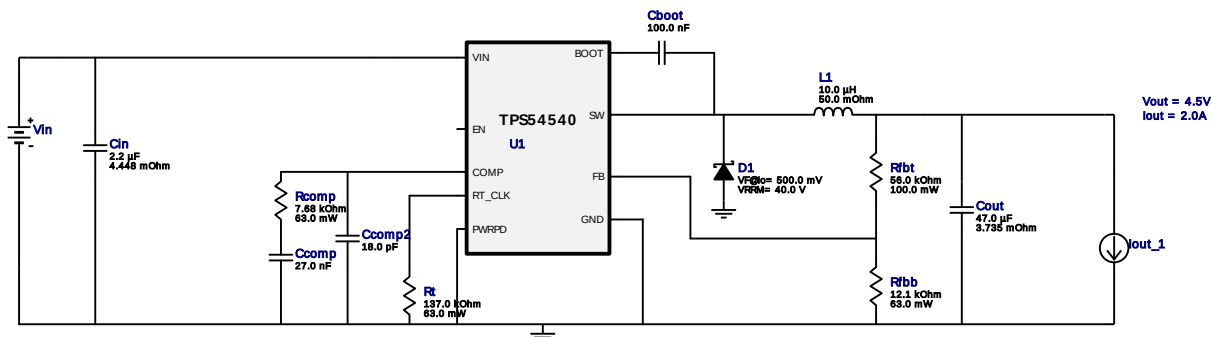


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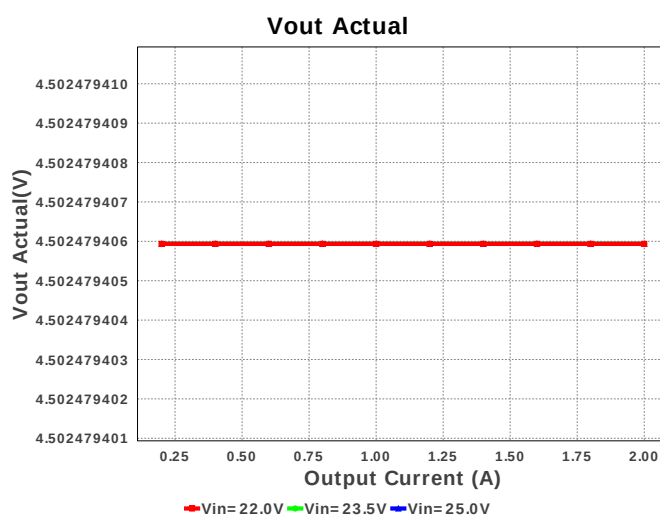
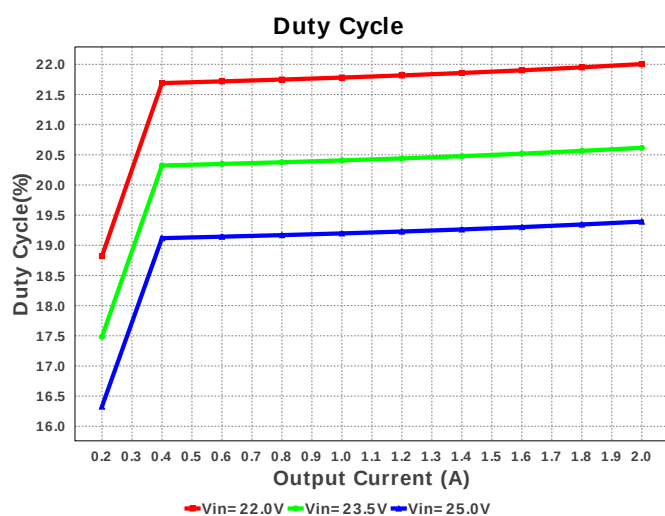
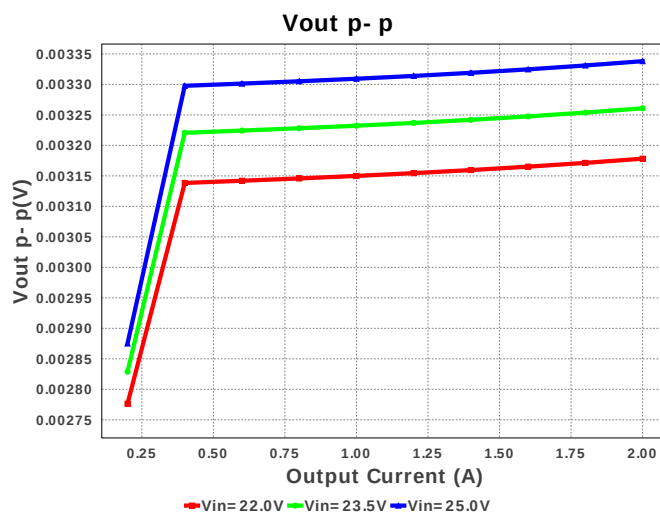
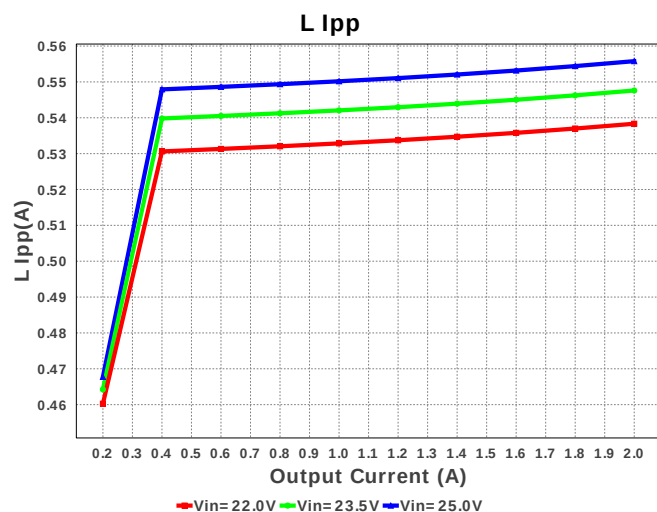
Design : 4770666/27 TPS54540DDAR
TPS54540DDAR 22.0V-25.0V to 4.50V @ 2.0A

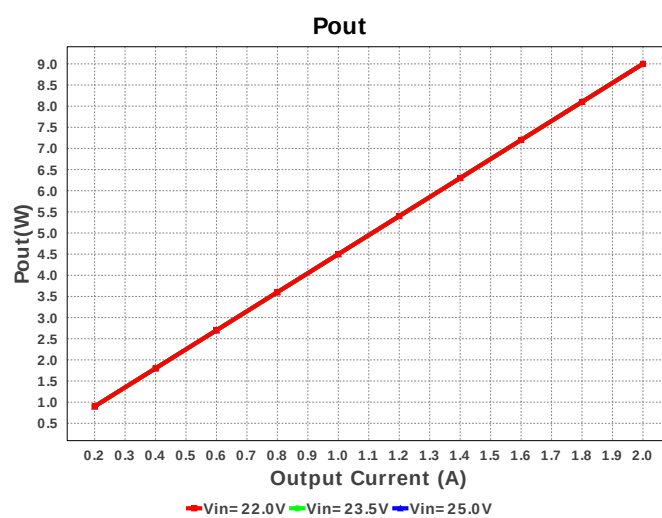
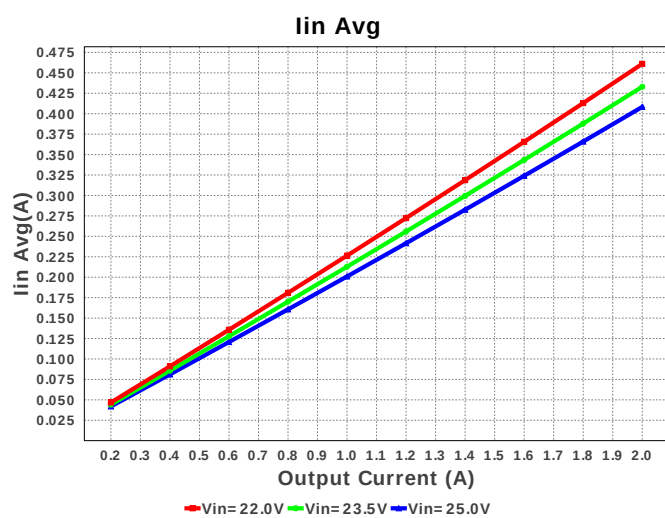
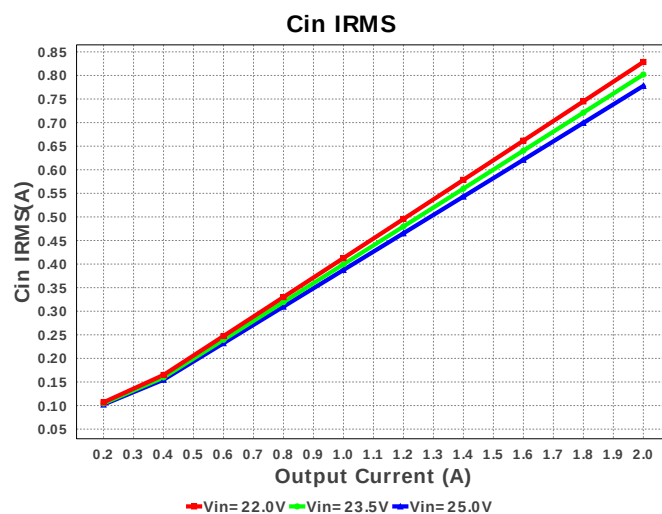
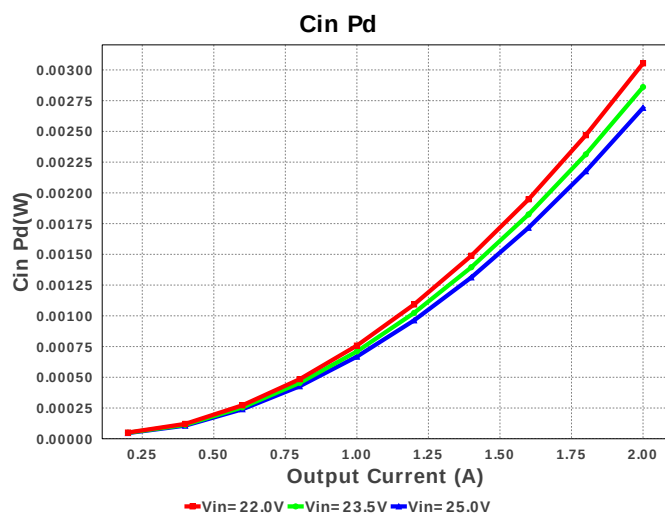
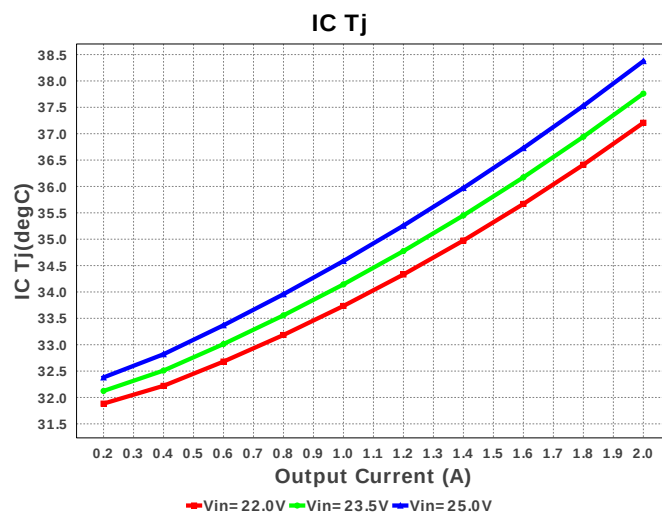
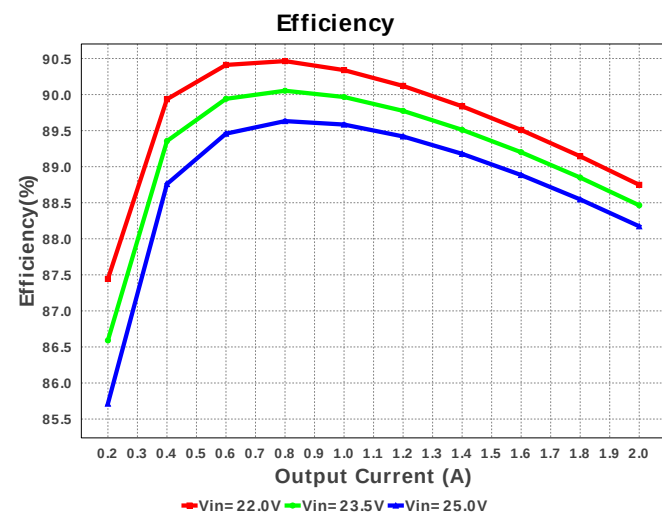


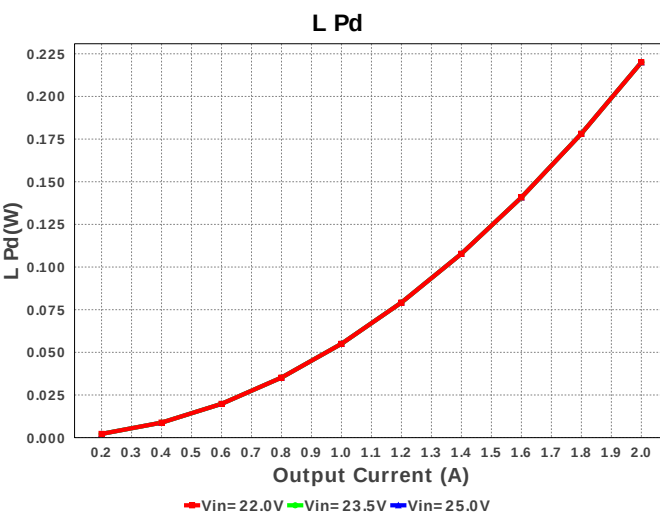
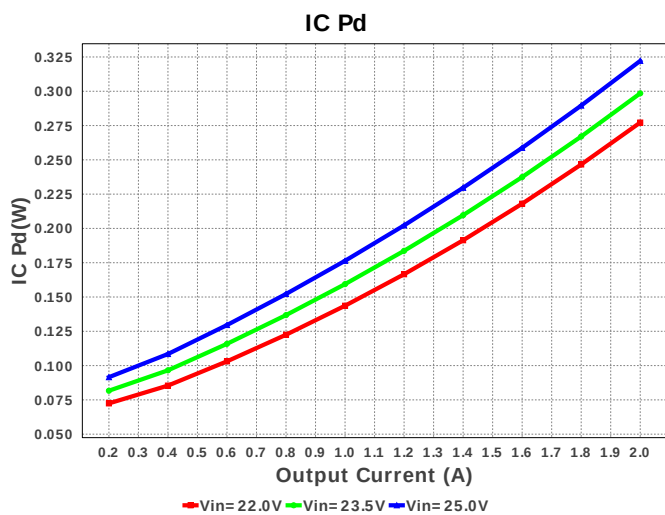
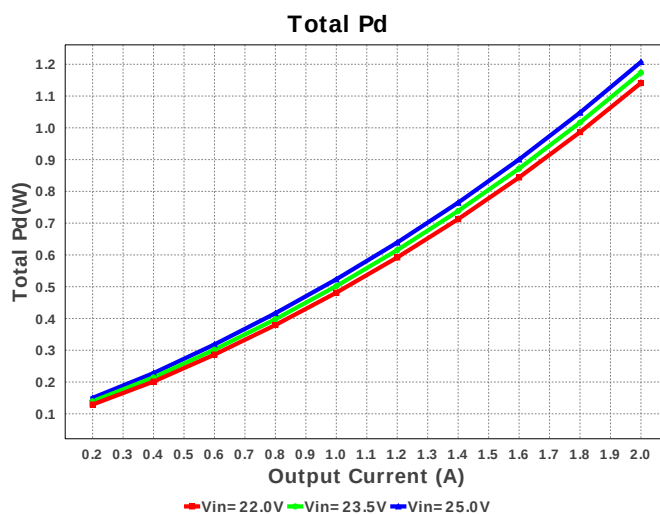
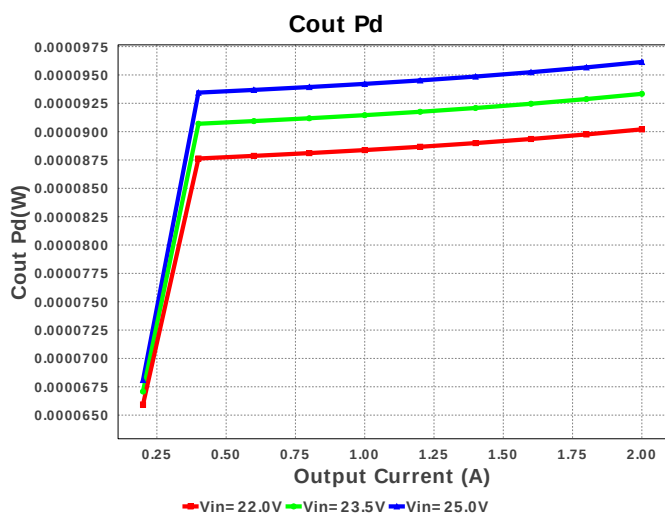
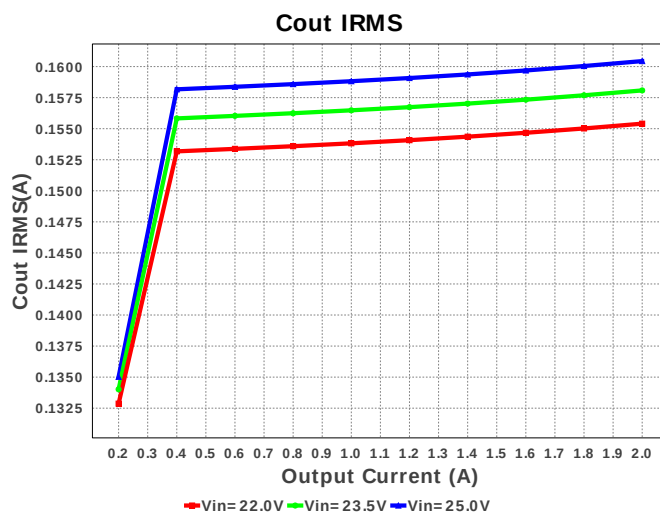
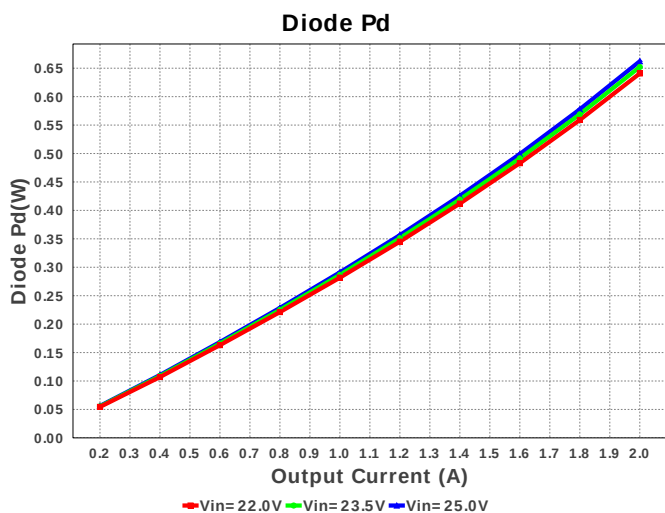
Electrical BOM

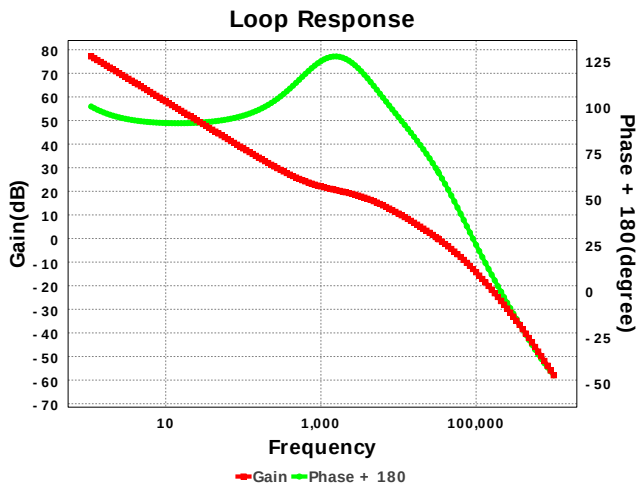
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cboot	MuRata	GRM155R61A104KA01D Series= X5R	Cap= 100.0 nF VDC= 10.0 V IRMS= 0.0 A	1	\$0.01	0402 3 mm ²
2.	Ccomp	Yageo America	CC0805KRX7R9BB273 Series= X7R	Cap= 27.0 nF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	0805 7 mm ²
3.	Ccomp2	Kemet	C0805C180K5GACTU Series= C0G/NP0	Cap= 18.0 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	GRM31CC80J476KE18L Series= X6S	Cap= 47.0 uF ESR= 3.735 mOhm VDC= 6.3 V IRMS= 4.0522 A	1	\$0.10	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	SRN8040-100M	L= 10.0 uH DCR= 50.0 mOhm	1	\$0.22	SRN8040 100 mm ²
8.	Rcomp	Vishay-Dale	CRCW04027K68FKED Series= CRCW..e3	Res= 7.68 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.	Rfht	Susumu Co Ltd	RR1220P-563-D Series= RR12	Res= 56.0 kOhm Power= 100.0 mW Tolerance= 0.5%	1	\$0.01	0805 7 mm ²
11.	Rt	Vishay-Dale	CRCW0402137KFKED Series= CRCW..e3	Res= 137.0 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	780.182 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	161.766 mA	Current	Output capacitor RMS ripple current
3.	Iin Avg	411.5 mA	Current	Average input current
4.	L Ipp	560.37 mA	Current	Peak-to-peak inductor ripple current
5.	BOM Count	12	General	Total Design BOM count
6.	FootPrint	247.0 mm ²	General	Total Foot Print Area of BOM components
7.	Frequency	715.301 kHz	General	Switching frequency
8.	Mode	CCM	General	Conduction Mode
9.	Pout	9.0 W	General	Total output power
10.	Total BOM	\$2.5	General	Total BOM Cost
11.	ICThetaJA Effective	26.0 degC/W	Op_Point	Effective IC Junction-to-Ambient Thermal Resistance
12.	Low Freq Gain	77.154 dB	Op_Point	Gain at 10Hz
13.	Vout Actual	4.502 V	Op_Point	Vout Actual calculated based on selected voltage divider resistors
14.	Vout OP	4.5 V	Op_Point	Operational Output Voltage
15.	Cross Freq	32.087 kHz	Op_point	Bode plot crossover frequency
16.	Duty Cycle	19.553 %	Op_point	Duty cycle
17.	Efficiency	87.485 %	Op_point	Steady state efficiency
18.	Gain Marg	-26.532 dB	Op_point	Bode Plot Gain Margin
19.	IC Tj	38.393 degC	Op_point	IC junction temperature
20.	IOUT_OP	2.0 A	Op_point	Iout operating point
21.	Phase Marg	65.502 deg	Op_point	Bode Plot Phase Margin
22.	VIN_OP	25.0 V	Op_point	Vin operating point
23.	Vout p-p	3.362 mV	Op_point	Peak-to-peak output ripple voltage
24.	Cin Pd	2.707 mW	Power	Input capacitor power dissipation
25.	Cout Pd	97.738 μW	Power	Output capacitor power dissipation
26.	Diode Pd	741.881 mW	Power	Diode power dissipation
27.	IC Pd	322.807 mW	Power	IC power dissipation
28.	L Pd	220.0 mW	Power	Inductor power dissipation
29.	Total Pd	1.287 W	Power	Total Power Dissipation
30.	Vout Tolerance	2.258 %		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	22.0	Minimum input voltage
4.	Vout	4.5	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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