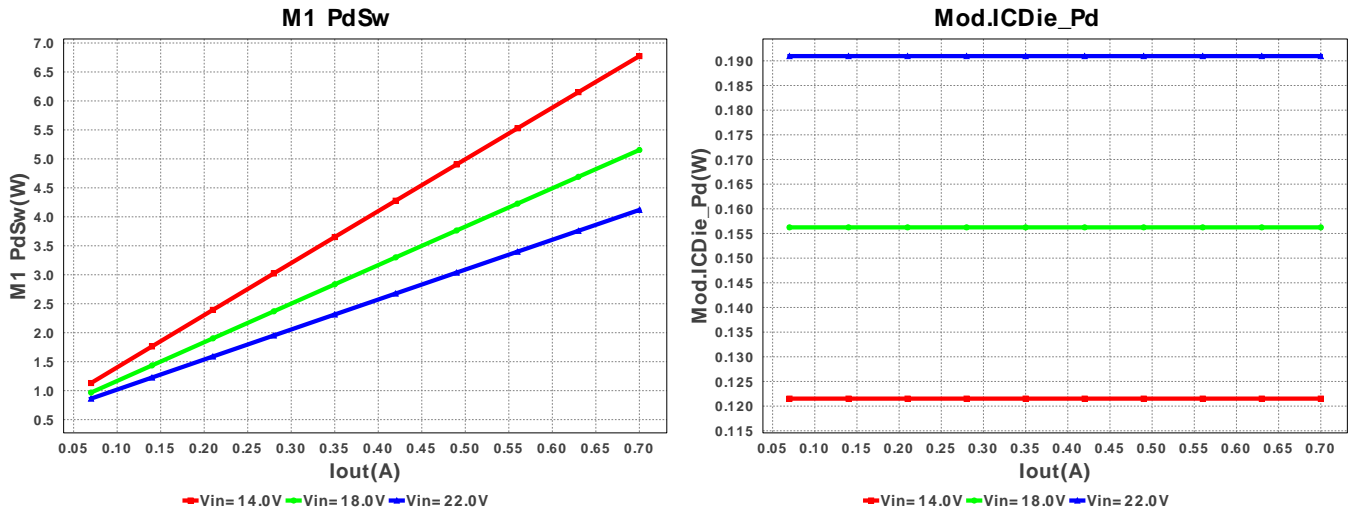












Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	266.508 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	1.465 A	Current	Output capacitor RMS ripple current
3.	Iin Avg	3.751 A	Current	Average input current
4.	L Ipp	923.212 mA	Current	Peak-to-peak inductor ripple current
5.	L1 Irms	3.759 A	Current	Inductor ripple current
6.	M1 Irms	4.645 A	Current	M1 MOSFET Irms
7.	SW Ipk	4.211 A	Current	Peak switch current
8.	BOM Count	17	General	Total Design BOM count
9.	FootPrint	1.781 kmm2	General	Total Foot Print Area of BOM components
10.	Frequency	150.0 kHz	General	Switching frequency
11.	IC Tolerance	15.3 mV	General	IC Feedback Tolerance
12.	M Vds Act	158.815 mV	General	M Vds
13.	M1 Rdson	34.194 mOhm	General	Drain-Source On-resistance
14.	M1 ThetaJA	50.0 degC/W	General	MOSFET junction-to-ambient thermal resistance
15.	Pout	49.0 W	General	Total output power
16.	Total BOM	\$4.63	General	Total BOM Cost
17.	D1 Tj	89.5 degC	Op_Point	D1 junction temperature
18.	Vout OP	70.0 V	Op_Point	Operational Output Voltage
19.	Cross Freq	859.524 Hz	Op_point	Bode plot crossover frequency
20.	Duty Cycle	81.329 %	Op_point	Duty cycle
21.	Efficiency	93.306 %	Op_point	Steady state efficiency
22.	IC Tj	54.304 degC	Op_point	IC junction temperature
23.	ICThetaJA	200.0 degC/W	Op_point	IC junction-to-ambient thermal resistance
24.	IOUT_OP	700.0 mA	Op_point	Iout operating point
25.	M1 TjOP	118.421 degC	Op_point	M1 MOSFET junction temperature
26.	Phase Marg	60.158 deg	Op_point	Bode Plot Phase Margin
27.	VIN_OP	14.0 V	Op_point	Vin operating point
28.	Vout p-p	513.08 mV	Op_point	Peak-to-peak output ripple voltage
29.	Cin Pd	24.149 mW	Power	Input capacitor power dissipation
30.	Cout Pd	261.69 mW	Power	Output capacitor power dissipation
31.	Diode Pd	595.0 mW	Power	Diode power dissipation
32.	IC Pd	121.52 mW	Power	IC power dissipation
33.	L Pd	542.452 mW	Power	Inductor power dissipation
34.	M1 Pd	1.768 W	Power	M1 MOSFET total power dissipation
35.	M1 PdCond	737.622 mW	Power	M1 MOSFET conduction losses
36.	M1 PdSw	1.031 W	Power	M1 MOSFET switching losses
37.	Rfb Pd	87.657 mW	Power	Rfb Power Dissipation
38.	Total Pd	3.515 W	Power	Total Power Dissipation

Design Inputs

#	Name	Value	Description
1.	Iout	700.0 mA	Maximum Output Current
2.	Iout1	700.0 mAmps	Output Current #1
3.	VinMax	22.0 V	Maximum input voltage
4.	VinMin	14.0 V	Minimum input voltage
5.	Vout	70.0 V	Output Voltage
6.	Vout1	70.0 Volt	Output Voltage #1
7.	base_pn	LM3488	Texas Instruments Base Part Number
8.	source	DC	Input Source Type
9.	ta	30.0 degC	Ambient temperature
10.	userfs	150.0 kHz	Customer Selected Frequency

Design Assistance

1. LM3488 Product Folder : <http://www.ti.com/product/lm3488> : contains the data sheet and other resources.

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