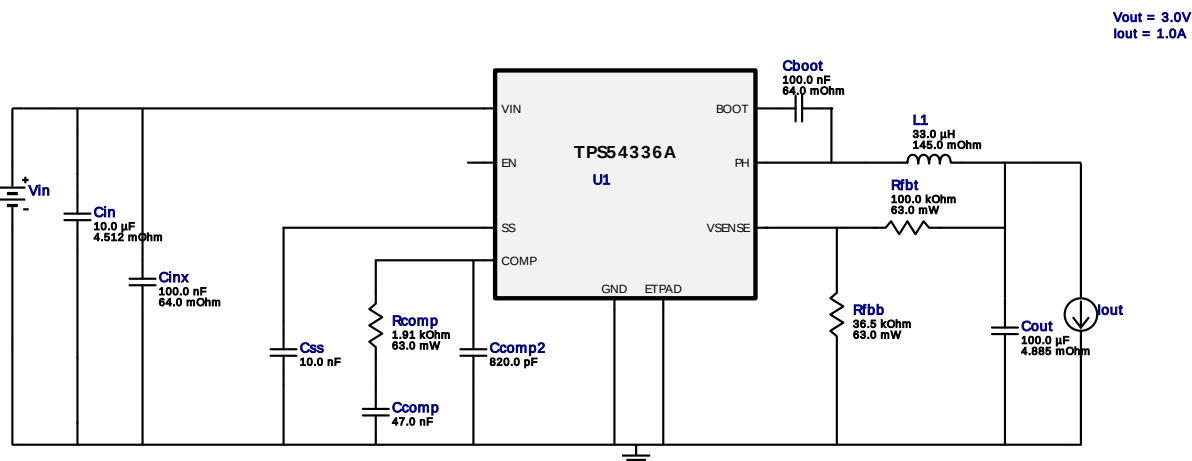


WEBENCH® Design Report

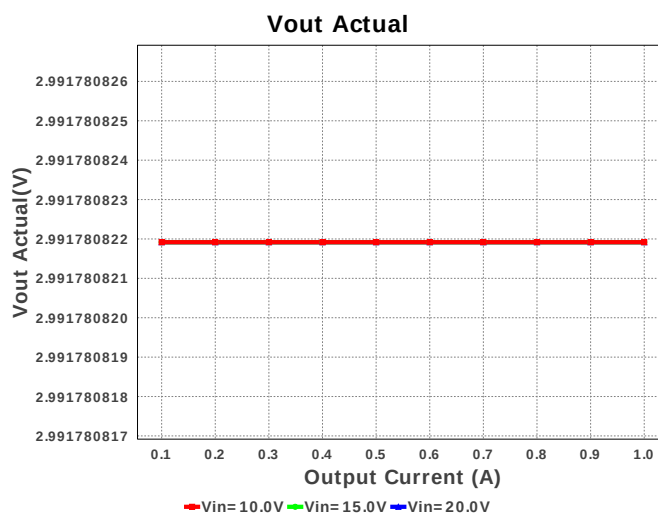
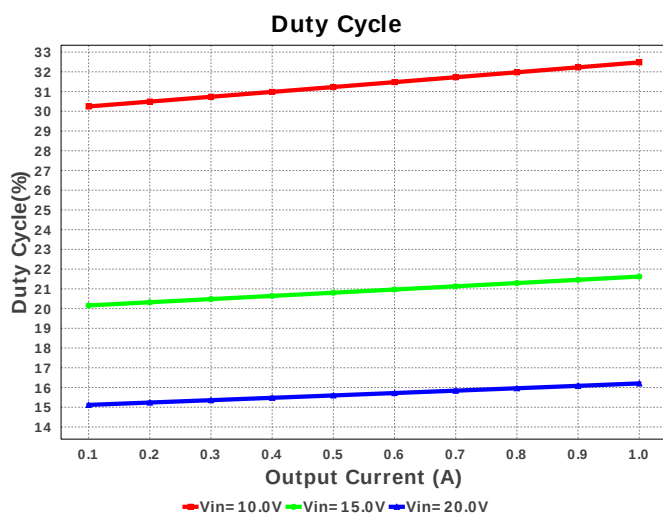
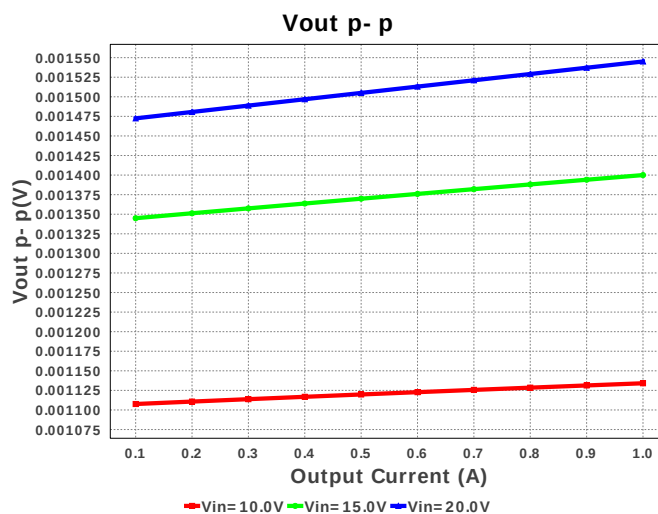
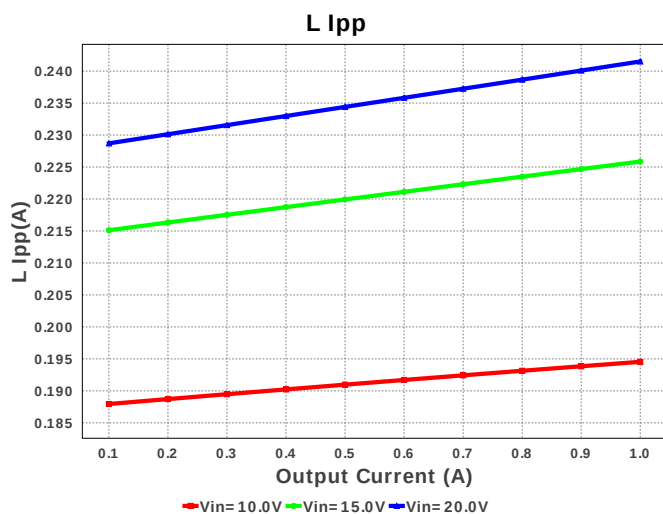
Design : 4728729/4 TPS54336ADDAR
TPS54336ADDAR 10.0V-20.0V to 3.00V @ 1.0A

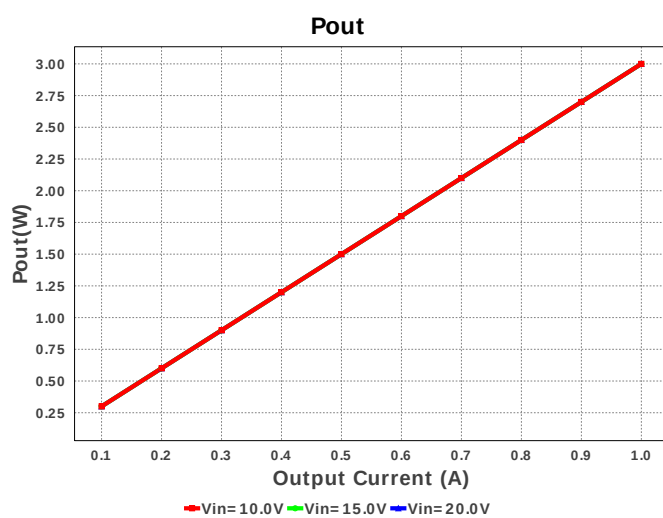
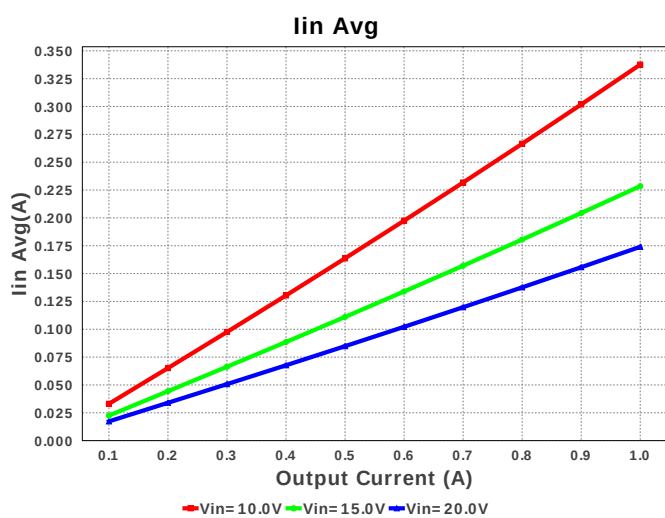
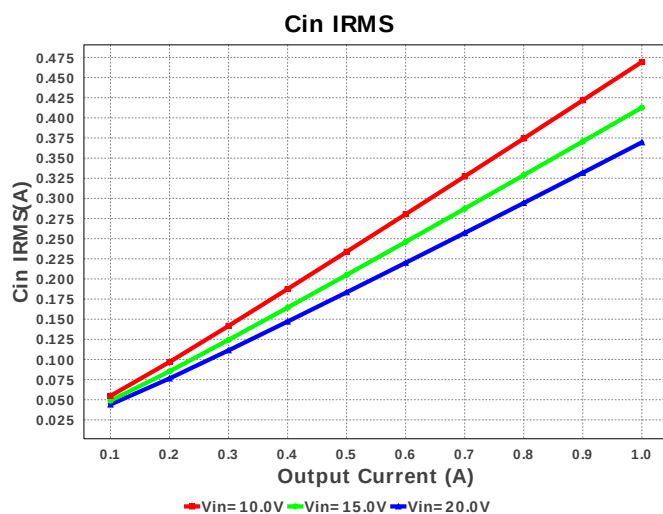
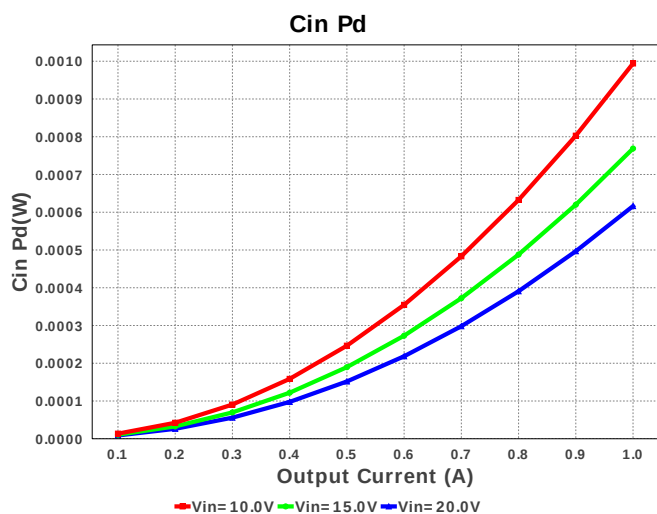
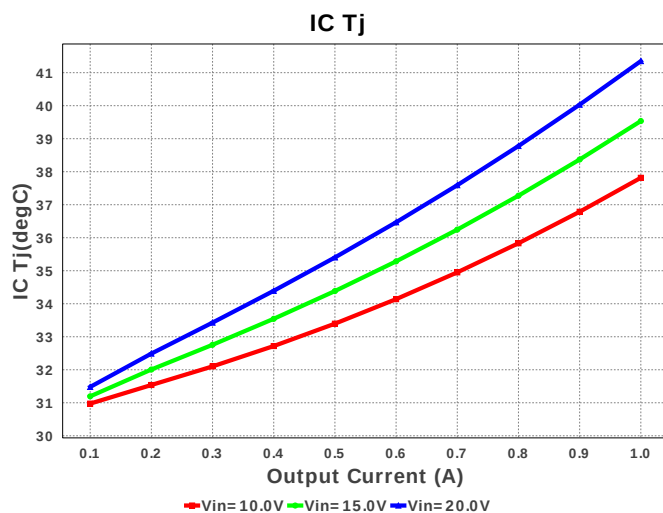
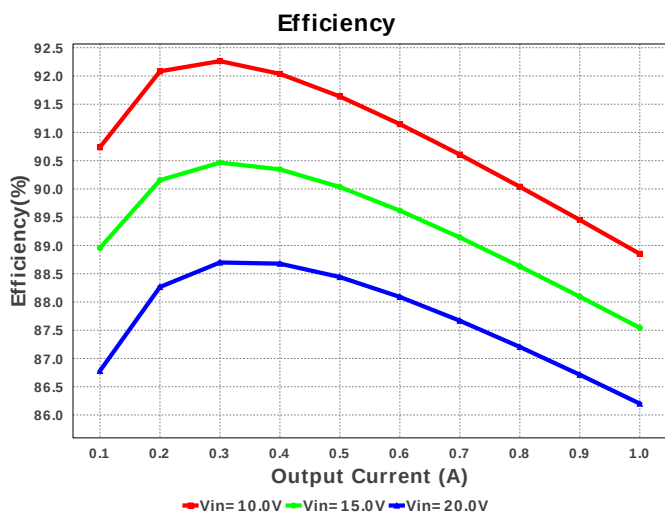


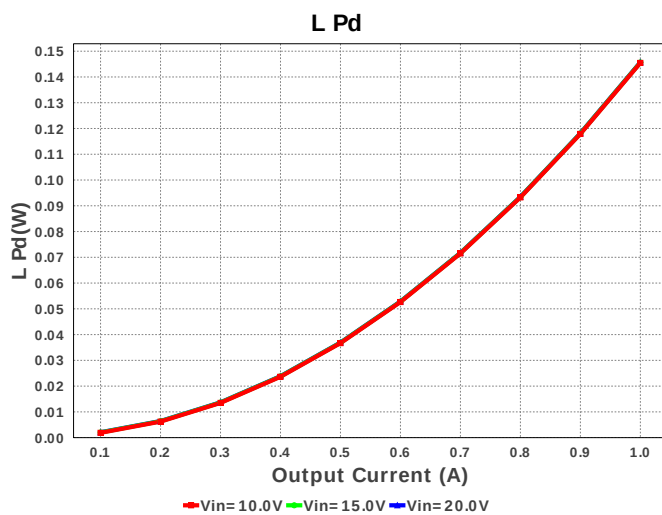
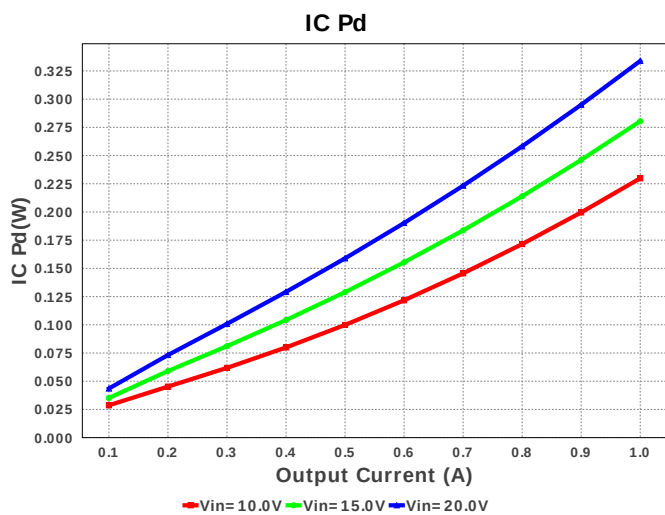
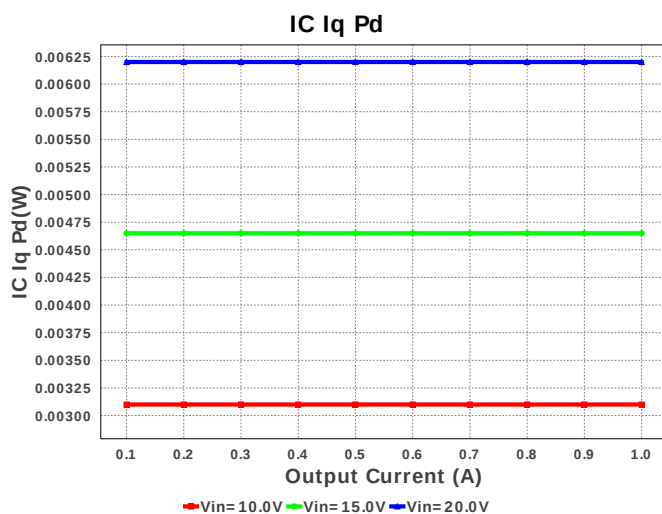
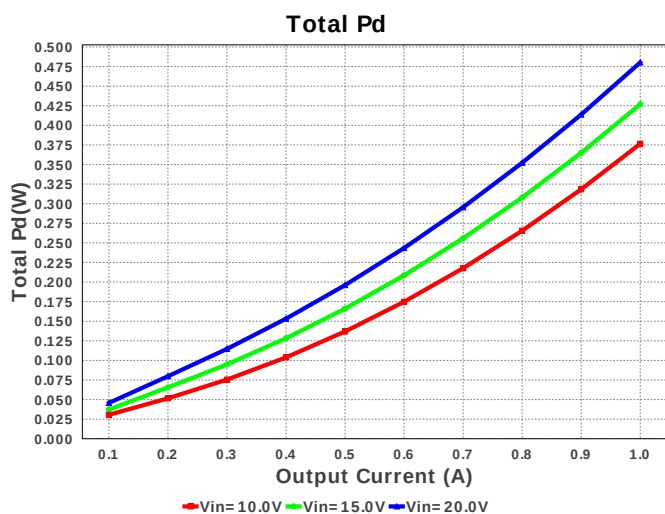
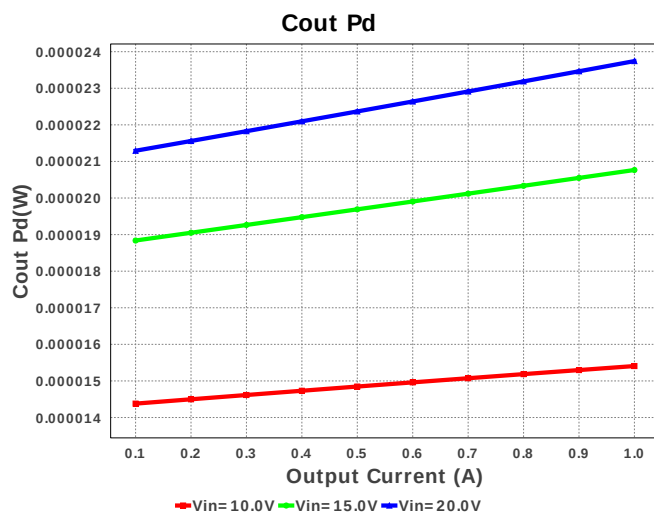
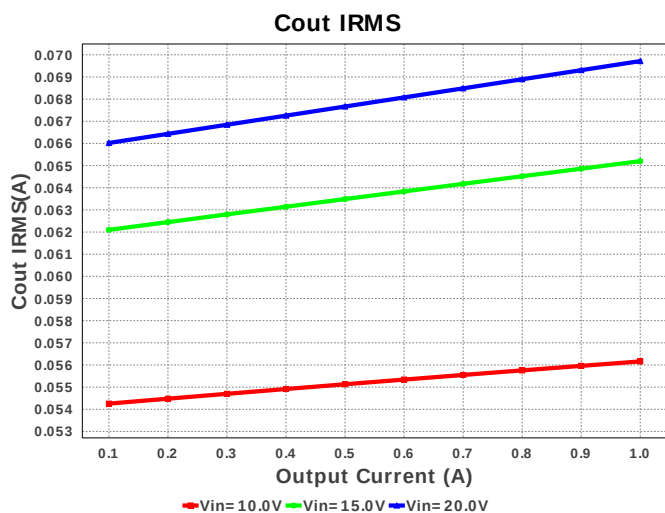
Electrical BOM

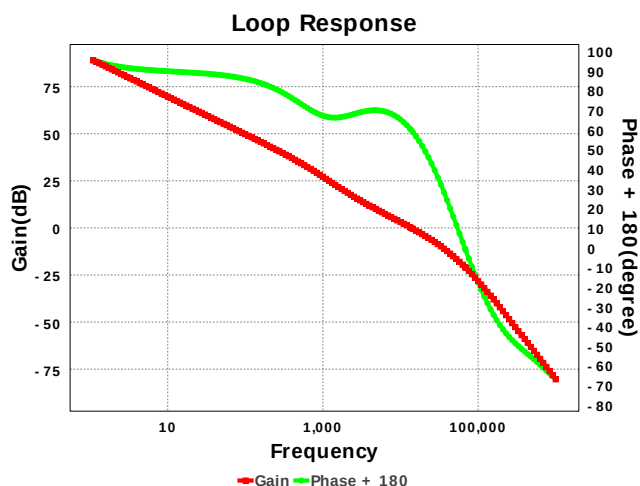
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cboot	Kemet	C0805C104K5RACTU Series= X7R	Cap= 100.0 nF ESR= 64.0 mOhm VDC= 50.0 V IRMS= 1.64 A	1	\$0.01	 0805 7 mm ²
2.	Ccomp	Taiyo Yuden	TMK212B7473KD-T Series= X7R	Cap= 47.0 nF VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	 0805 7 mm ²
3.	Ccomp2	Yageo America	CC0805KRX7R9BB821 Series= X7R	Cap= 820.0 pF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	 0805 7 mm ²
4.	Cin	MuRata	GRM31CR61E106KA12L Series= X5R	Cap= 10.0 uF ESR= 4.512 mOhm VDC= 25.0 V IRMS= 2.447 A	1	\$0.05	 1206_190 11 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	GRM31CR60J107ME39L Series= X5R	Cap= 100.0 uF ESR= 4.885 mOhm VDC= 6.3 V IRMS= 4.4118 A	1	\$0.14	 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	SRN8040-330M	L= 33.0 uH DCR= 145.0 mOhm	1	\$0.22	 SRN8040 100 mm ²
9.	Rcomp	Vishay-Dale	CRCW04021K91FKED Series= CRCW..e3	Res= 1.91 kOhm 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	369.584 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	69.716 mA	Current	Output capacitor RMS ripple current
3.	Iin Avg	174.01 mA	Current	Average input current
4.	L Ipp	241.5 mA	Current	Peak-to-peak inductor ripple current
5.	BOM Count	12	General	Total Design BOM count
6.	FootPrint	217.0 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	3.0 W	General	Total output power
10.	Total BOM	\$1.39	General	Total BOM Cost
11.	ICThetaJA Effective	34.0 degC/W	Op_Point	Effective IC Junction-to-Ambient Thermal Resistance
12.	Low Freq Gain	88.917 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	13.794 kHz	Op_point	Bode plot crossover frequency
16.	Duty Cycle	16.207 %	Op_point	Duty cycle
17.	Efficiency	86.201 %	Op_point	Steady state efficiency
18.	Gain Marg	-20.81 dB	Op_point	Bode Plot Gain Margin
19.	IC Tj	41.35 degC	Op_point	IC junction temperature
20.	IOUT_OP	1.0 A	Op_point	Iout operating point
21.	Phase Marg	60.169 deg	Op_point	Bode Plot Phase Margin
22.	VIN_OP	20.0 V	Op_point	Vin operating point
23.	Vout p-p	1.545 mV	Op_point	Peak-to-peak output ripple voltage
24.	Cin Pd	616.306 μ W	Power	Input capacitor power dissipation
25.	Cout Pd	23.743 μ W	Power	Output capacitor power dissipation
26.	IC Iq Pd	6.2 mW	Power	IC Iq Pd
27.	IC Pd	333.838 mW	Power	IC power dissipation
28.	L Pd	145.705 mW	Power	Inductor power dissipation
29.	Total Pd	480.233 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	1.0	Maximum Output Current
2.	VinMax	20.0	Maximum input voltage
3.	VinMin	10.0	Minimum input voltage
4.	Vout	3.0	Output Voltage
5.	base_pn	TPS54336A	Texas Instruments Base Part 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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