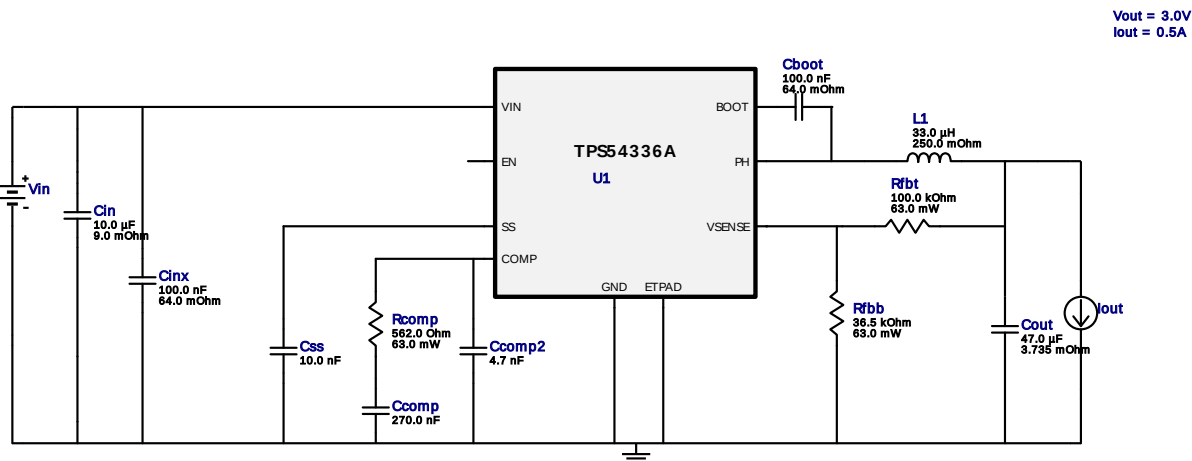


WEBENCH® Design Report

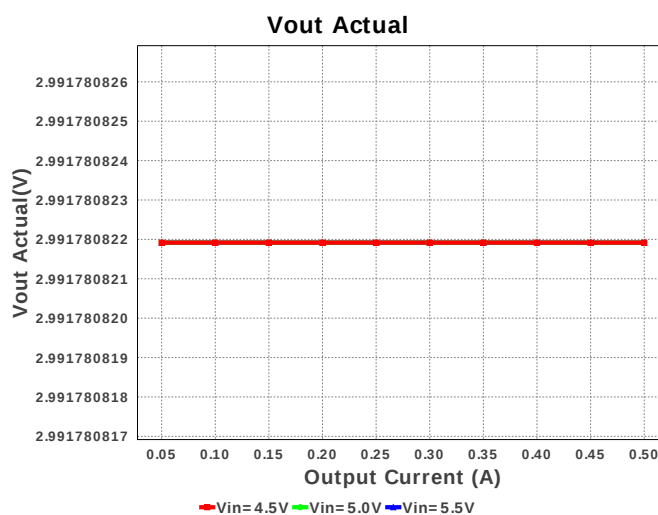
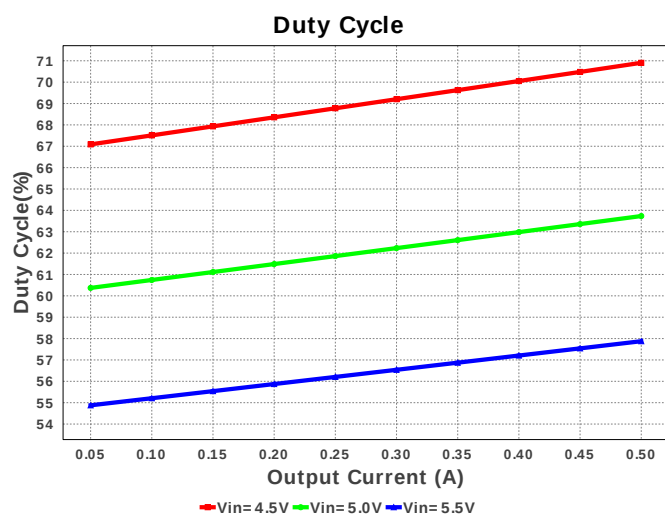
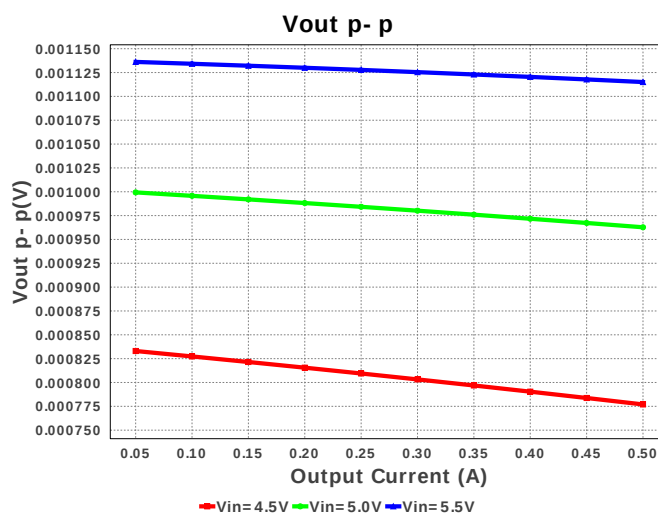
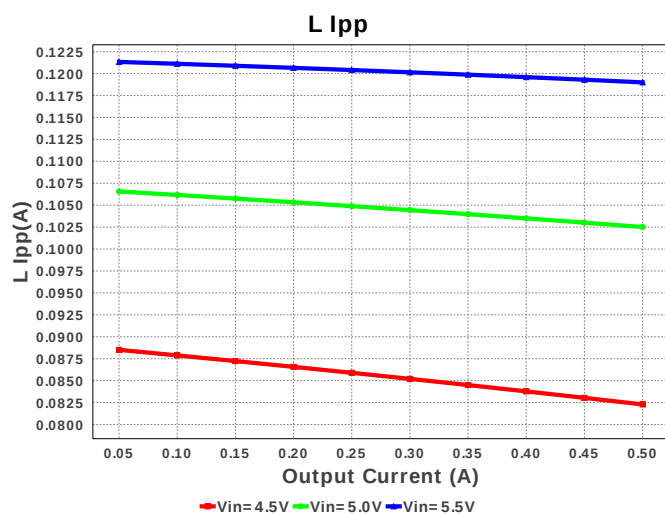
Design : 4742013/154 TPS54336ADDAR
TPS54336ADDAR 4.5V-5.5V to 3.00V @ 0.5A

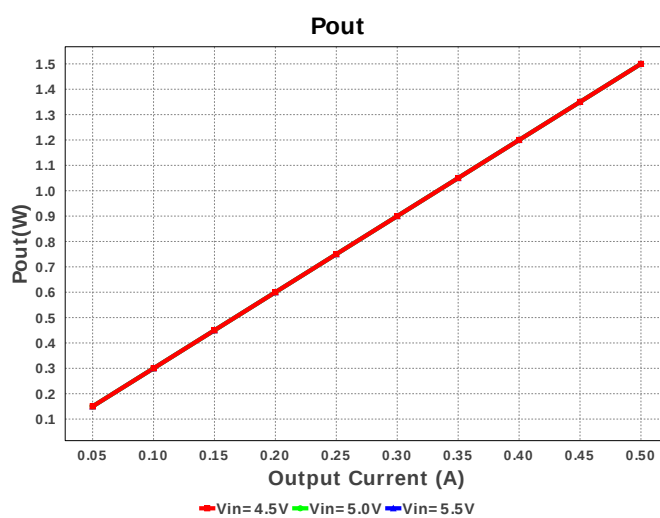
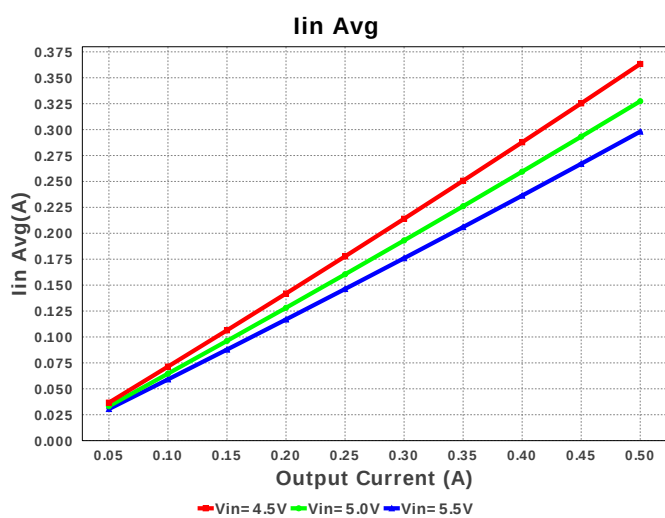
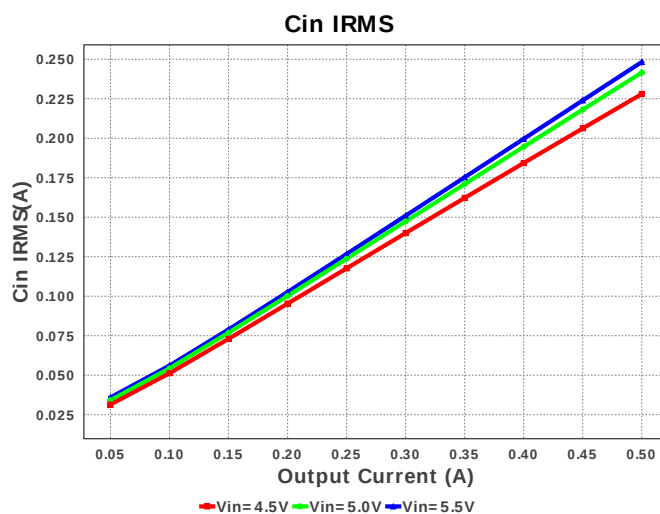
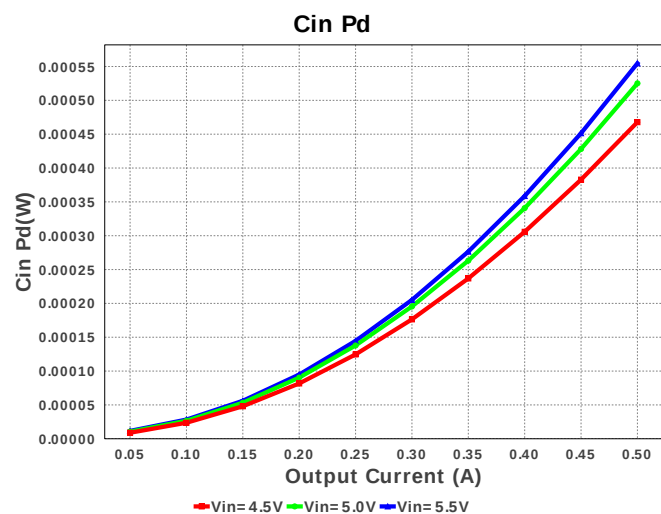
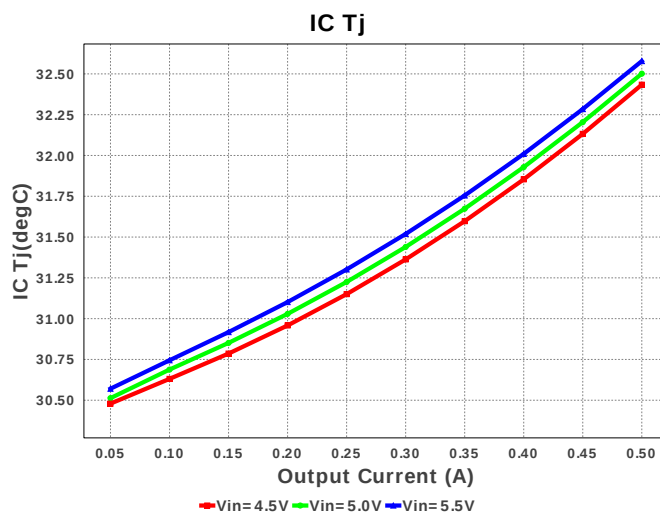
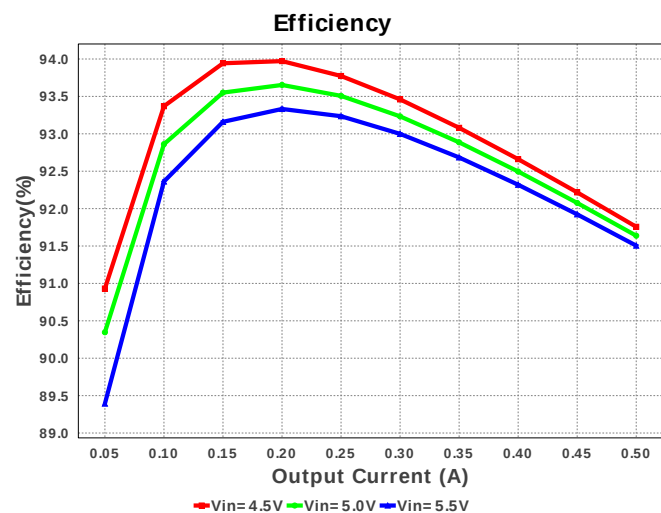


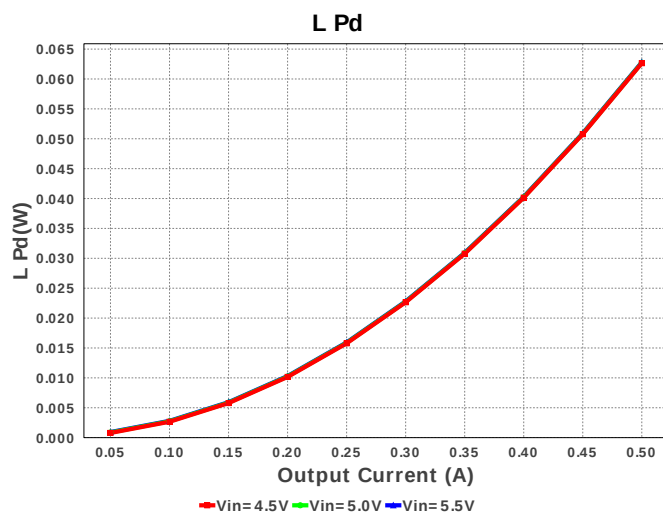
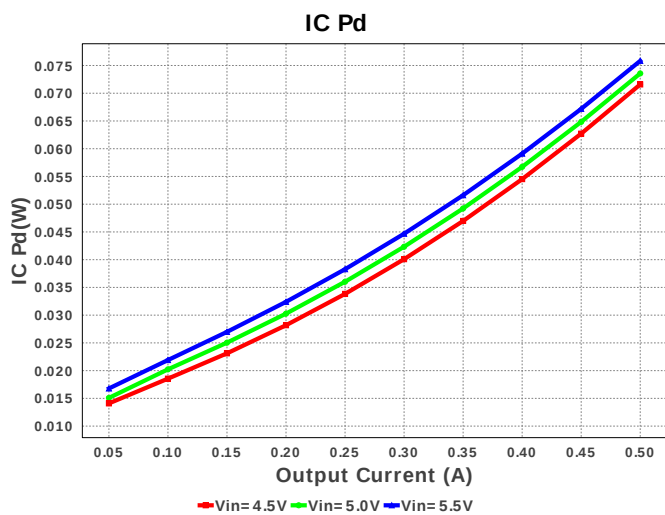
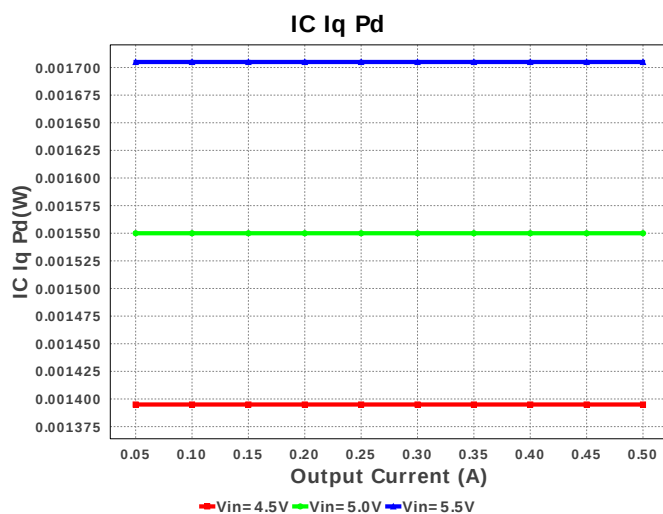
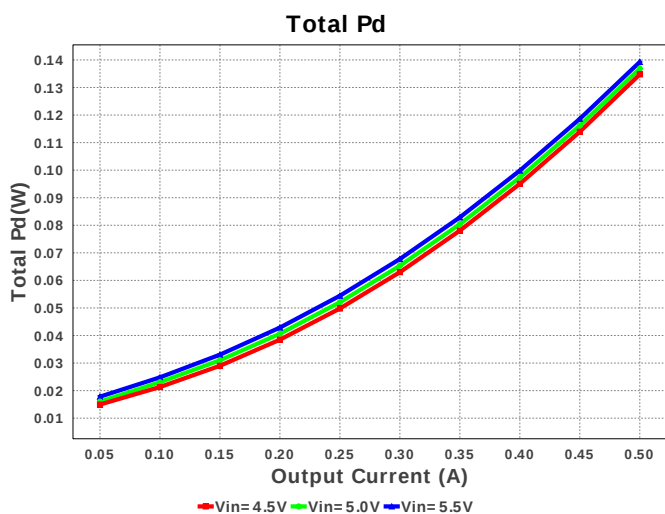
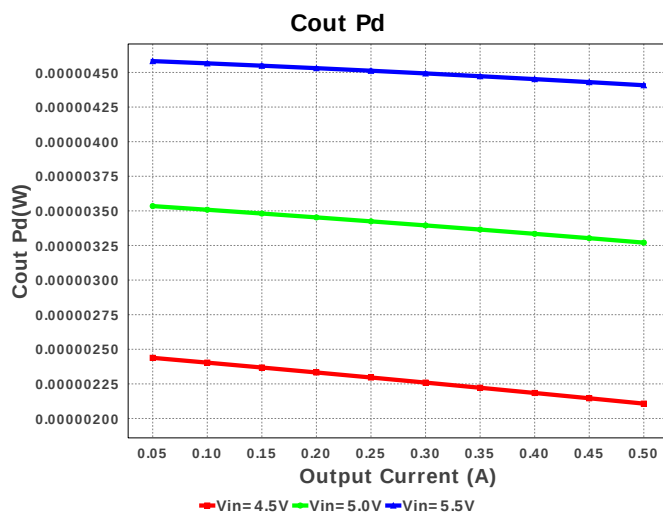
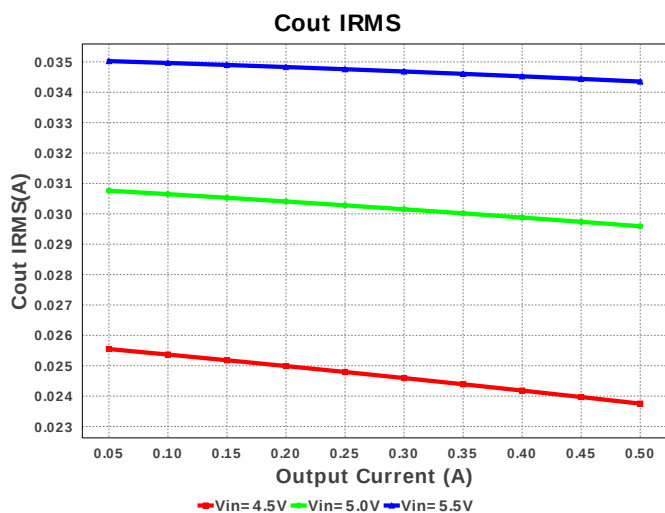
Electrical BOM

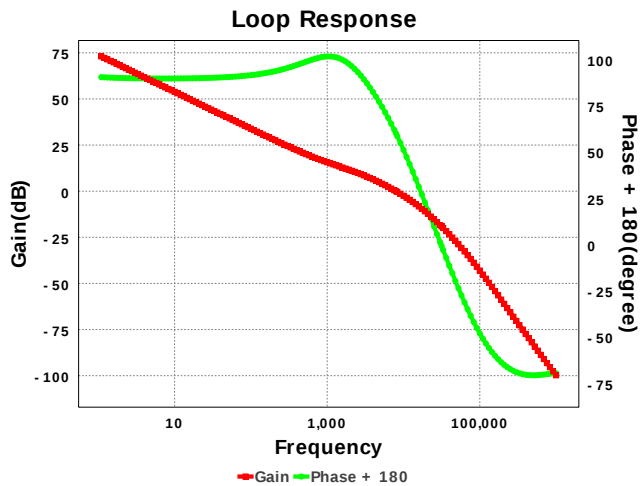
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cboot	Kemet	C0805C104K5RACTU Series= X7R	Cap= 100.0 nF ESR= 64.0 mOhm VDC= 50.0 V IRMS= 1.64 A	1	\$0.01	0805 7 mm ²
2.	Ccomp	MuRata	GRM155R60J274KE01D Series= X5R	Cap= 270.0 nF VDC= 6.3 V IRMS= 0.0 A	1	\$0.02	0402 3 mm ²
3.	Ccomp2	Yageo America	CC0805KRX7R9BB472 Series= X7R	Cap= 4.7 nF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	0805 7 mm ²
4.	Cin	MuRata	GRM188R60J106ME47D Series= X5R	Cap= 10.0 uF ESR= 9.0 mOhm VDC= 6.3 V IRMS= 2.74 A	1	\$0.02	0603 5 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	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
7.	Css	MuRata	GRM033R61A103KA01D Series= X5R	Cap= 10.0 nF VDC= 10.0 V IRMS= 0.0 A	1	\$0.01	0201 2 mm ²
8.	L1	Bourns	SDR0604-330KL	L= 33.0 uH DCR= 250.0 mOhm	1	\$0.18	SDR0604 61 mm ²
9.	Rcomp	Vishay-Dale	CRCW0402562RFFKED Series= CRCW..e3	Res= 562.0 Ohm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
10.	Rfbb	Vishay-Dale	CRCW040236K5FKED Series= CRCW..e3	Res= 36.5 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
11.	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
12.	U1	Texas Instruments	TPS54336ADDAR	Switcher	1	\$0.90	

R-PDSO-G8 57 mm²







Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	248.258 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	34.352 mA	Current	Output capacitor RMS ripple current
3.	Iin Avg	298.05 mA	Current	Average input current
4.	L Ipp	119.0 mA	Current	Peak-to-peak inductor ripple current
5.	BOM Count	12	General	Total Design BOM count
6.	FootPrint	168.0 mm ²	General	Total Foot Print Area of BOM components
7.	Frequency	340.0 kHz	General	Switching frequency
8.	IC Tolerance	12.0 mV	General	IC Feedback Tolerance
9.	Pout	1.5 W	General	Total output power
10.	Total BOM	\$1.29	General	Total BOM Cost
11.	ICThetaJA Effective	34.0 degC/W	Op_Point	Effective IC Junction-to-Ambient Thermal Resistance
12.	Low Freq Gain	73.035 dB	Op_Point	Gain at 10Hz
13.	Vout Actual	2.992 V	Op_Point	Vout Actual calculated based on selected voltage divider resistors
14.	Vout OP	3.0 V	Op_Point	Operational Output Voltage
15.	Cross Freq	7.983 kHz	Op_point	Bode plot crossover frequency
16.	Duty Cycle	57.877 %	Op_point	Duty cycle
17.	Efficiency	91.505 %	Op_point	Steady state efficiency
18.	Gain Marg	-19.111 dB	Op_point	Bode Plot Gain Margin
19.	IC Tj	32.578 degC	Op_point	IC junction temperature
20.	IOUT_OP	500.0 mA	Op_point	Iout operating point
21.	Phase Marg	60.633 deg	Op_point	Bode Plot Phase Margin
22.	VIN_OP	5.5 V	Op_point	Vin operating point
23.	Vout p-p	1.115 mV	Op_point	Peak-to-peak output ripple voltage
24.	Cin Pd	554.688 μ W	Power	Input capacitor power dissipation
25.	Cout Pd	4.408 μ W	Power	Output capacitor power dissipation
26.	IC Iq Pd	1.705 mW	Power	IC Iq Pd
27.	IC Pd	75.834 mW	Power	IC power dissipation
28.	L Pd	62.795 mW	Power	Inductor power dissipation
29.	Total Pd	139.256 mW	Power	Total Power Dissipation
30.	Vout Tolerance	3.002 %		Vout Tolerance based on IC Tolerance (no load) and voltage divider resistors if applicable

Design Inputs

#	Name	Value	Description
1.	Iout	500.0 m	Maximum Output Current
2.	VinMax	5.5	Maximum input voltage
3.	VinMin	4.5	Minimum input voltage
4.	Vout	3.0	Output Voltage
5.	base_pn	TPS54336A	Base Product Number
6.	source	DC	Input Source Type
7.	Ta	30.0	Ambient temperature

Design Assistance

1. **TPS54336A** Product Folder : <http://www.ti.com/product/TPS54336A> : contains the data sheet and other resources.

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