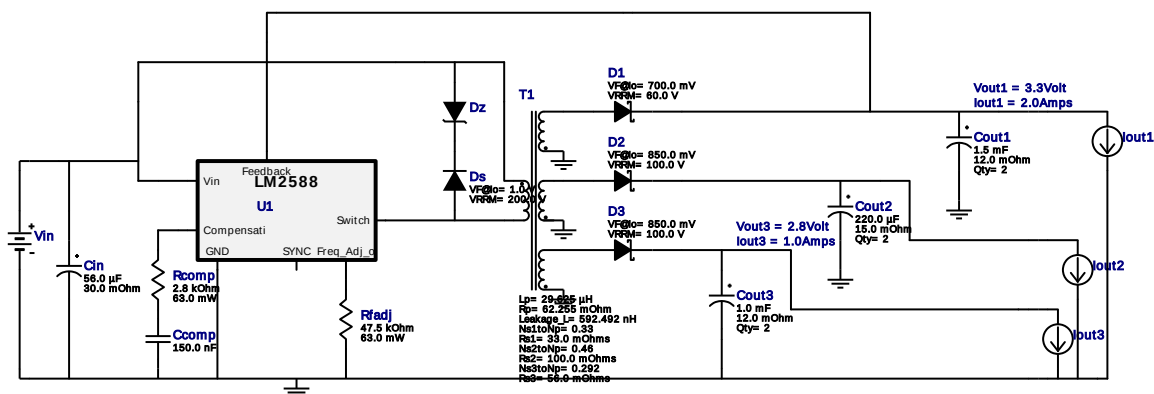


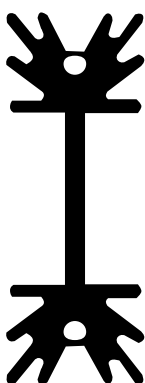


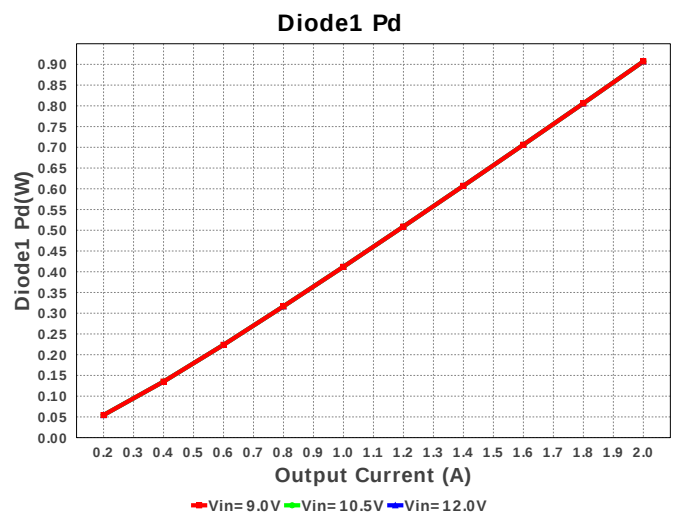
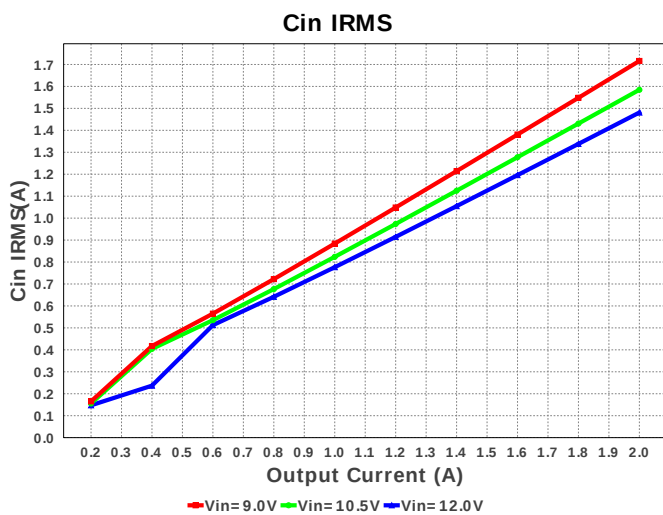
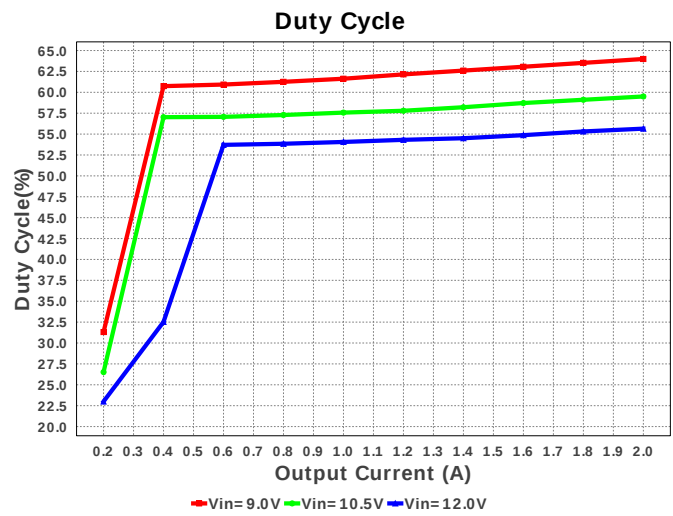
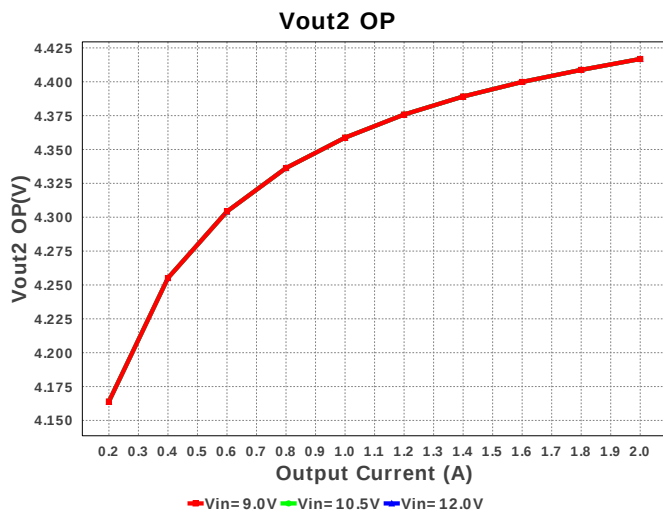
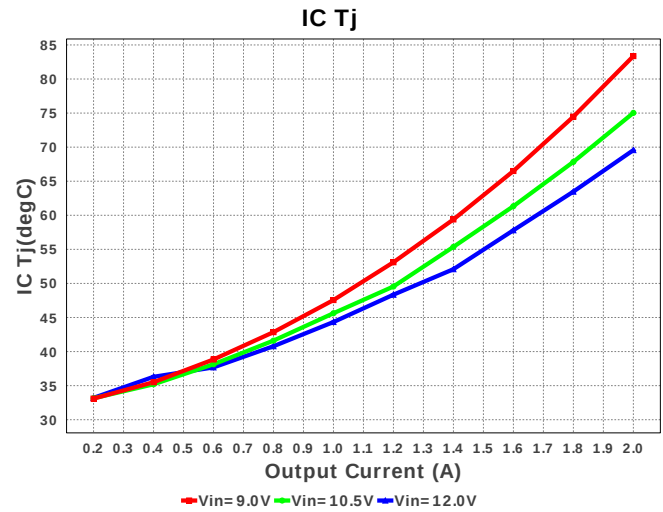
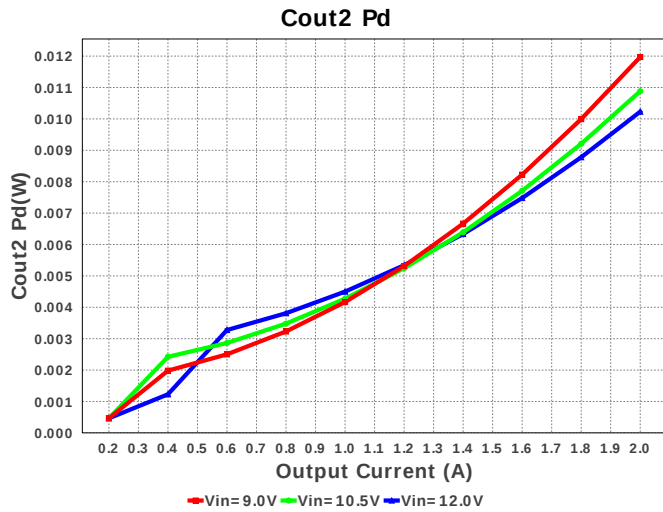
My Comments

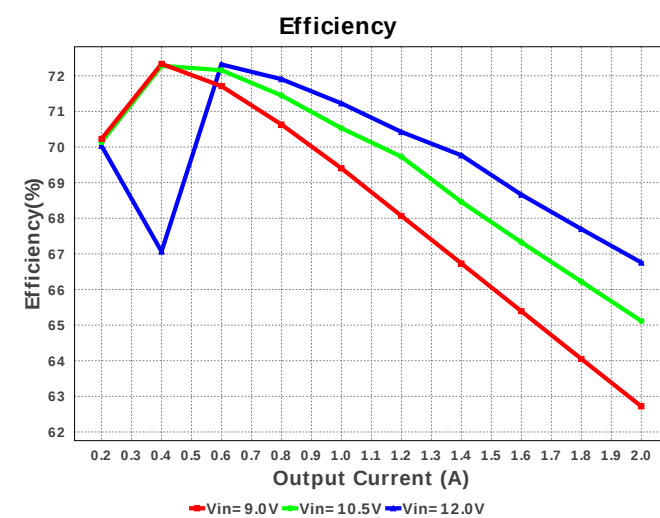
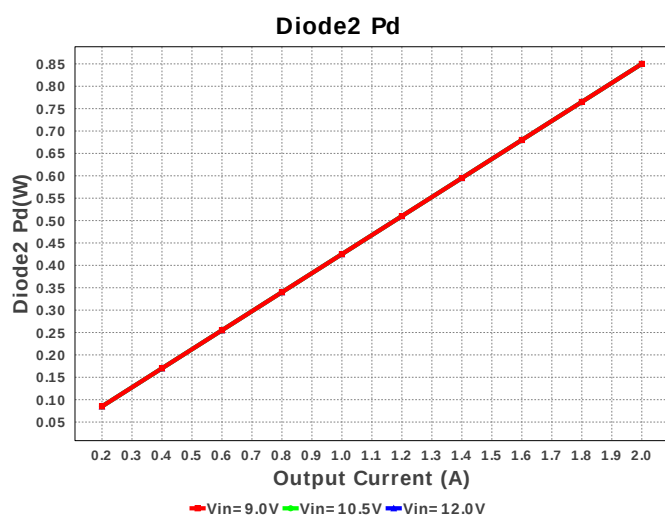
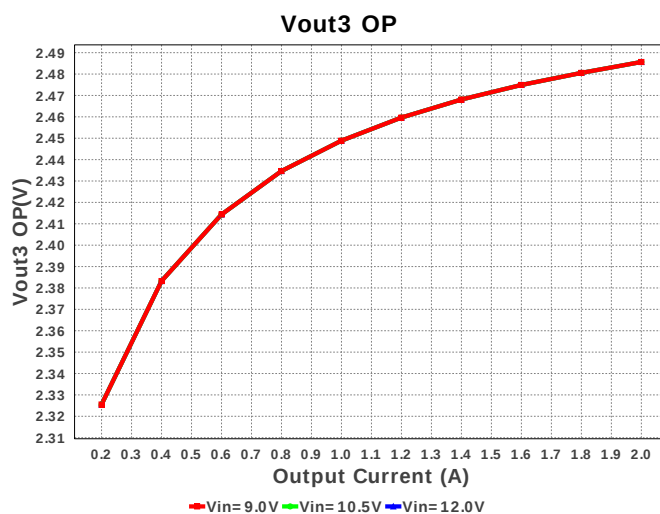
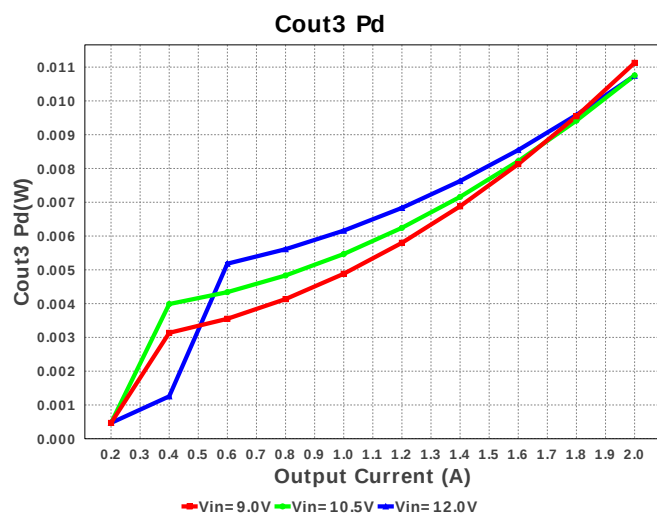
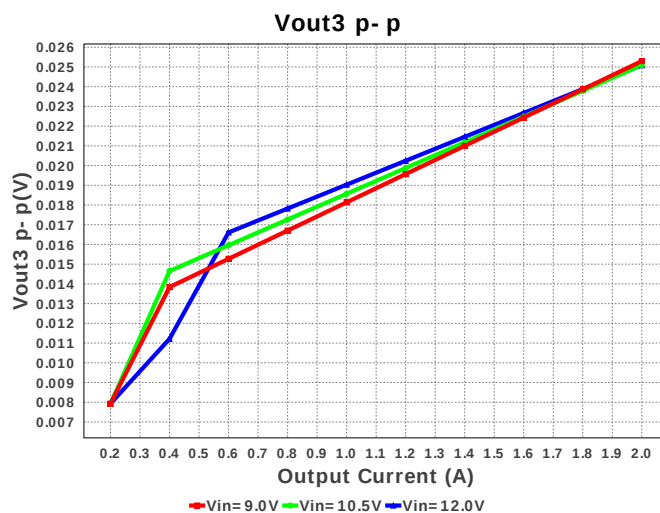
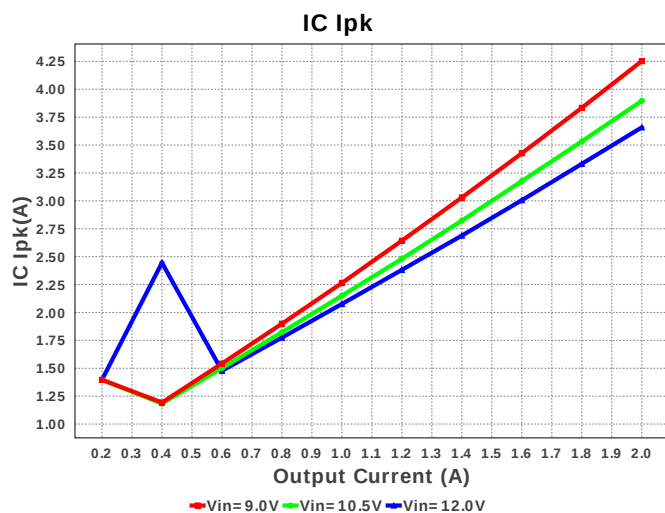
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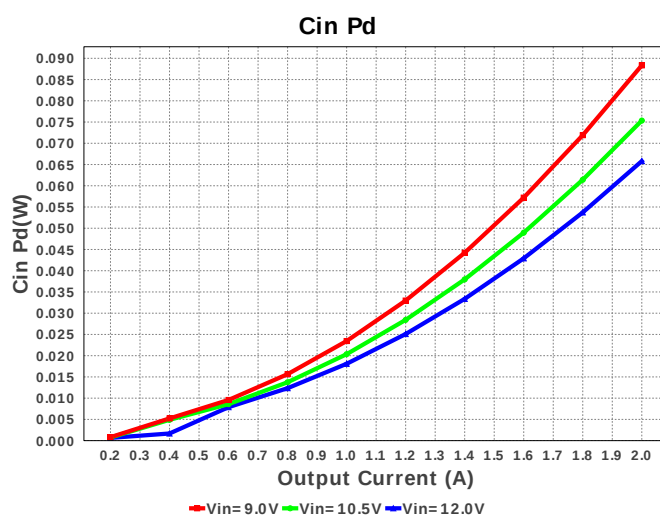
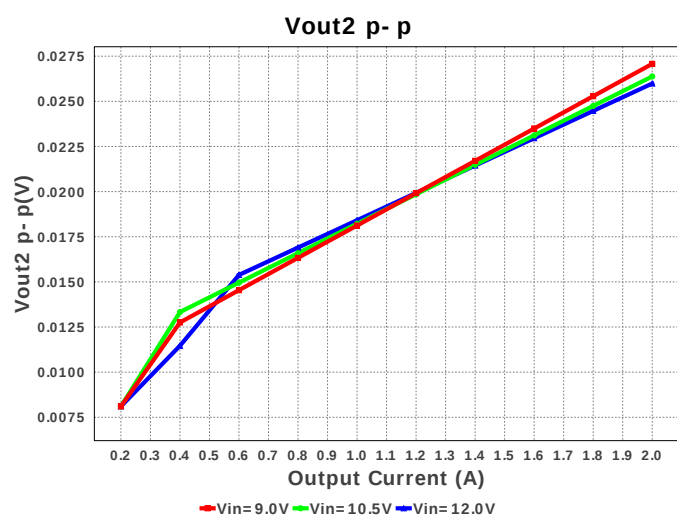
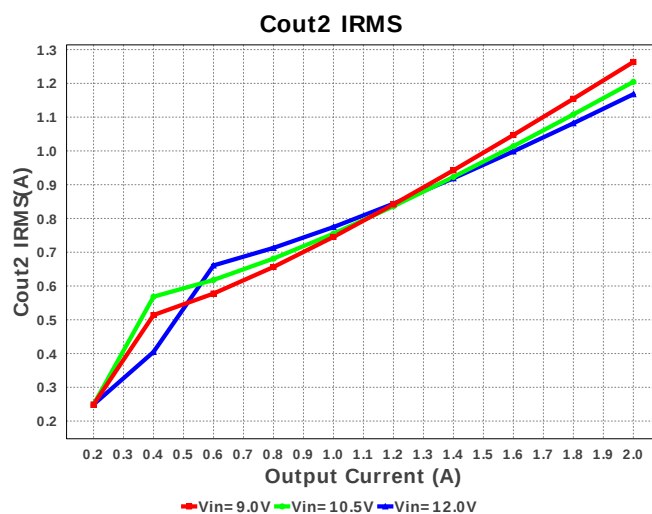
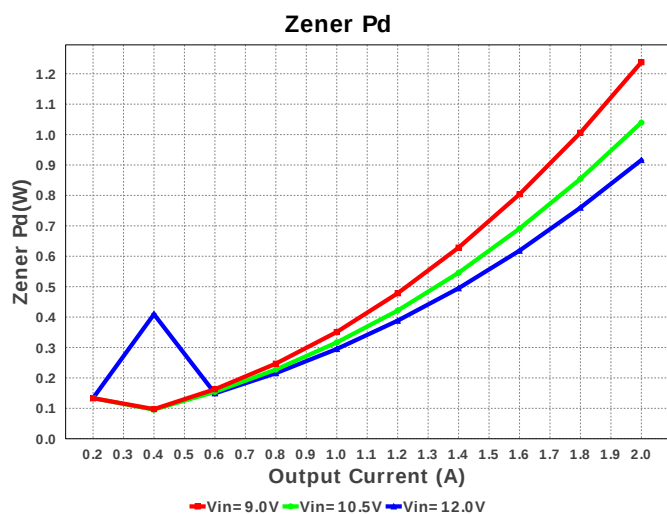
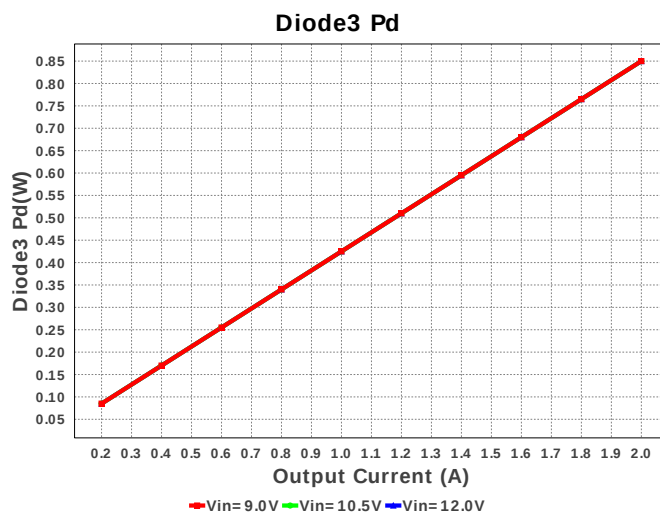
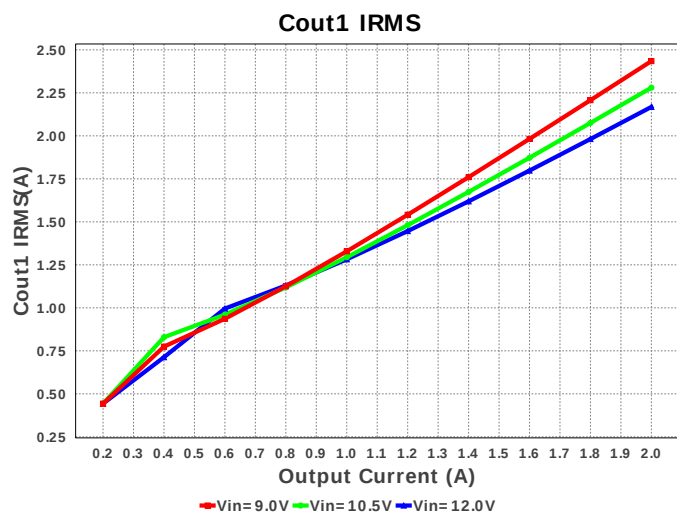
Electrical BOM

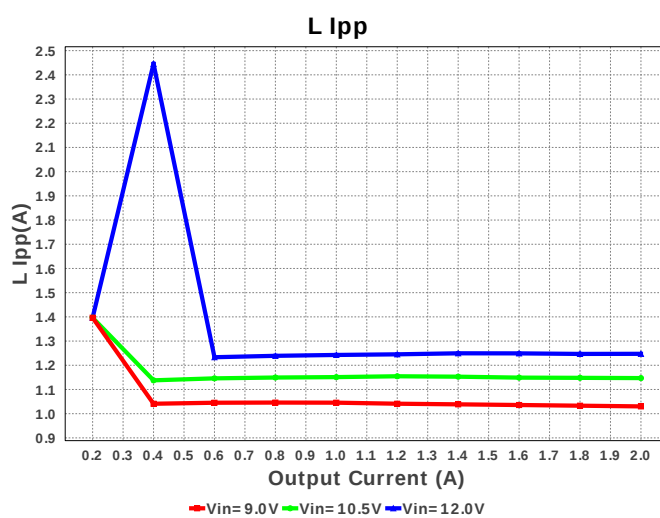
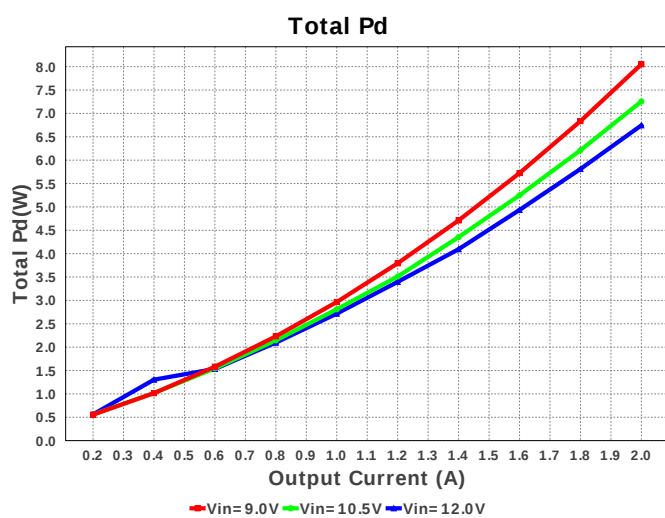
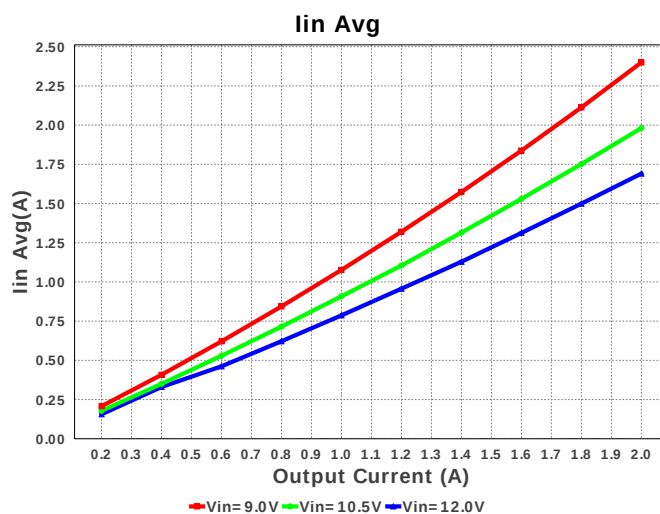
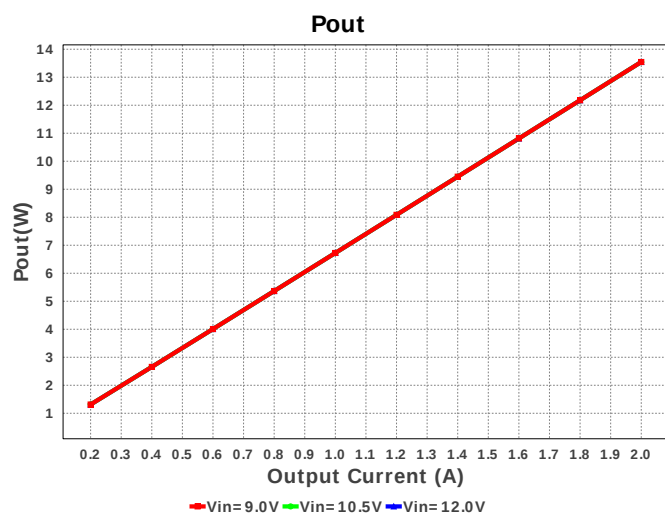
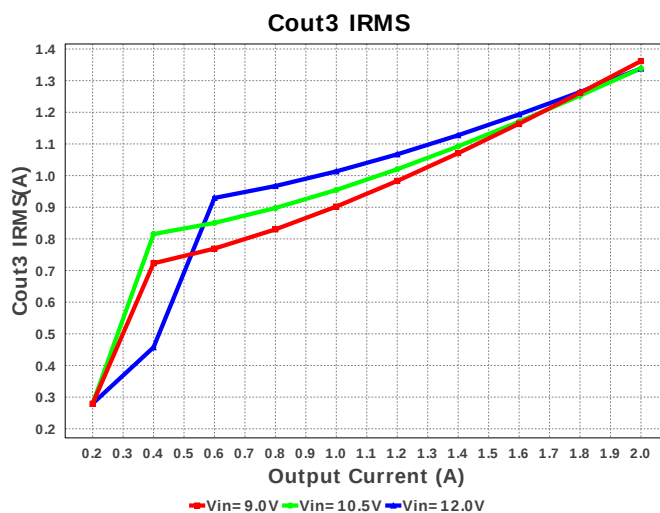
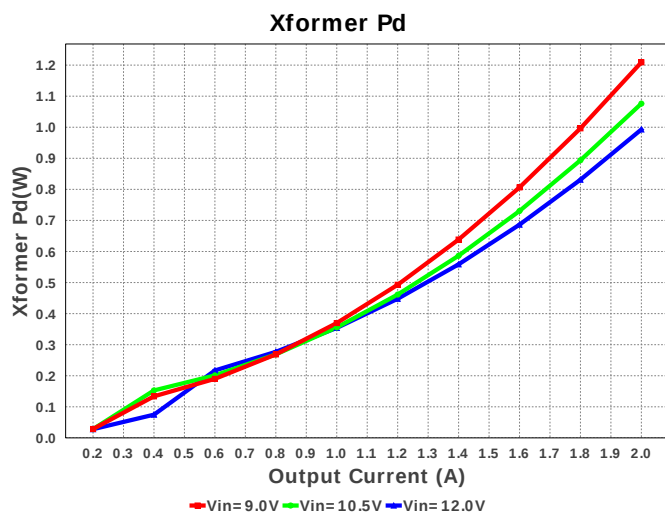
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Ccomp	MuRata	GRM155R60J154KE01D Series= X5R	Cap= 150.0 nF VDC= 6.3 V IRMS= 0.0 A	1	\$0.01	0402 3 mm ²
2.	Cin	Panasonic	20SVPF56MX Series= ?	Cap= 56.0 uF ESR= 30.0 mOhm VDC= 20.0 V IRMS= 2.8 A	1	\$0.35	CAPSMT_62_E61 53 mm ²
3.	Cout1	Panasonic	4SVPC1500M Series= SVPC	Cap= 1.5 mF ESR= 12.0 mOhm VDC= 4.0 V IRMS= 4.7 A	2	NA	SM_RADIAL_8MM 113 mm ²
4.	Cout2	Panasonic	6SVPE220MW Series= SVPE	Cap= 220.0 uF ESR= 15.0 mOhm VDC= 6.3 V IRMS= 3.15 A	2	\$0.20	CAPSMT_62_E61 53 mm ²
5.	Cout3	Panasonic	16SVPF1000M Series= ?	Cap= 1.0 mF ESR= 12.0 mOhm VDC= 16.0 V IRMS= 5.4 A	2	\$0.74	CAPSMT_62_F12 151 mm ²
6.	D1	Diodes Inc.	B560C-13-F	VF@Io= 700.0 mV VRRM= 60.0 V	1	\$0.17	SMC 83 mm ²
7.	D2	Micro Commercial Components	SK310A-TP	VF@Io= 850.0 mV VRRM= 100.0 V	1	\$0.10	SMA 37 mm ²
8.	D3	Micro Commercial Components	SK310A-TP	VF@Io= 850.0 mV VRRM= 100.0 V	1	\$0.10	SMA 37 mm ²

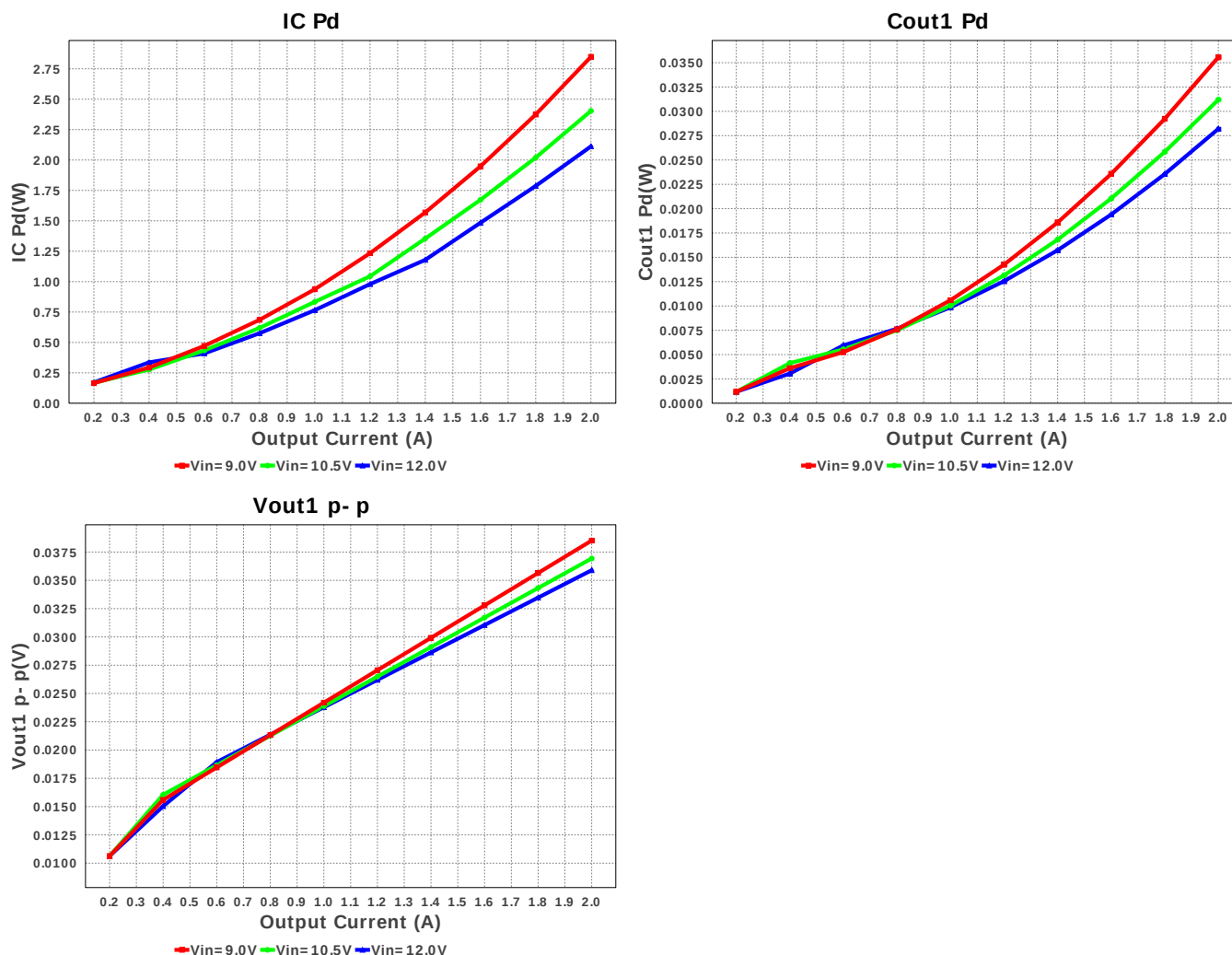
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
9.	Ds	Central Semiconductor	CMR1U-02M	VF@Io= 1.0 V VRRM= 200.0 V	1	NA	 SMA 37 mm ²
10.	Dz	Micro Commercial Components	SMBJ5364B-TP	Zener	1	NA	 SMB 44 mm ²
11.	HeatSink	Aavid	531102B02500G	Heatsink	1	NA	 531102 545 mm ²
12.	Rcomp	Vishay-Dale	CRCW04022K80FKED Series= CRCW..e3	Res= 2.8 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
13.	Rfadj	Vishay-Dale	CRCW040247K5FKED Series= CRCW..e3	Res= 47.5 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
14.	T1	CUSTOM	CUSTOM	Lp= 29.625 µH Rp= 62.255 mOhm Leakage_L= 592.492 nH Ns1toNp= 0.33 Rs1= 33.0 mOhms Ns2toNp= 0.46 Rs2= 100.0 mOhms Ns3toNp= 0.292 Rs3= 56.0 mOhms	1	NA	CUSTOM 0 mm ²
15.	U1	Texas Instruments	LM2588S-3.3/NOPB	Switcher	1	\$5.10	 TA07B 121 mm ²











Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	1.826 A	Current	Input capacitor RMS ripple current
2.	Cout1 IRMS	2.582 A	Current	Output capacitor1 RMS ripple current
3.	Cout2 IRMS	1.33 A	Current	Output capacitor2 RMS ripple current
4.	Cout3 IRMS	1.438 A	Current	Output capacitor3 RMS ripple current
5.	IC Ipk	4.464 A	Current	Peak switch current
6.	Iin Avg	2.476 A	Current	Average input current
7.	L Ipp	1.17 A	Current	Peak-to-peak inductor ripple current
8.	BOM Count	18	General	Total Design BOM count
9.	FootPrint	1.608 k mm ²	General	Total Foot Print Area of BOM components
10.	Frequency	149.918 kHz	General	Switching frequency
11.	IC Tolerance	58.0 mV	General	IC Feedback Tolerance
12.	Pout	14.208 W	General	Total output power
13.	Total BOM	\$0.0	General	Total BOM Cost
14.	Vout3 OP	2.818 V	Op_Point	Operational Voltage 3
15.	Duty Cycle	63.601 %	Op_point	Duty cycle
16.	Efficiency	63.773 %	Op_point	Steady state efficiency
17.	IC Tj	88.705 degC	Op_point	IC junction temperature
18.	ICThetaJA	18.734 degC/W	Op_point	IC junction-to-ambient thermal resistance
19.	IOUT_OP	2.0 A	Op_point	Iout operating point
20.	VIN_OP	9.0 V	Op_point	Vin operating point
21.	Vout1 OP	3.321 V	Op_point	Operational Voltage 1
22.	Vout1 p-p	41.218 mV	Op_point	Peak-to-peak output1 ripple voltage
23.	Vout2 OP	4.749 V	Op_point	Operational Voltage 2
24.	Vout2 p-p	28.572 mV	Op_point	Peak-to-peak output2 ripple voltage
25.	Vout3 p-p	27.164 mV	Op_point	Peak-to-peak output3 ripple voltage
26.	Cin Pd	100.009 mW	Power	Input capacitor power dissipation
27.	Cout1 Pd	40.007 mW	Power	Output capacitor1 power dissipation
28.	Cout1 Pd	40.007 mW	Power	Output capacitor1 power dissipation
29.	Cout2 Pd	13.269 mW	Power	Output capacitor2 power dissipation
30.	Cout3 Pd	12.401 mW	Power	Output capacitor3 power dissipation
31.	Diode1 Pd	907.094 mW	Power	Diode1 power dissipation

#	Name	Value	Category	Description
32.	Diode2 Pd	518.007 mW	Power	Diode2 power dissipation
33.	Diode3 Pd	518.007 mW	Power	Diode3 power dissipation
34.	IC Pd	3.134 W	Power	IC power dissipation
35.	Total Pd	8.071 W	Power	Total Power Dissipation
36.	Xformer Pd	1.36 W	Power	Transformer power dissipation
37.	Zener Pd	1.467 W	Power	Zener power dissipation
38.	Vout Tolerance	1.758 %		Vout Tolerance based on IC Tolerance (no load) and voltage divider resistors if applicable

Design Inputs

#	Name	Value	Description
1.	Iout	2.0	Maximum Output Current
2.	Iout1	2.0	Output Current #1
3.	Iout2	1.0	Output Current #2
4.	Iout3	1.0	Output Current #3
5.	VinMax	12.0	Maximum input voltage
6.	VinMin	9.0	Minimum input voltage
7.	Vout	3.3	Output Voltage
8.	Vout1	3.3	Output Voltage #1
9.	Vout2	5.0	Output Voltage #2
10.	Vout3	2.8	Output Voltage #3
11.	base_pn	LM2588	Base Product Number
12.	source	DC	Input Source Type
13.	Ta	30.0	Ambient temperature

Design Assistance

1. **LM2588** Product Folder : <http://www.ti.com/product/LM2588> : contains the data sheet and other resources.

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