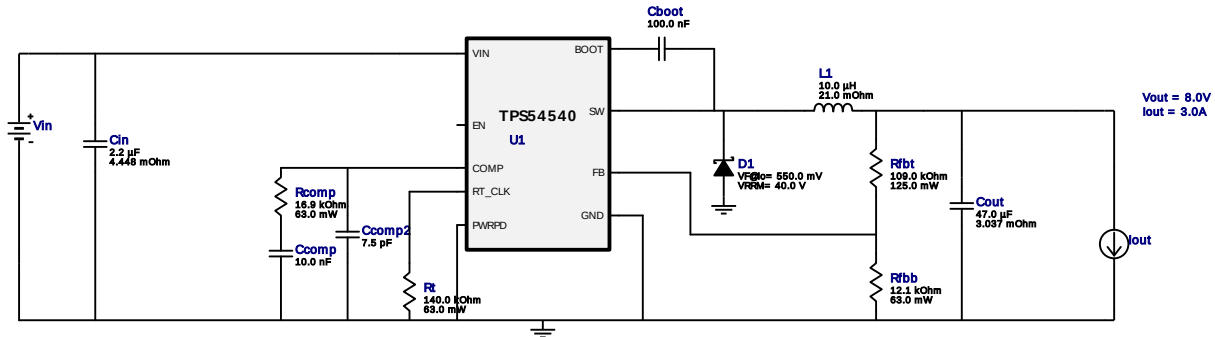
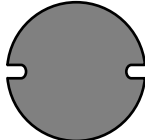


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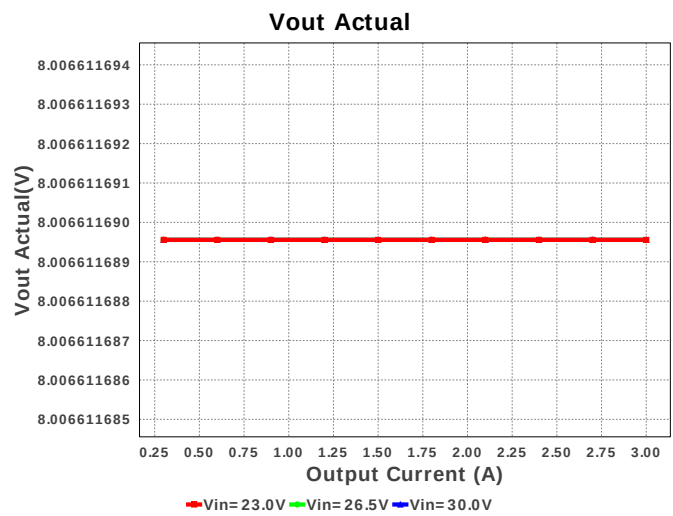
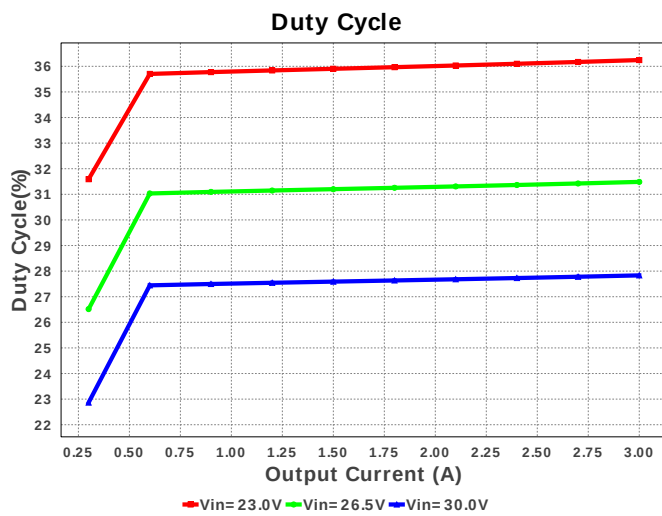
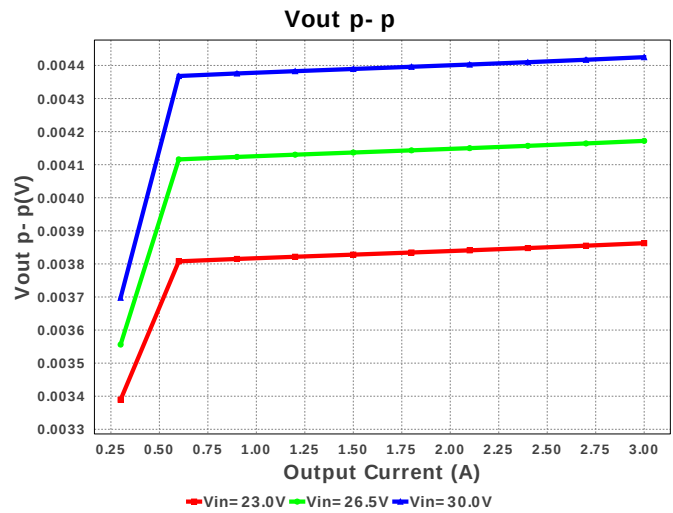
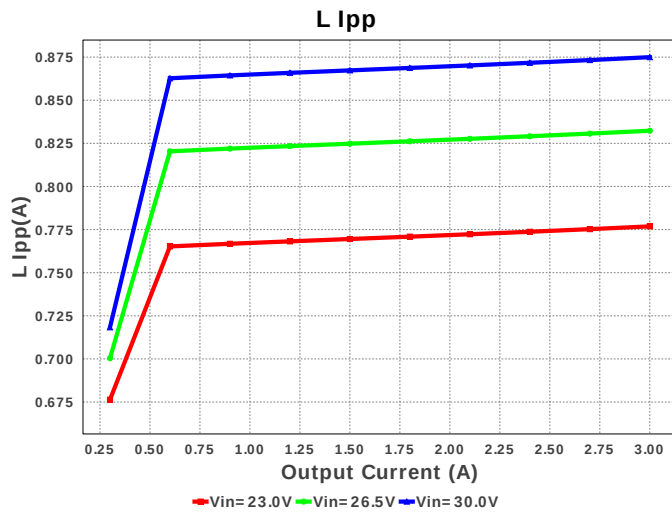
Design : 4806352/4 TPS54540DDAR
TPS54540DDAR 23.0V-30.0V to 8.00V @ 3.0A

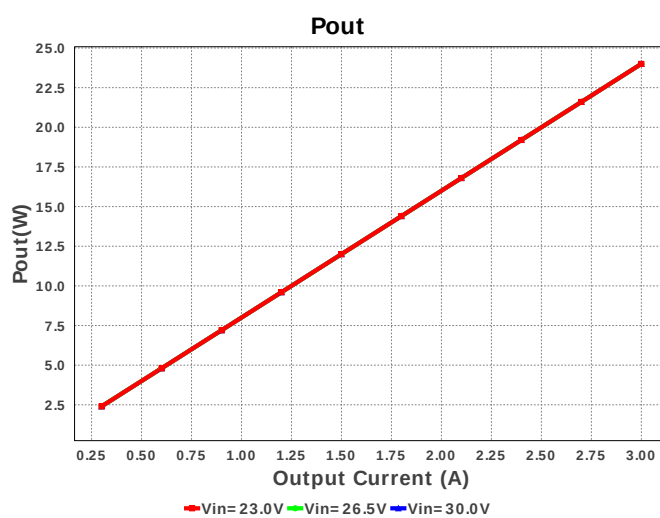
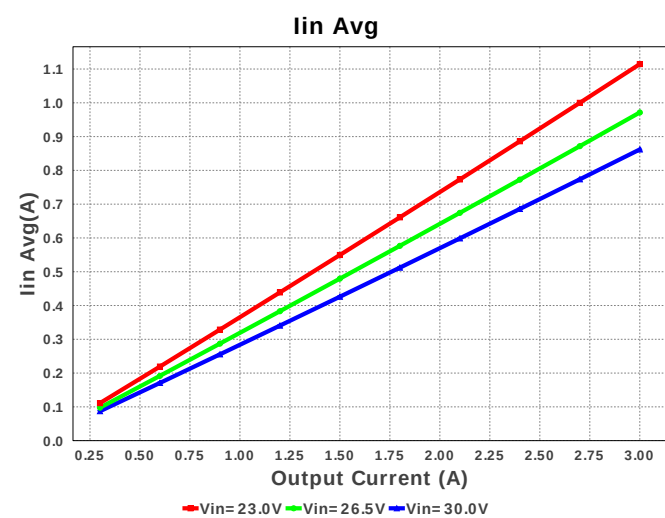
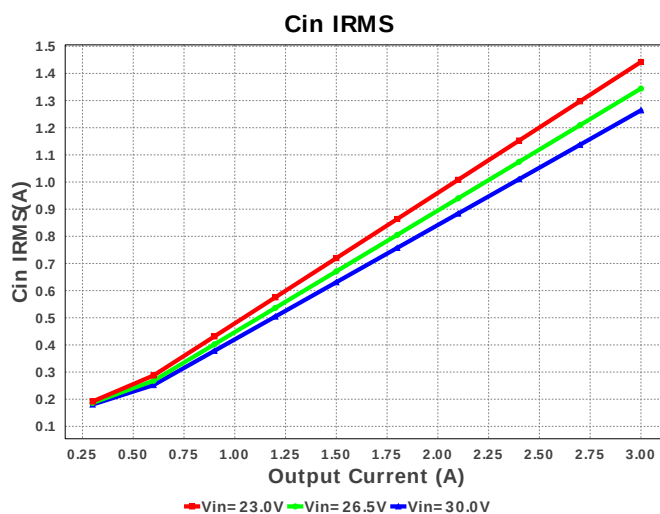
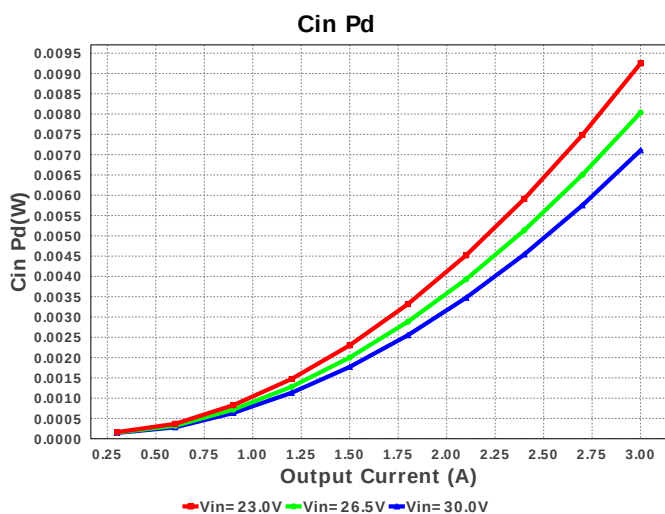
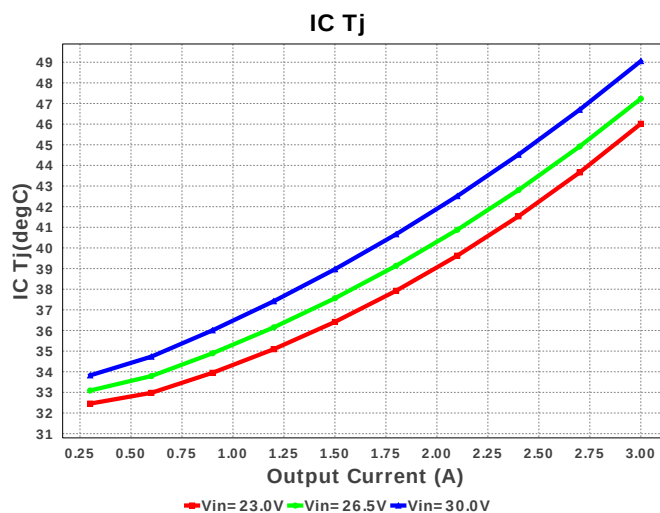
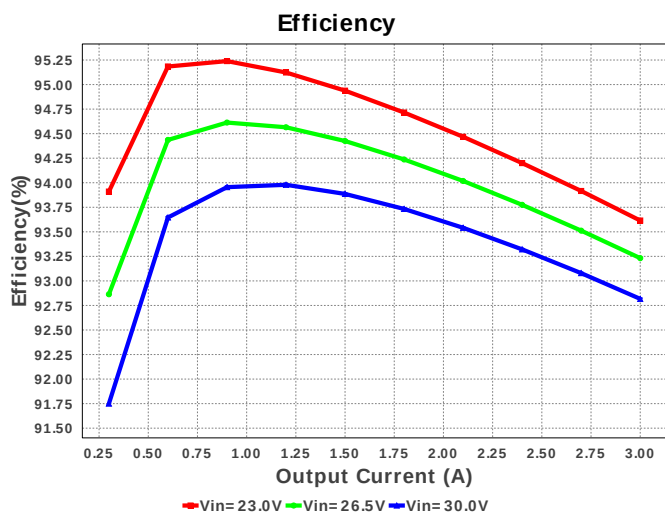


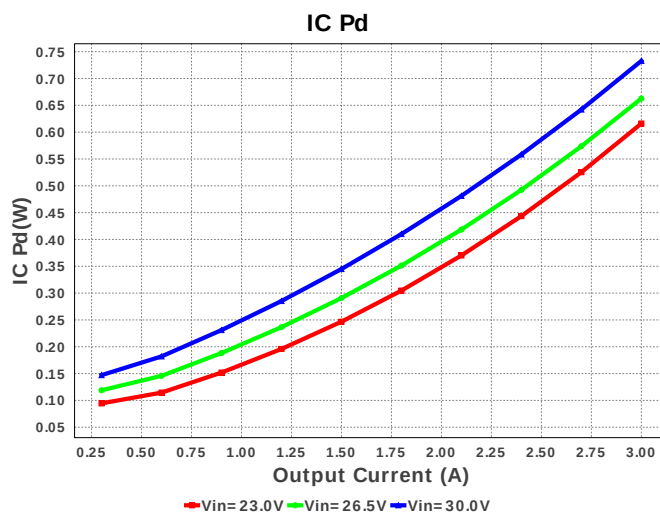
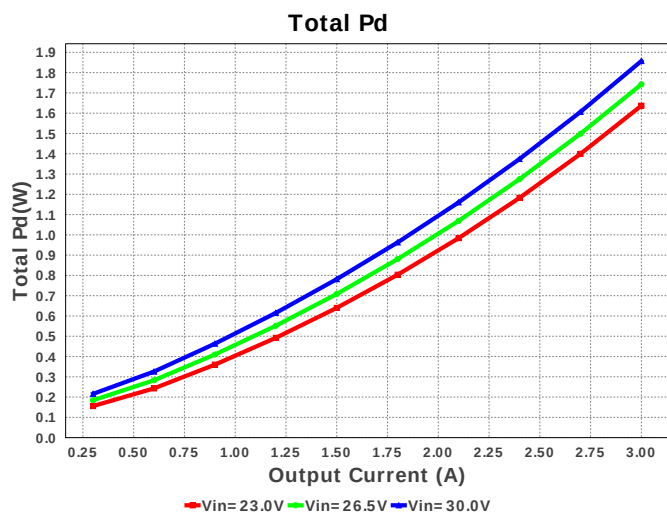
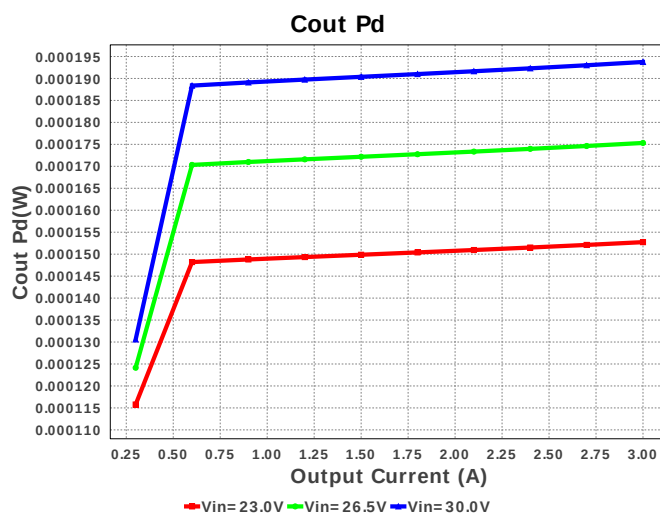
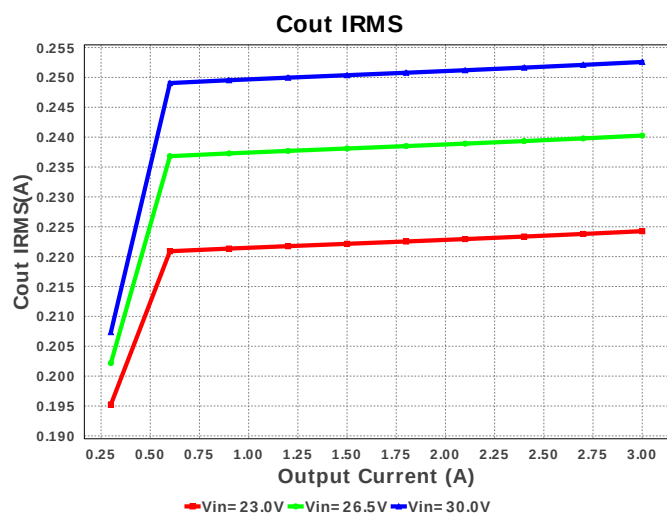
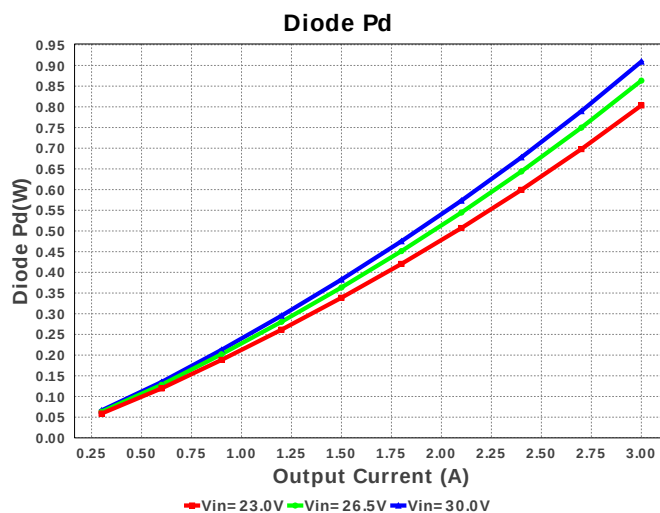
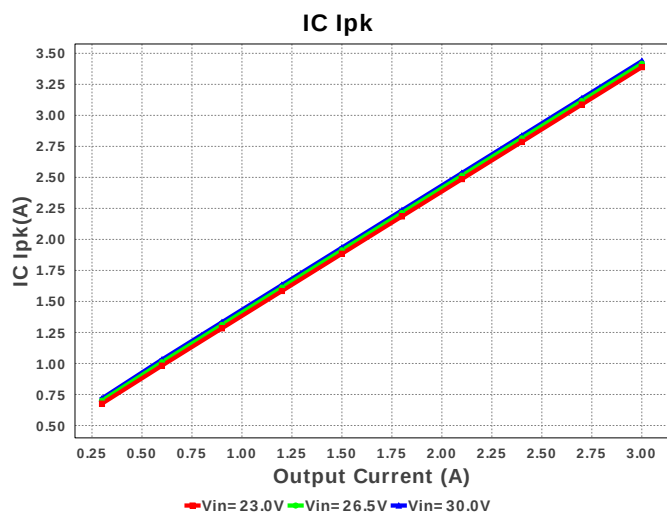
Electrical BOM

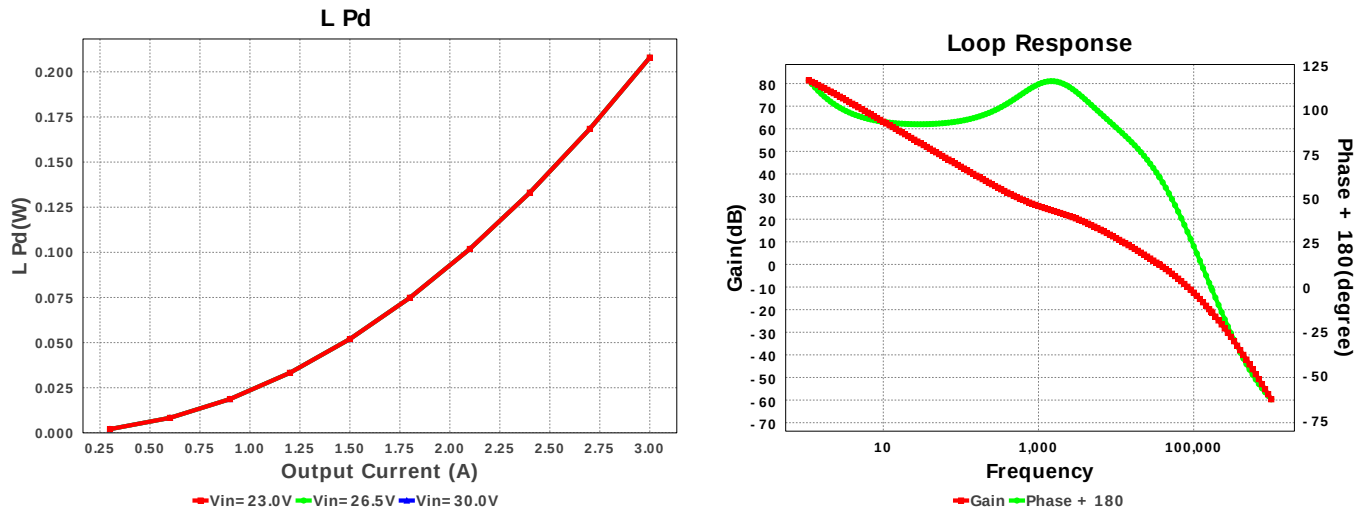
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cboot	MuRata	GRM155R61A104KA01D Series= X5R	Cap= 100.0 nF VDC= 10.0 V IRMS= 0.0 A	1	\$0.01	 0402 3 mm ²
2.	Ccomp	MuRata	GRM216R71H103KA01D Series= X7R	Cap= 10.0 nF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	 0805 7 mm ²
3.	Ccomp2	MuRata	GRM1555C1H7R5CA01D Series= C0G/NP0	Cap= 7.5 pF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	 0402 3 mm ²
4.	Cin	MuRata	GRM31CR71H225KA88L Series= X7R	Cap= 2.2 uF ESR= 4.448 mOhm VDC= 50.0 V IRMS= 2.2252 A	1	\$0.05	 1206_190 11 mm ²
5.	Cout	MuRata	GRM32ER61C476ME15L Series= X5R	Cap= 47.0 uF ESR= 3.037 mOhm VDC= 16.0 V IRMS= 4.59346 A	1	\$0.24	 1210_280 15 mm ²
6.	D1	Diodes Inc.	B540C-13-F	VF@Io= 550.0 mV VRRM= 40.0 V	1	\$0.17	 SMC 83 mm ²
7.	L1	Bourns	SDR1307-100ML	L= 10.0 uH DCR= 21.0 mOhm	1	\$0.35	 SDR1307 227 mm ²
8.	Rcomp	Vishay-Dale	CRCW040216K9FKED Series= CRCW..e3	Res= 16.9 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
9.	Rfbb	Vishay-Dale	CRCW040212K1FKED Series= CRCW..e3	Res= 12.1 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
10.	Rfbt	Yageo America	RT0805BRD07109KL Series= RT0805	Res= 109.0 kOhm Power= 125.0 mW Tolerance= 0.1%	1	\$0.04	 0805 7 mm ²
11.	Rt	Vishay-Dale	CRCW0402140KFKED Series= CRCW..e3	Res= 140.0 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	TPS54540DDAR	Switcher	1	\$1.95	 R-PDSO-G8 55 mm ²









Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	1.266 A	Current	Input capacitor RMS ripple current
2.	Cout IRMS	253.755 mA	Current	Output capacitor RMS ripple current
3.	IC IpK	3.44 A	Current	Peak switch current in IC
4.	Iin Avg	865.81 mA	Current	Average input current
5.	L Ipp	879.03 mA	Current	Peak-to-peak inductor ripple current
6.	BOM Count	12	General	Total Design BOM count
7.	FootPrint	419.0 mm ²	General	Total Foot Print Area of BOM components
8.	Frequency	699.837 kHz	General	Switching frequency
9.	Mode	CCM	General	Conduction Mode
10.	Pout	24.0 W	General	Total output power
11.	Total BOM	\$2.86	General	Total BOM Cost
12.	ICThetaJA Effective	26.0 degC/W	Op_Point	Effective IC Junction-to-Ambient Thermal Resistance
13.	Low Freq Gain	81.377 dB	Op_Point	Gain at 10Hz
14.	Vout Actual	8.007 V	Op_Point	Vout Actual calculated based on selected voltage divider resistors
15.	Vout OP	8.0 V	Op_Point	Operational Output Voltage
16.	Cross Freq	35.897 kHz	Op_point	Bode plot crossover frequency
17.	Duty Cycle	27.963 %	Op_point	Duty cycle
18.	Efficiency	92.399 %	Op_point	Steady state efficiency
19.	Gain Marg	-20.864 dB	Op_point	Bode Plot Gain Margin
20.	IC Tj	49.089 degC	Op_point	IC junction temperature
21.	IOUT_OP	3.0 A	Op_point	Iout operating point
22.	Phase Marg	62.565 deg	Op_point	Bode Plot Phase Margin
23.	VIN_OP	30.0 V	Op_point	Vin operating point
24.	Vout p-p	4.444 mV	Op_point	Peak-to-peak output ripple voltage
25.	Cin Pd	7.124 mW	Power	Input capacitor power dissipation
26.	Cout Pd	195.558 μ W	Power	Output capacitor power dissipation
27.	Diode Pd	1.025 W	Power	Diode power dissipation
28.	IC Pd	734.177 mW	Power	IC power dissipation
29.	L Pd	207.9 mW	Power	Inductor power dissipation
30.	Total Pd	1.974 W	Power	Total Power Dissipation
31.	Vout Tolerance	2.01 %		Vout Tolerance based on IC Tolerance (no load) and voltage divider resistors if applicable

Design Inputs

#	Name	Value	Description
1.	Iout	3.0	Maximum Output Current
2.	VinMax	30.0	Maximum input voltage
3.	VinMin	23.0	Minimum input voltage
4.	Vout	8.0	Output Voltage
5.	base_pn	TPS54540	Base Product Number
6.	source	DC	Input Source Type
7.	Ta	30.0	Ambient temperature

Design Assistance

1. **TPS54540** Product Folder : <http://www.ti.com/product/TPS54540> : contains the data sheet and other resources.

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