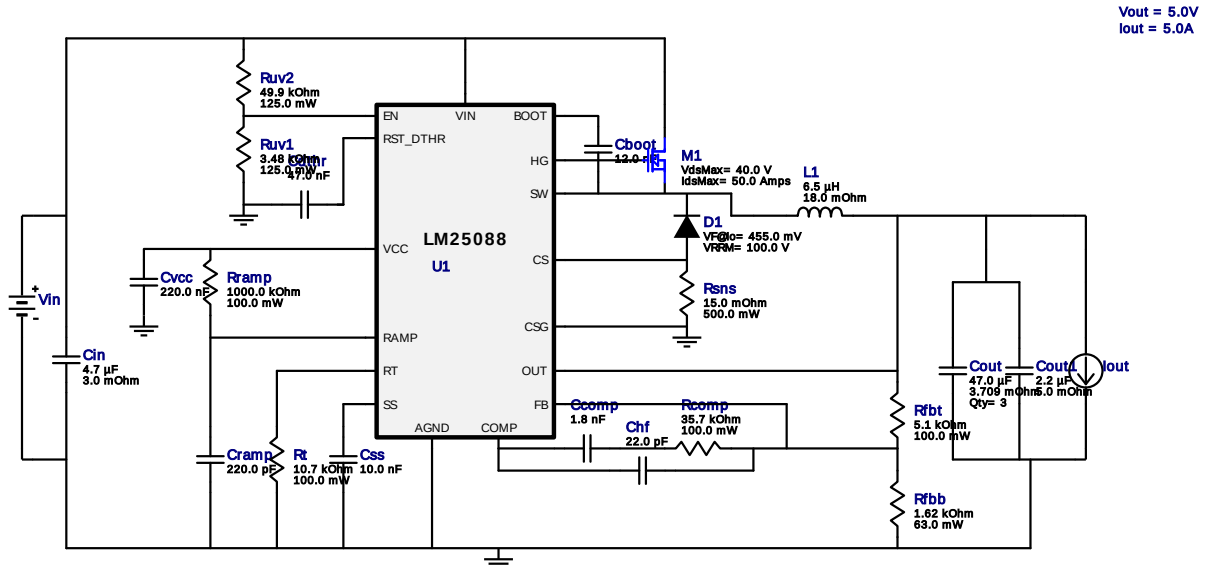


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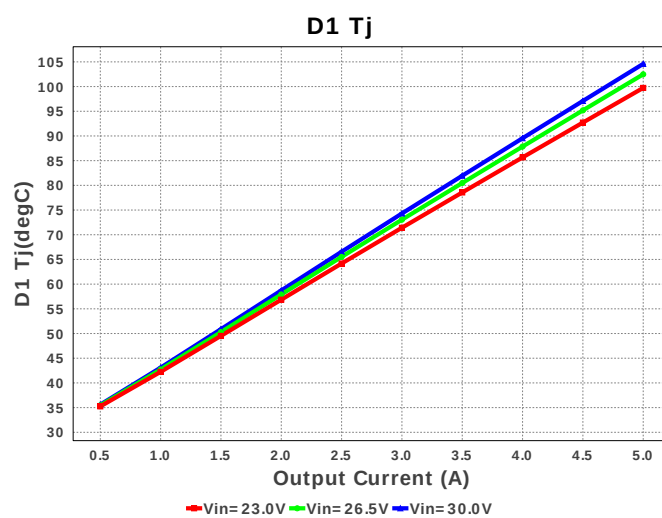
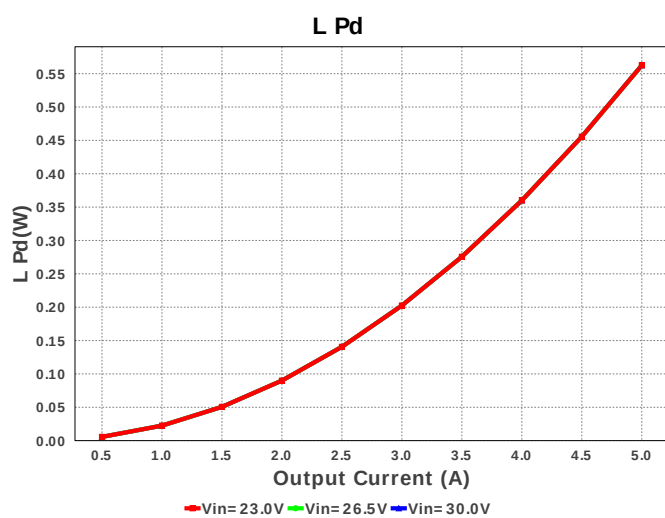
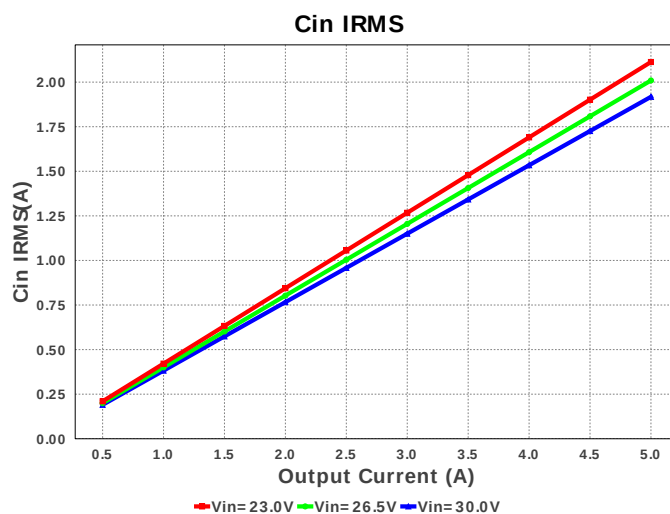
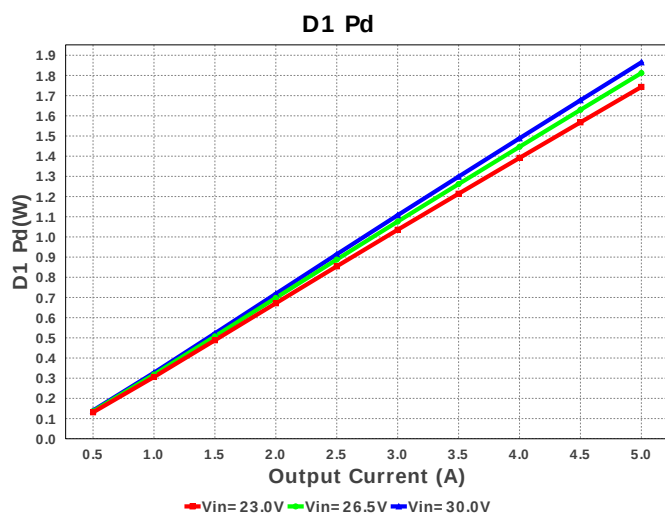
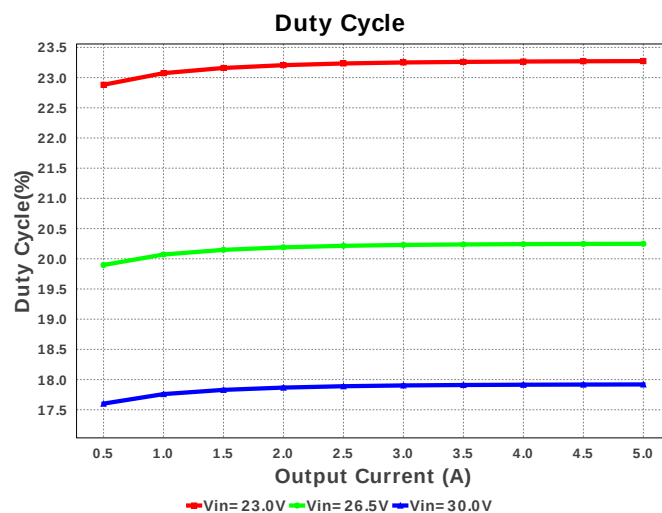
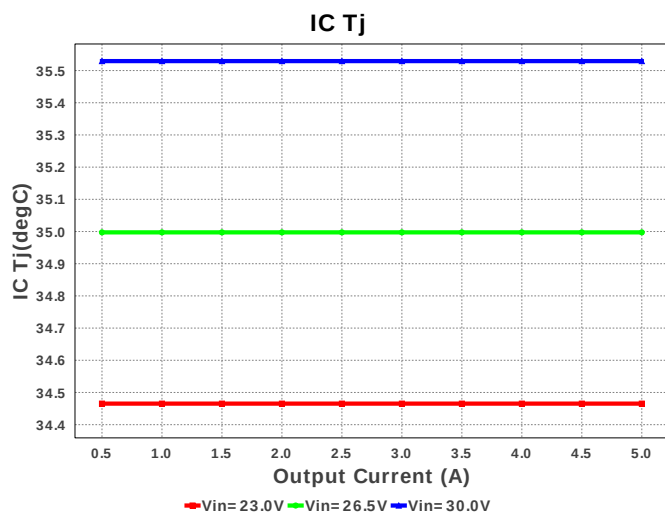
Design : 4766773/9 LM25088MH-1/NOPB
LM25088MH-1/NOPB 23.0V-30.0V to 5.00V @ 5.0A

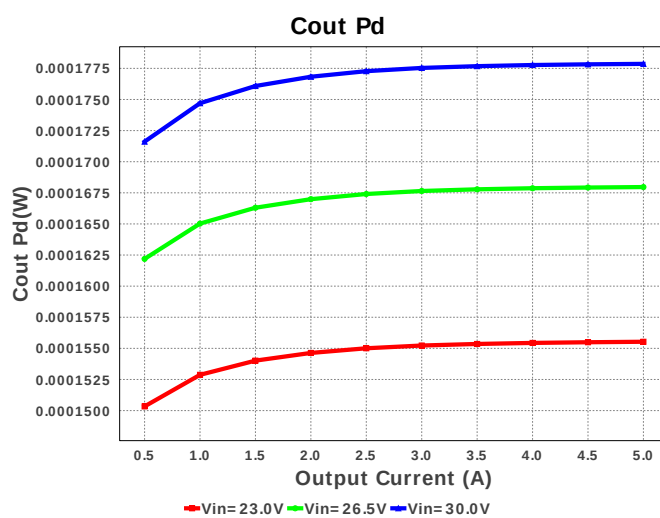
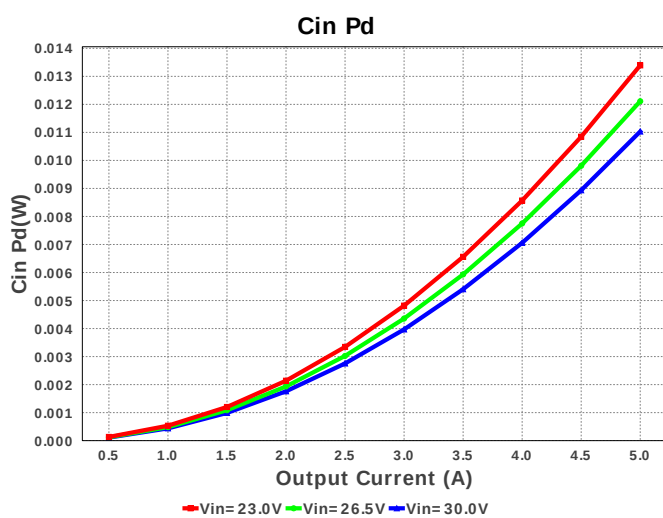
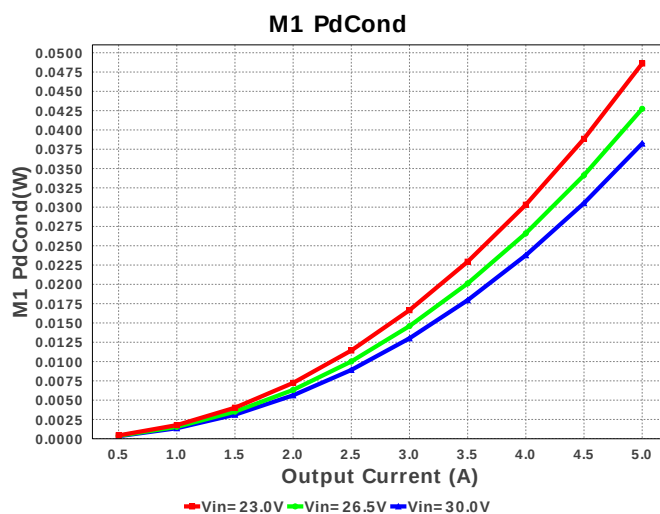
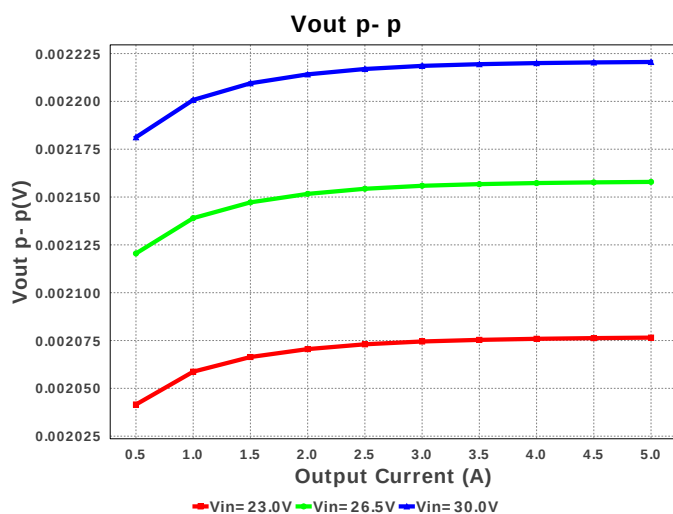
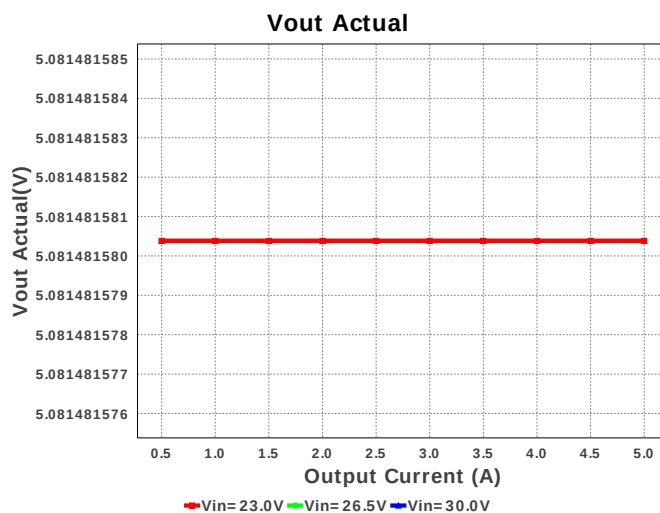
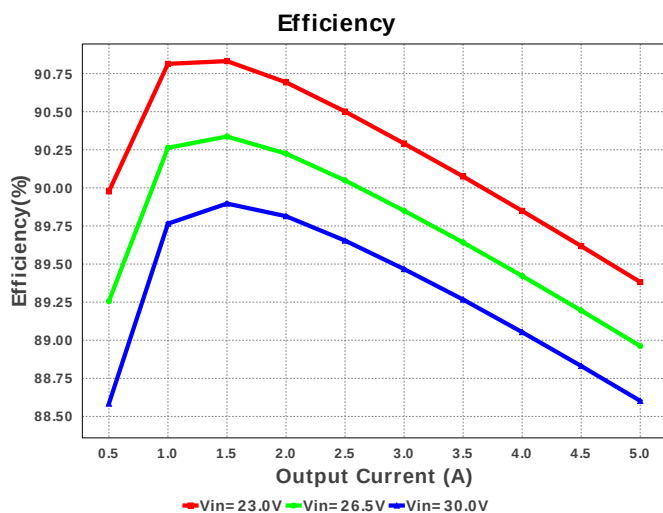


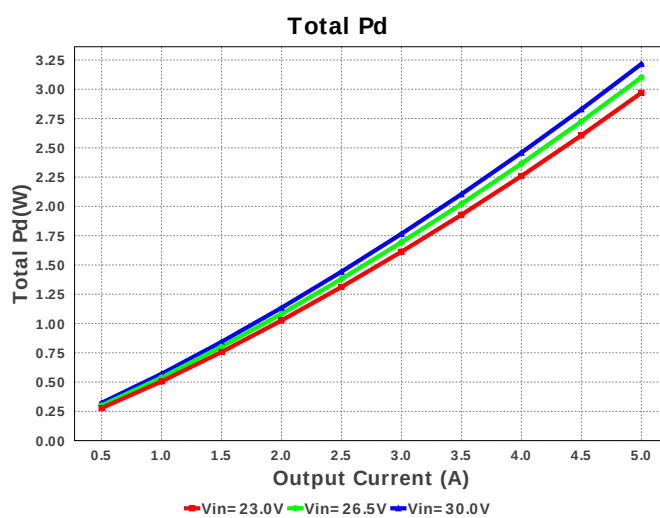
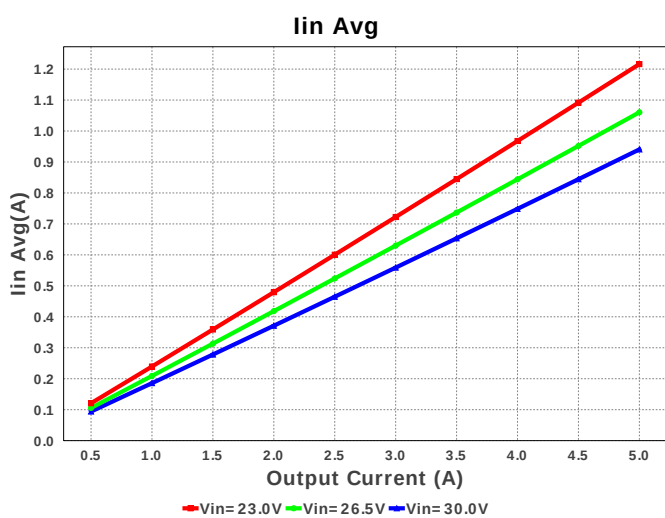
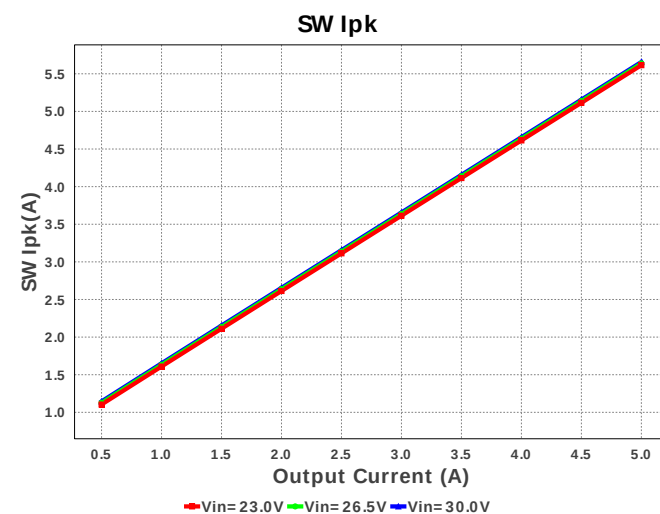
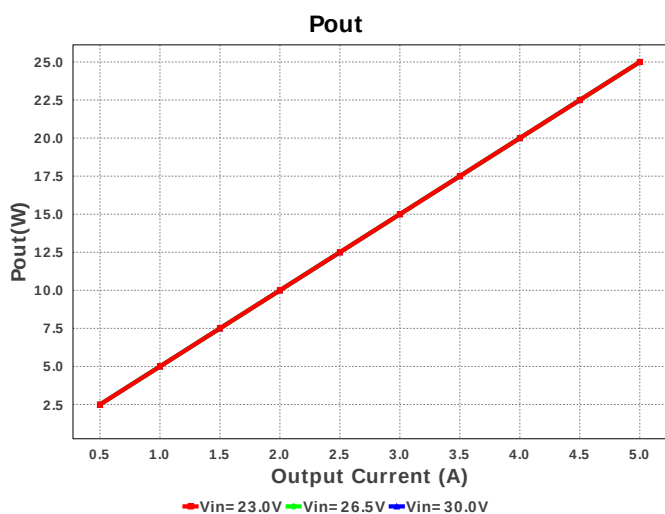
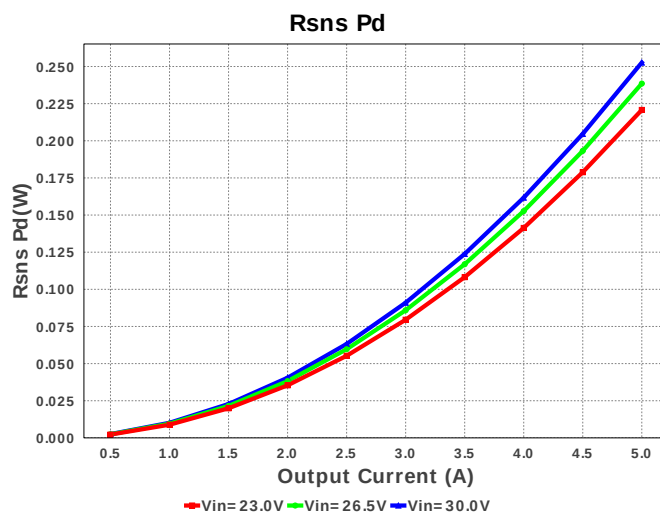
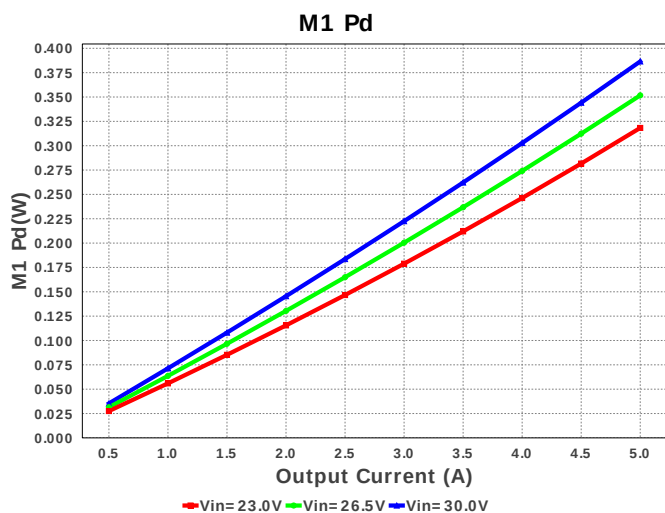
Electrical BOM

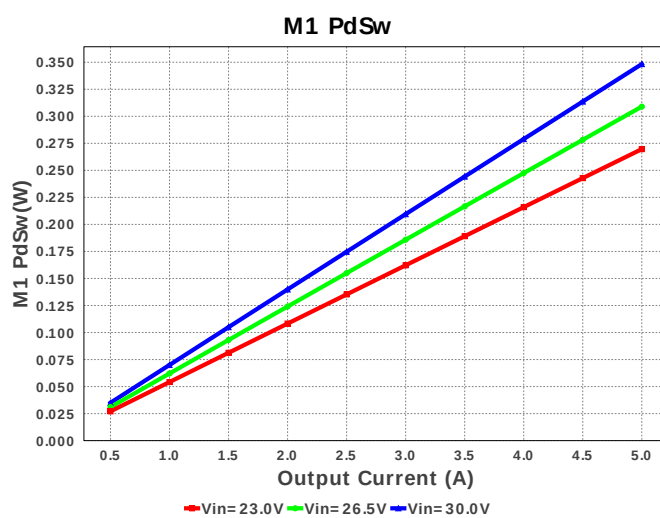
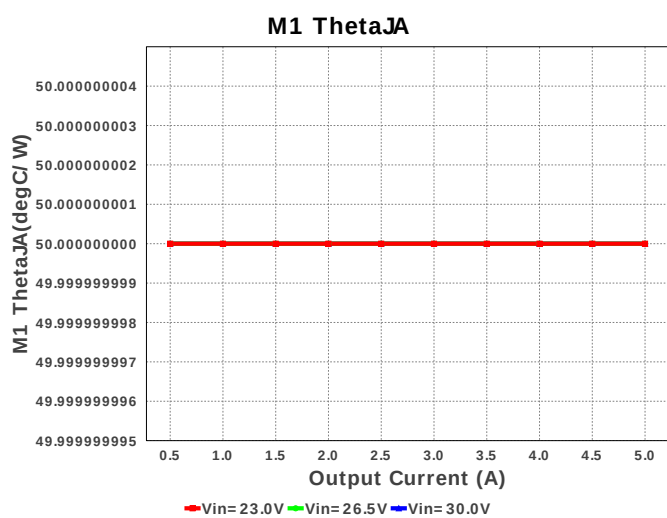
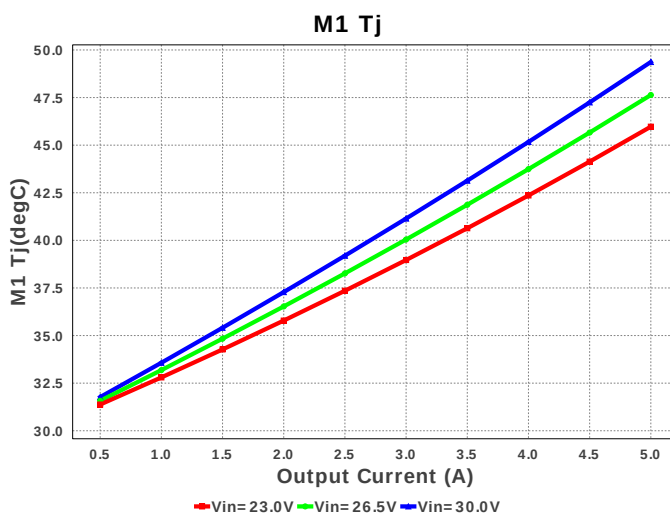
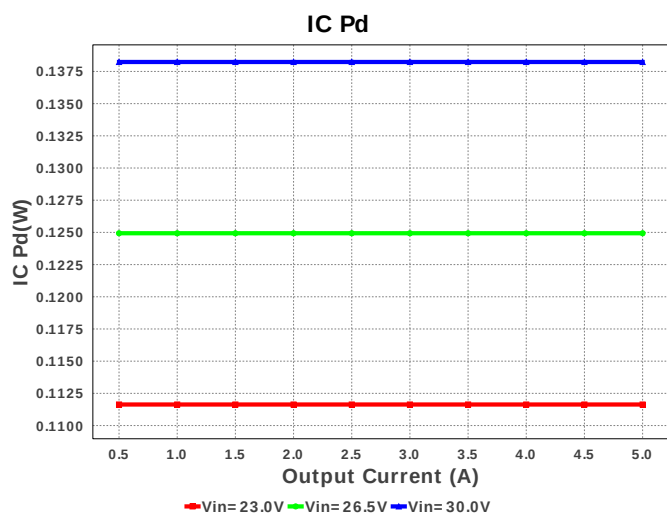
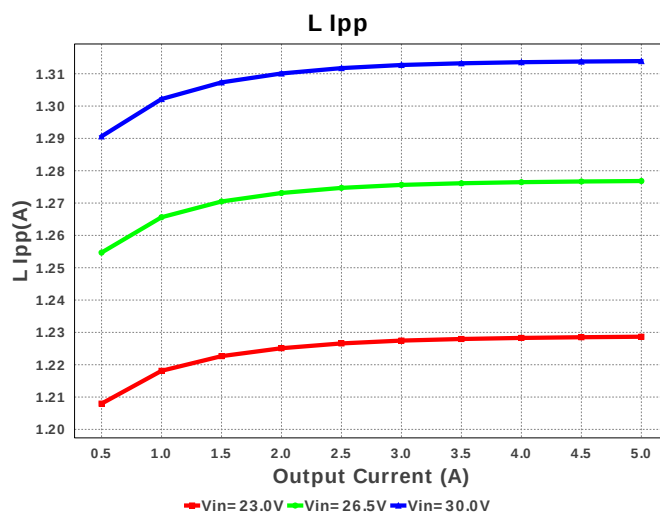
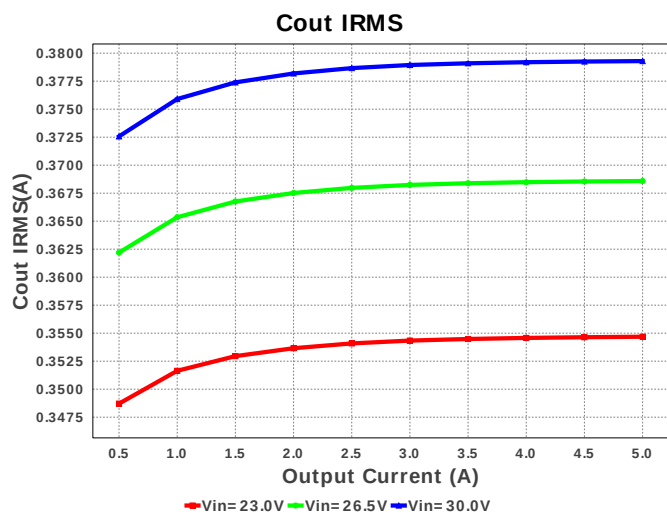
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cboot	MuRata	GRM188R71E123KA01D Series= X7R	Cap= 12.0 nF VDC= 25.0 V IRMS= 0.0 A	1	\$0.02	0603 5 mm ²
2.	Ccomp	MuRata	GRM1885C1H182JA01J Series= C0G/NP0	Cap= 1.8 nF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	0603 5 mm ²
3.	Cdthr	MuRata	GRM188R71C473KA01D 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	MuRata	GRM31CR61A476KE15L Series= X5R	Cap= 47.0 uF ESR= 3.709 mOhm VDC= 10.0 V IRMS= 4.2862 A	3	\$0.15	1206_190 11 mm ²
7.	Cout1	MuRata	GRM155R60J225ME15D Series= X5R	Cap= 2.2 uF ESR= 5.0 mOhm VDC= 6.3 V IRMS= 3.67 A	1	\$0.02	0402 3 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

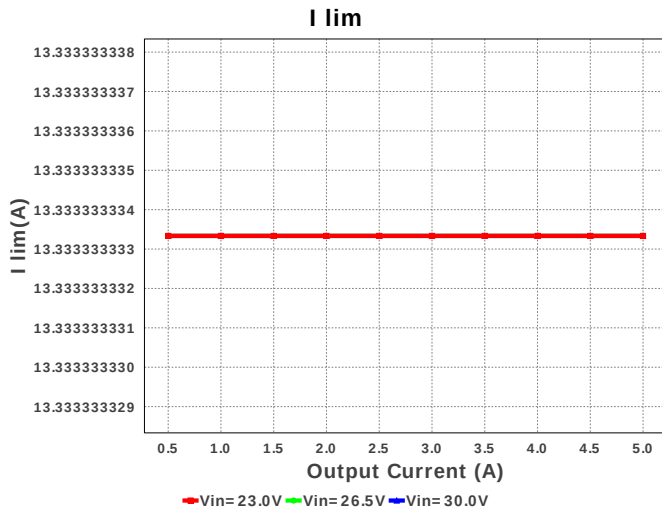
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
10.	Cvcc	Kemet	C0603C224Z4VACTU Series= Y5V	Cap= 220.0 nF VDC= 16.0 V IRMS= 0.0 A	1	\$0.01	 0603 5 mm ²
11.	D1	STMicroelectronics	STPS20M100SG-TR	VF@Io= 455.0 mV VRRM= 100.0 V	1	\$1.33	 DDPAK 210 mm ²
12.	L1	Bourns	SRR1208-6R5ML	L= 6.5 µH DCR= 18.0 mOhm	1	\$0.37	 SRR1208 216 mm ²
13.	M1	Texas Instruments	CSD18504Q5A	VdsMax= 40.0 V IdsMax= 50.0 Amps	1	\$0.37	 TRANS_NexFET_Q5A 55 mm ²
14.	Rcomp	Vishay-Dale	CRCW060335K7FKEA Series= CRCW..e3	Res= 35.7 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	Yageo America	RC0603FR-075K1L Series= ?	Res= 5.1 kOhm Power= 100.0 mW Tolerance= 1.0%	1	\$0.01	 0603 5 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-6ENF3481V Series= ERJ-6E	Res= 3.48 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7 mm ²
21.	Ruv2	Panasonic	ERJ-6ENF4992V Series= ERJ-6E	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	1.918 A	Current	Input capacitor RMS ripple current
2.	Cout IRMS	378.966 mA	Current	Output capacitor RMS ripple current
3.	I lim	13.333 A	Current	Current limit threshold
4.	Iin Avg	940.53 mA	Current	Average input current
5.	L Ipp	1.313 A	Current	Peak-to-peak inductor ripple current
6.	SW Ipk	5.656 A	Current	Peak switch current
7.	BOM Count	24	General	Total Design BOM count
8.	FootPrint	665.0 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.	M1 ThetaJA	50.0 degC/W	General	MOSFET junction-to-ambient thermal resistance
12.	Mode	CCM	General	Conduction Mode
13.	Pout	25.0 W	General	Total output power
14.	Total BOM	\$4.37	General	Total BOM Cost
15.	D1 Tj	104.596 degC	Op_Point	D1 junction temperature
16.	Vout Actual	4.999 V	Op_Point	Vout Actual calculated based on selected voltage divider resistors
17.	Duty Cycle	17.919 %	Op_point	Duty cycle
18.	Efficiency	88.602 %	Op_point	Steady state efficiency
19.	IC Tj	35.529 degC	Op_point	IC junction temperature
20.	ICThetaJA	40.0 degC/W	Op_point	IC junction-to-ambient thermal resistance
21.	IOUT_OP	5.0 A	Op_point	Iout operating point
22.	M1 Tj	49.369 degC	Op_point	M1 MOSFET junction temperature
23.	VIN_OP	30.0 V	Op_point	Vin operating point
24.	Vout p-p	2.219 mV	Op_point	Peak-to-peak output ripple voltage
25.	Cin Pd	11.031 mW	Power	Input capacitor power dissipation
26.	Cout Pd	177.557 μW	Power	Output capacitor power dissipation
27.	D1 Pd	1.865 W	Power	Diode1 power dissipation
28.	IC Pd	138.234 mW	Power	IC power dissipation
29.	L Pd	562.5 mW	Power	Inductor power dissipation
30.	M1 Pd	386.51 mW	Power	M1 MOSFET total power dissipation
31.	M1 PdCond	38.236 mW	Power	M1 MOSFET conduction losses
32.	M1 PdSw	348.273 mW	Power	M1 MOSFET switching losses
33.	Rsns Pd	252.646 mW	Power	Current Limit Sense Resistor Power Dissipation
34.	Total Pd	3.216 W	Power	Total Power Dissipation
35.	Vout Tolerance	3.05 %		Vout Tolerance based on IC Tolerance (no load) and voltage divider resistors if applicable

Design Inputs

#	Name	Value	Description
1.	Iout	5.0	Maximum Output Current
2.	VinMax	30.0	Maximum input voltage
3.	VinMin	23.0	Minimum input voltage
4.	Vout	5.0	Output Voltage
5.	base_pn	LM25088	Base Product Number
6.	source	DC	Input Source Type
7.	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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