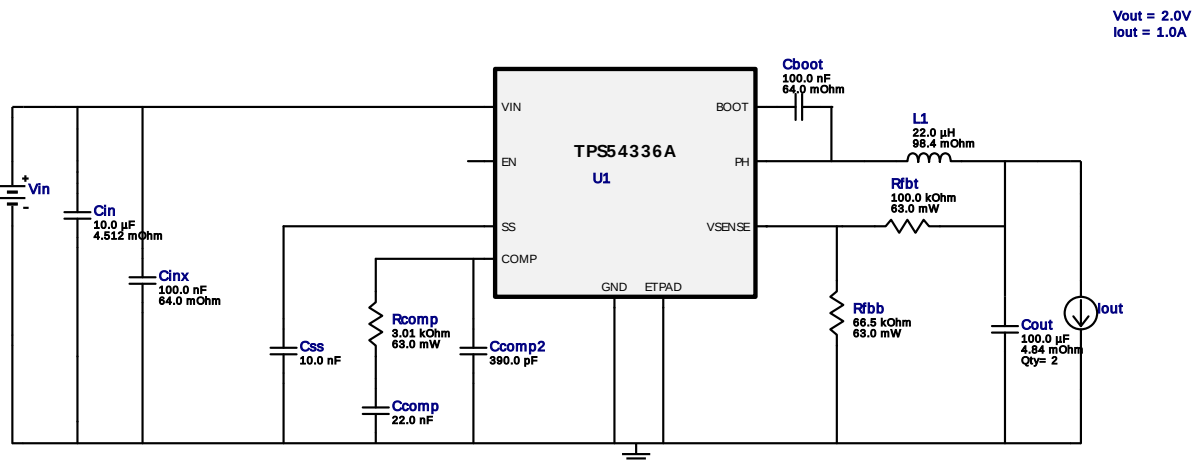


WEBENCH® Design Report

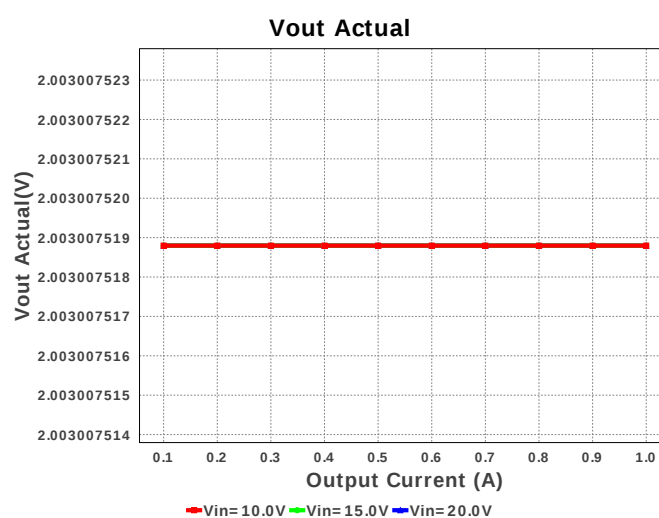
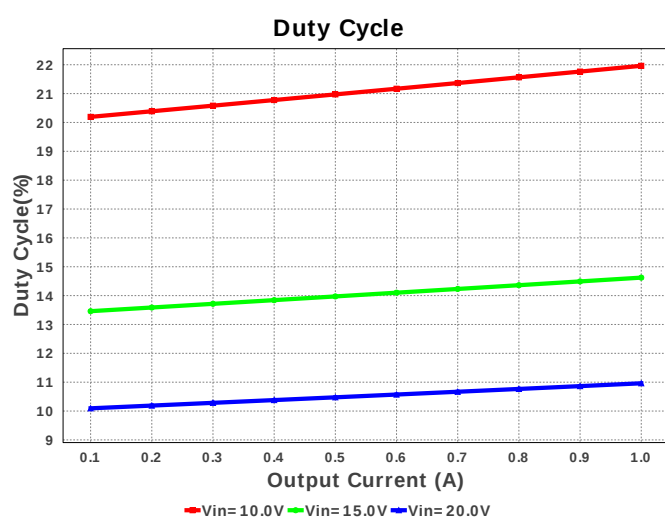
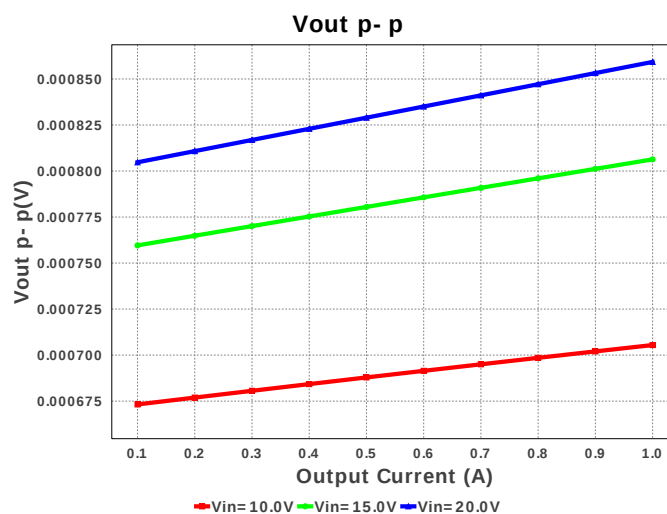
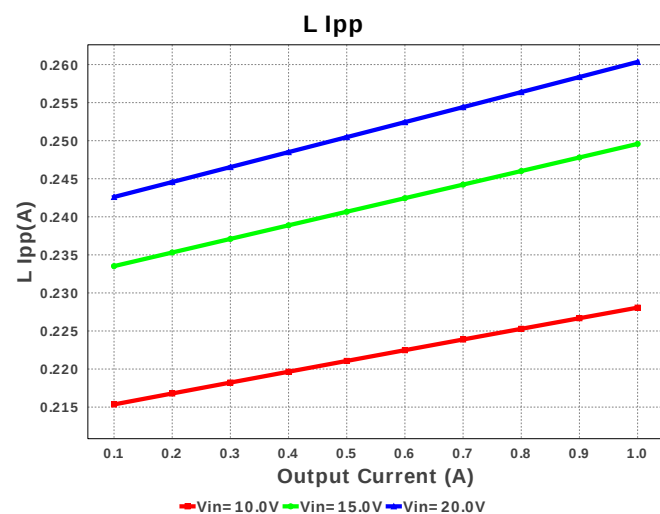
Design : 4728750/2 TPS54336ADDAR
TPS54336ADDAR 10.0V-20.0V to 2.00V @ 1.0A

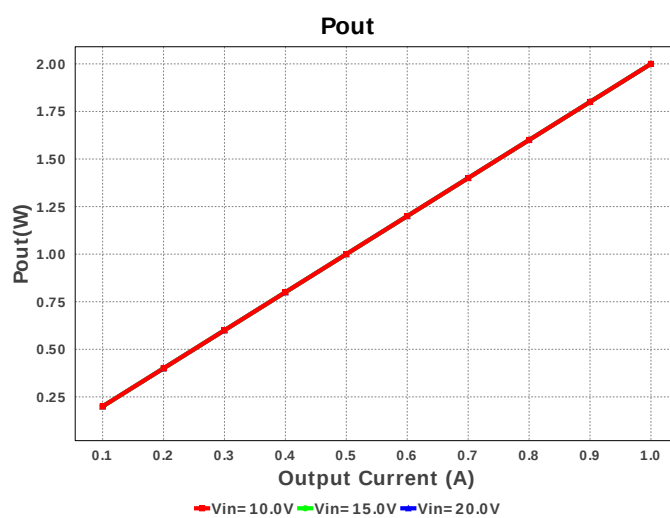
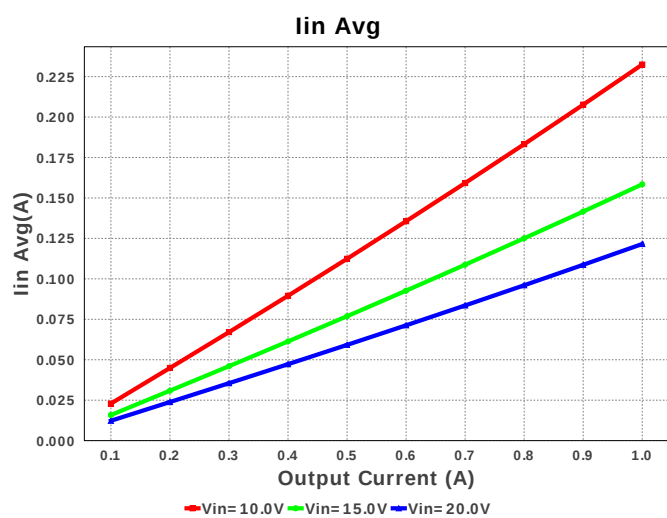
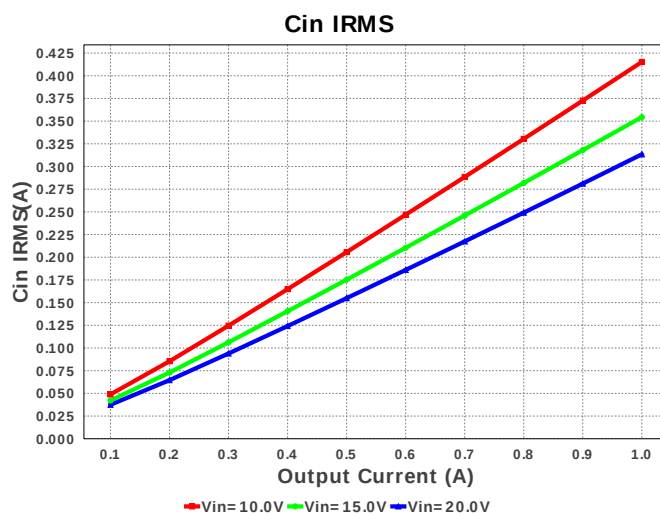
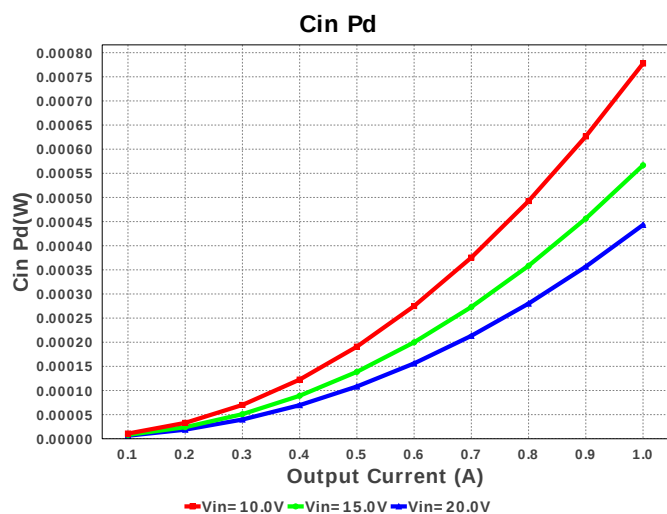
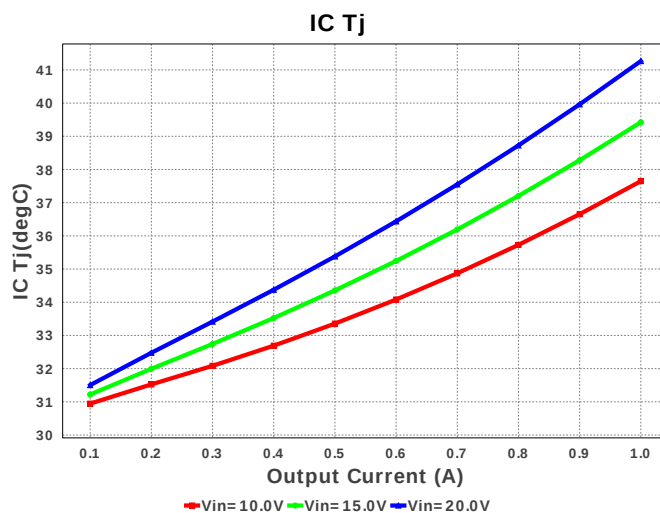
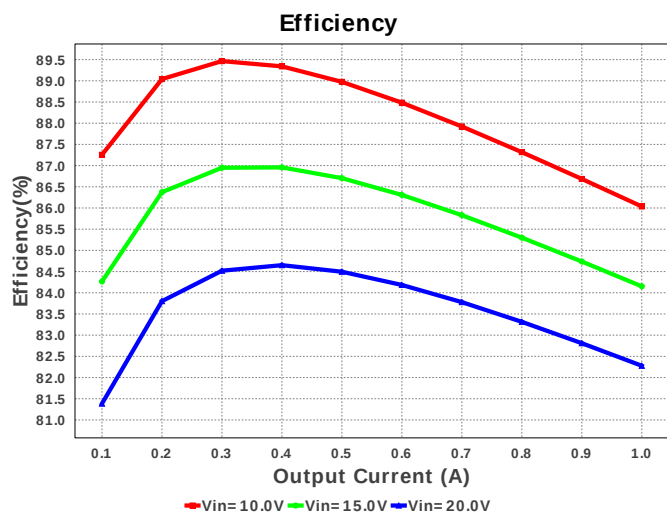


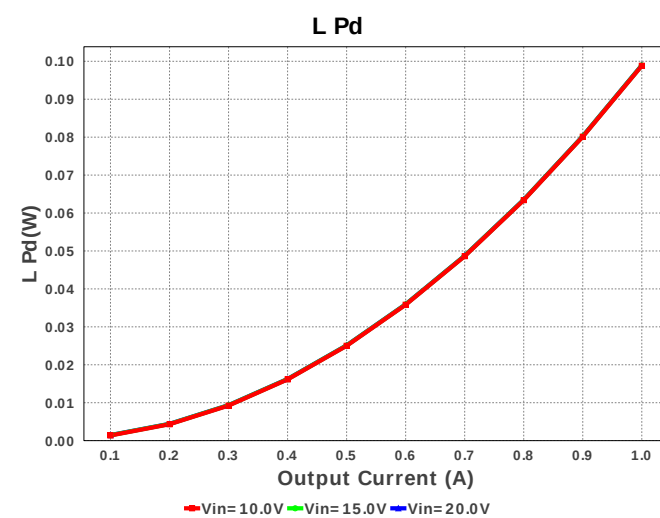
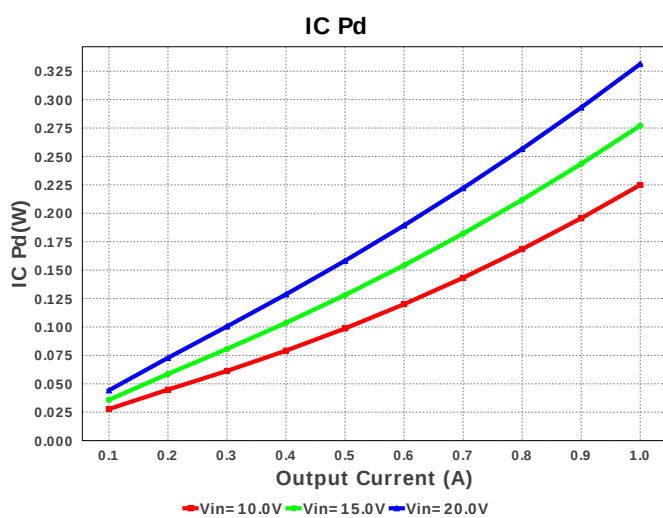
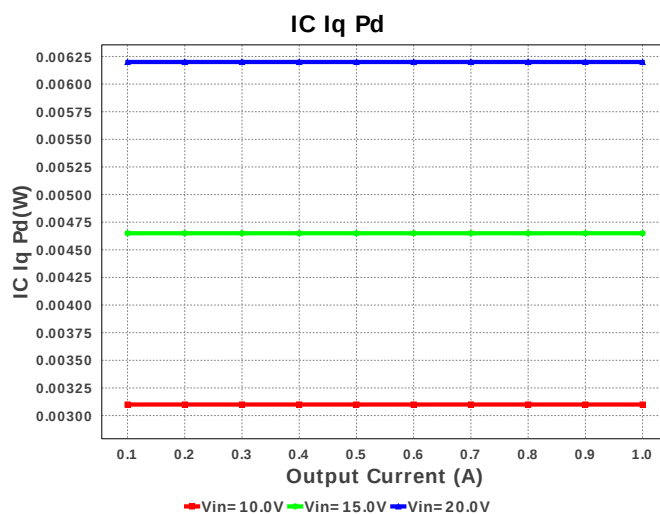
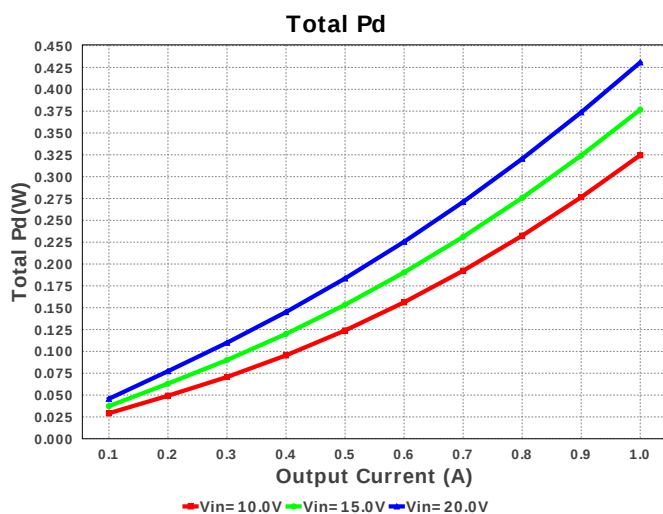
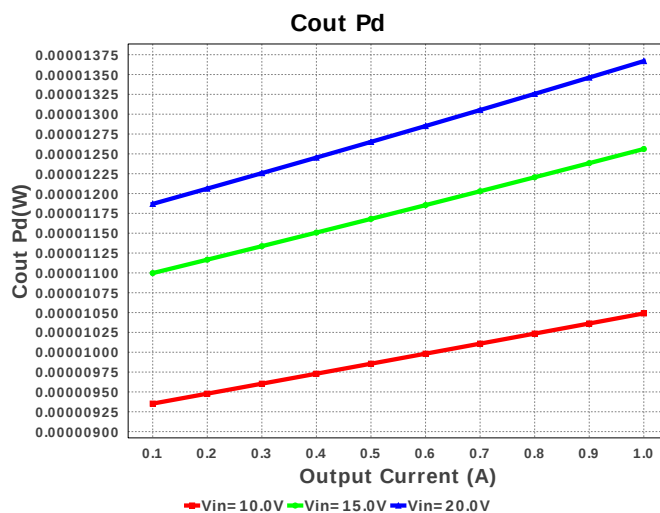
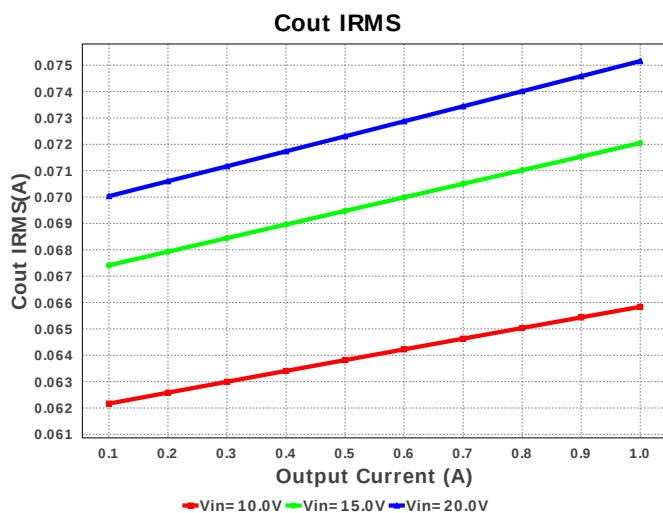
Electrical BOM

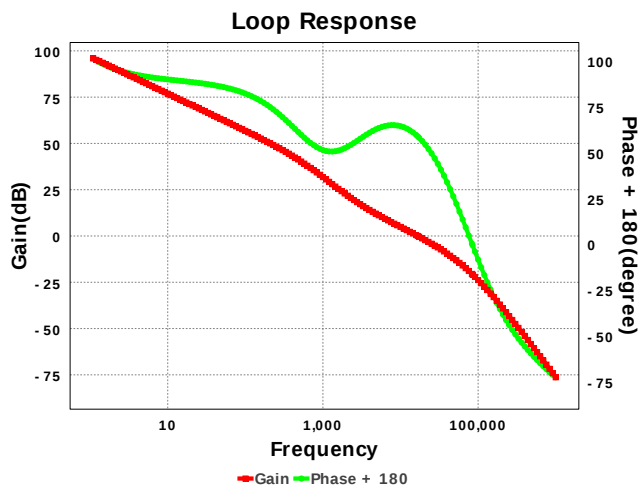
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cboot	Kemet	C0805C104K5RACTU Series= X7R	Cap= 100.0 nF ESR= 64.0 mOhm VDC= 50.0 V IRMS= 1.64 A	1	\$0.01	 0805 7 mm ²
2.	Ccomp	Yageo America	CC0805KRX7R9BB223 Series= X7R	Cap= 22.0 nF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	 0805 7 mm ²
3.	Ccomp2	Yageo America	CC0805KRX7R9BB391 Series= X7R	Cap= 390.0 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	GRM31CD80G107ME39L Series= X6T	Cap= 100.0 uF ESR= 4.84 mOhm VDC= 4.0 V IRMS= 4.3381 A	2	\$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	TDK	SLF6045T-220M1R1-3PF	L= 22.0 uH DCR= 98.4 mOhm	1	\$0.43	 SLF6045 64 mm ²
9.	Rcomp	Vishay-Dale	CRCW04023K01FKED Series= CRCW...e3	Res= 3.01 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
10.	Rfbb	Vishay-Dale	CRCW040266K5FKED Series= CRCW...e3	Res= 66.5 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	313.401 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	75.156 mA	Current	Output capacitor RMS ripple current
3.	Iin Avg	121.54 mA	Current	Average input current
4.	L Ipp	260.35 mA	Current	Peak-to-peak inductor ripple current
5.	BOM Count	13	General	Total Design BOM count
6.	FootPrint	192.0 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	2.0 W	General	Total output power
10.	Total BOM	\$1.74	General	Total BOM Cost
11.	ICThetaJA Effective	34.0 degC/W	Op_Point	Effective IC Junction-to-Ambient Thermal Resistance
12.	Low Freq Gain	95.904 dB	Op_Point	Gain at 10Hz
13.	Vout Actual	2.003 V	Op_Point	Vout Actual calculated based on selected voltage divider resistors
14.	Vout OP	2.0 V	Op_Point	Operational Output Voltage
15.	Cross Freq	16.69 kHz	Op_point	Bode plot crossover frequency
16.	Duty Cycle	10.962 %	Op_point	Duty cycle
17.	Efficiency	82.278 %	Op_point	Steady state efficiency
18.	Gain Marg	-20.814 dB	Op_point	Bode Plot Gain Margin
19.	IC Tj	41.266 degC	Op_point	IC junction temperature
20.	IOUT_OP	1.0 A	Op_point	Iout operating point
21.	Phase Marg	59.461 deg	Op_point	Bode Plot Phase Margin
22.	VIN_OP	20.0 V	Op_point	Vin operating point
23.	Vout p-p	859.275 μ V	Op_point	Peak-to-peak output ripple voltage
24.	Cin Pd	443.169 μ W	Power	Input capacitor power dissipation
25.	Cout Pd	13.669 μ W	Power	Output capacitor power dissipation
26.	IC Iq Pd	6.2 mW	Power	IC Iq Pd
27.	IC Pd	331.346 mW	Power	IC power dissipation
28.	L Pd	98.956 mW	Power	Inductor power dissipation
29.	Total Pd	430.786 mW	Power	Total Power Dissipation
30.	Vout Tolerance	2.732 %		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	2.0	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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