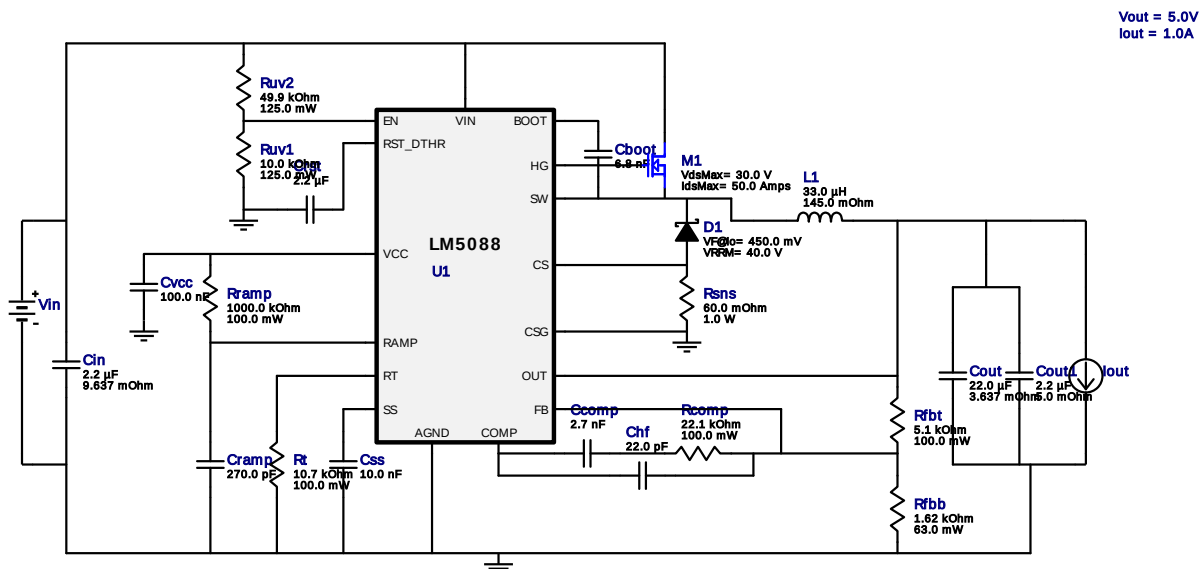


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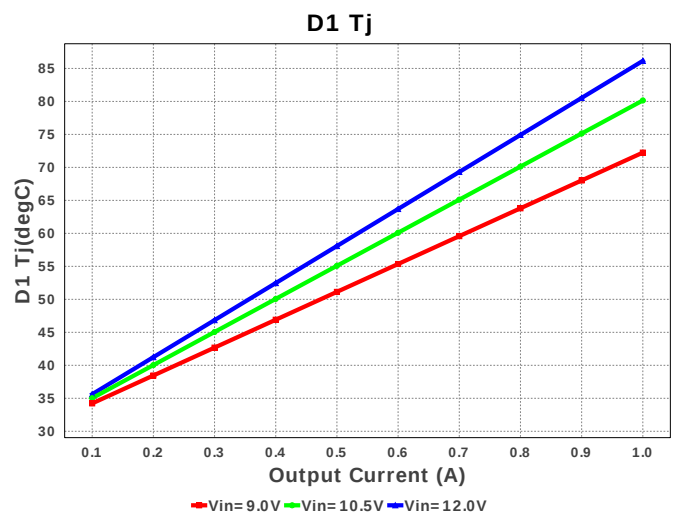
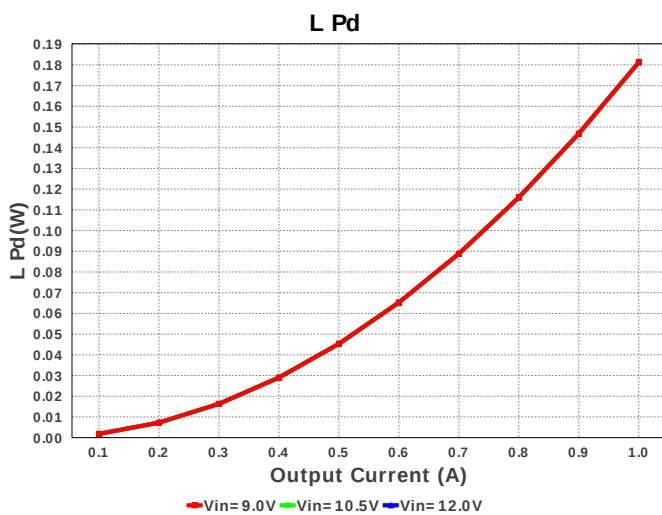
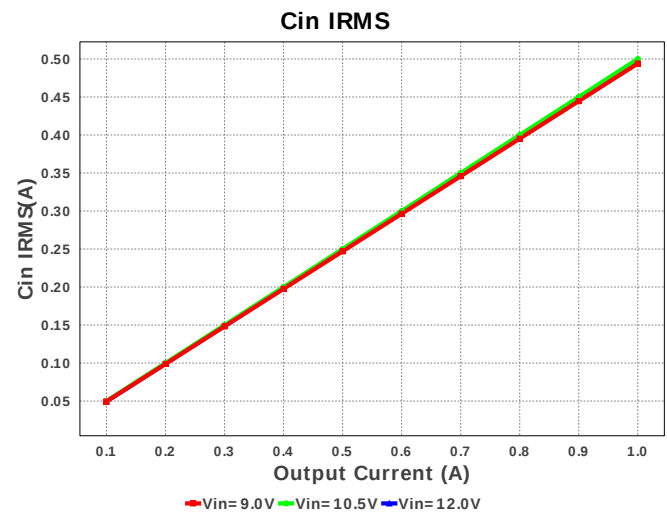
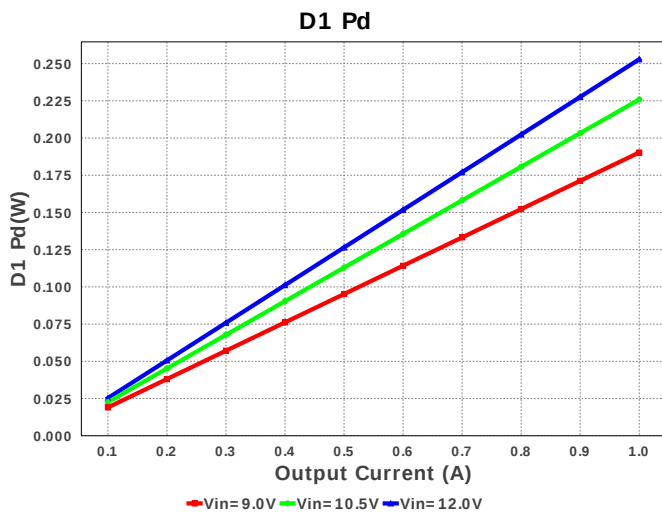
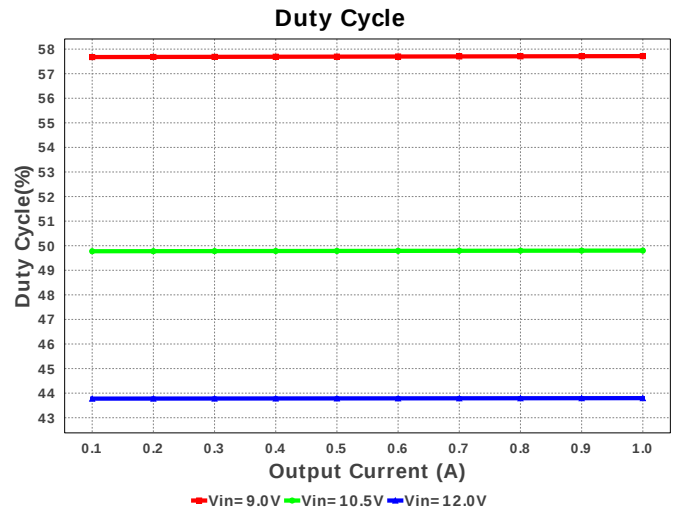
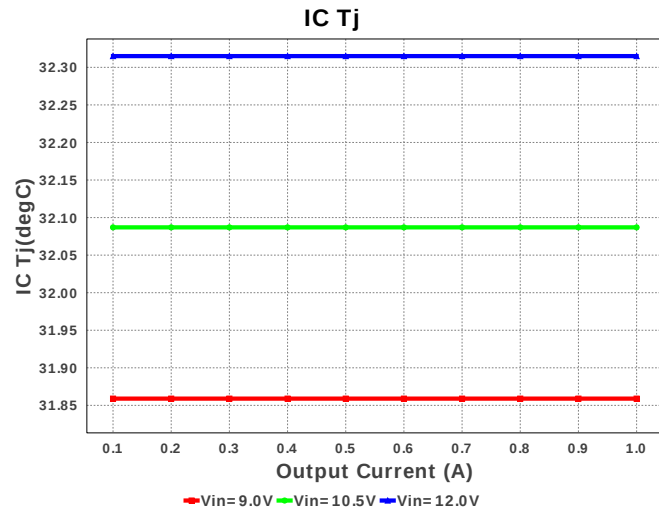
Design : 4372614/42 LM5088MH-2/NOPB
LM5088MH-2/NOPB 9.0V-12.0V to 5.00V @ 1.0A

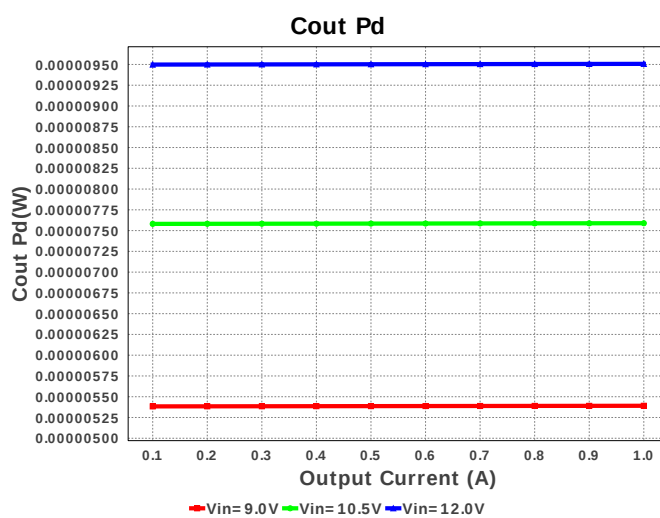
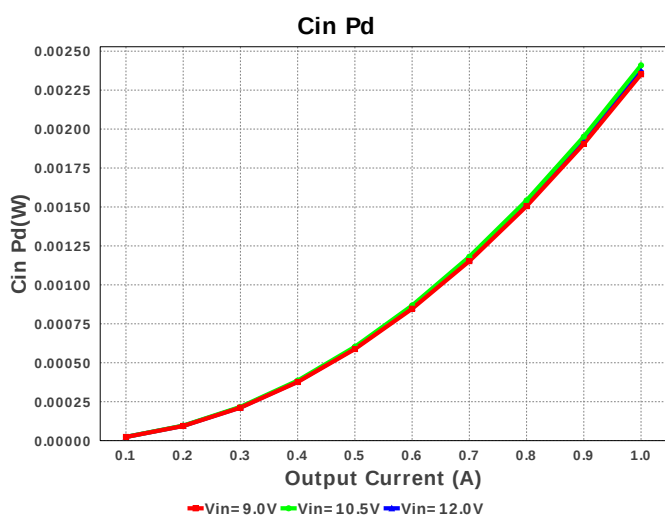
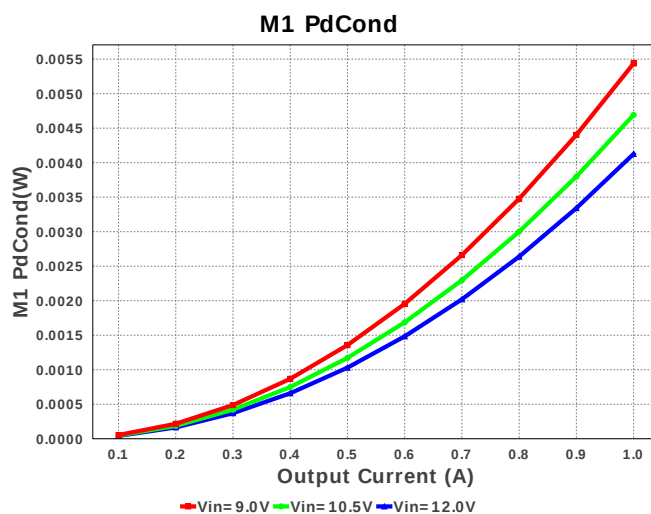
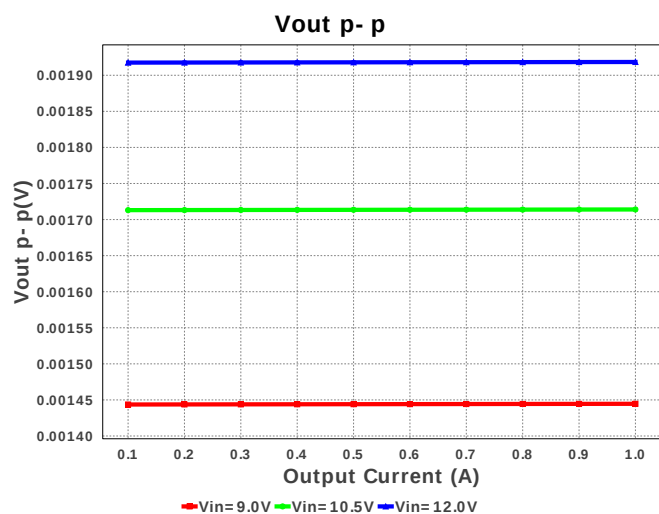
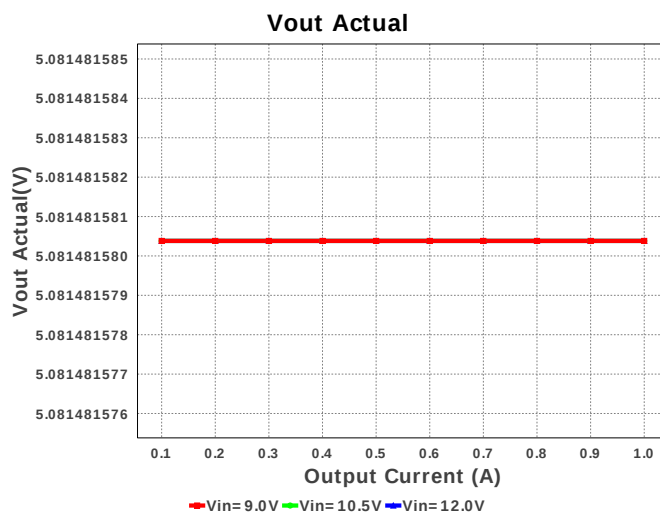
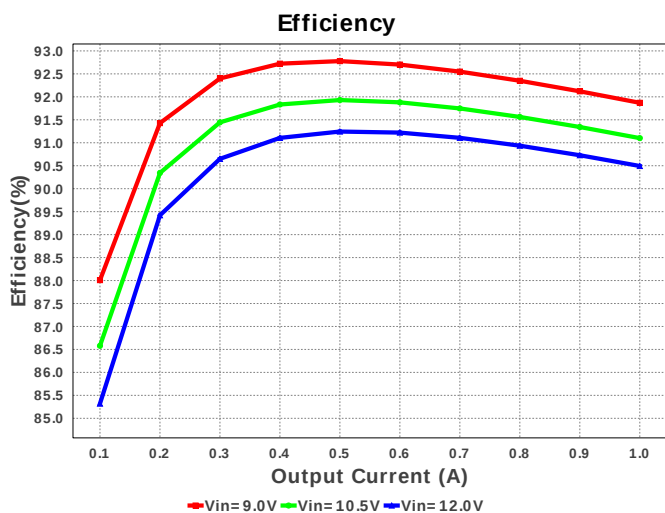


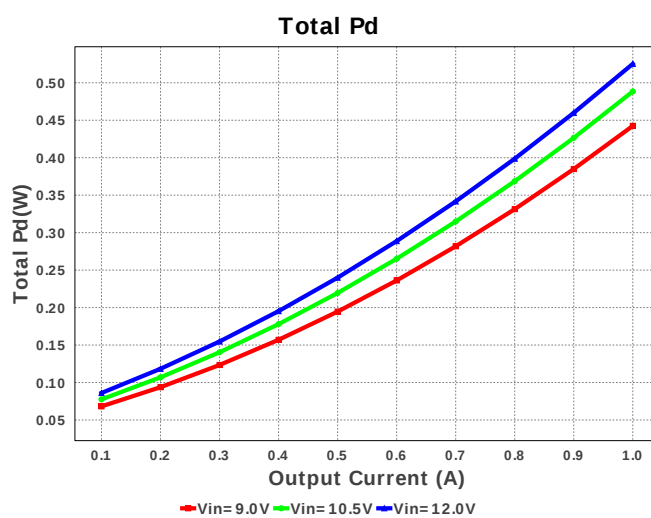
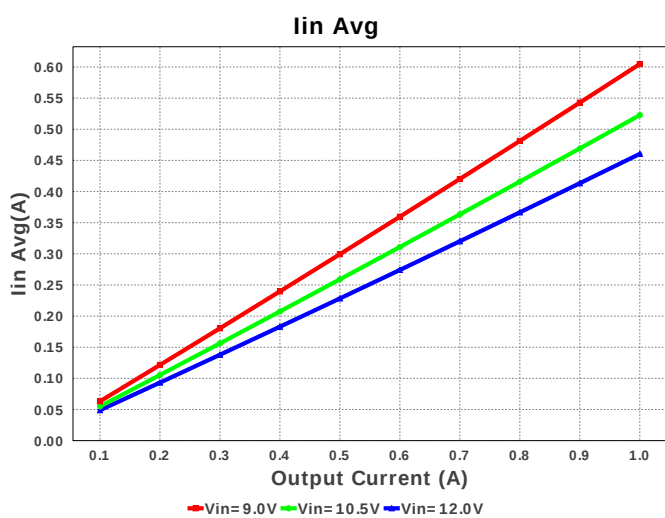
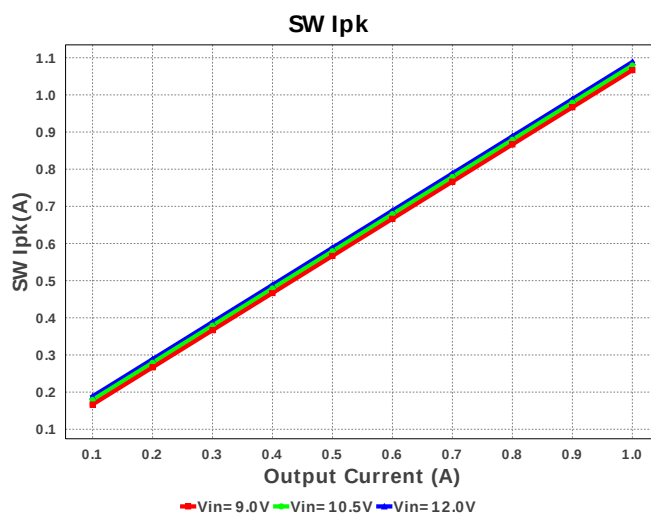
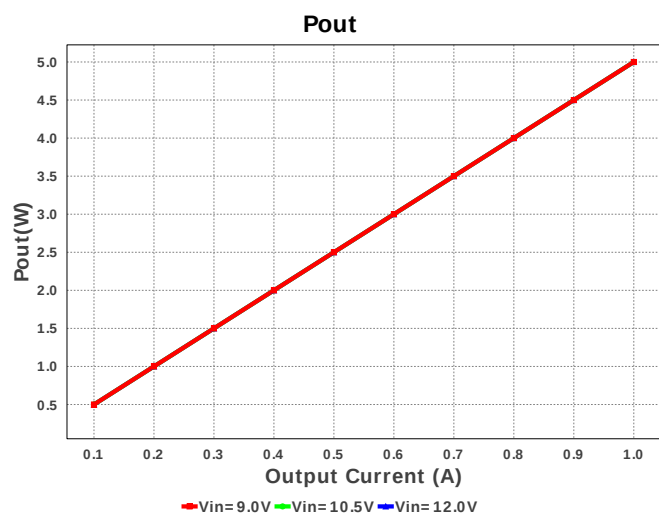
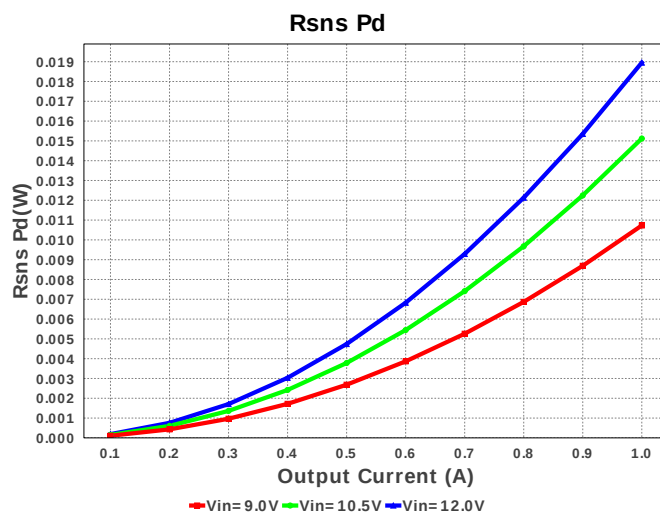
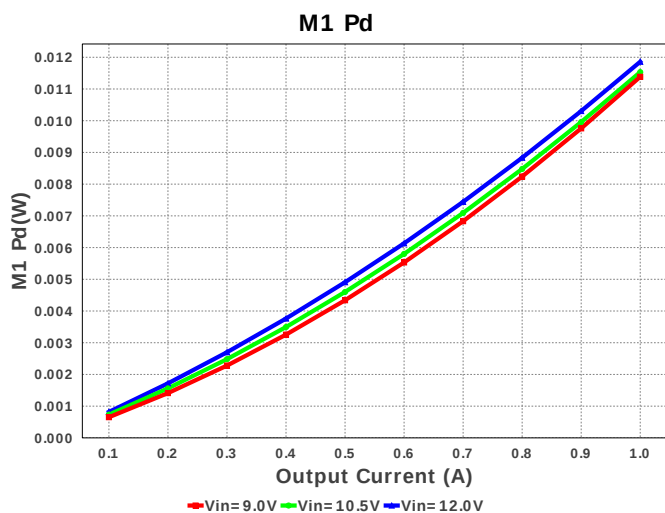
Electrical BOM

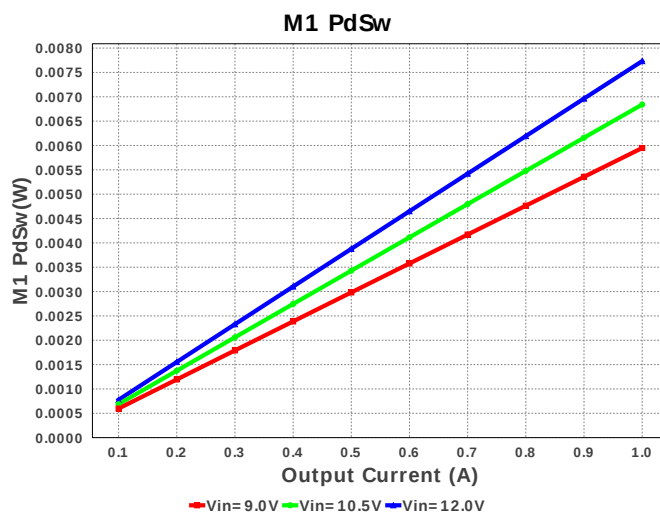
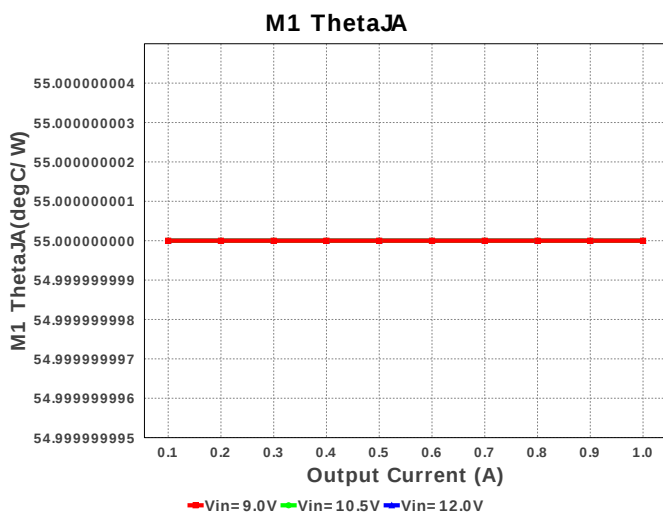
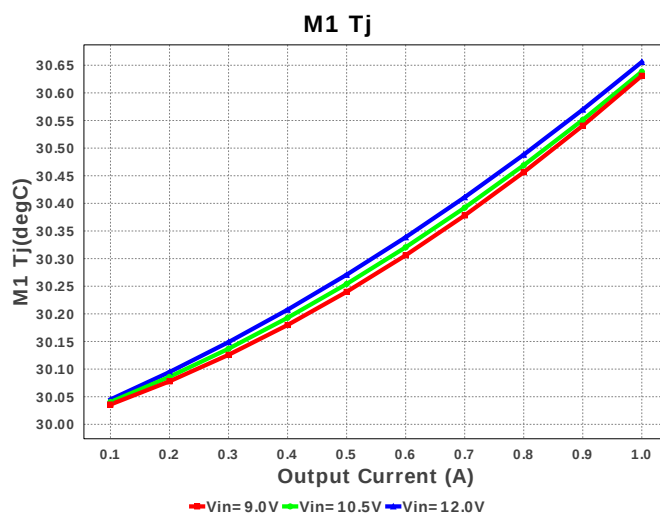
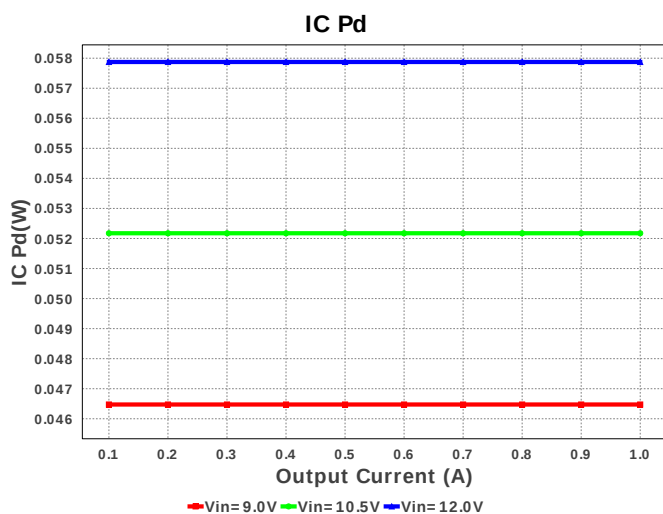
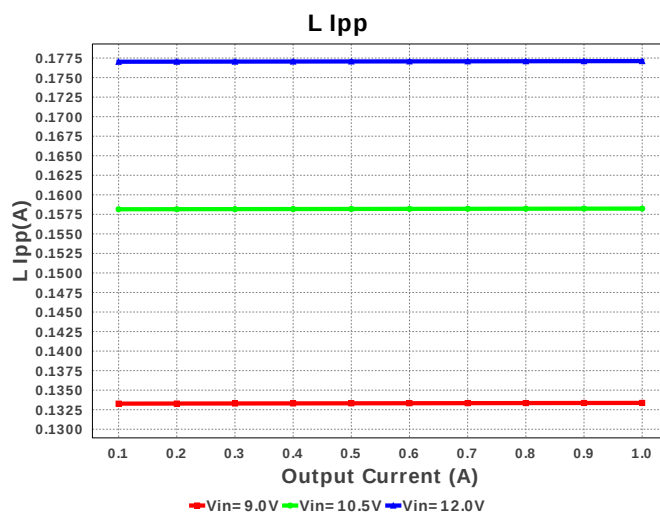
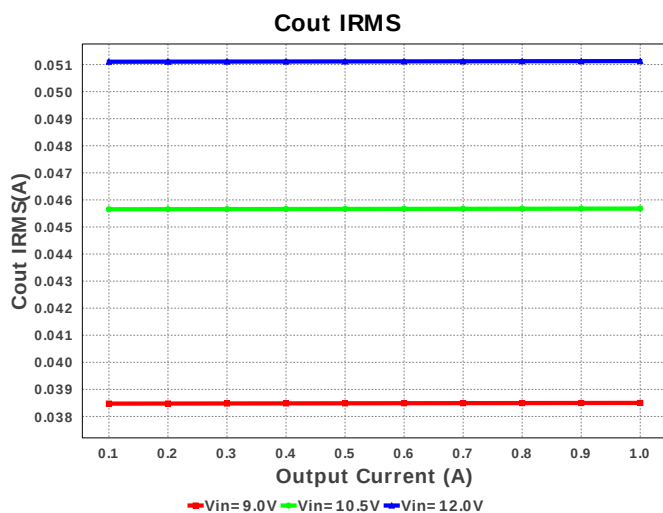
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cboot	Kemet	C0603C682K5RACTU Series= X7R	Cap= 6.8 nF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	0603 5 mm ²
2.	Ccomp	MuRata	GRM1885C1H272JA01J Series= C0G/NP0	Cap= 2.7 nF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	0603 5 mm ²
3.	Chf	Kemet	C0603C220K3GACTU Series= C0G/NP0	Cap= 22.0 pF VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	0603 5 mm ²
4.	Cin	MuRata	GRM188R61C225KE15D Series= X5R	Cap= 2.2 uF ESR= 9.637 mOhm VDC= 16.0 V IRMS= 1.20373 A	1	\$0.02	0603 5 mm ²
5.	Cout	MuRata	GRM31CR61A226KE19L Series= X5R	Cap= 22.0 uF ESR= 3.637 mOhm VDC= 10.0 V IRMS= 3.56456 A	1	\$0.07	1206_190 11 mm ²
6.	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
7.	Cramp	Yageo America	CC0603JRNPO9BN271 Series= C0G/NP0	Cap= 270.0 pF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	0603 5 mm ²
8.	Crst	Kemet	C0603C225K9PACTU Series= X5R	Cap= 2.2 uF VDC= 6.3 V IRMS= 0.0 A	1	\$0.02	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

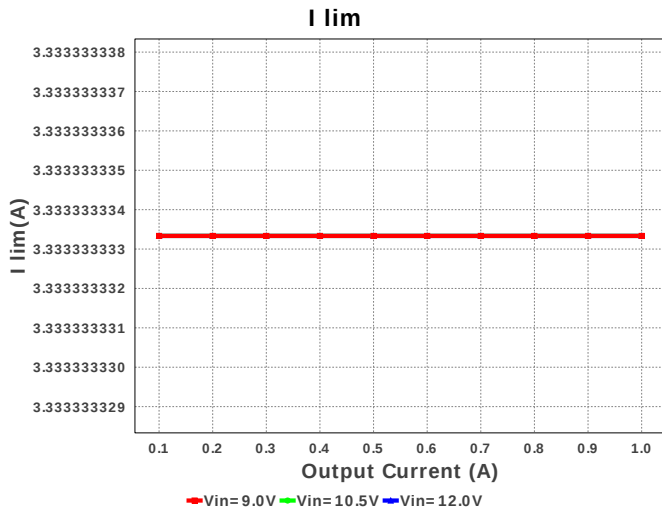
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
10.	Cvcc	Kemet	C0603C104K3RACTU Series= X7R	Cap= 100.0 nF VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	 0603 5 mm ²
11.	D1	Diodes Inc.	1N5819HW-7-F	VF@Io= 450.0 mV VRRM= 40.0 V	1	\$0.08	 SOD-123 13 mm ²
12.	L1	Bourns	SRN8040-330M	L= 33.0 µH DCR= 145.0 mOhm	1	\$0.22	 SRN8040 100 mm ²
13.	M1	Texas Instruments	CSD17308Q3	VdsMax= 30.0 V IdsMax= 50.0 Amps	1	\$0.34	 TRANS_NexFET_Q3 18 mm ²
14.	Rcomp	Vishay-Dale	CRCW060322K1FKEA Series= CRCW..e3	Res= 22.1 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	CSRN2010FK60L0 Series= ?	Res= 60.0 mOhm Power= 1.0 W Tolerance= 1.0%	1	\$0.14	 2010 32 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-6ENF1002V Series= ERJ-6E	Res= 10.0 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	LM5088MH-2/NOPB	Switcher	1	\$1.76	 MXA16A 59 mm ²











Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	496.137 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	51.083 mA	Current	Output capacitor RMS ripple current
3.	I lim	3.333 A	Current	Current limit threshold
4.	Iin Avg	460.44 mA	Current	Average input current
5.	L Ipp	176.96 mA	Current	Peak-to-peak inductor ripple current
6.	SW Ipk	1.088 A	Current	Peak switch current
7.	BOM Count	22	General	Total Design BOM count
8.	FootPrint	308.0 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	55.0 degC/W	General	MOSFET junction-to-ambient thermal resistance
12.	Pout	5.0 W	General	Total output power
13.	Total BOM	\$2.8	General	Total BOM Cost
14.	D1 Tj	86.147 degC	Op_Point	D1 junction temperature
15.	Vout Actual	4.999 V	Op_Point	Vout Actual calculated based on selected voltage divider resistors
16.	Duty Cycle	43.797 %	Op_point	Duty cycle
17.	Efficiency	90.494 %	Op_point	Steady state efficiency
18.	IC Tj	32.315 degC	Op_point	IC junction temperature
19.	ICThetaJA	40.0 degC/W	Op_point	IC junction-to-ambient thermal resistance
20.	IOUT_OP	1.0 A	Op_point	Iout operating point
21.	M1 Tj	30.656 degC	Op_point	M1 MOSFET junction temperature
22.	VIN_OP	12.0 V	Op_point	Vin operating point
23.	Vout p-p	1.917 mV	Op_point	Peak-to-peak output ripple voltage
24.	Cin Pd	2.372 mW	Power	Input capacitor power dissipation
25.	Cout Pd	9.491 μ W	Power	Output capacitor power dissipation
26.	D1 Pd	252.914 mW	Power	Diode1 power dissipation
27.	IC Pd	57.874 mW	Power	IC power dissipation
28.	L Pd	181.25 mW	Power	Inductor power dissipation
29.	M1 Pd	11.859 mW	Power	M1 MOSFET total power dissipation
30.	M1 PdCond	4.127 mW	Power	M1 MOSFET conduction losses
31.	M1 PdSw	7.732 mW	Power	M1 MOSFET switching losses
32.	Rsns Pd	18.953 mW	Power	Current Limit Sense Resistor Power Dissipation
33.	Total Pd	525.233 mW	Power	Total Power Dissipation
34.	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	1.0	Maximum Output Current
2.	VinMax	12.0	Maximum input voltage
3.	VinMin	9.0	Minimum input voltage
4.	Vout	5.0	Output Voltage
5.	base_pn	LM5088	Base Product Number
6.	source	DC	Input Source Type
7.	Ta	30.0	Ambient temperature

Design Assistance

1. **LM5088** Product Folder : <http://www.ti.com/product/LM5088> : contains the data sheet and other resources.

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