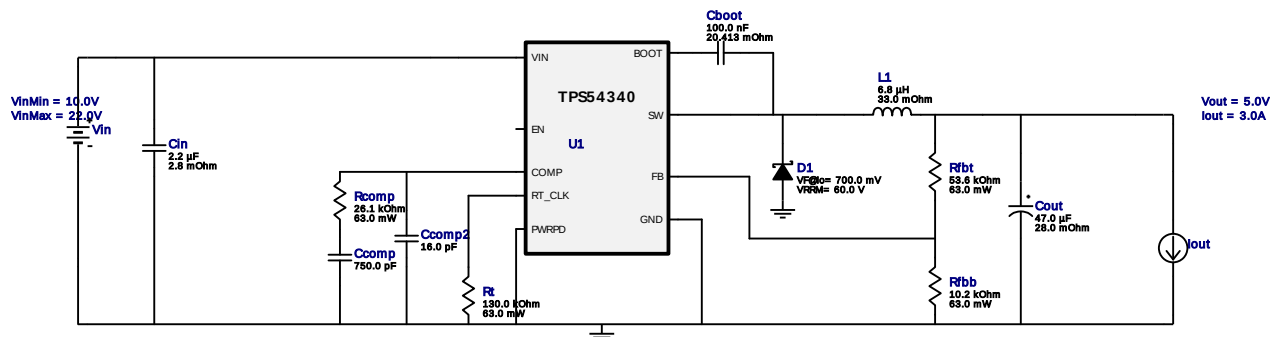


WEBENCH® Design Report

Design : 3584667/111 TPS54340DDAR
TPS54340DDAR 10.0V-22.0V to 5.00V @ 3.0A



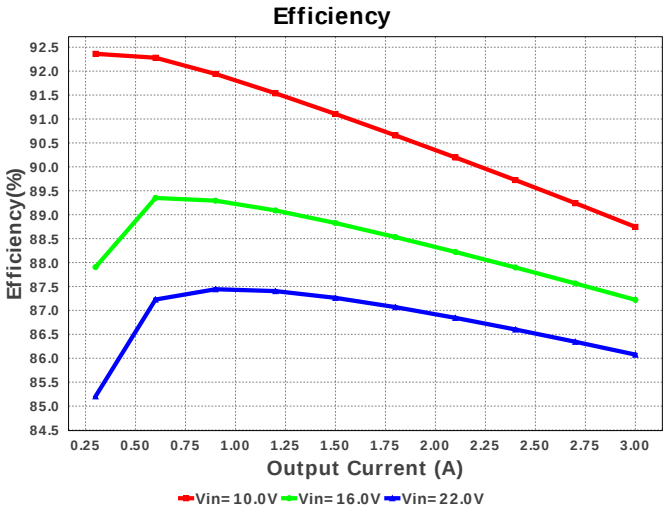
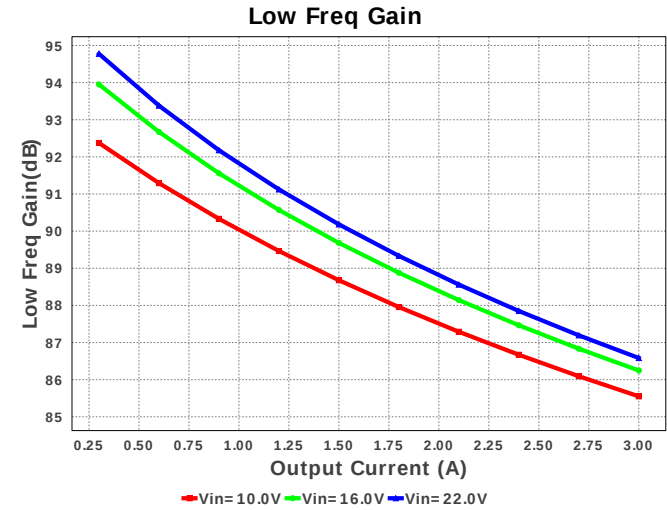
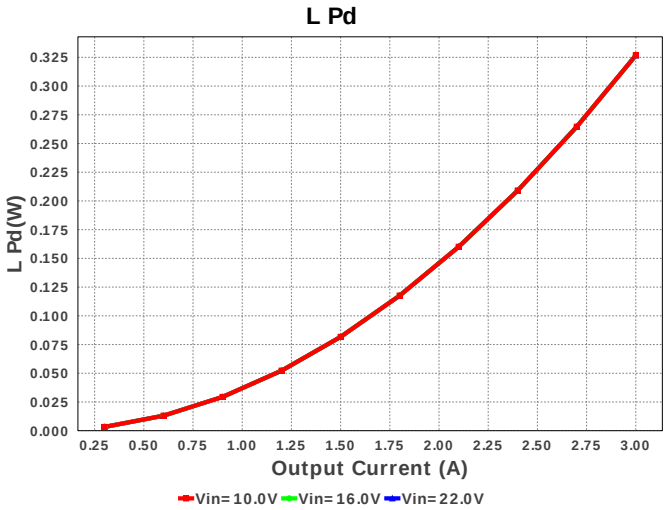
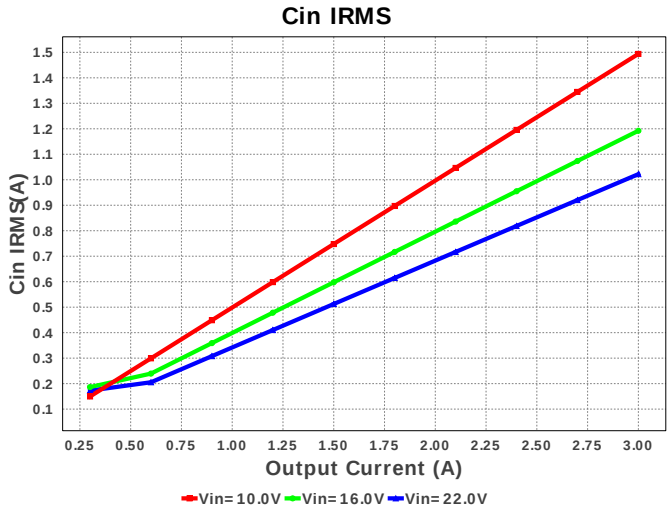
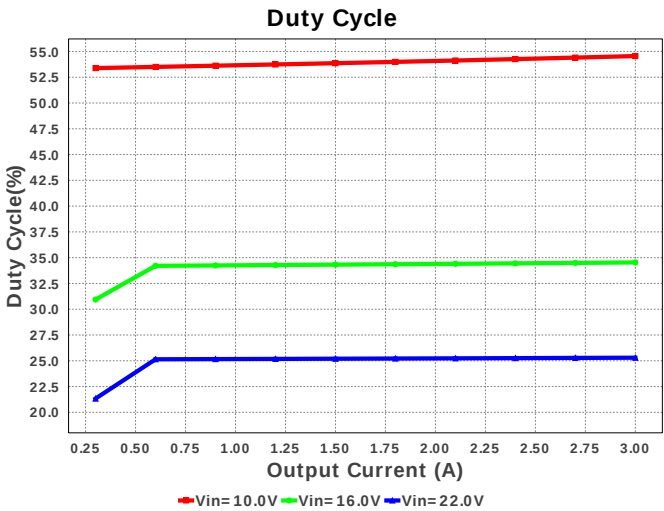
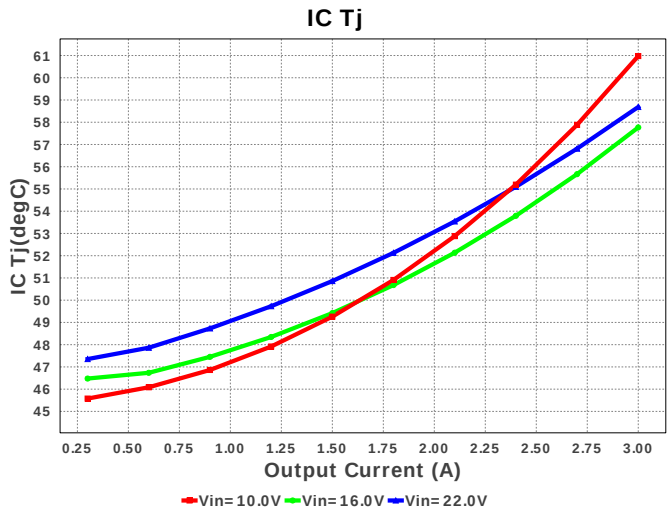
Electrical BOM

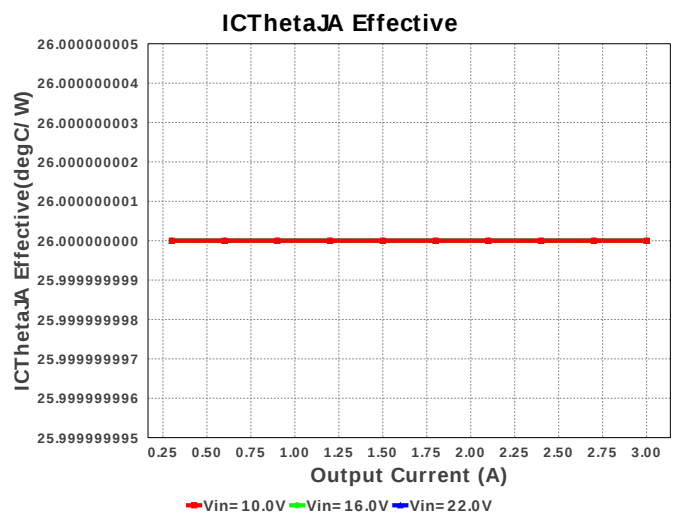
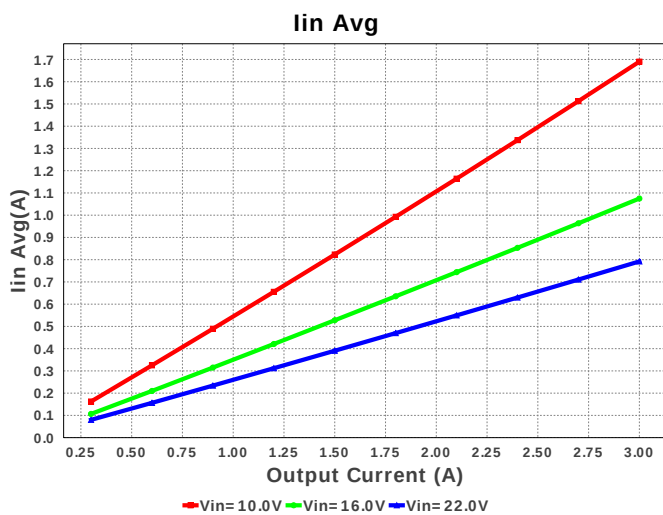
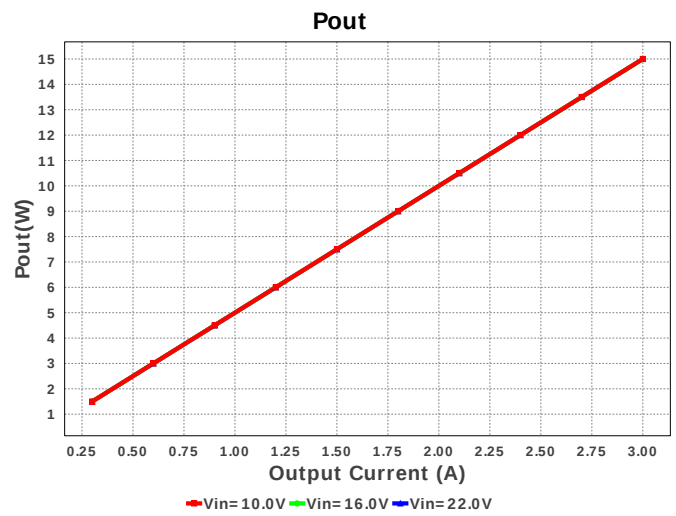
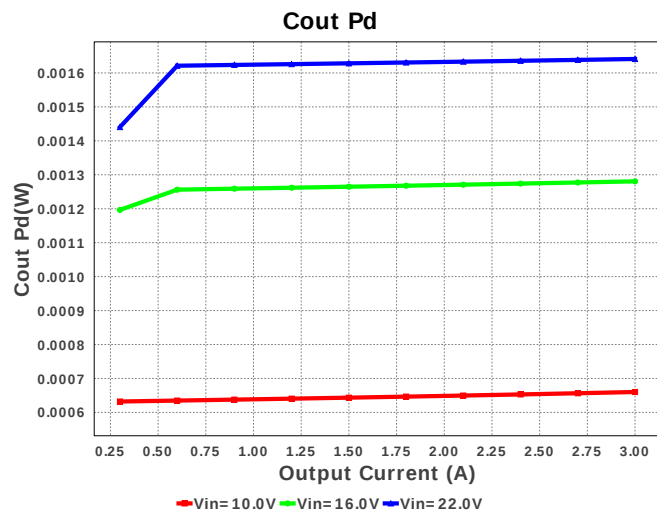
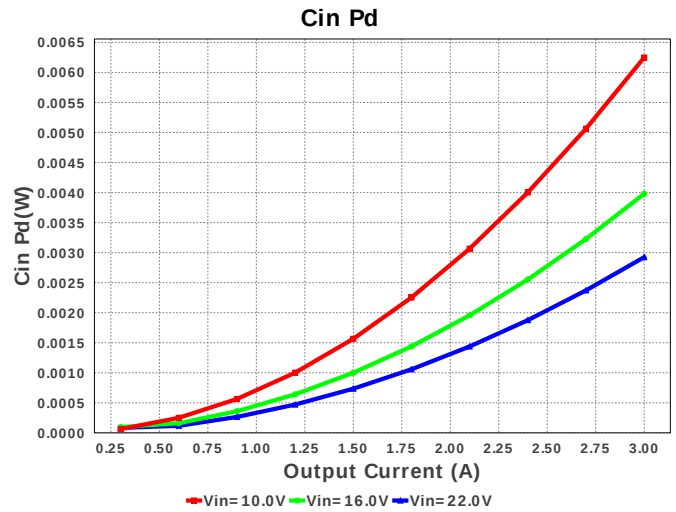
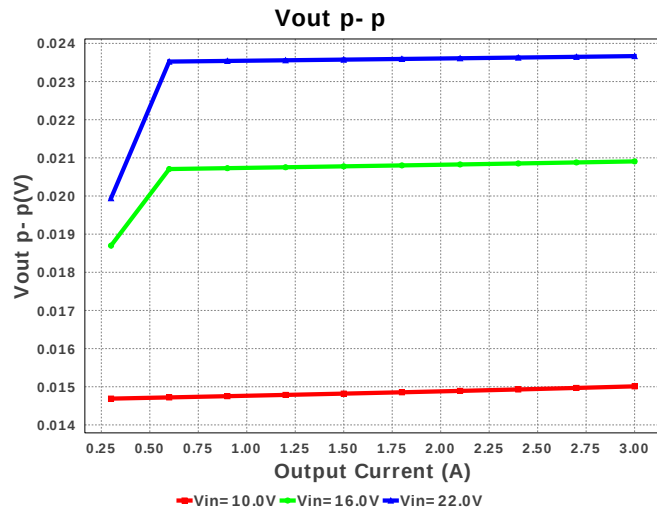
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cboot	TDK	C1005X5R1A104K Series= X5R	Cap= 100.0 nF ESR= 20.413 mOhm VDC= 10.0 V IRMS= 0.0 A	1	\$0.01	 0402 3 mm ²
2.	Ccomp	MuRata	GRM1555C1E751JA01D Series= C0G/NP0	Cap= 750.0 pF VDC= 25.0 V IRMS= 0.0 A	1	\$0.02	 0402 3 mm ²
3.	Ccomp2	TDK	C0603C0G1E160G Series= C0G	Cap= 16.0 pF VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	 0201 2 mm ²
4.	Cin	TDK	C3225X7R2A225K230AB Series= X7R	Cap= 2.2 uF ESR= 2.8 mOhm VDC= 100.0 V IRMS= 9.8247 A	1	\$0.19	 1210 15 mm ²
5.	Cout	Chemi-Con	APXE100ARA470ME61G Series= PXE	Cap= 47.0 uF ESR= 28.0 mOhm VDC= 10.0 V IRMS= 2.31 A	1	\$0.39	 CAPSMT_62_E61 53 mm ²
6.	D1	Diodes Inc.	B560C-13-F	VF@Io= 700.0 mV VRRM= 60.0 V	1	\$0.19	 SMC 83 mm ²
7.	L1	Bourns	SRN8040-6R8Y	L= 6.8 uH DCR= 33.0 mOhm	1	\$0.22	 SRN8040 100 mm ²
8.	Rcomp	Vishay-Dale	CRCW040226K1FKED Series= CRCW..e3	Res= 26.1 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
9.	Rfbb	Vishay-Dale	CRCW040210K2FKED Series= CRCW..e3	Res= 10.2 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
10.	Rfbt	Vishay-Dale	CRCW040253K6FKED Series= CRCW..e3	Res= 53.6 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
11.	Rt	Vishay-Dale	CRCW0402130KFKED Series= CRCW..e3	Res= 130.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²

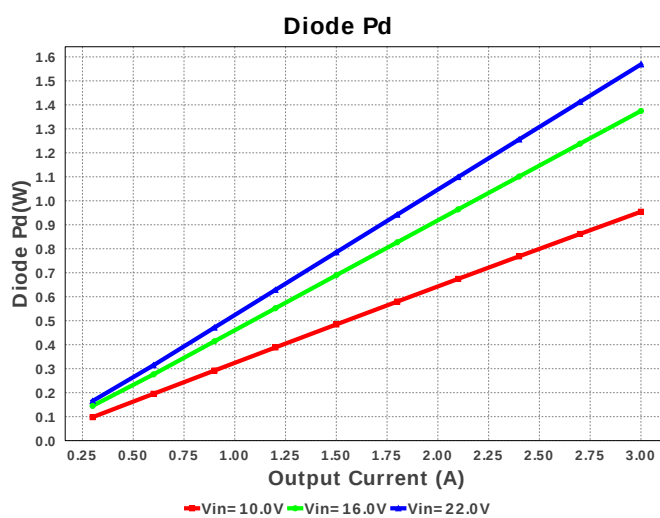
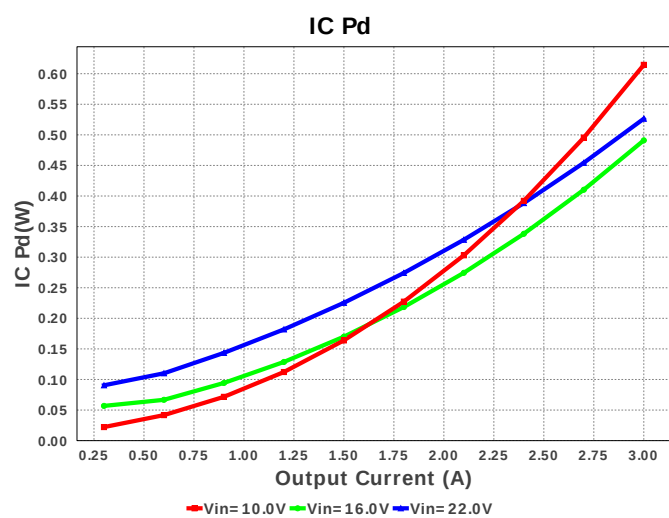
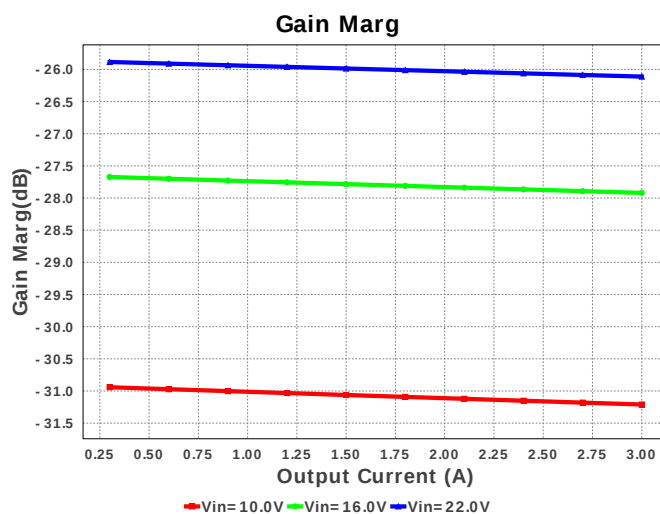
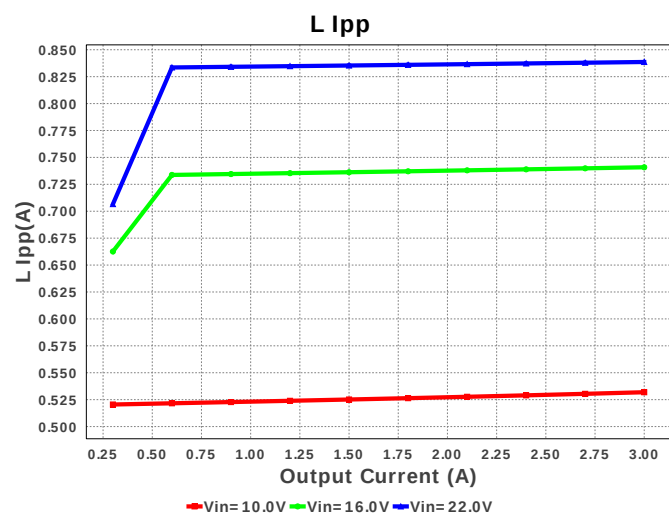
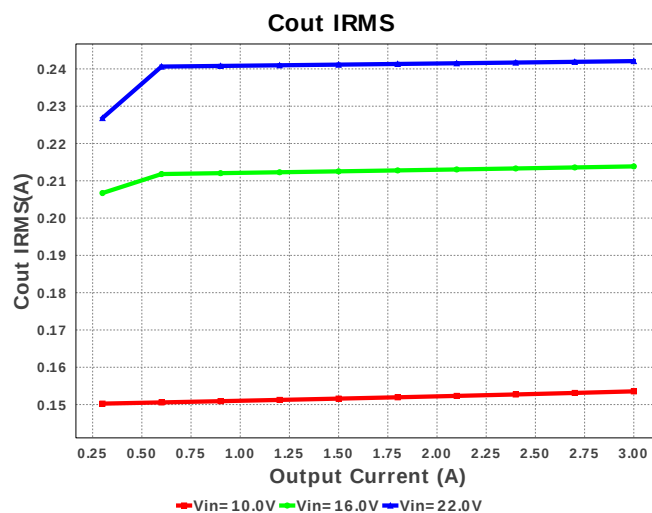
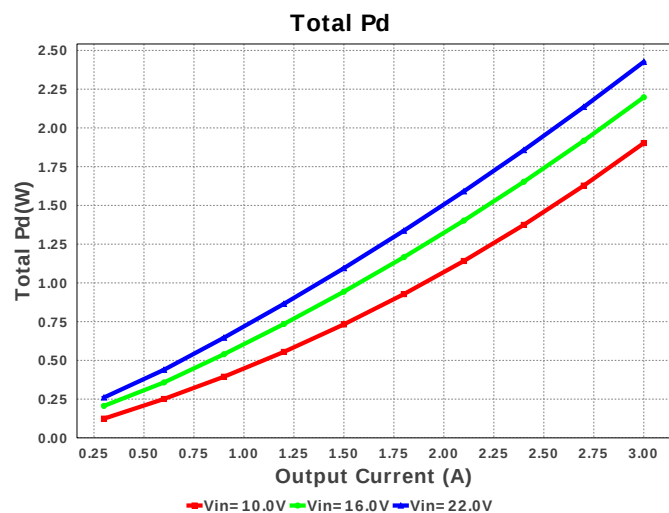
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
12.	U1	Texas Instruments	TPS54340DDAR	Switcher	1	\$1.68	

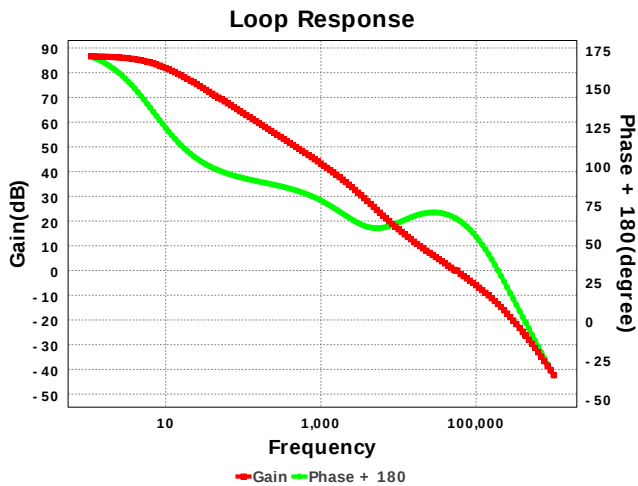


R-PDSO-G8 57 mm²









Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	1.018 A	Current	Input capacitor RMS ripple current
2.	Cout IRMS	234.681 mA	Current	Output capacitor RMS ripple current
3.	Iin Avg	768.78 mA	Current	Average input current
4.	L Ipp	812.96 mA	Current	Peak-to-peak inductor ripple current
5.	BOM Count	12	General	Total Design BOM count
6.	FootPrint	329.0 mm ²	General	Total Foot Print Area of BOM components
7.	Frequency	754.173 kHz	General	Switching frequency
8.	Pout	15.0 W	General	Total output power
9.	Total BOM	\$2.75	General	Total BOM Cost
10.	ICThetaJA Effective	26.0 degC/W	Op_Point	Effective IC Junction-to-Ambient Thermal Resistance
11.	Vout OP	5.0 V	Op_Point	Operational Output Voltage
12.	Cross Freq	54.293 kHz	Op_point	Bode plot crossover frequency
13.	Duty Cycle	24.524 %	Op_point	Duty cycle
14.	Efficiency	88.689 %	Op_point	Steady state efficiency
15.	Gain Marg	-26.111 dB	Op_point	Bode Plot Gain Margin
16.	IC Tj	58.475 degC	Op_point	IC junction temperature
17.	IOUT_OP	3.0 A	Op_point	Iout operating point
18.	Phase Marg	66.867 deg	Op_point	Bode Plot Phase Margin
19.	VIN_OP	22.0 V	Op_point	Vin operating point
20.	Vout p-p	22.943 mV	Op_point	Peak-to-peak output ripple voltage
21.	Cin Pd	2.899 mW	Power	Input capacitor power dissipation
22.	Cout Pd	1.542 mW	Power	Output capacitor power dissipation
23.	Diode Pd	1.064 W	Power	Diode power dissipation
24.	IC Pd	518.288 mW	Power	IC power dissipation
25.	L Pd	326.7 mW	Power	Inductor power dissipation
26.	Total Pd	1.913 W	Power	Total Power Dissipation
27.	Low Freq Gain	86.583 dB	Unknown	Gain at 10Hz

Design Inputs

#	Name	Value	Description
1.	Iout	3.0	Maximum Output Current
2.	Iout1	3.0	Output Current #1
3.	VinMax	22.0	Maximum input voltage
4.	VinMin	10.0	Minimum input voltage
5.	Vout	5.0	Output Voltage
6.	Vout1	5.0	Output Voltage #1
7.	base_pn	TPS54340	Base Product Number
8.	source	DC	Input Source Type
9.	Ta	45.0	Ambient temperature

Design Assistance

1. **TPS54340** Product Folder : <http://www.ti.com/product/TPS54340> : contains the data sheet and other resources.

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