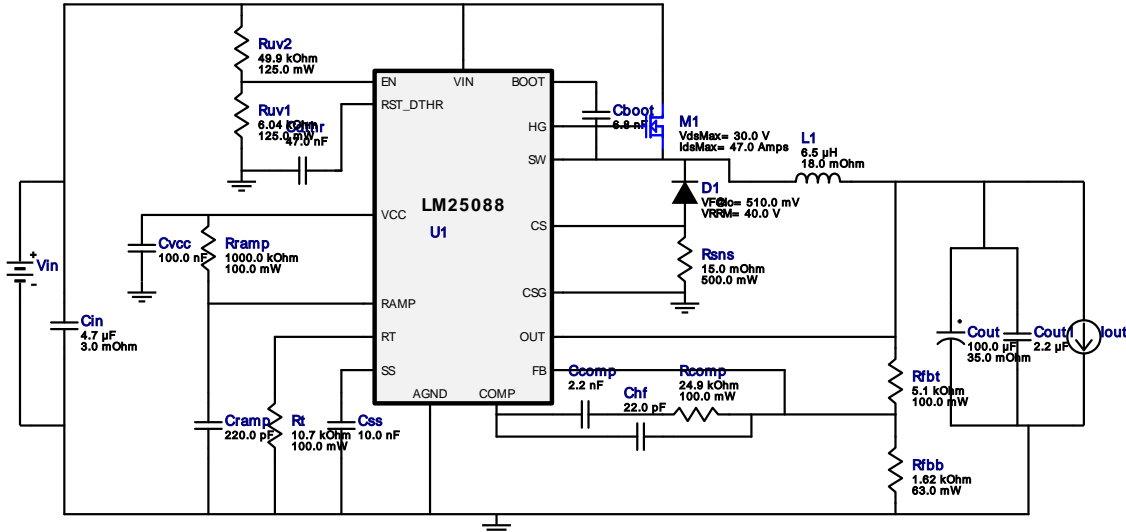


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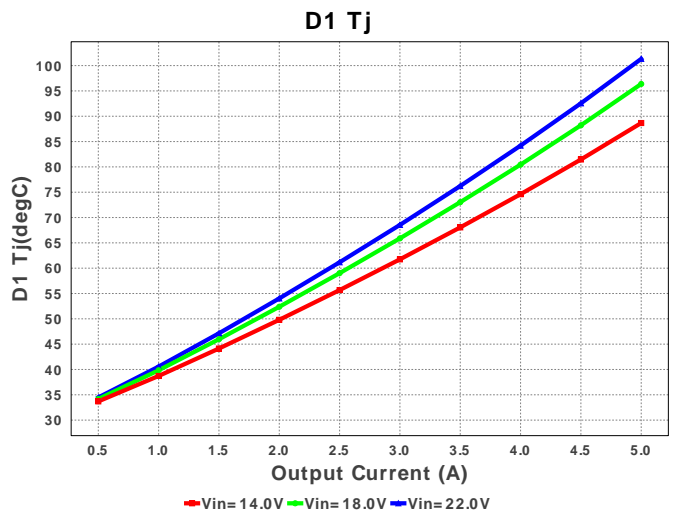
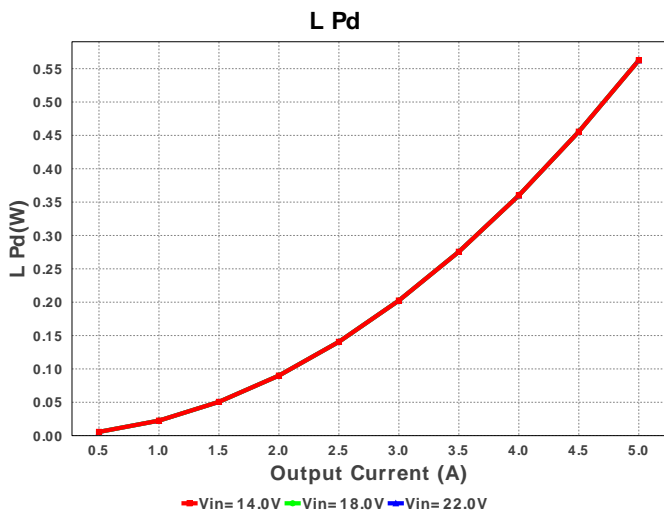
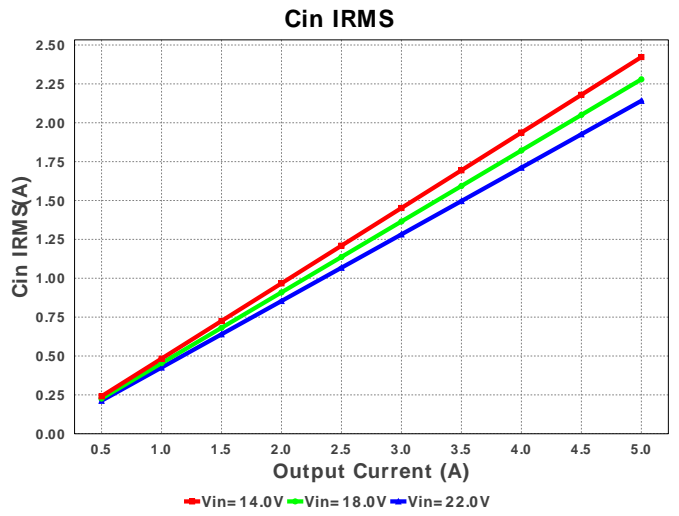
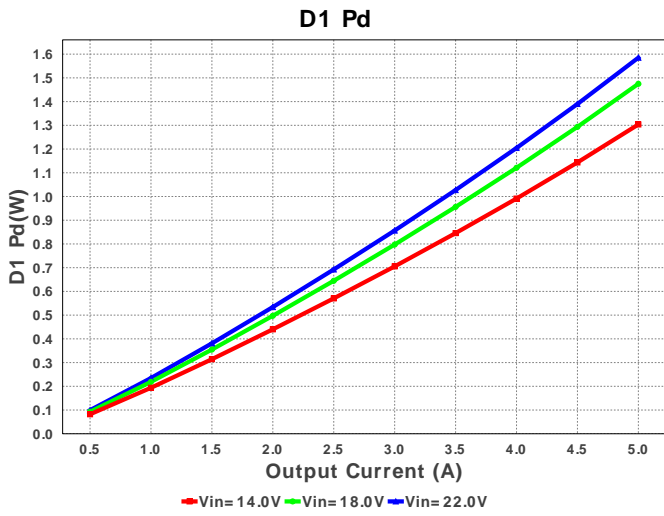
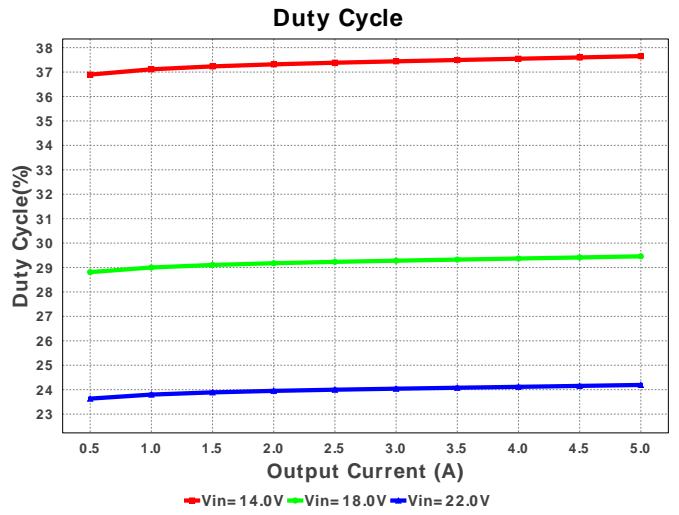
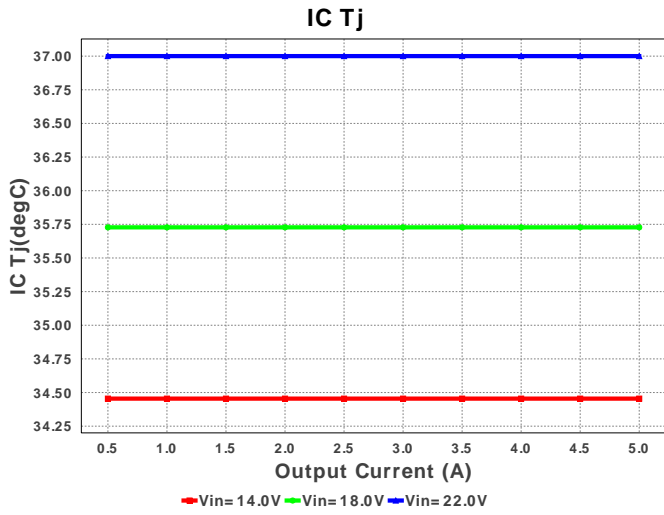
 Design : 4391607/1 LM25088MH-1/NOPB
 LM25088MH-1/NOPB 14.0V-22.0V to 5.00V @ 5.0A

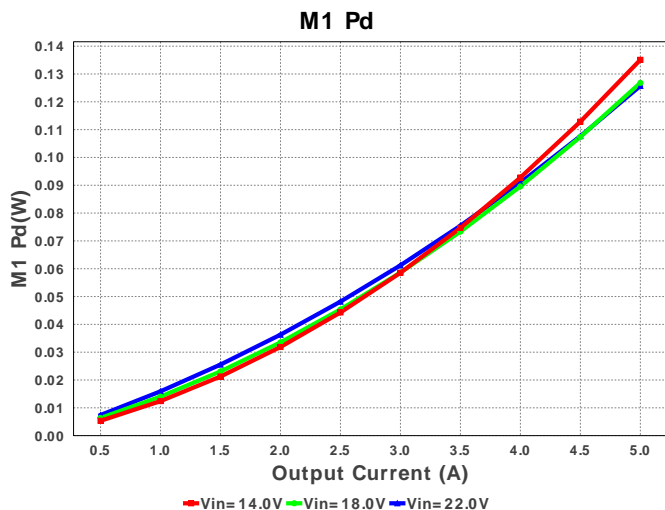
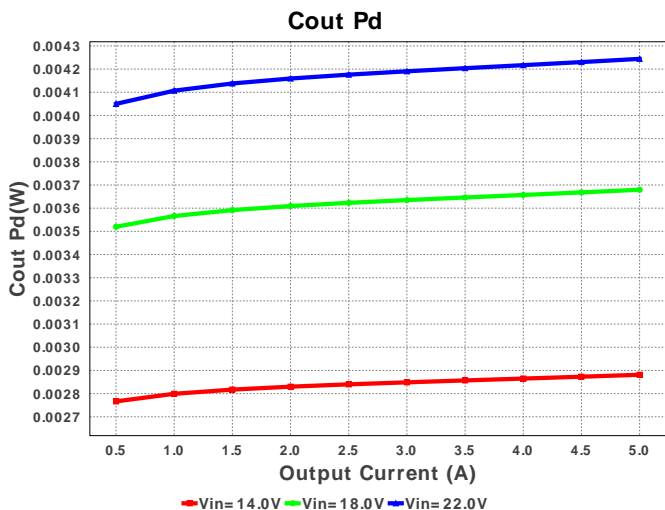
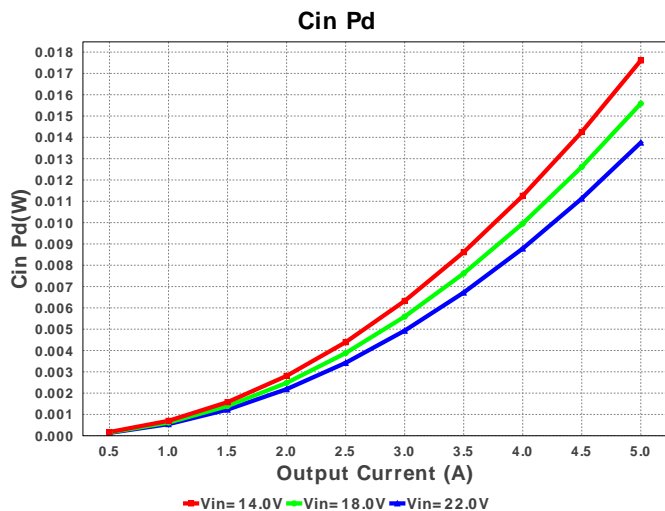
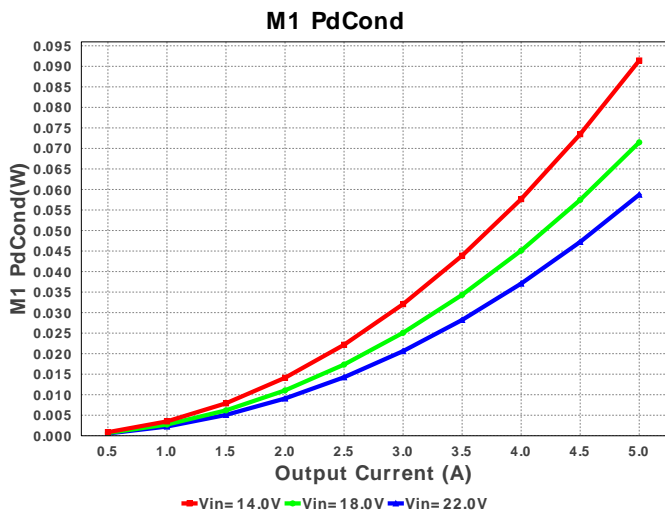
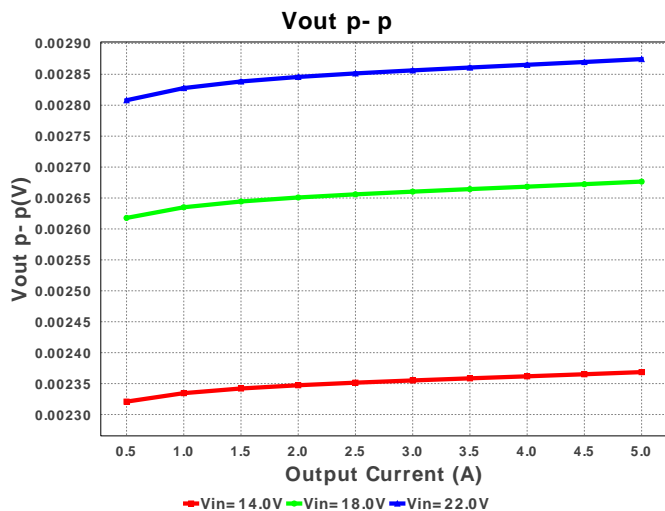
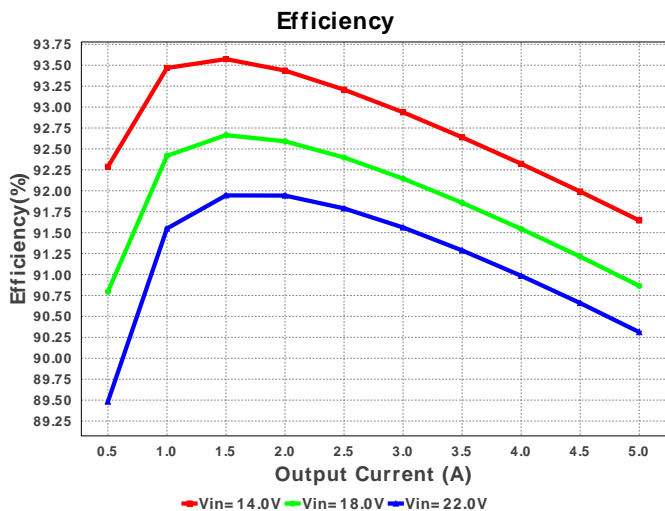
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 VinMax = 22.0V

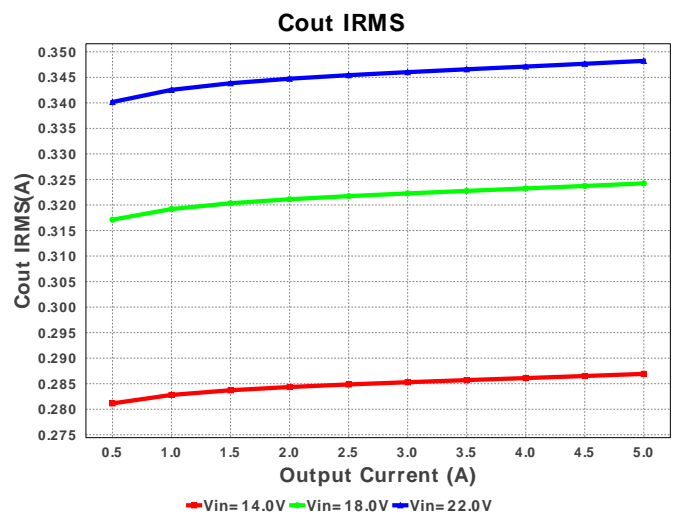
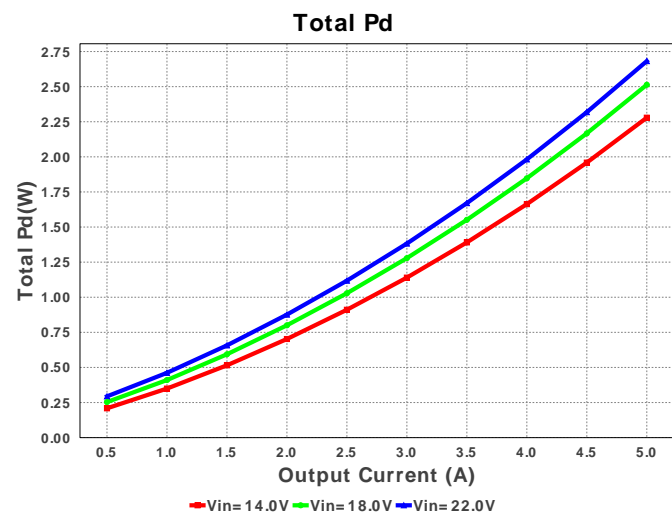
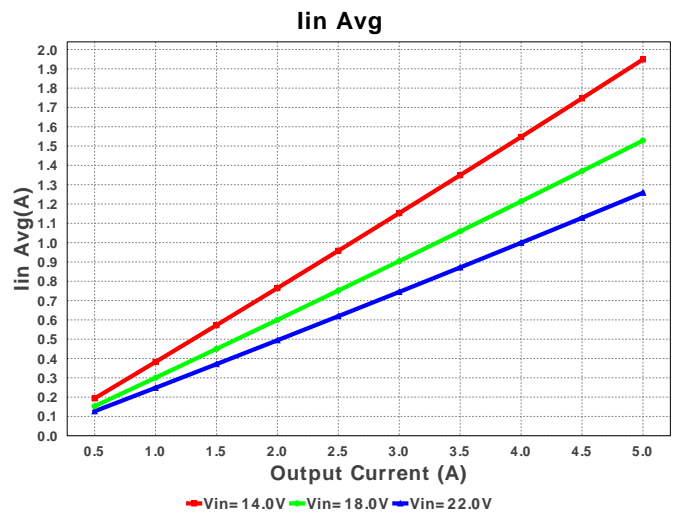
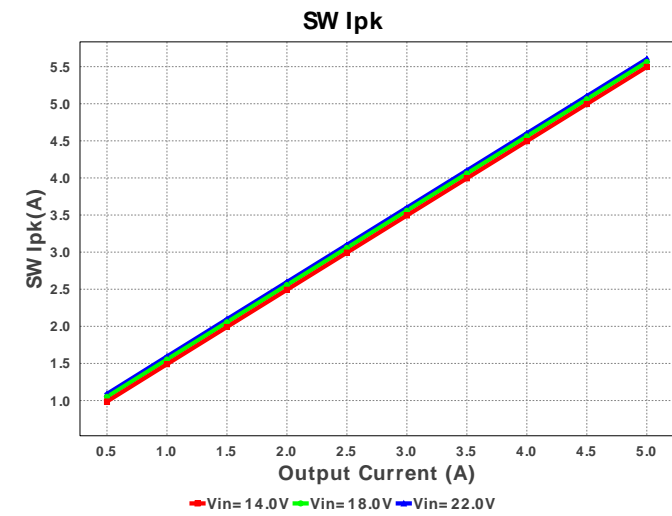
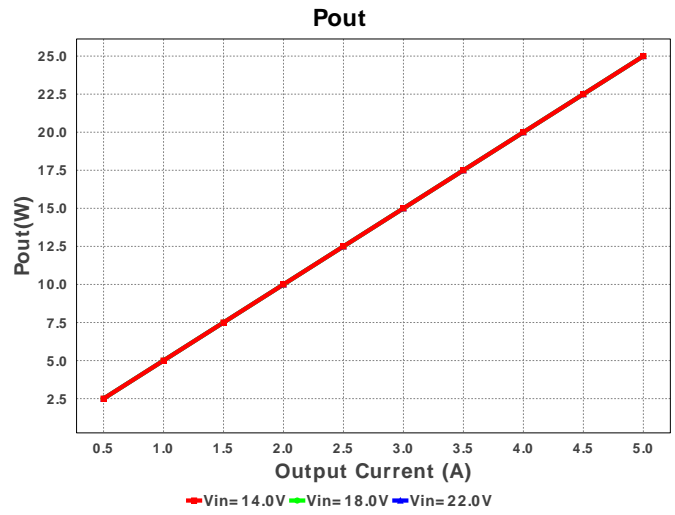
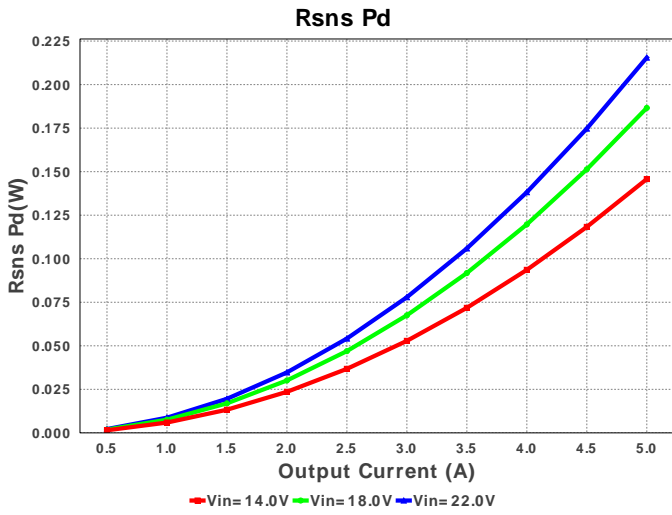
 Vout = 5.0V
 Iout = 5.0A

Electrical BOM

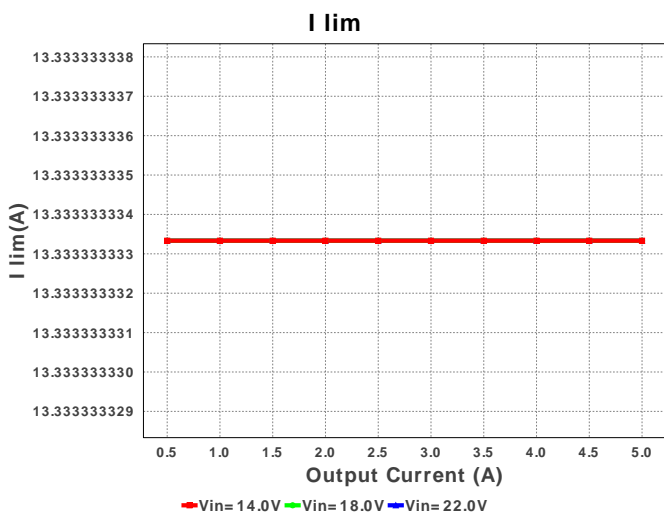
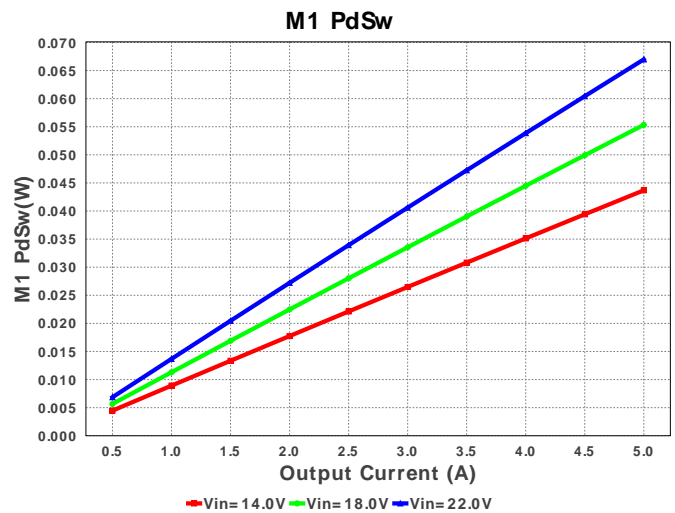
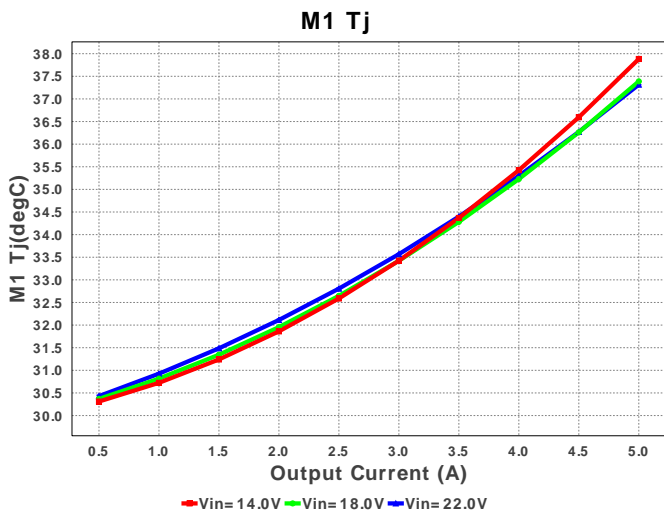
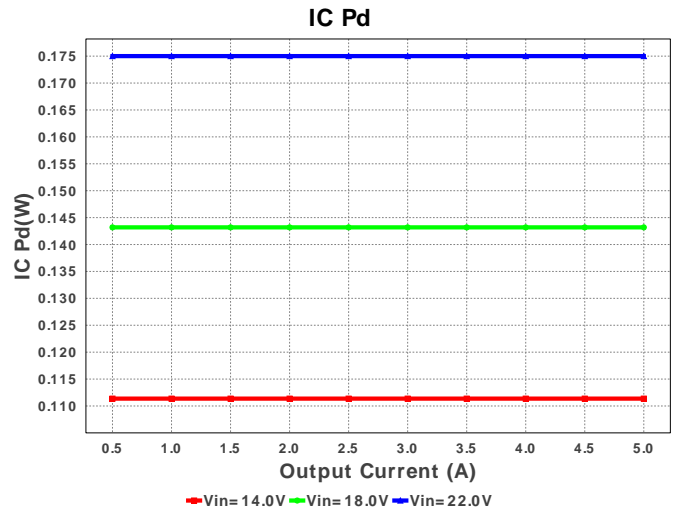
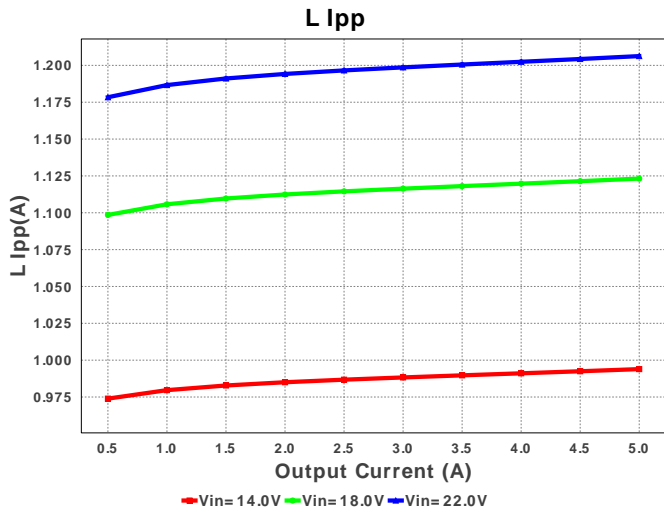
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cboot	Kemet	C0603C682K5RACTU Series= X7R	Cap= 6.8 nF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	0603 5 mm ²
2.	Ccomp	Kemet	C0603C222K5RACTU Series= X7R	Cap= 2.2 nF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	0603 5 mm ²
3.	Cdthr	MuRata	GRM188R71C473KA01D Series= X7R	Cap= 47.0 nF VDC= 16.0 V IRMS= 0.0 A	1	\$0.01	0603 5 mm ²
4.	Chf	Kemet	C0603C220K3GACTU Series= C0G/NP0	Cap= 22.0 pF VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	0603 5 mm ²
5.	Cin	MuRata	GRM31CR71H475KA12L Series= X7R	Cap= 4.7 uF ESR= 3.0 mOhm VDC= 50.0 V IRMS= 4.98 A	1	\$0.07	1206 11 mm ²
6.	Cout	Panasonic	8TPE100MAZB Series= 1281	Cap= 100.0 uF ESR= 35.0 mOhm VDC= 8.0 V IRMS= 1.4 A	1	\$0.48	3528-21 17 mm ²
7.	Cout1	Kemet	C0603C225K9PACTU Series= X5R	Cap= 2.2 uF VDC= 6.3 V IRMS= 0.0 A	1	\$0.02	0603 5 mm ²
8.	Cramp	AVX	06033A220JAT2A Series= C0G/NP0	Cap= 220.0 pF VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	0603 5 mm ²
9.	Css	Kemet	C0603C103J5RACTU Series= X7R	Cap= 10.0 nF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	0603 5 mm ²

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
10.	Cvcc	Kemet	C0603C104K3RACTU Series= X7R	Cap= 100.0 nF VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	 0603 5 mm ²
11.	D1	Vishay-Semiconductor	50WQ04FNPBF	VF@Io= 510.0 mV VRRM= 40.0 V	1	\$0.40	 DPAK 102 mm ²
12.	L1	Bourns	SRR1208-6R5ML	L= 6.5 µH DCR= 18.0 mOhm	1	\$0.37	 SRR1208 216 mm ²
13.	M1	Texas Instruments	CSD17308Q3	VdsMax= 30.0 V IdsMax= 47.0 Amps	1	\$0.34	 TRANS_NexFET_Q3 19 mm ²
14.	Rcomp	Vishay-Dale	CRCW060324K9FKEA Series= CRCW..e3	Res= 24.9 kOhm Power= 100.0 mW Tolerance= 1.0%	1	\$0.01	 0603 5 mm ²
15.	Rfbb	Vishay-Dale	CRCW04021K62FKED Series= CRCW..e3	Res= 1.62 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
16.	Rfbt	Susumu Co Ltd	RR1220P-512-D Series= 264	Res= 5.1 kOhm Power= 100.0 mW Tolerance= 0.5%	1	\$0.01	 0805 7 mm ²
17.	Rramp	Vishay-Dale	CRCW06031M00FKEA Series= CRCW..e3	Res= 1000.0 kOhm Power= 100.0 mW Tolerance= 1.0%	1	\$0.01	 0603 5 mm ²
18.	Rsns	Stackpole Electronics Inc	CSR1206FK15L0 Series= ?	Res= 15.0 mOhm Power= 500.0 mW Tolerance= 1.0%	1	\$0.11	 1206 11 mm ²
19.	Rt	Vishay-Dale	CRCW060310K7FKEA Series= CRCW..e3	Res= 10.7 kOhm Power= 100.0 mW Tolerance= 1.0%	1	\$0.01	 0603 5 mm ²
20.	Ruv1	Panasonic	ERJ-6ENF6041V Series= 225	Res= 6.04 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7 mm ²
21.	Ruv2	Panasonic	ERJ-6ENF4992V Series= 225	Res= 49.9 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7 mm ²
22.	U1	Texas Instruments	LM25088MH-1/NOPB	Switcher	1	\$1.50	 MXA16A 59 mm ²









Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	2.142 A	Current	Input capacitor RMS ripple current
2.	Cout IRMS	348.095 mA	Current	Output capacitor RMS ripple current
3.	I lim	13.3333 A	Current	Current limit threshold
4.	Iin Avg	1.257 A	Current	Average input current
5.	L Ipp	1.206 A	Current	Peak-to-peak inductor ripple current
6.	SW Ipk	5.603 A	Current	Peak switch current
7.	BOM Count	22	General	Total Design BOM count
8.	FootPrint	510.0 mm ²	General	Total Foot Print Area of BOM components
9.	Frequency	524.549 kHz	General	Switching frequency
10.	IC Tolerance	18.0 mV	General	IC Feedback Tolerance
11.	Pout	25.0 W	General	Total output power

#	Name	Value	Category	Description
12.	Total BOM	\$3.43	General	Total BOM Cost
13.	D1 Tj	101.908 degC	Op_Point	D1 junction temperature
14.	Duty Cycle	24.205 %	Op_point	Duty cycle
15.	Efficiency	90.375 %	Op_point	Steady state efficiency
16.	IC Tj	37.0 degC	Op_point	IC junction temperature
17.	IOUT_OP	5.0 A	Op_point	Iout operating point
18.	M1 Tj	35.452 degC	Op_point	M1 MOSFET junction temperature
19.	VIN_OP	22.0 V	Op_point	Vin operating point
20.	Vout p-p	2.874 mV	Op_point	Peak-to-peak output ripple voltage
21.	Cin Pd	13.76 mW	Power	Input capacitor power dissipation
22.	Cout Pd	4.241 mW	Power	Output capacitor power dissipation
23.	D1 Pd	1.598 W	Power	Diode1 power dissipation
24.	IC Pd	175.008 mW	Power	IC power dissipation
25.	L Pd	562.5 mW	Power	Inductor power dissipation
26.	M1 Pd	93.577 mW	Power	M1 MOSFET total power dissipation
27.	M1 PdCond	58.412 mW	Power	M1 MOSFET conduction losses
28.	M1 PdSw	35.166 mW	Power	M1 MOSFET switching losses
29.	Rsns Pd	215.431 mW	Power	Current Limit Sense Resistor Power Dissipation
30.	Total Pd	2.663 W	Power	Total Power Dissipation

Design Inputs

#	Name	Value	Description
1.	Iout	5.0	Maximum Output Current
2.	Iout1	5.0	Output Current #1
3.	VinMax	22.0	Maximum input voltage
4.	VinMin	14.0	Minimum input voltage
5.	Vout	5.0	Output Voltage
6.	Vout1	5.0	Output Voltage #1
7.	base_pn	LM25088	Base Product Number
8.	source	DC	Input Source Type
9.	Ta	30.0	Ambient temperature

Design Assistance

1. **LM25088** Product Folder : <http://www.ti.com/product/LM25088> : contains the data sheet and other resources.

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