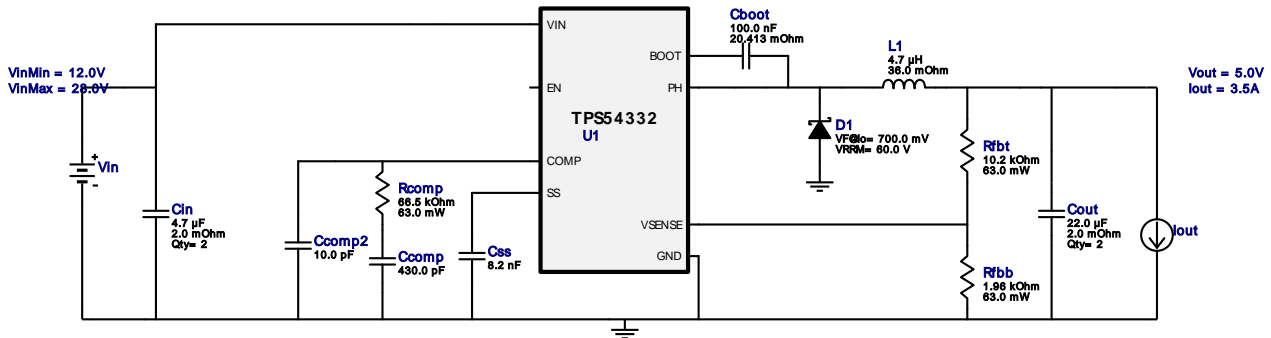

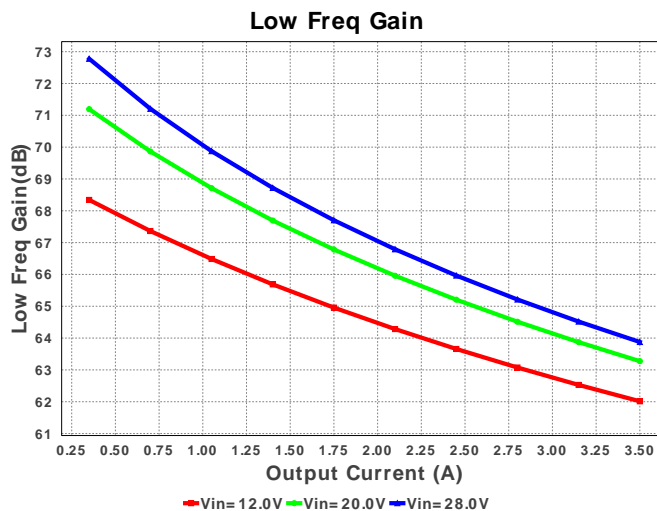
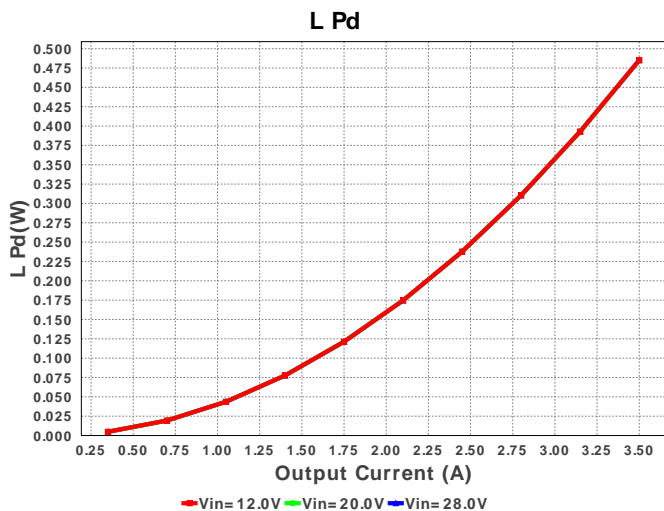
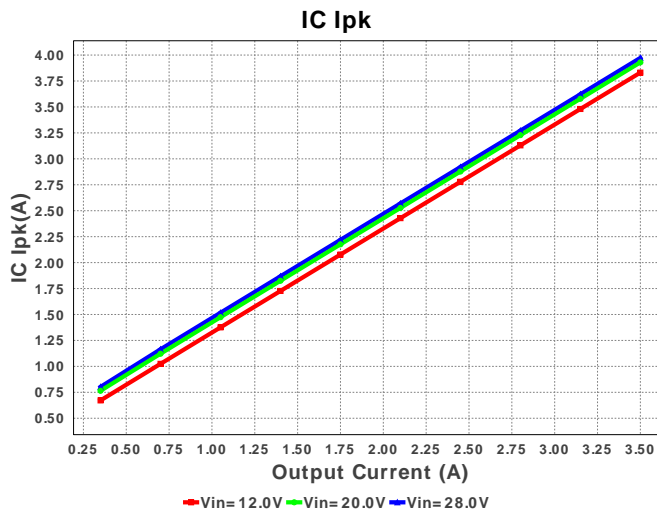
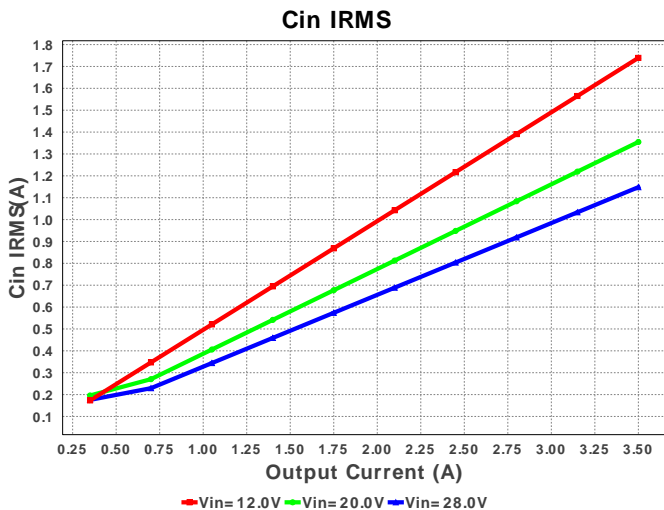
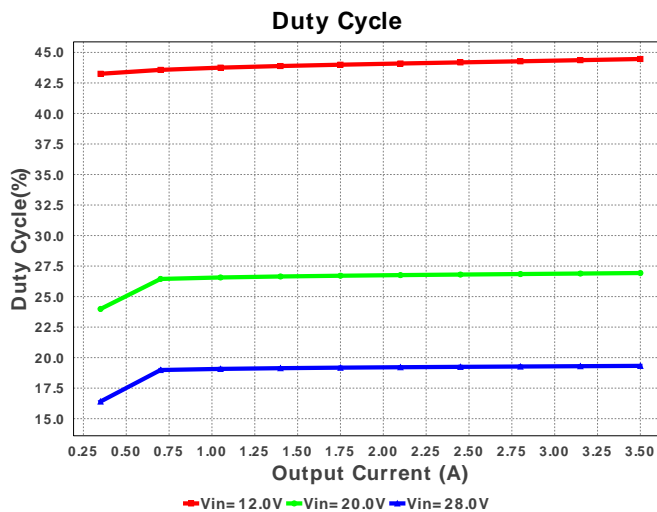
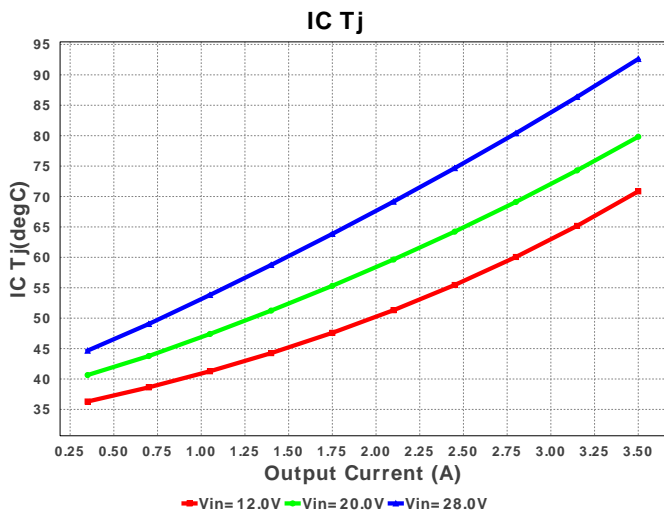


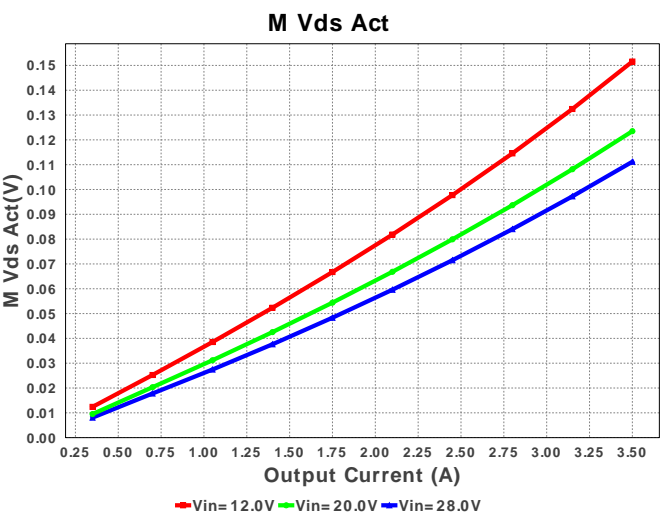
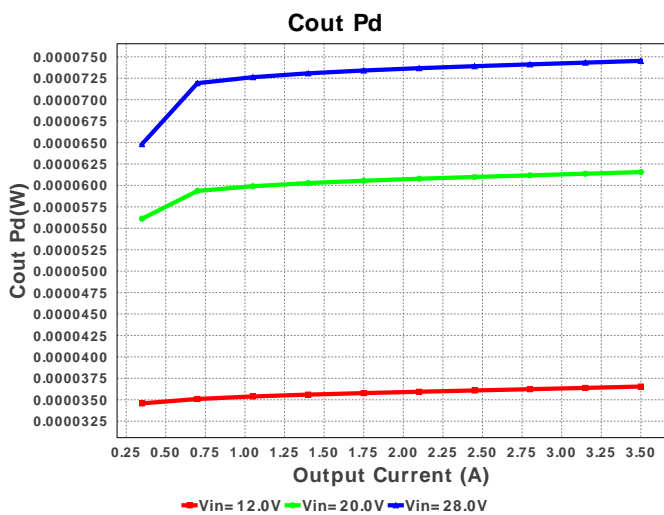
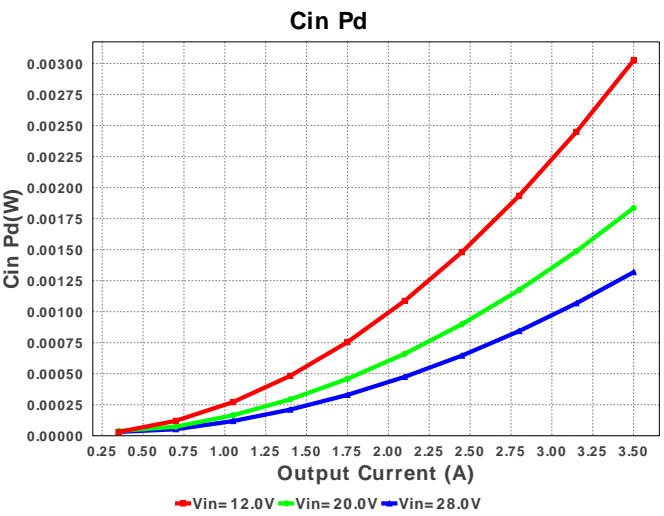
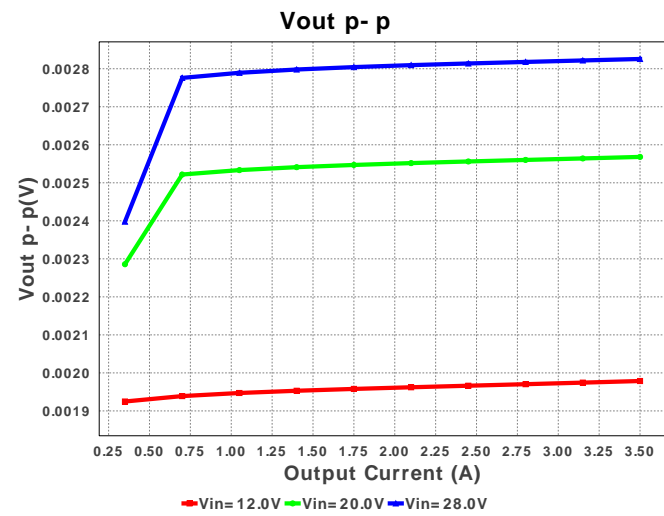
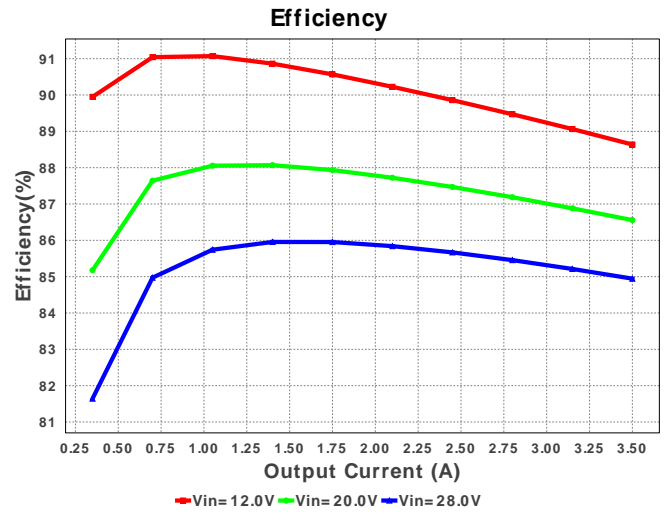
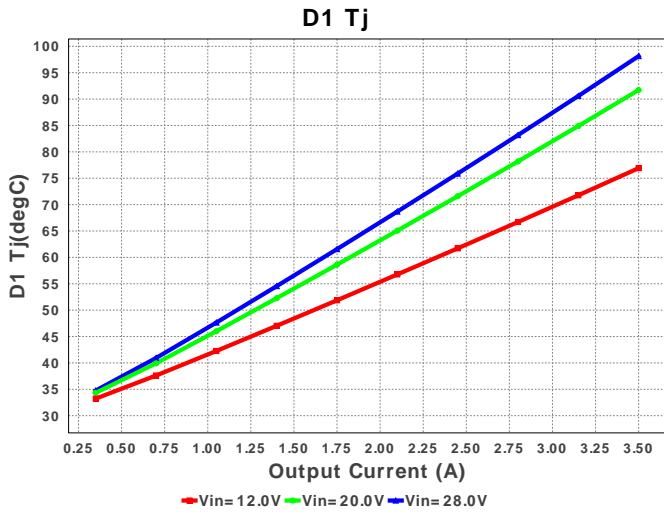
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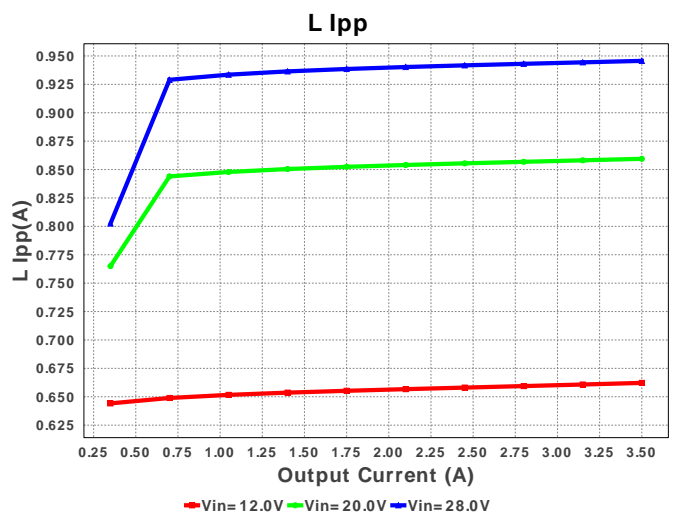
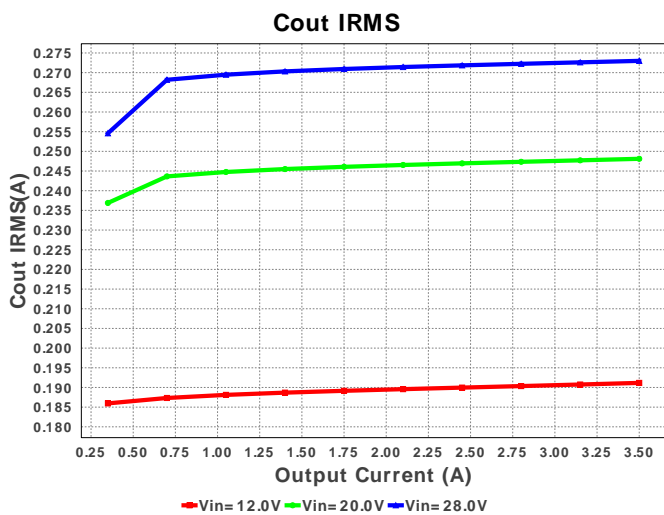
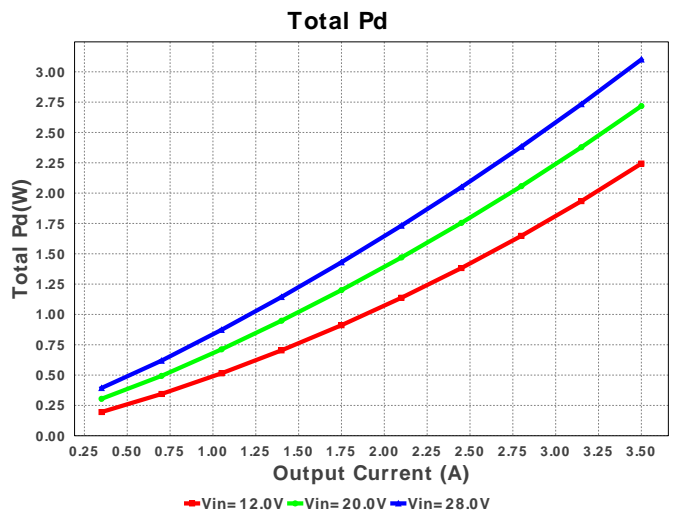
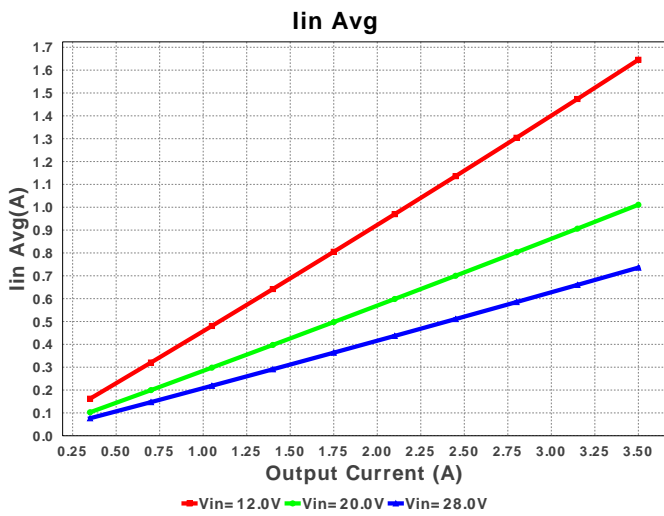
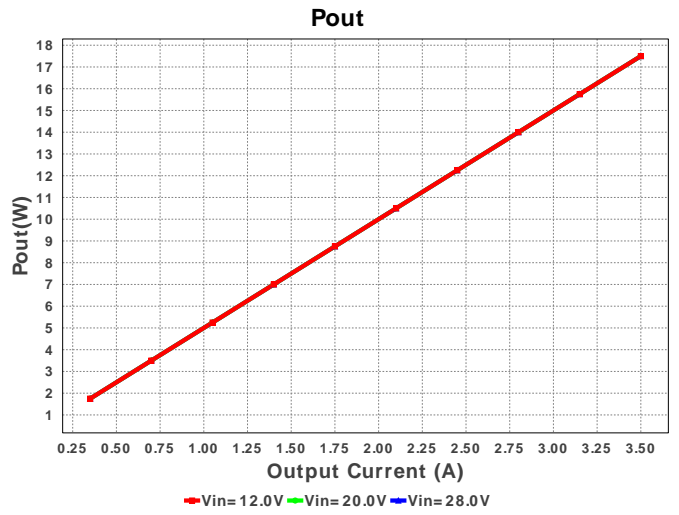
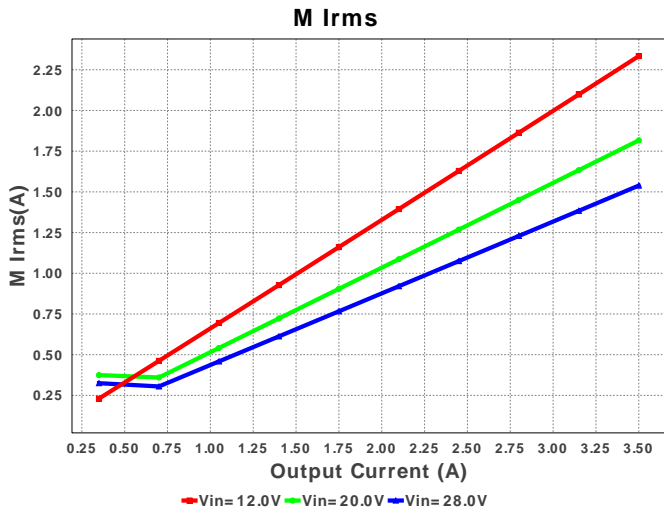
 Design : 1188967/39 TPS54332DDAR
 TPS54332DDAR 12.0V-28.0V to 5.00V @ 3.5A

Electrical BOM

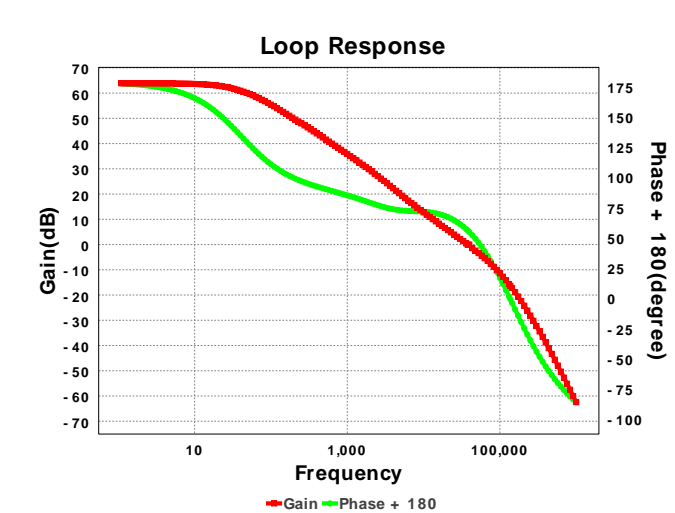
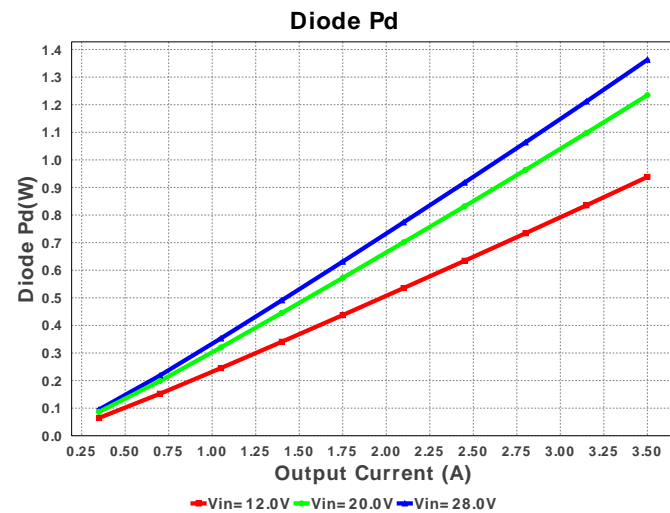
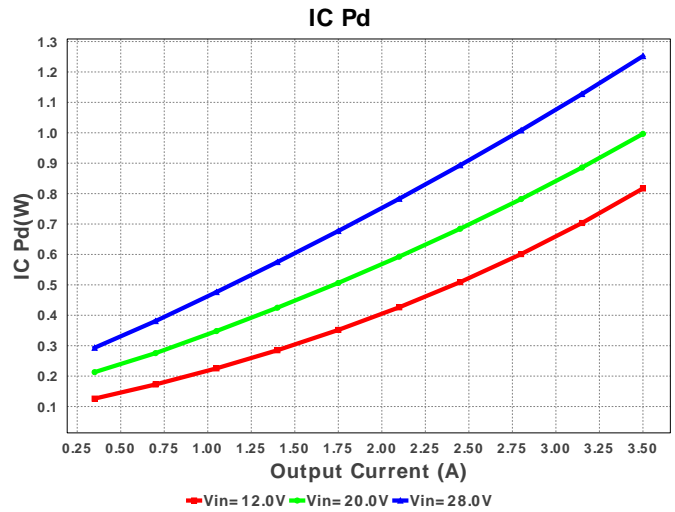
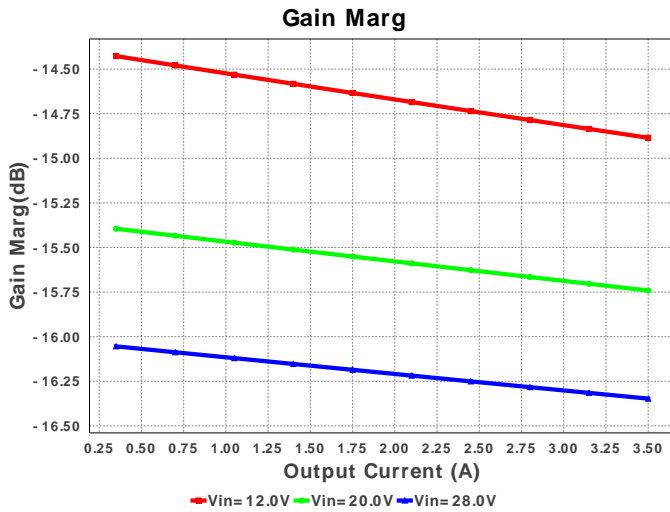
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cboot	TDK	C1005X5R1A104K Series= X5R	Cap= 100.0 nF ESR= 20.413 mOhm VDC= 10.0 V IRMS= 0.0 A	1	\$0.01	0402 3 mm ²
2.	Ccomp	Samsung Electro-Mechanics	CL21C431JBANNNC Series= C0G/NP0	Cap= 430.0 pF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	0805 7 mm ²
3.	Ccomp2	Kemet	C0805C100K5GACTU Series= C0G/NP0	Cap= 10.0 pF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	0805 7 mm ²
4.	Cin	MuRata	GRM32ER71H475KA88L Series= X7R	Cap= 4.7 uF ESR= 2.0 mOhm VDC= 50.0 V IRMS= 5.35 A	2	\$0.29	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	2	\$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.	B560C-13-F	VF@Io= 700.0 mV VRRM= 60.0 V	1	\$0.19	SMC 83 mm ²
8.	L1	Coilcraft	XAL5030-472MEB	L= 4.7 uH DCR= 36.0 mOhm	1	\$0.63	XAL5030 54 mm ²
9.	Rcomp	Vishay-Dale	CRCW040266K5FKED Series= CRCW..e3	Res= 66.5 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
10.	Rfbb	Vishay-Dale	CRCW04021K96FKED Series= CRCW..e3	Res= 1.96 kOhm 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	1.148 A	Current	Input capacitor RMS ripple current
2.	Cout IRMS	273.224 mA	Current	Output capacitor RMS ripple current
3.	IC Ipk	3.973 A	Current	Peak switch current in IC
4.	Iin Avg	736.35 mA	Current	Average input current
5.	L Ipp	946.48 mA	Current	Peak-to-peak inductor ripple current
6.	M1 Irms	1.539 A	Current	Q Iavg
7.	BOM Count	14	General	Total Design BOM count
8.	FootPrint	282.0 mm ²	General	Total Foot Print Area of BOM components
9.	Frequency	1000.0 kHz	General	Switching frequency
10.	M Vds Act	111.232 mV	General	Voltage drop across the MosFET
11.	Pout	17.5 W	General	Total output power
12.	Total BOM	\$2.52	General	Total BOM Cost
13.	D1 Tj	98.946 degC	Op_point	D1 junction temperature
14.	Vout OP	5.0 V	Op_point	Operational Output Voltage
15.	Cross Freq	37.91 kHz	Op_point	Bode plot crossover frequency
16.	Duty Cycle	19.341 %	Op_point	Duty cycle
17.	Efficiency	84.879 %	Op_point	Steady state efficiency
18.	Gain Marg	-16.347 dB	Op_point	Bode Plot Gain Margin
19.	IC Tj	92.615 degC	Op_point	IC junction temperature
20.	ICThetaJA	50.0 degC/W	Op_point	IC junction-to-ambient thermal resistance
21.	IOUT_OP	3.5 A	Op_point	Iout operating point
22.	Phase Marg	56.784 deg	Op_point	Bode Plot Phase Margin
23.	VIN_OP	28.0 V	Op_point	Vin operating point
24.	Vout p-p	2.828 mV	Op_point	Peak-to-peak output ripple voltage
25.	Cin Pd	1.319 mW	Power	Input capacitor power dissipation
26.	Cout Pd	74.651 μW	Power	Output capacitor power dissipation
27.	Diode Pd	1.379 W	Power	Diode power dissipation
28.	IC Pd	1.252 W	Power	IC power dissipation
29.	L Pd	485.1 mW	Power	Inductor power dissipation
30.	Total Pd	3.118 W	Power	Total Power Dissipation
31.	Low Freq Gain	63.876 dB	Unknown	Gain at 10Hz

Design Inputs

#	Name	Value	Description
1.	Iout	3.5	Maximum Output Current
2.	Iout1	3.5	Output Current #1
3.	VinMax	28.0	Maximum input voltage
4.	VinMin	12.0	Minimum input voltage
5.	Vout	5.0	Output Voltage
6.	Vout1	5.0	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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