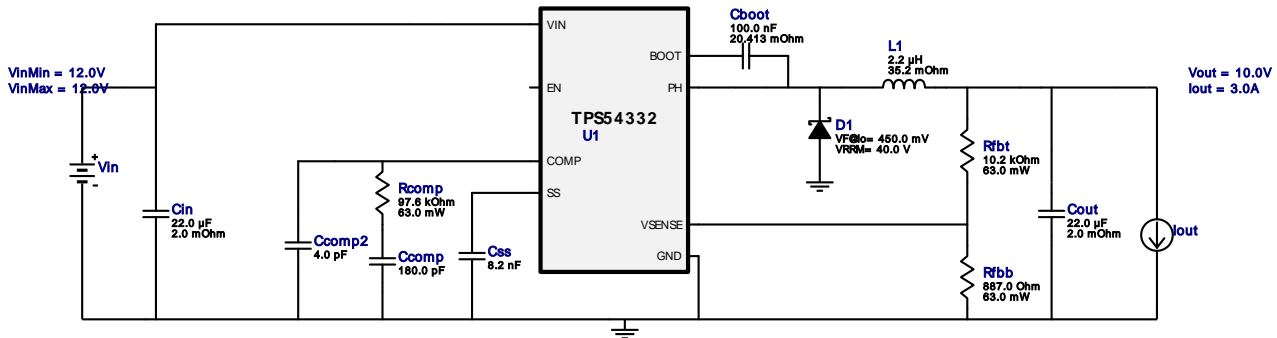

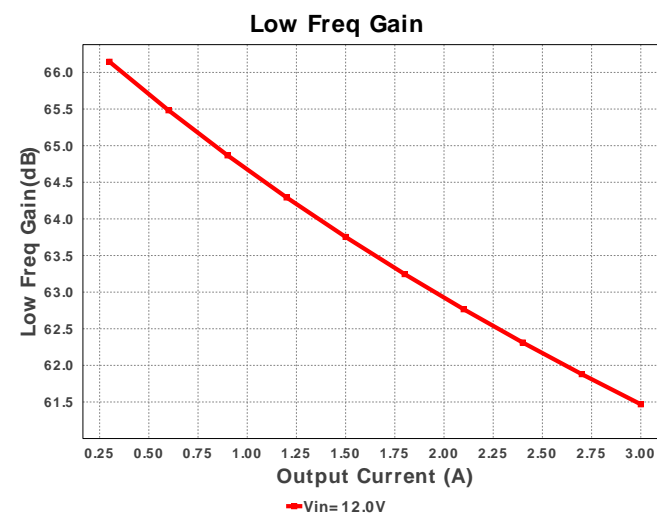
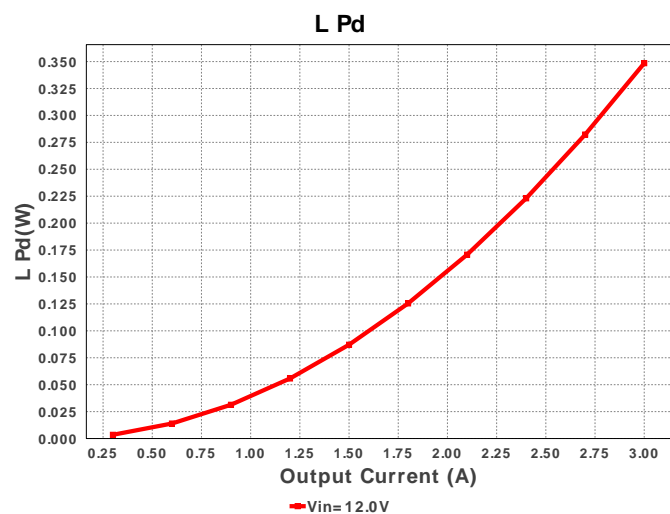
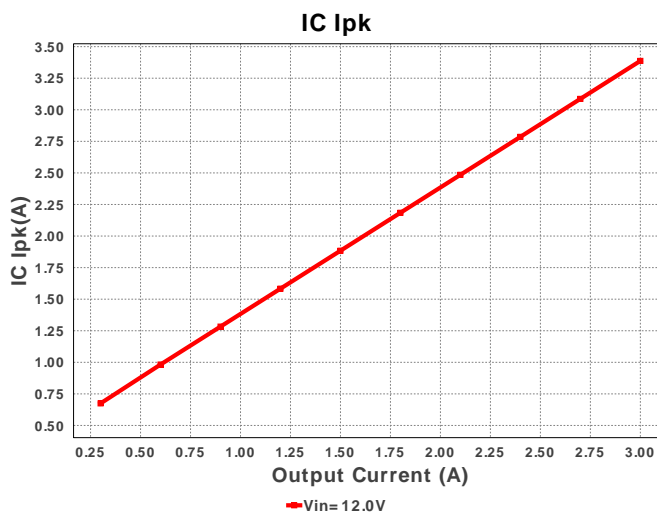
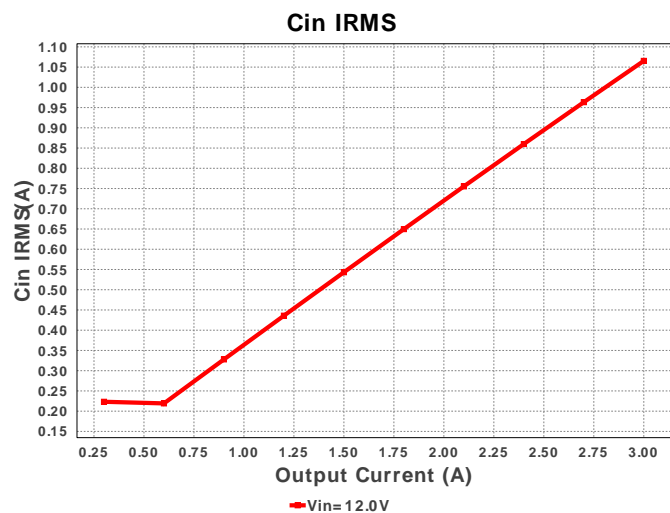
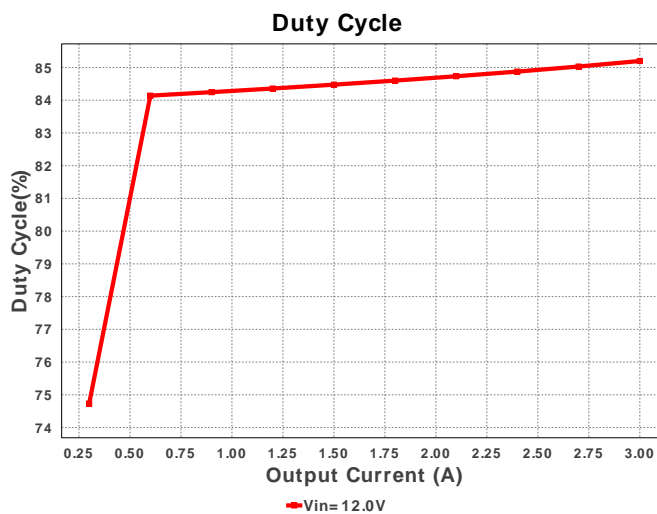
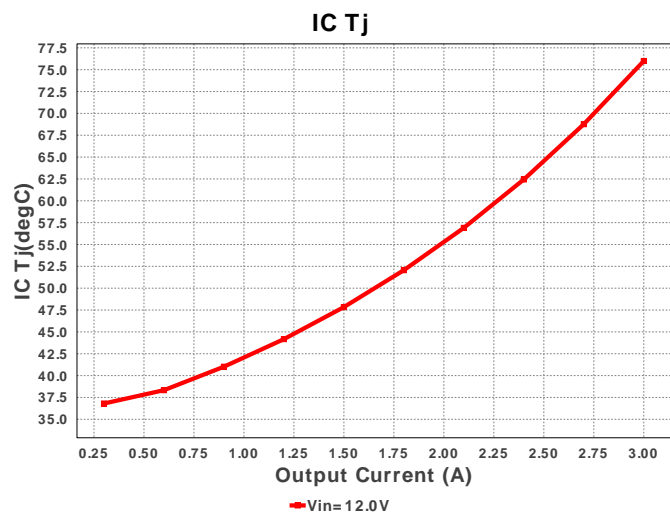


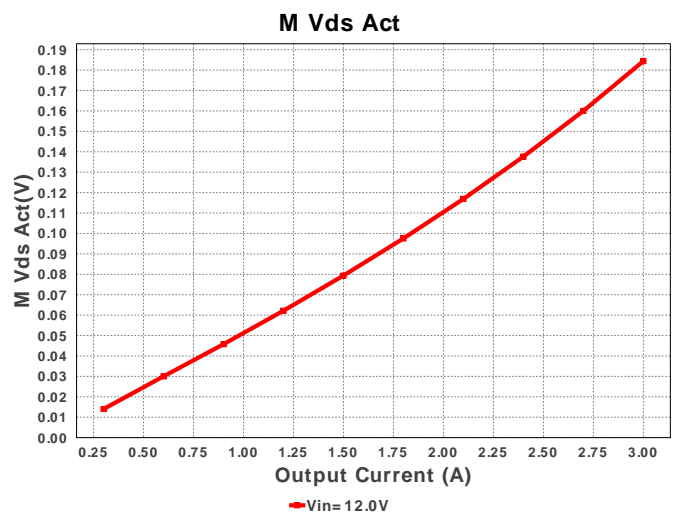
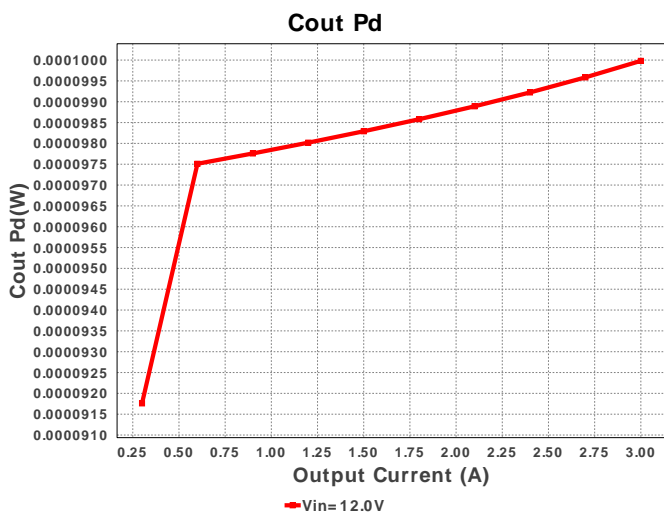
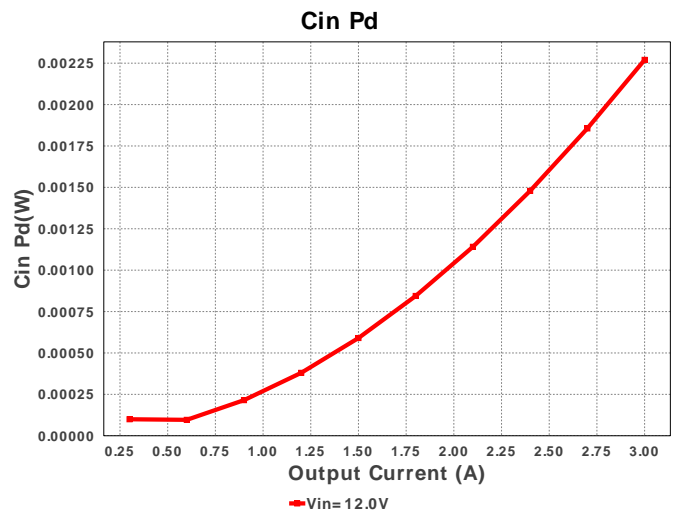
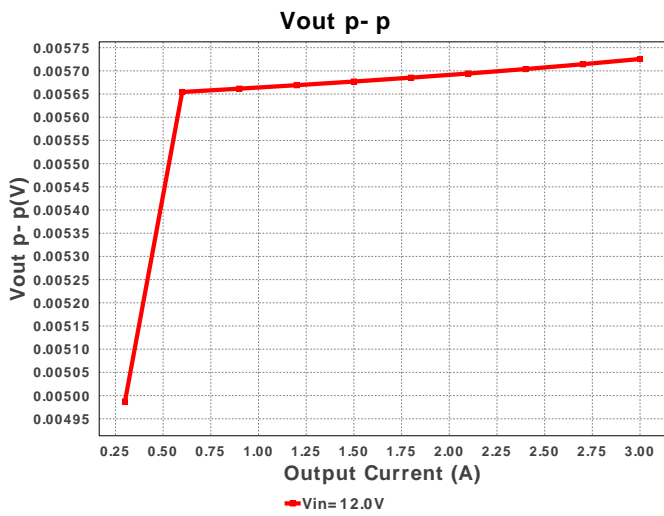
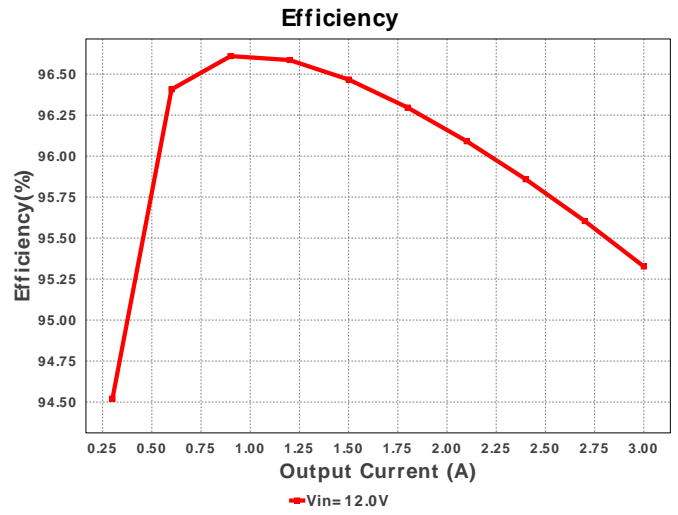
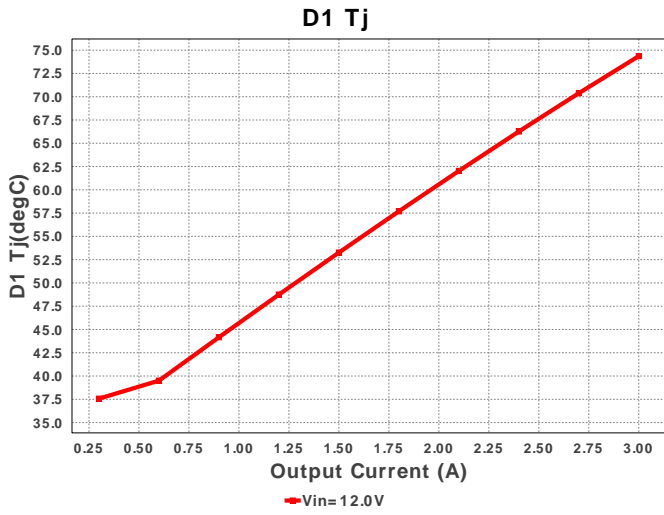
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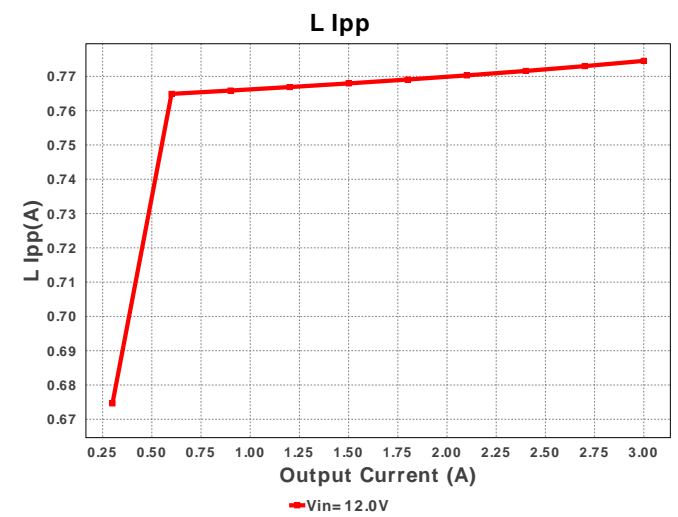
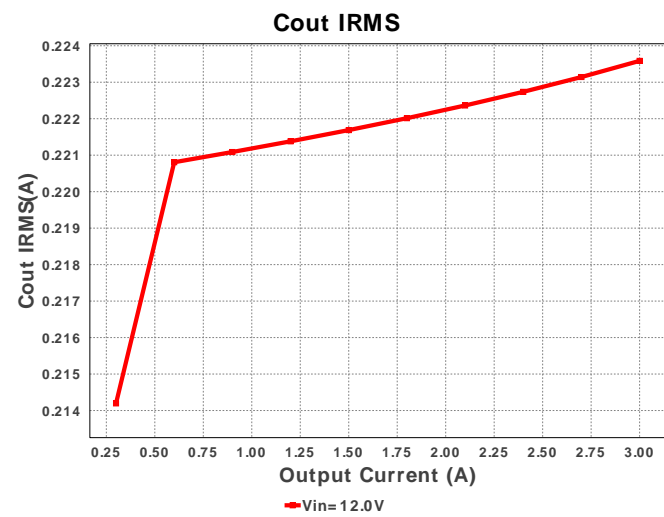
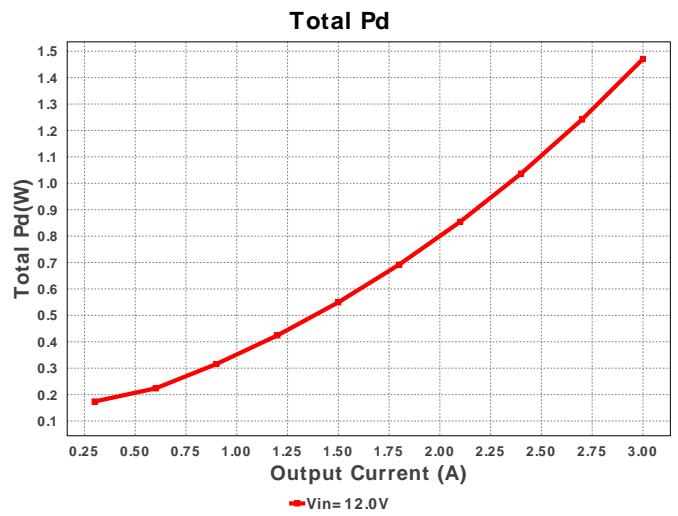
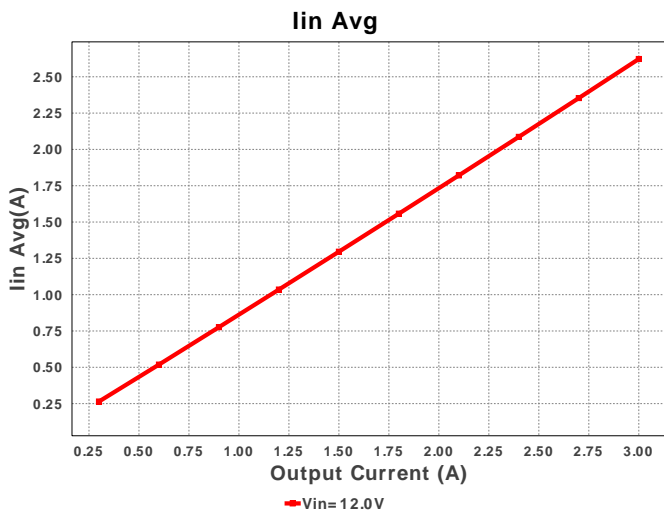
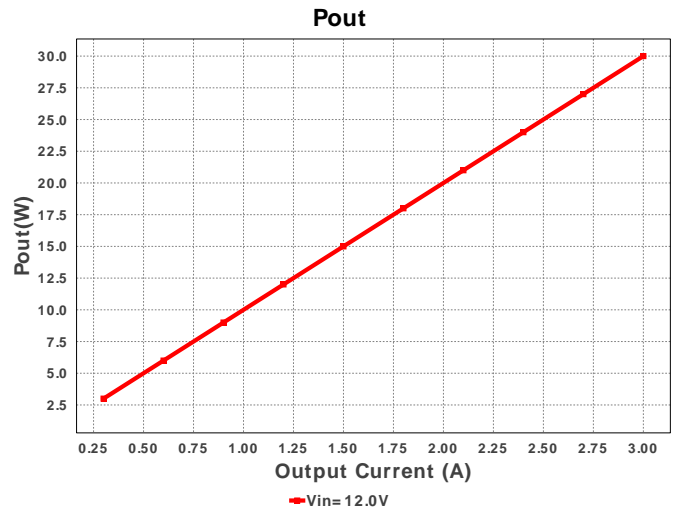
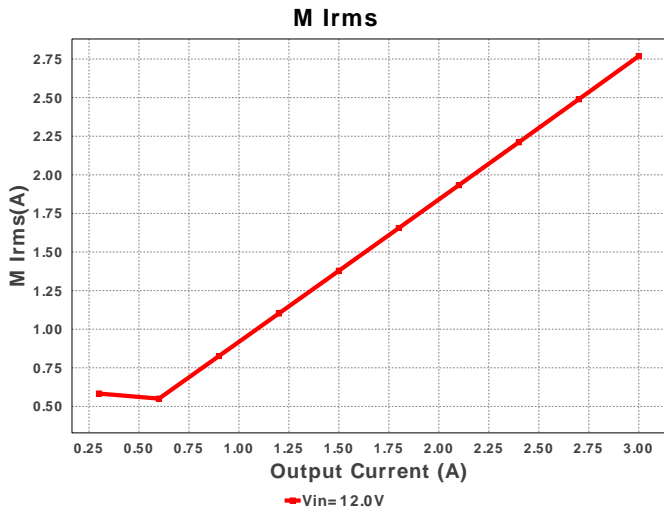
 Design : 4373714/38 TPS54332DDAR
 TPS54332DDAR 12.0V-12.0V to 10.00V @ 3.0A

Electrical BOM

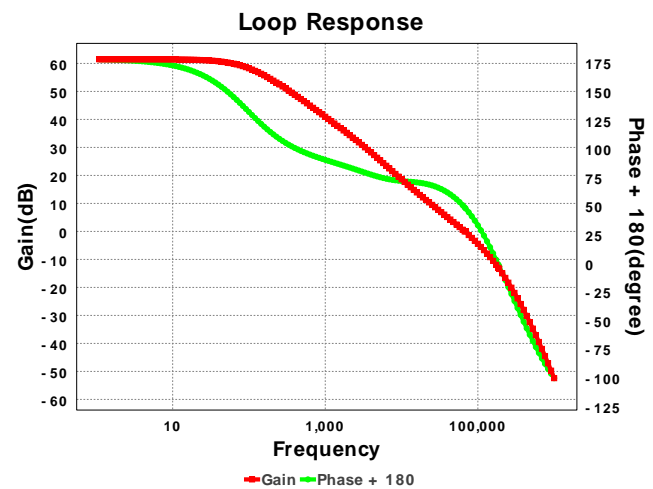
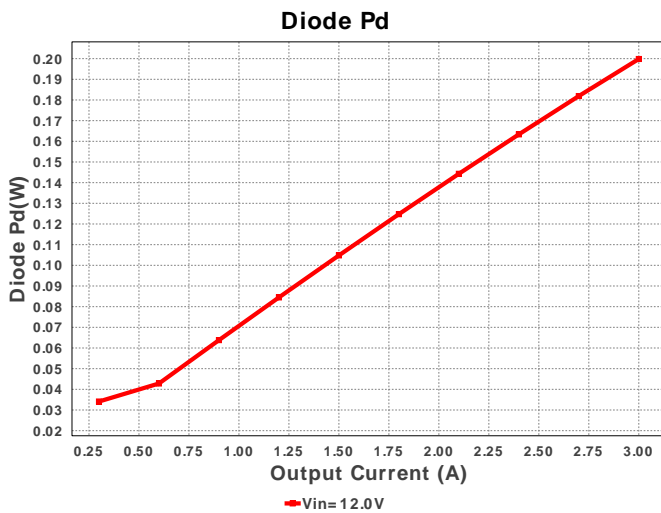
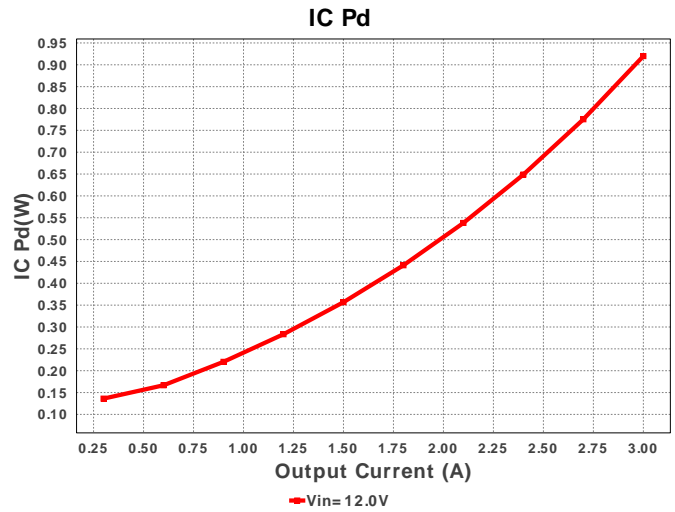
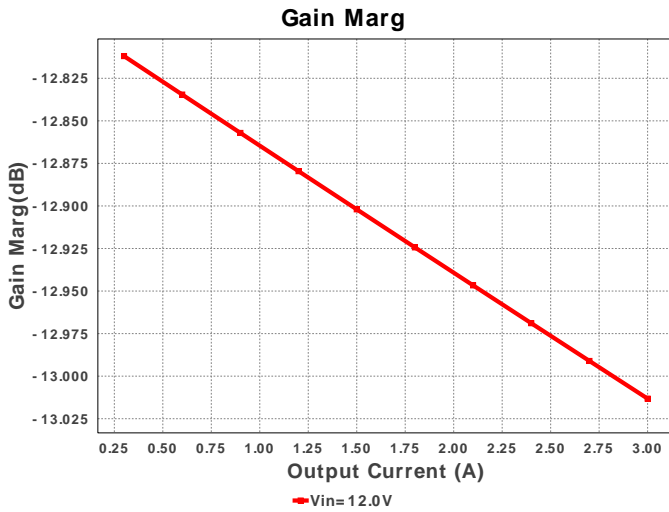
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cboot	TDK	C1005X5R1A104K Series= X5R	Cap= 100.0 nF ESR= 20.413 mOhm VDC= 10.0 V IRMS= 0.0 A	1	\$0.01	0402 3 mm ²
2.	Ccomp	Kemet	C0805C181K5GACTU Series= C0G/NP0	Cap= 180.0 pF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	0805 7 mm ²
3.	Ccomp2	Yageo America	CC0805CRNP09BN4R0 Series= C0G/NP0	Cap= 4.0 pF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	0805 7 mm ²
4.	Cin	MuRata	GRM32ER61E226KE15L Series= X5R	Cap= 22.0 uF ESR= 2.0 mOhm VDC= 25.0 V IRMS= 3.67 A	1	\$0.16	1210 15 mm ²
5.	Cout	MuRata	GRM32ER61C226KE20L Series= X5R	Cap= 22.0 uF ESR= 2.0 mOhm VDC= 16.0 V IRMS= 3.68 A	1	\$0.16	1210 15 mm ²
6.	Css	MuRata	GRM033R61A822KA01D Series= X5R	Cap= 8.2 nF VDC= 10.0 V IRMS= 0.0 A	1	\$0.01	0201 2 mm ²
7.	D1	Diodes Inc.	1N5819HW-7-F	VF@Io= 450.0 mV VRRM= 40.0 V	1	\$0.08	SOD-123 13 mm ²
8.	L1	Coilcraft	XAL4020-222MEB	L= 2.2 uH DCR= 35.2 mOhm	1	\$0.60	XAL4020 25 mm ²
9.	Rcomp	Vishay-Dale	CRCW040297K6FKED Series= CRCW..e3	Res= 97.6 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
10.	Rfbb	Vishay-Dale	CRCW0402887R7FKED Series= CRCW..e3	Res= 887.0 Ohm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
11.	Rfbt	Vishay-Dale	CRCW040210K2FKED Series= CRCW..e3	Res= 10.2 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
12.	U1	Texas Instruments	TPS54332DDAR	Switcher	1	\$0.73	 DDA0008H 57 mm ²









Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	1.065 A	Current	Input capacitor RMS ripple current
2.	Cout IRMS	223.586 mA	Current	Output capacitor RMS ripple current
3.	IC Ipk	3.387 A	Current	Peak switch current in IC
4.	Iin Avg	2.622 A	Current	Average input current
5.	L Ipp	774.52 mA	Current	Peak-to-peak inductor ripple current
6.	M1 Irms	2.769 A	Current	Q lavg
7.	BOM Count	12	General	Total Design BOM count
8.	FootPrint	152.0 mm ²	General	Total Foot Print Area of BOM components
9.	Frequency	1000.0 kHz	General	Switching frequency
10.	M Vds Act	184.385 mV	General	Voltage drop across the MosFET
11.	Pout	30.0 W	General	Total output power
12.	Total BOM	\$1.8	General	Total BOM Cost
13.	D1 Tj	74.363 degC	Op_Point	D1 junction temperature
14.	Low Freq Gain	61.469 dB	Op_Point	Gain at 10Hz
15.	Vout OP	10.0 V	Op_Point	Operational Output Voltage
16.	Cross Freq	67.098 kHz	Op_point	Bode plot crossover frequency
17.	Duty Cycle	85.198 %	Op_point	Duty cycle
18.	Efficiency	95.327 %	Op_point	Steady state efficiency
19.	Gain Marg	-13.013 dB	Op_point	Bode Plot Gain Margin
20.	IC Tj	75.995 degC	Op_point	IC junction temperature
21.	ICThetaJA	50.0 degC/W	Op_point	IC junction-to-ambient thermal resistance
22.	IOUT_OP	3.0 A	Op_point	Iout operating point
23.	Phase Marg	49.981 deg	Op_point	Bode Plot Phase Margin
24.	VIN_OP	12.0 V	Op_point	Vin operating point
25.	Vout p-p	5.726 mV	Op_point	Peak-to-peak output ripple voltage
26.	Cin Pd	2.27 mW	Power	Input capacitor power dissipation
27.	Cout Pd	99.981 μW	Power	Output capacitor power dissipation
28.	Diode Pd	199.833 mW	Power	Diode power dissipation
29.	IC Pd	919.895 mW	Power	IC power dissipation
30.	L Pd	348.48 mW	Power	Inductor power dissipation
31.	Total Pd	1.471 W	Power	Total Power Dissipation

Design Inputs

#	Name	Value	Description
1.	Iout	3.0	Maximum Output Current
2.	Iout1	3.0	Output Current #1
3.	VinMax	12.0	Maximum input voltage
4.	VinMin	12.0	Minimum input voltage
5.	Vout	10.0	Output Voltage
6.	Vout1	10.0	Output Voltage #1
7.	base_pn	TPS54332	Base Product Number
8.	source	DC	Input Source Type
9.	Ta	30.0	Ambient temperature

Design Assistance

1. **TPS54332** Product Folder : <http://www.ti.com/product/TPS54332> : contains the data sheet and other resources.

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