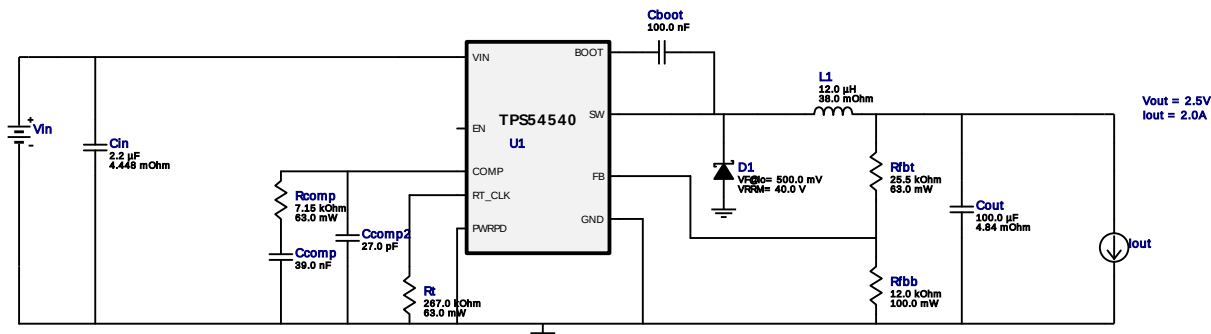


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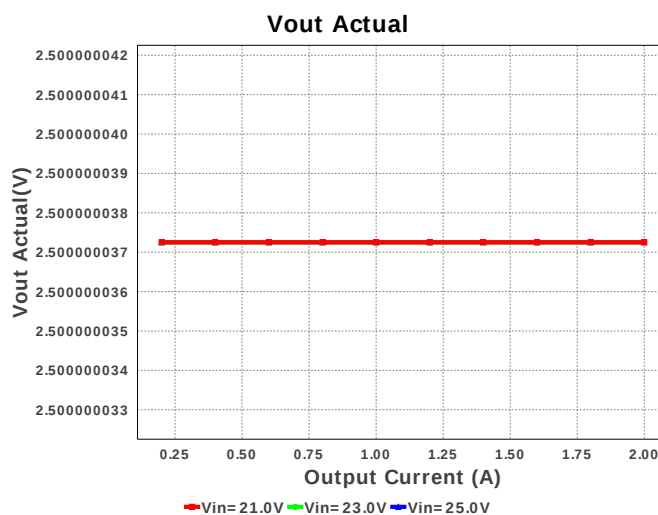
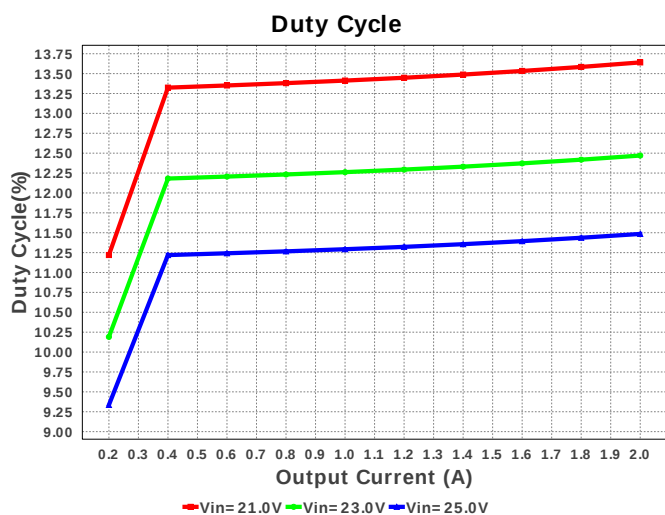
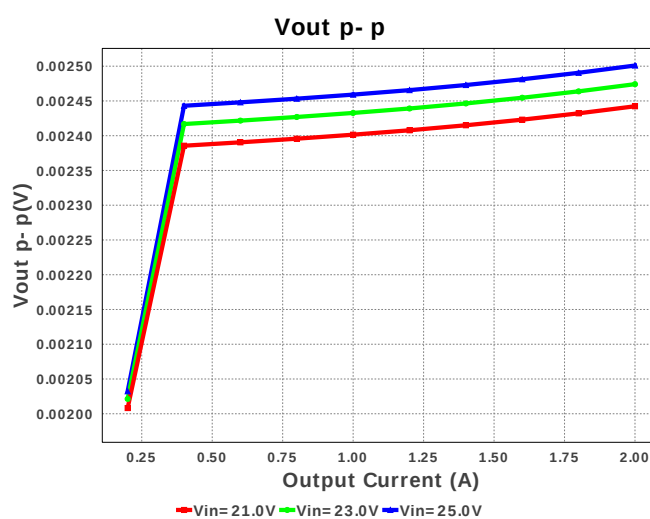
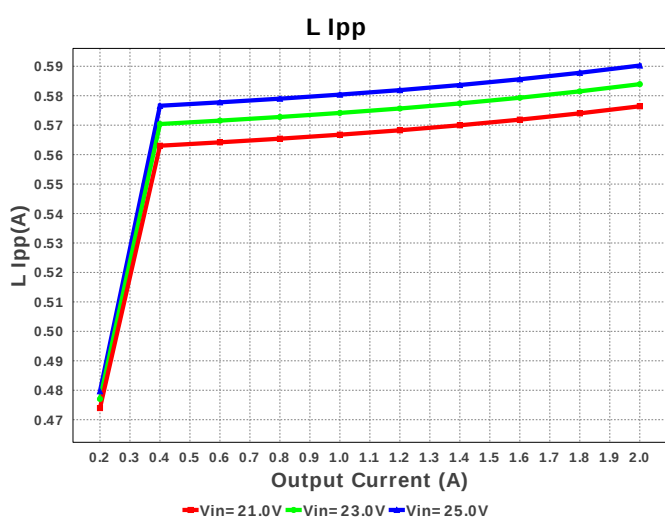
Design : 4742013/197 TPS54540DDAR
TPS54540DDAR 21.0V-25.0V to 2.50V @ 2.0A

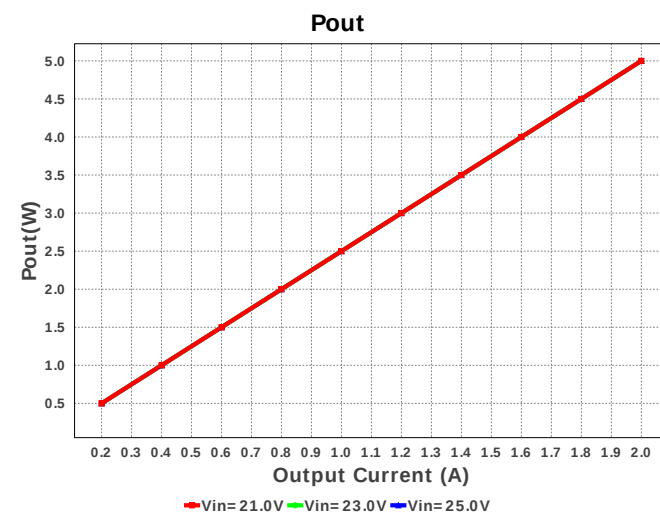
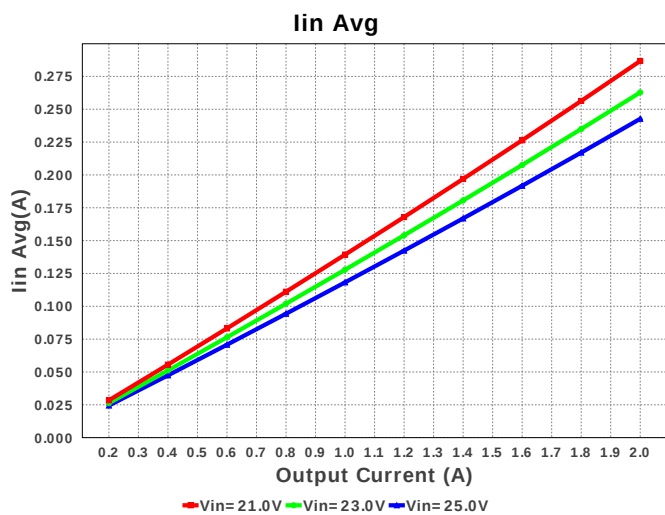
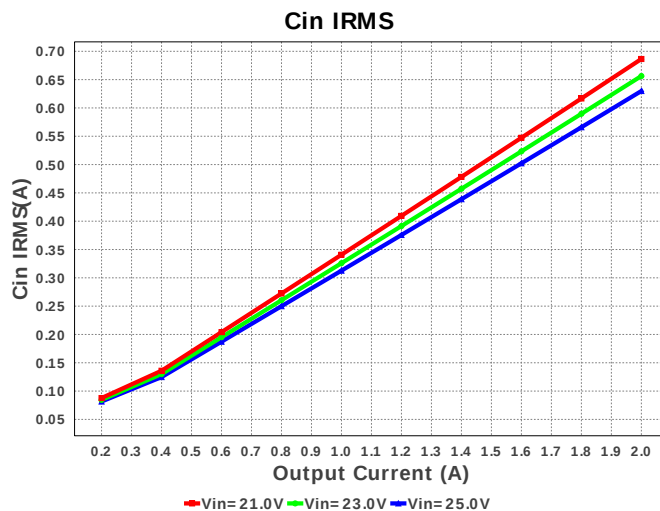
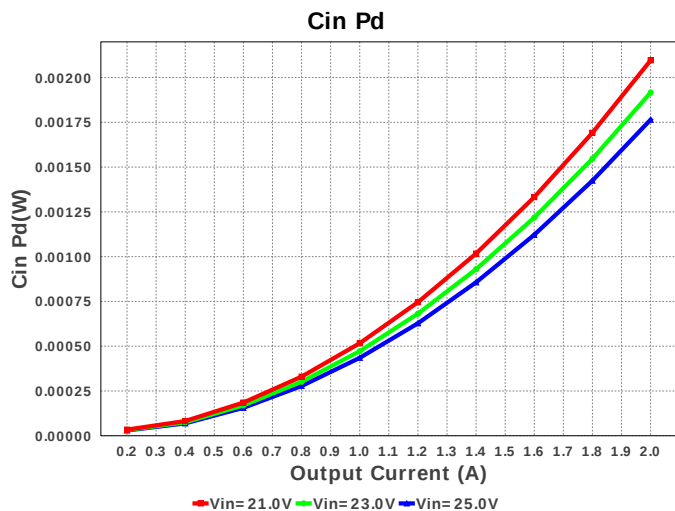
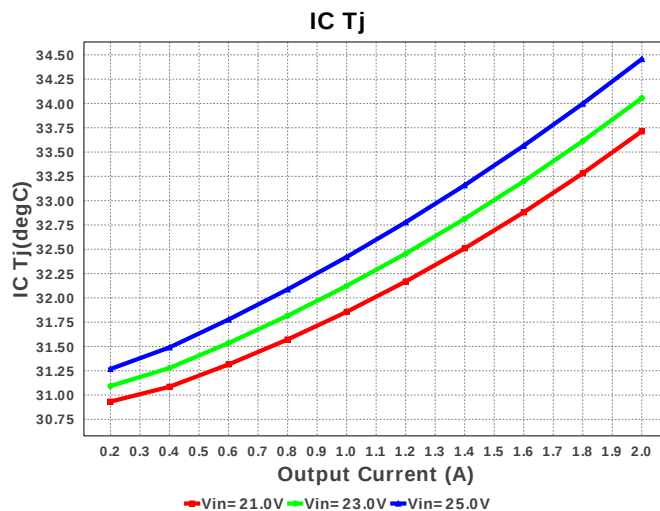
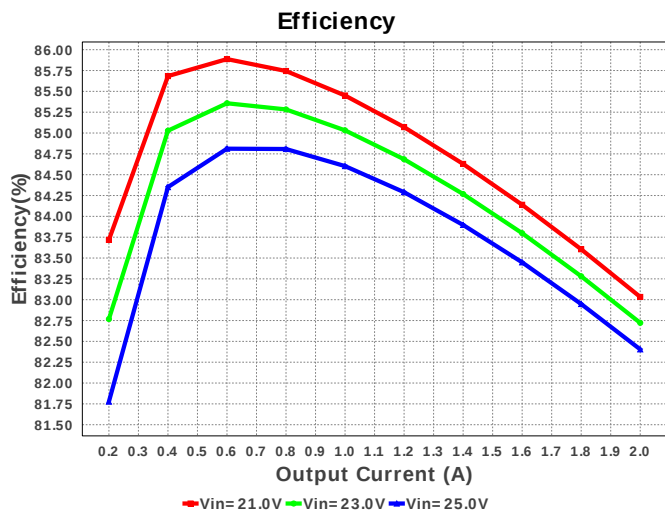


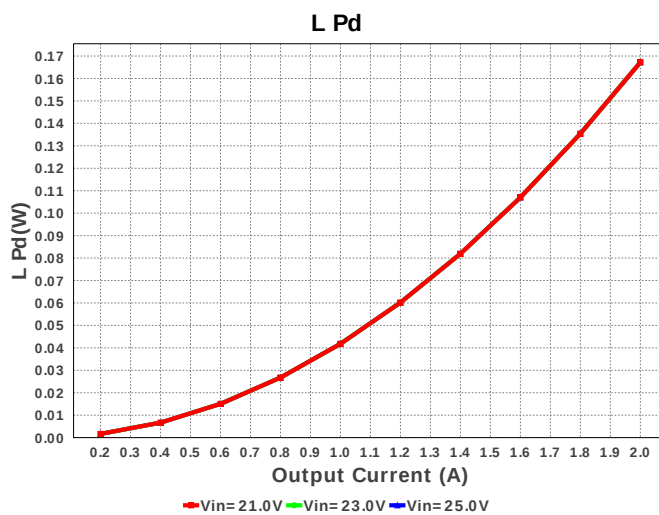
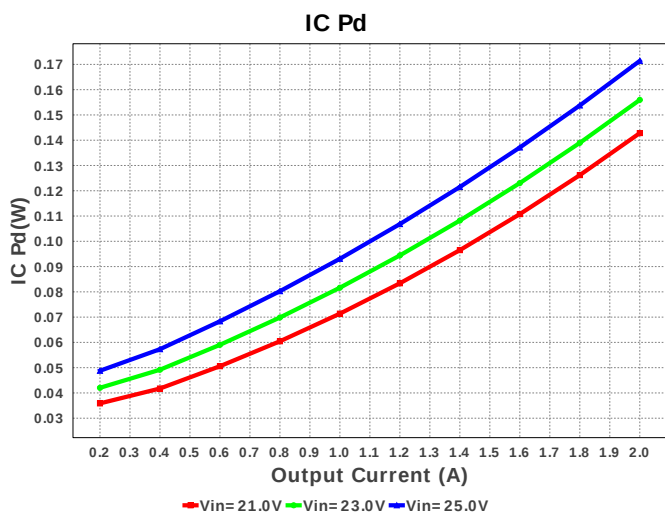
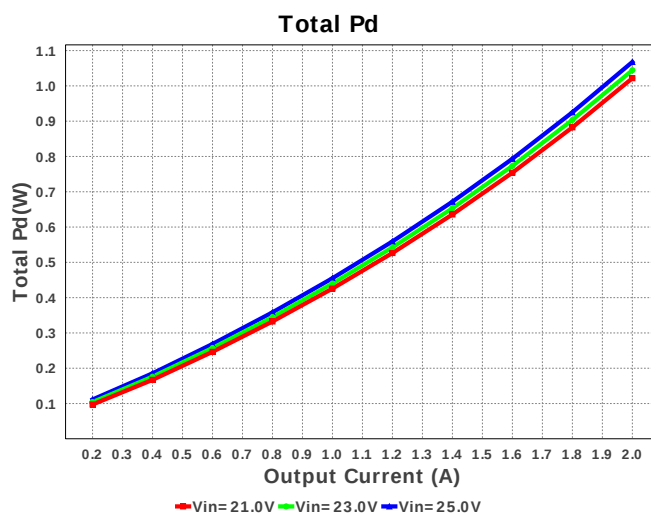
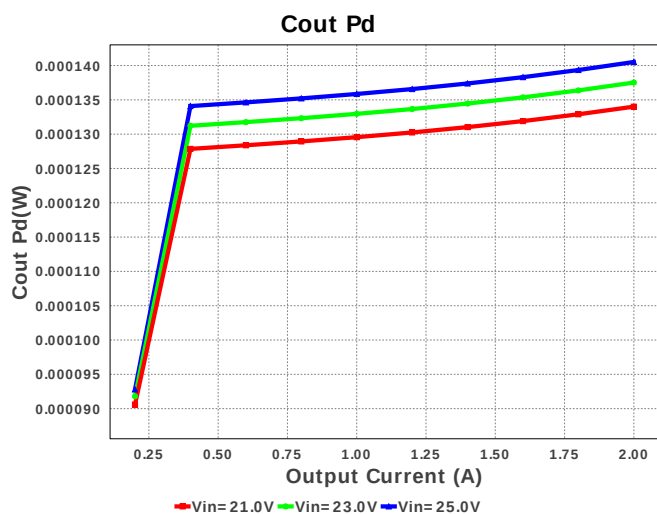
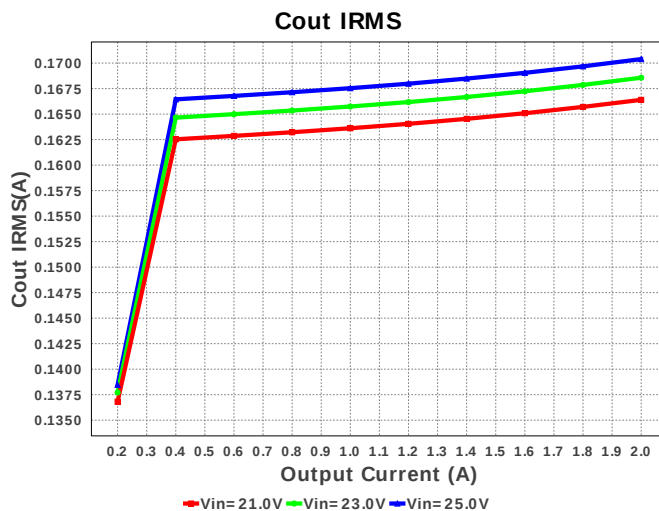
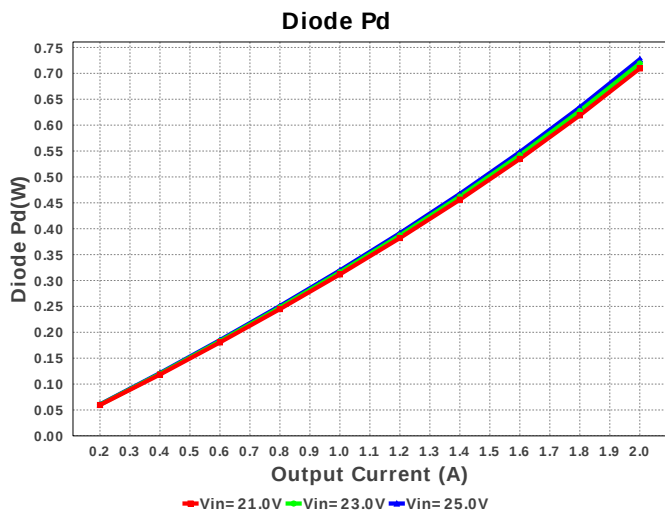
Electrical BOM

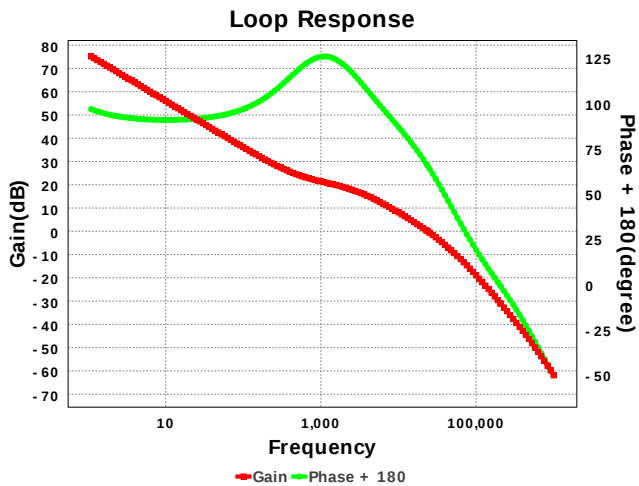
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cboot	MuRata	GRM155R61A104KA01D Series= X5R	Cap= 100.0 nF VDC= 10.0 V IRMS= 0.0 A	1	\$0.01	 0402 3 mm ²
2.	Ccomp	MuRata	GRM155R61A393KA01D Series= X5R	Cap= 39.0 nF VDC= 10.0 V IRMS= 0.0 A	1	\$0.01	 0402 3 mm ²
3.	Ccomp2	Kemet	C0805C270K5GACTU Series= C0G/NP0	Cap= 27.0 pF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	 0805 7 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	GRM31CD80G107ME39L Series= X6T	Cap= 100.0 uF ESR= 4.84 mOhm VDC= 4.0 V IRMS= 4.3381 A	1	\$0.14	 1206_190 11 mm ²
6.	D1	Diodes Inc.	B340A-13-F	VF@Io= 500.0 mV VRRM= 40.0 V	1	\$0.11	 SMA 37 mm ²
7.	L1	Bourns	SRR1206-120ML	L= 12.0 uH DCR= 38.0 mOhm	1	\$0.37	 SRR1206 216 mm ²
8.	Rcomp	Vishay-Dale	CRCW04027K15FKED Series= CRCW..e3	Res= 7.15 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
9.	Rfbb	Yageo America	RC0603FR-0712KL Series= ?	Res= 12.0 kOhm Power= 100.0 mW Tolerance= 1.0%	1	\$0.01	 0603 5 mm ²
10.	Rfht	Vishay-Dale	CRCW040225K5FKED Series= CRCW..e3	Res= 25.5 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
11.	Rt	Vishay-Dale	CRCW0402267KFKED Series= CRCW..e3	Res= 267.0 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 57 mm²







Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	633.927 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	172.996 mA	Current	Output capacitor RMS ripple current
3.	Iin Avg	246.24 mA	Current	Average input current
4.	L Ipp	599.28 mA	Current	Peak-to-peak inductor ripple current
5.	BOM Count	12	General	Total Design BOM count
6.	FootPrint	359.0 mm ²	General	Total Foot Print Area of BOM components
7.	Frequency	364.83 kHz	General	Switching frequency
8.	Pout	5.0 W	General	Total output power
9.	Total BOM	\$2.69	General	Total BOM Cost
10.	ICThetaJA Effective	26.0 degC/W	Op_Point	Effective IC Junction-to-Ambient Thermal Resistance
11.	Low Freq Gain	75.152 dB	Op_Point	Gain at 10Hz
12.	Vout Actual	2.5 V	Op_Point	Vout Actual calculated based on selected voltage divider resistors
13.	Vout OP	2.5 V	Op_Point	Operational Output Voltage
14.	Cross Freq	23.745 kHz	Op_point	Bode plot crossover frequency
15.	Duty Cycle	11.66 %	Op_point	Duty cycle
16.	Efficiency	81.223 %	Op_point	Steady state efficiency
17.	Gain Marg	-30.847 dB	Op_point	Bode Plot Gain Margin
18.	IC Tj	34.474 degC	Op_point	IC junction temperature
19.	IOUT_OP	2.0 A	Op_point	Iout operating point
20.	Phase Marg	66.201 deg	Op_point	Bode Plot Phase Margin
21.	VIN_OP	25.0 V	Op_point	Vin operating point
22.	Vout p-p	2.539 mV	Op_point	Peak-to-peak output ripple voltage
23.	Cin Pd	1.787 mW	Power	Input capacitor power dissipation
24.	Cout Pd	144.85 μ W	Power	Output capacitor power dissipation
25.	Diode Pd	814.666 mW	Power	Diode power dissipation
26.	IC Pd	172.088 mW	Power	IC power dissipation
27.	L Pd	167.2 mW	Power	Inductor power dissipation
28.	Total Pd	1.156 W	Power	Total Power Dissipation
29.	Vout Tolerance	2.387 %		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.	VinMax	25.0	Maximum input voltage
3.	VinMin	21.0	Minimum input voltage
4.	Vout	2.5	Output Voltage
5.	base_pn	TPS54540	Texas Instruments Base Part 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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