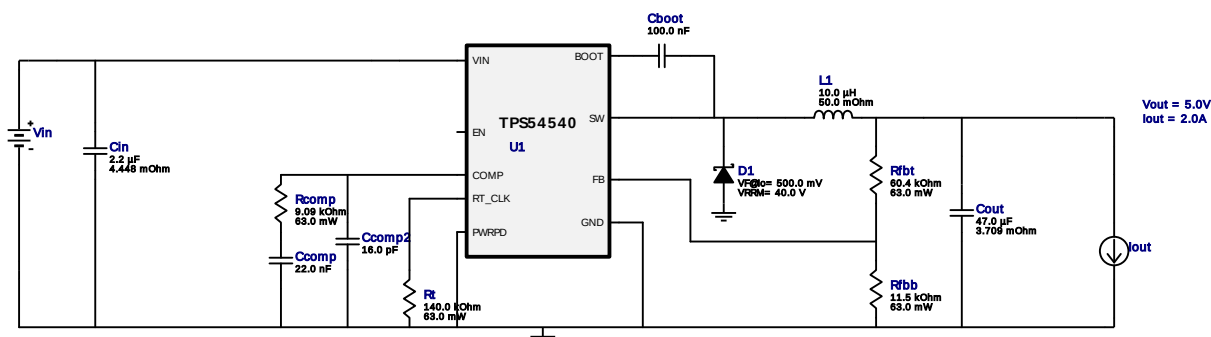


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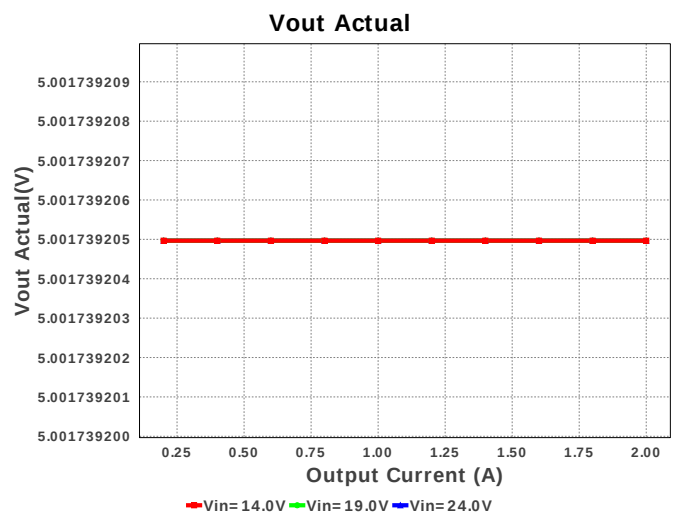
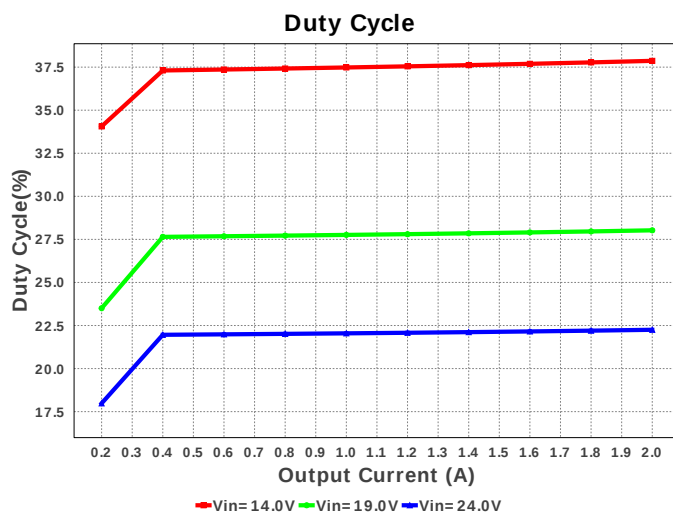
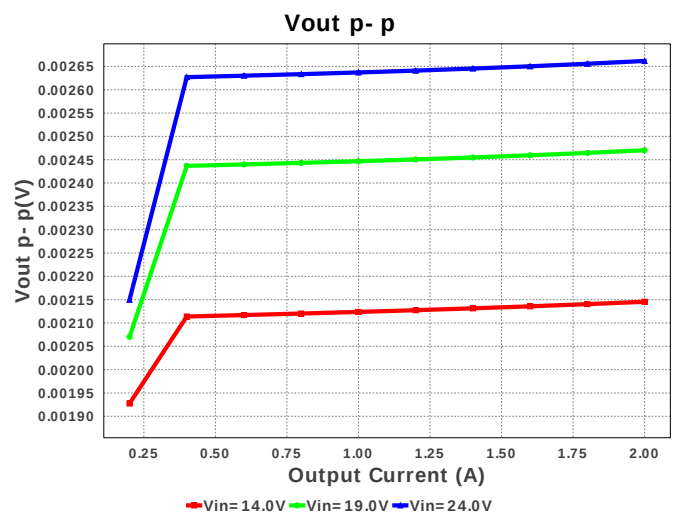
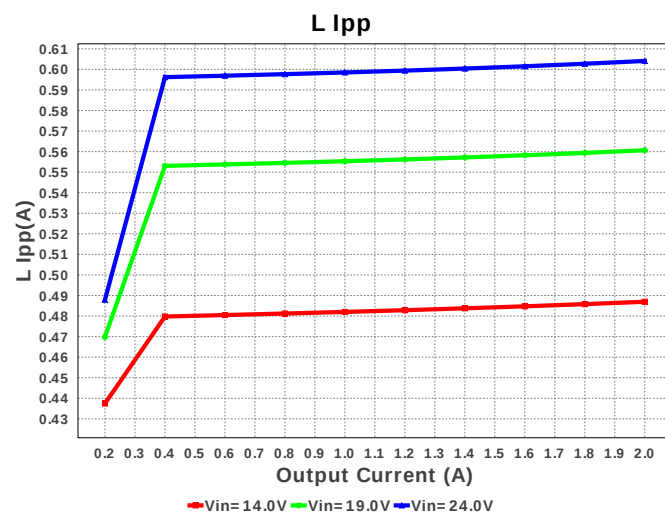
Design : 4748542/1 TPS54540DDAR
TPS54540DDAR 14.0V-24.0V to 5.00V @ 2.0A

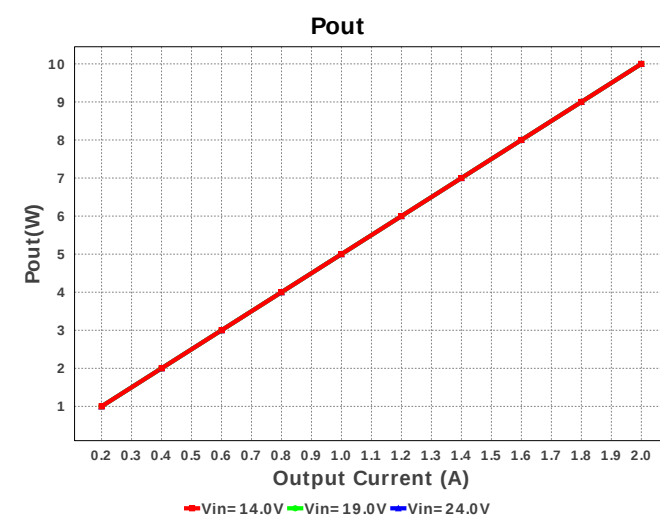
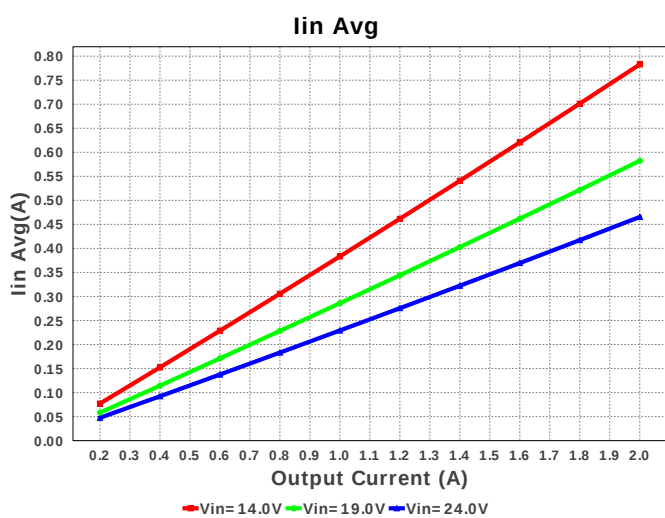
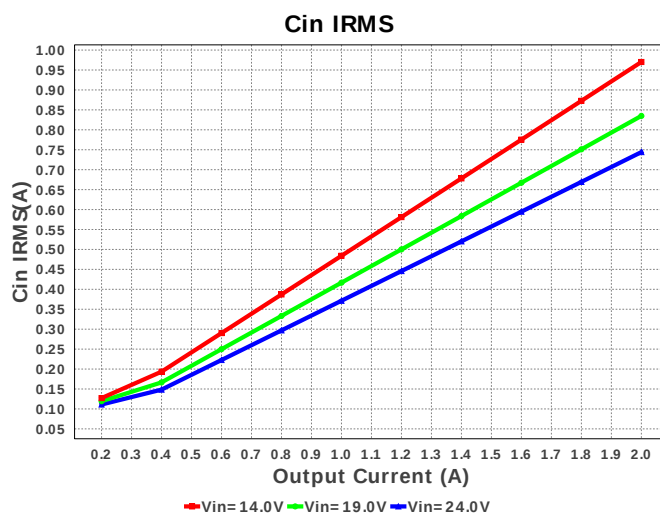
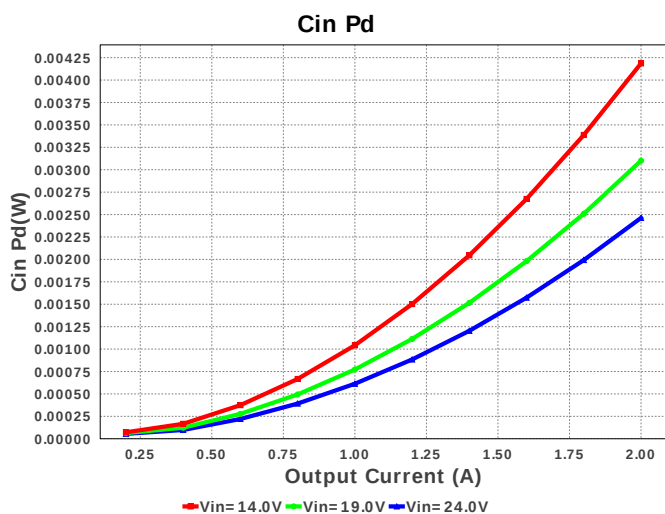
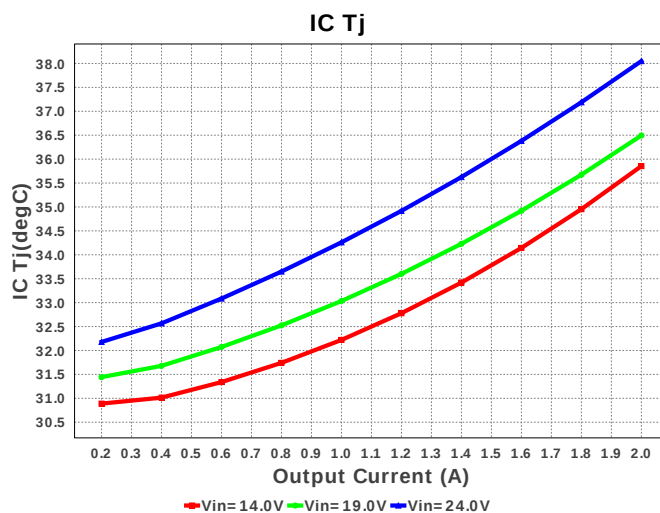
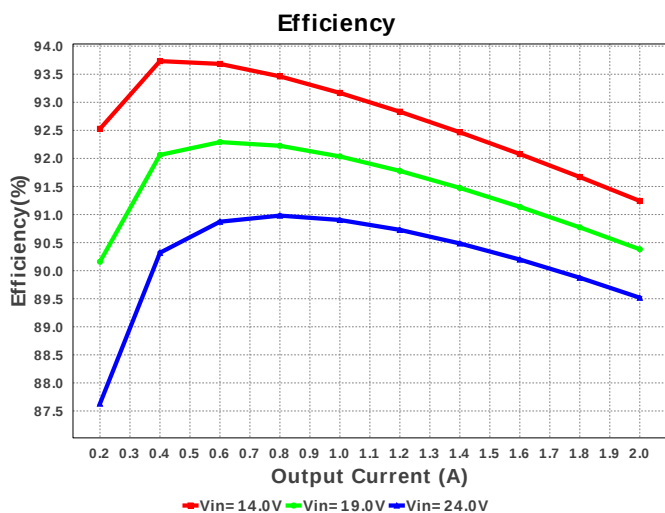


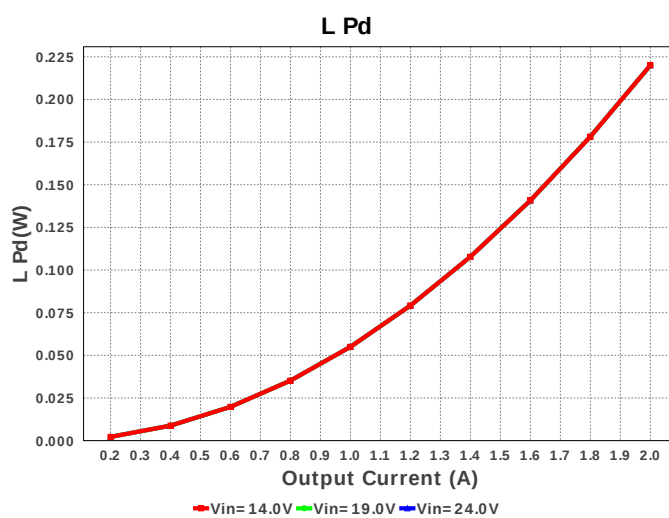
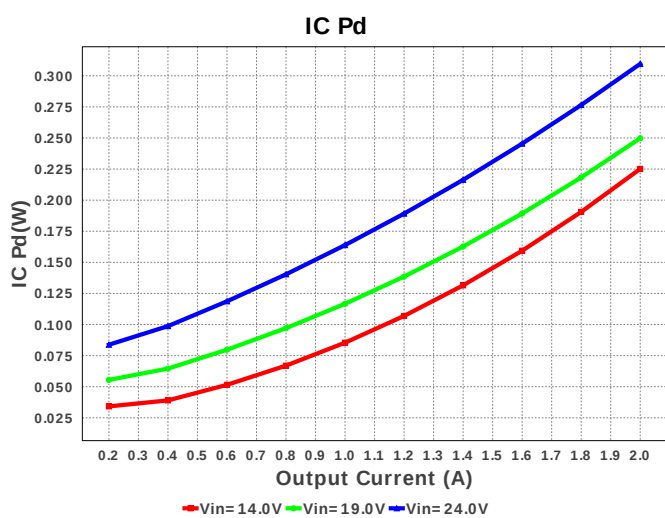
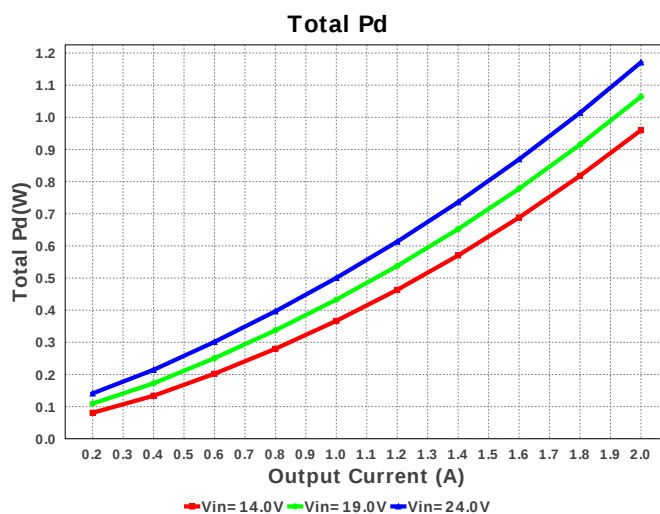
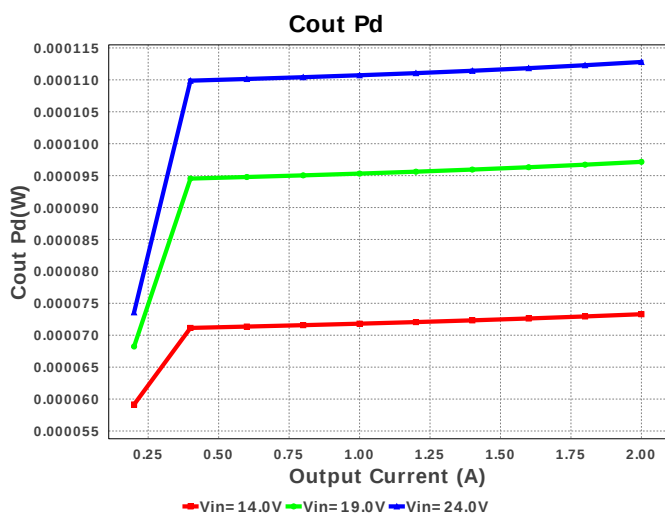
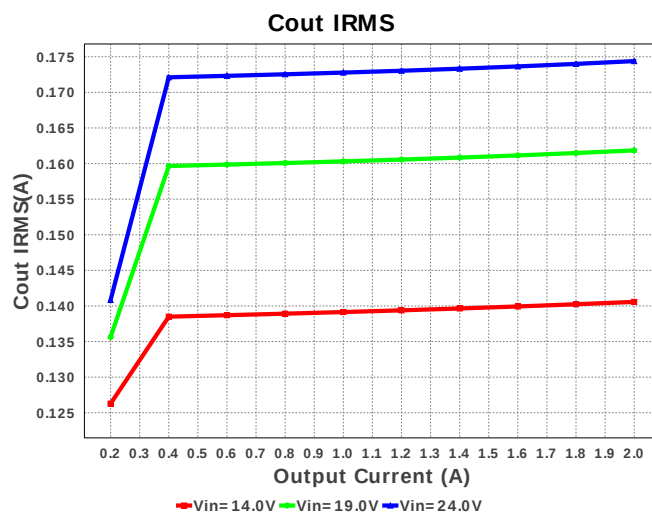
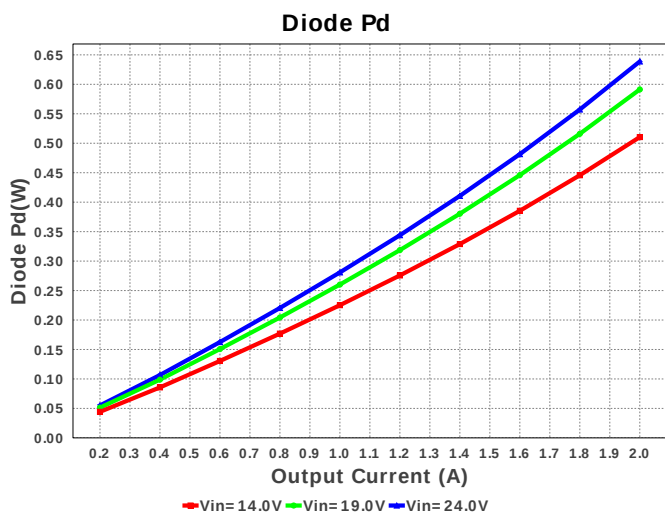
Electrical BOM

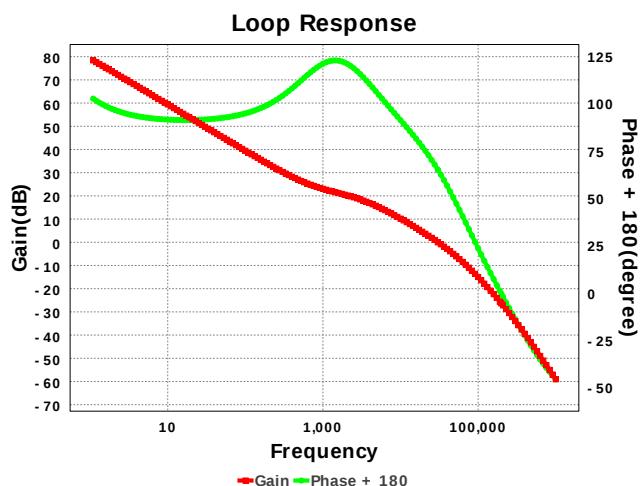
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cboot	MuRata	GRM155R61A104KA01D Series= X5R	Cap= 100.0 nF VDC= 10.0 V IRMS= 0.0 A	1	\$0.01	 0402 3 mm ²
2.	Ccomp	Yageo America	CC0805KRX7R9BB223 Series= X7R	Cap= 22.0 nF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	 0805 7 mm ²
3.	Ccomp2	TDK	C0603C0G1E160G Series= C0G/NP0	Cap= 16.0 pF VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	 0201 2 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	GRM31CR61A476KE15L Series= X5R	Cap= 47.0 uF ESR= 3.709 mOhm VDC= 10.0 V IRMS= 4.2862 A	1	\$0.15	 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	CRCW04029K09FKED Series= CRCW..e3	Res= 9.09 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
9.	Rfbb	Vishay-Dale	CRCW040211K5FKED Series= CRCW..e3	Res= 11.5 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
10.	Rfbb	Vishay-Dale	CRCW040260K4FKED Series= CRCW..e3	Res= 60.4 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 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 57 mm²







Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	745.461 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	175.652 mA	Current	Output capacitor RMS ripple current
3.	Iin Avg	468.68 mA	Current	Average input current
4.	L Ipp	608.47 mA	Current	Peak-to-peak inductor ripple current
5.	BOM Count	12	General	Total Design BOM count
6.	FootPrint	240.0 mm ²	General	Total Foot Print Area of BOM components
7.	Frequency	699.837 kHz	General	Switching frequency
8.	Pout	10.0 W	General	Total output power
9.	Total BOM	\$2.55	General	Total BOM Cost
10.	ICThetaJA Effective	26.0 degC/W	Op_Point	Effective IC Junction-to-Ambient Thermal Resistance
11.	Low Freq Gain	78.376 dB	Op_Point	Gain at 10Hz
12.	Vout Actual	5.002 V	Op_Point	Vout Actual calculated based on selected voltage divider resistors
13.	Vout OP	5.0 V	Op_Point	Operational Output Voltage
14.	Cross Freq	30.464 kHz	Op_point	Bode plot crossover frequency
15.	Duty Cycle	22.412 %	Op_point	Duty cycle
16.	Efficiency	88.902 %	Op_point	Steady state efficiency
17.	Gain Marg	-26.357 dB	Op_point	Bode Plot Gain Margin
18.	IC Tj	38.066 degC	Op_point	IC junction temperature
19.	IOUT_OP	2.0 A	Op_point	Iout operating point
20.	Phase Marg	65.312 deg	Op_point	Bode Plot Phase Margin
21.	VIN_OP	24.0 V	Op_point	Vin operating point
22.	Vout p-p	2.681 mV	Op_point	Peak-to-peak output ripple voltage
23.	Cin Pd	2.472 mW	Power	Input capacitor power dissipation
24.	Cout Pd	114.436 μ W	Power	Output capacitor power dissipation
25.	Diode Pd	715.513 mW	Power	Diode power dissipation
26.	IC Pd	310.239 mW	Power	IC power dissipation
27.	L Pd	220.0 mW	Power	Inductor power dissipation
28.	Total Pd	1.248 W	Power	Total Power Dissipation
29.	Vout Tolerance	2.714 %		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	24.0	Maximum input voltage
3.	VinMin	14.0	Minimum input voltage
4.	Vout	5.0	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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