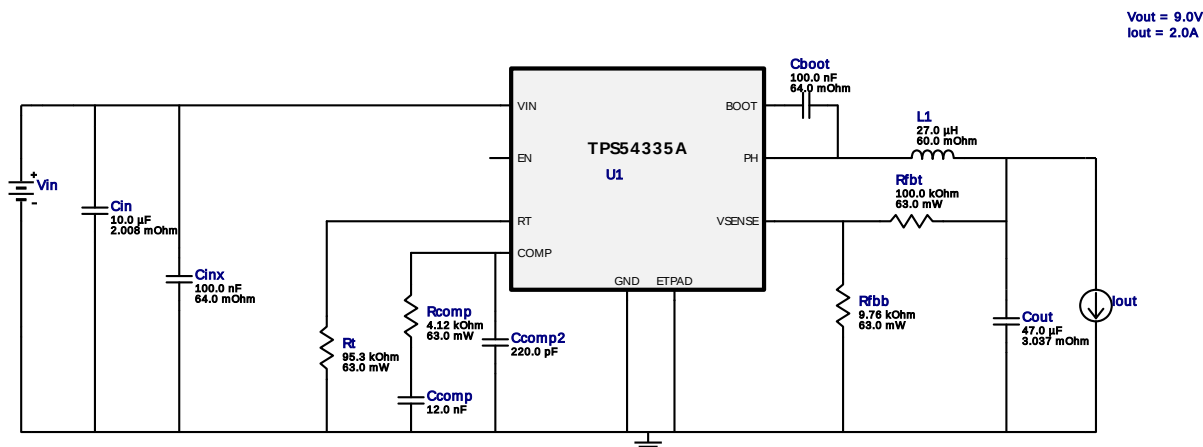


WEBENCH® Design Report

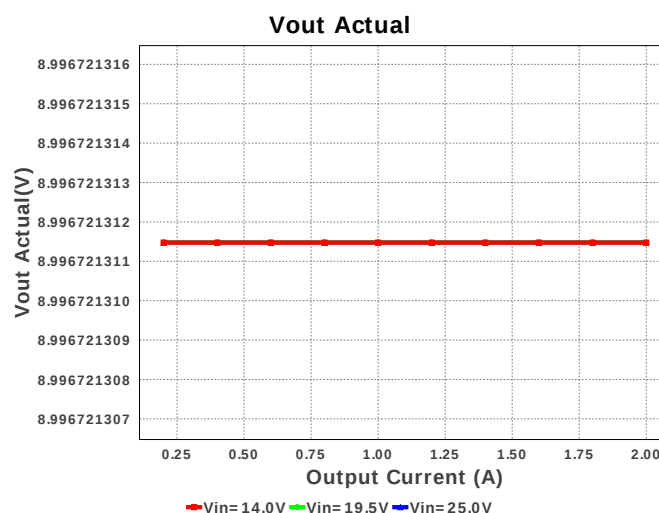
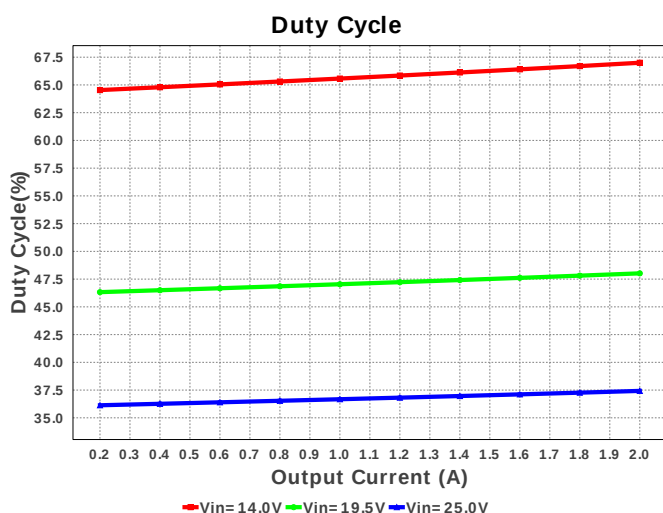
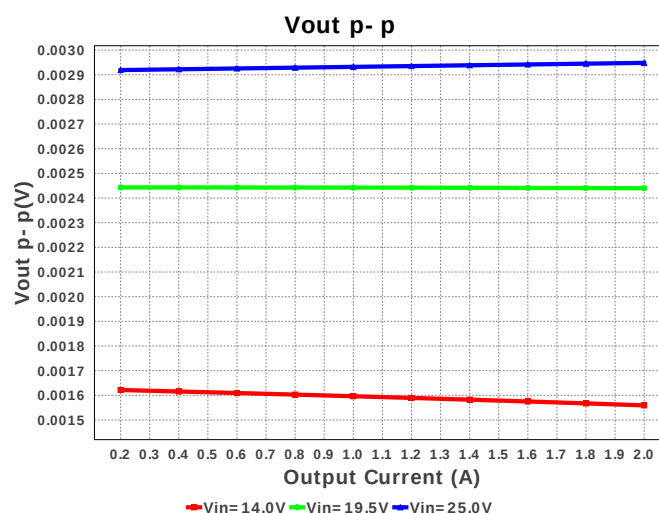
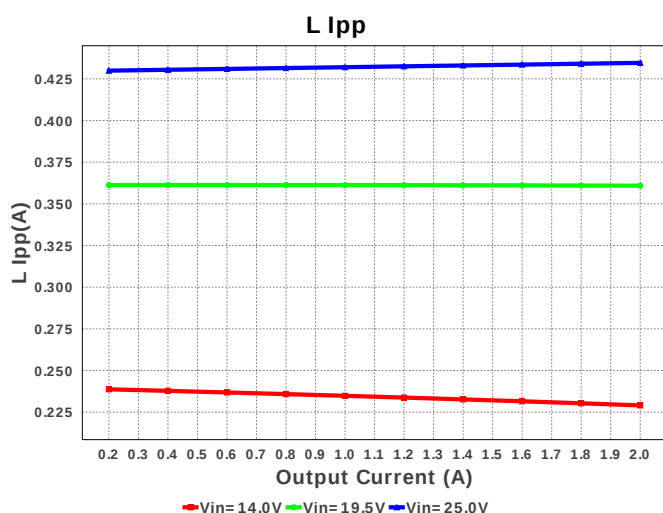
Design : 4742013/9 TPS54335ADDAR
TPS54335ADDAR 14.0V-25.0V to 9.00V @ 2.0A

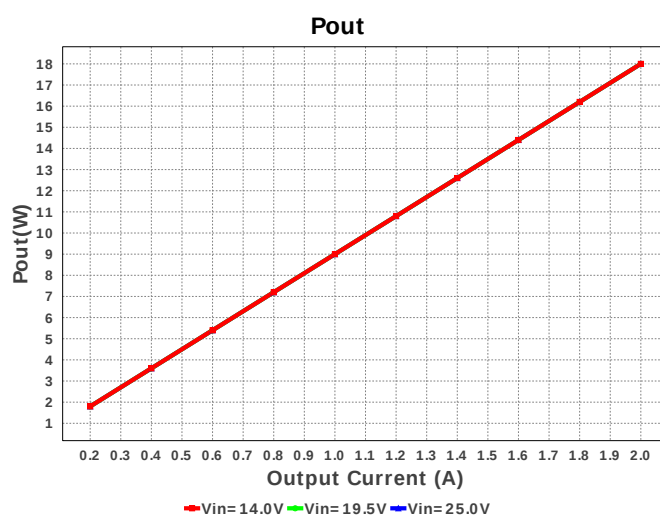
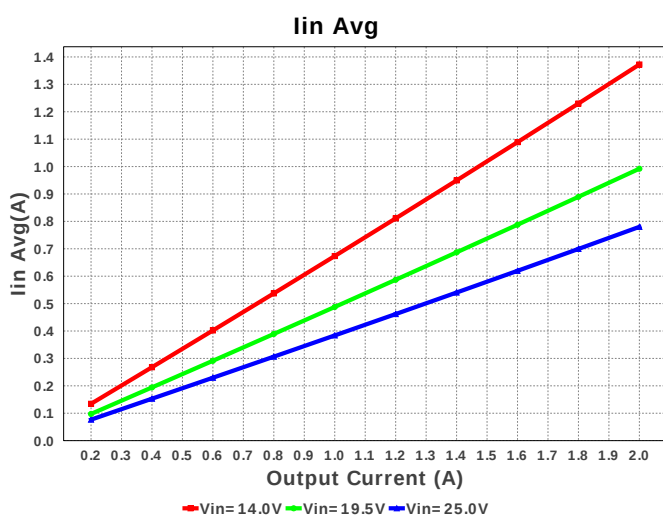
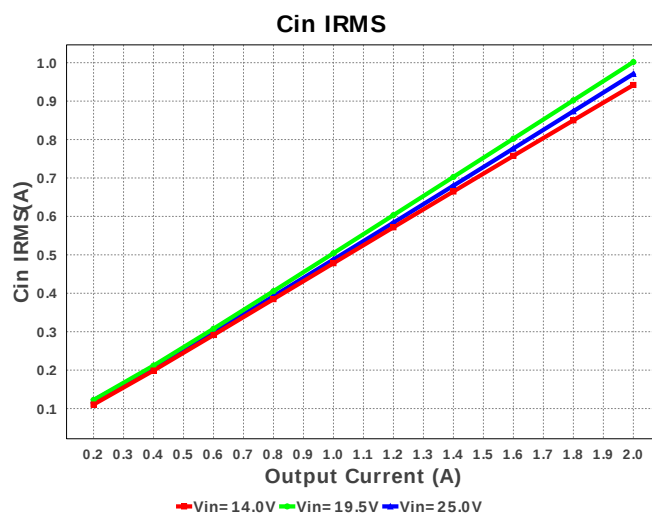
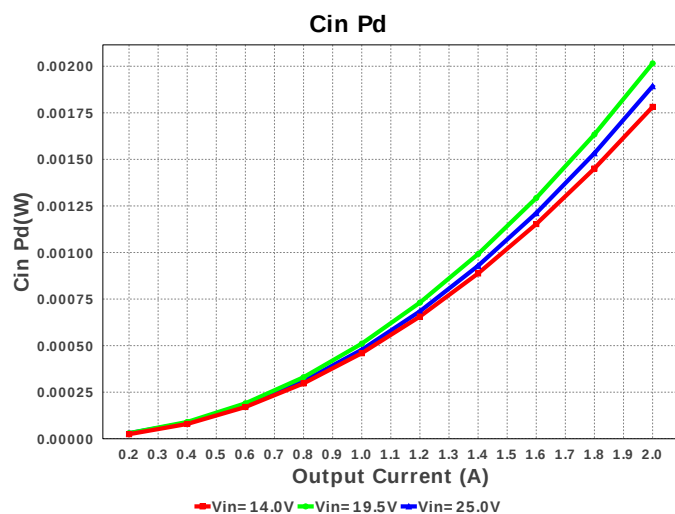
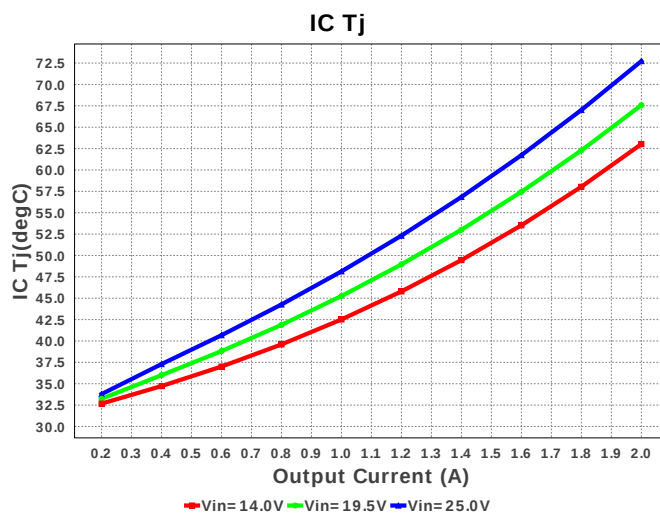
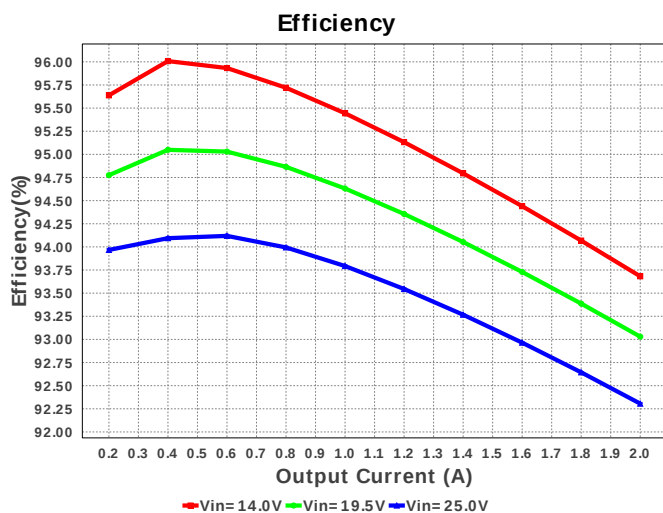


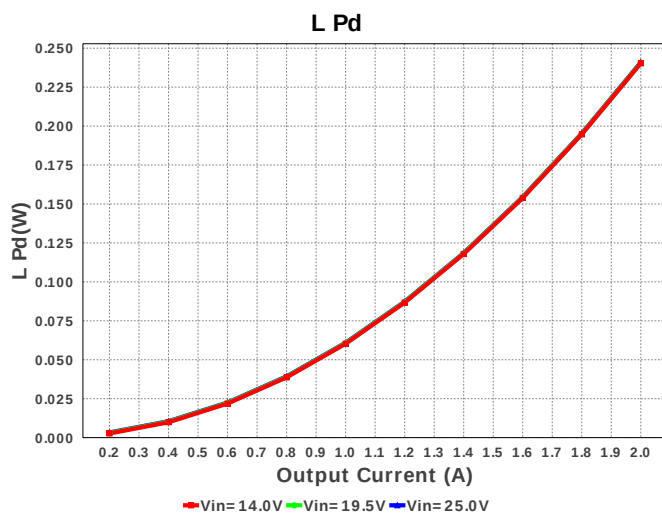
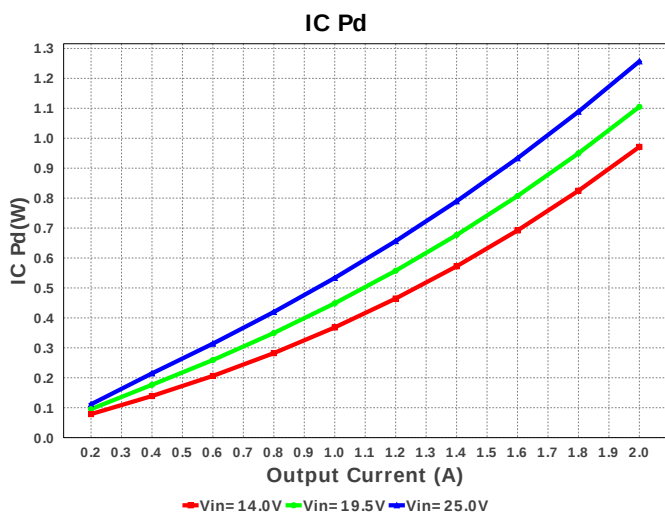
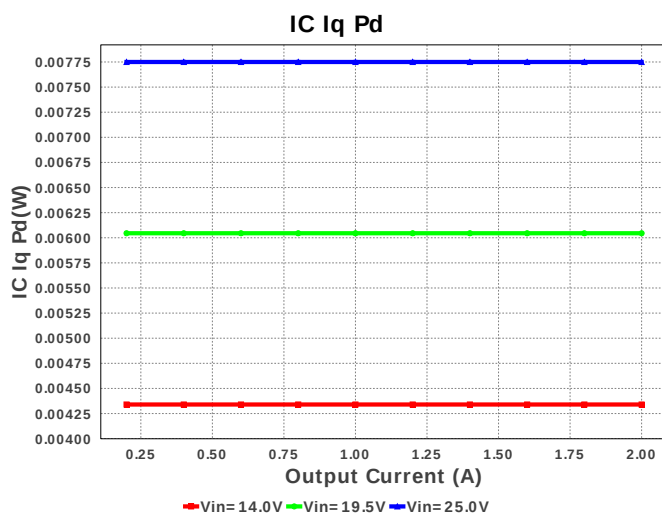
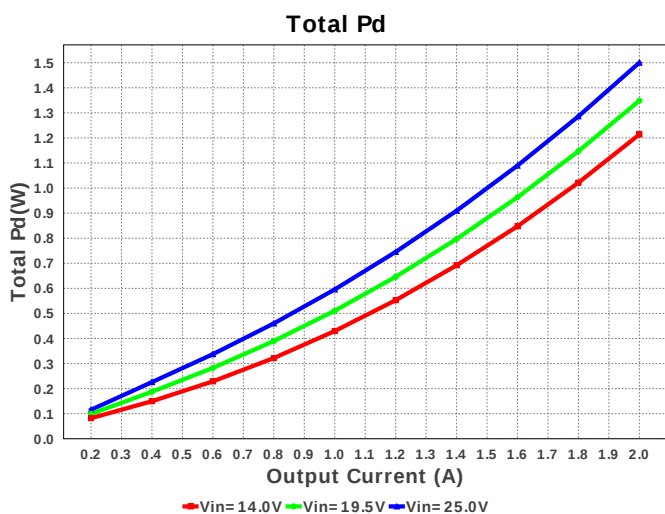
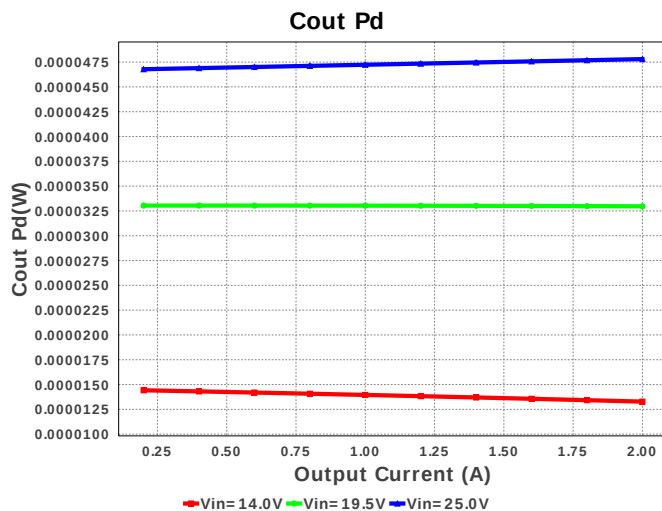
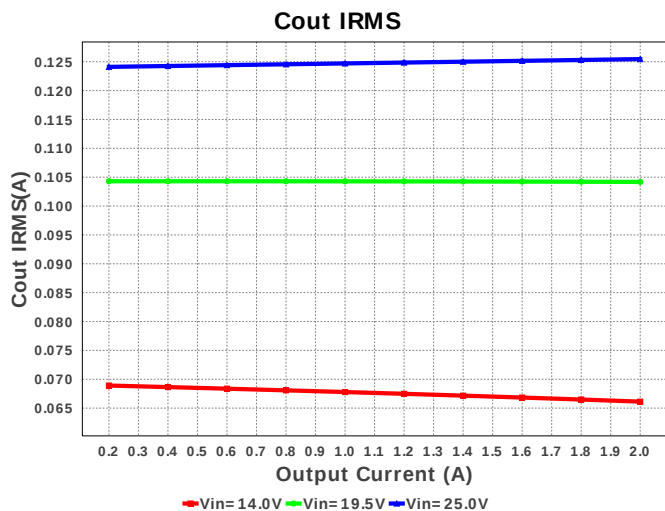
Electrical BOM

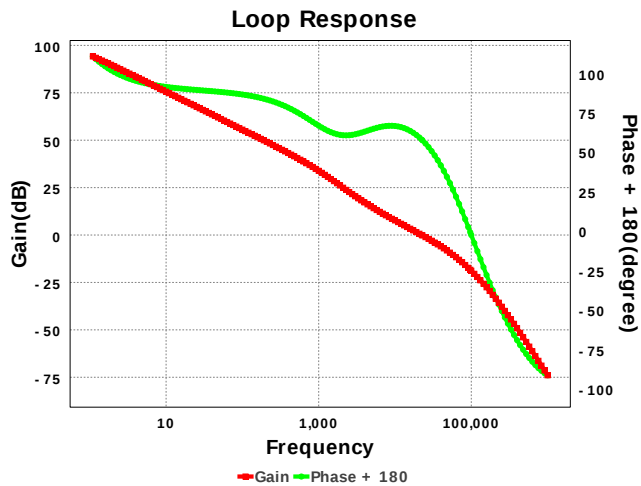
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cboot	Kemet	C0805C104K5RACTU Series= X7R	Cap= 100.0 nF ESR= 64.0 mOhm VDC= 50.0 V IRMS= 1.64 A	1	\$0.01	0805 7 mm ²
2.	Ccomp	MuRata	GRM033C80J123KE01D Series= X6S	Cap= 12.0 nF VDC= 6.3 V IRMS= 0.0 A	1	\$0.01	0201 2 mm ²
3.	Ccomp2	Yageo America	CC0805JRNPO9BN221 Series= C0G/NP0	Cap= 220.0 pF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	0805 7 mm ²
4.	Cin	MuRata	GRM32ER7YA106KA12L Series= X7R	Cap= 10.0 uF ESR= 2.008 mOhm VDC= 35.0 V IRMS= 4.6772 A	1	\$0.22	1210_280 15 mm ²
5.	Cinx	Kemet	C0805C104K5RACTU Series= X7R	Cap= 100.0 nF ESR= 64.0 mOhm VDC= 50.0 V IRMS= 1.64 A	1	\$0.01	0805 7 mm ²
6.	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
7.	L1	Bourns	SDR1307-270ML	L= 27.0 uH DCR= 60.0 mOhm	1	\$0.35	SDR1307 227 mm ²
8.	Rcomp	Vishay-Dale	CRCW04024K12FKED Series= CRCW...e3	Res= 4.12 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
9.	Rfbb	Vishay-Dale	CRCW04029K76FKED Series= CRCW...e3	Res= 9.76 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
10.	Rfbt	Vishay-Dale	CRCW0402100KFKED Series= CRCW..e3	Res= 100.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
11.	Rt	Vishay-Dale	CRCW040295K3FKED Series= CRCW..e3	Res= 95.3 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
12.	U1	Texas Instruments	TPS54335ADDAR	Switcher	1	\$0.90	

R-PDSO-G8 57 mm²







Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	970.901 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	125.456 mA	Current	Output capacitor RMS ripple current
3.	Iin Avg	780.02 mA	Current	Average input current
4.	L Ipp	434.59 mA	Current	Peak-to-peak inductor ripple current
5.	BOM Count	12	General	Total Design BOM count
6.	FootPrint	348.0 mm ²	General	Total Foot Print Area of BOM components
7.	Frequency	496.814 kHz	General	Switching frequency
8.	IC Tolerance	12.0 mV	General	IC Feedback Tolerance
9.	Pout	18.0 W	General	Total output power
10.	Total BOM	\$1.79	General	Total BOM Cost
11.	ICThetaJA Effective	34.0 degC/W	Op_Point	Effective IC Junction-to-Ambient Thermal Resistance
12.	Low Freq Gain	94.17 dB	Op_Point	Gain at 10Hz
13.	Vout Actual	8.997 V	Op_Point	Vout Actual calculated based on selected voltage divider resistors
14.	Vout OP	9.0 V	Op_Point	Operational Output Voltage
15.	Cross Freq	22.446 kHz	Op_point	Bode plot crossover frequency
16.	Duty Cycle	37.426 %	Op_point	Duty cycle
17.	Efficiency	92.306 %	Op_point	Steady state efficiency
18.	Gain Marg	-18.312 dB	Op_point	Bode Plot Gain Margin
19.	IC Tj	72.731 degC	Op_point	IC junction temperature
20.	IOUT_OP	2.0 A	Op_point	Iout operating point
21.	Phase Marg	58.73 deg	Op_point	Bode Plot Phase Margin
22.	VIN_OP	25.0 V	Op_point	Vin operating point
23.	Vout p-p	2.948 mV	Op_point	Peak-to-peak output ripple voltage
24.	Cin Pd	1.893 mW	Power	Input capacitor power dissipation
25.	Cout Pd	47.8 μ W	Power	Output capacitor power dissipation
26.	IC Iq Pd	7.75 mW	Power	IC Iq Pd
27.	IC Pd	1.257 W	Power	IC power dissipation
28.	L Pd	240.944 mW	Power	Inductor power dissipation
29.	Total Pd	1.5 W	Power	Total Power Dissipation
30.	Vout Tolerance	3.368 %		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	14.0	Minimum input voltage
4.	Vout	9.0	Output Voltage
5.	base_pn	TPS54335A	Base Product Number
6.	source	DC	Input Source Type
7.	Ta	30.0	Ambient temperature

Design Assistance

1. **TPS54335A** Product Folder : <http://www.ti.com/product/TPS54335A> : contains the data sheet and other resources.

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