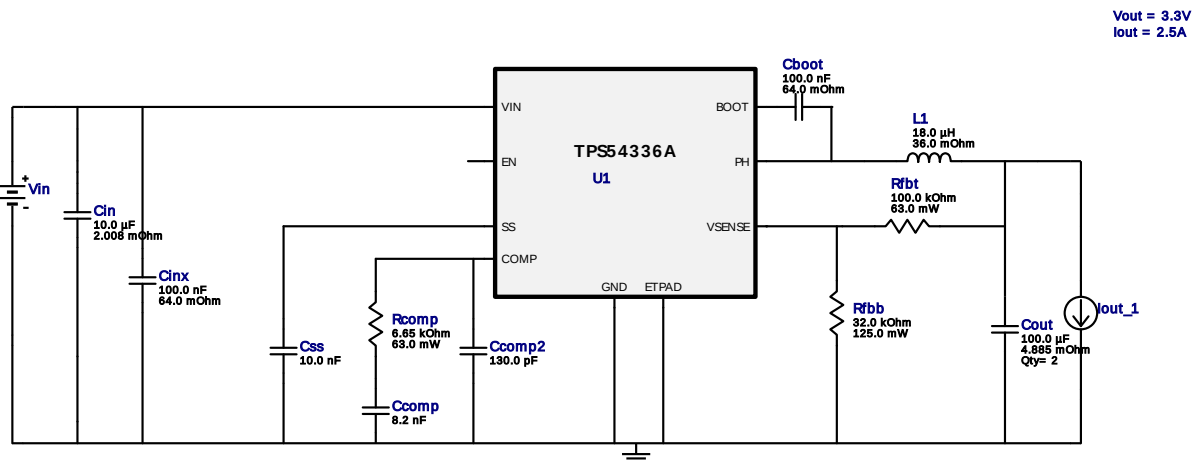


WEBENCH® Design Report

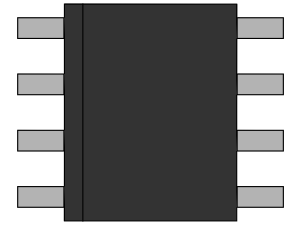
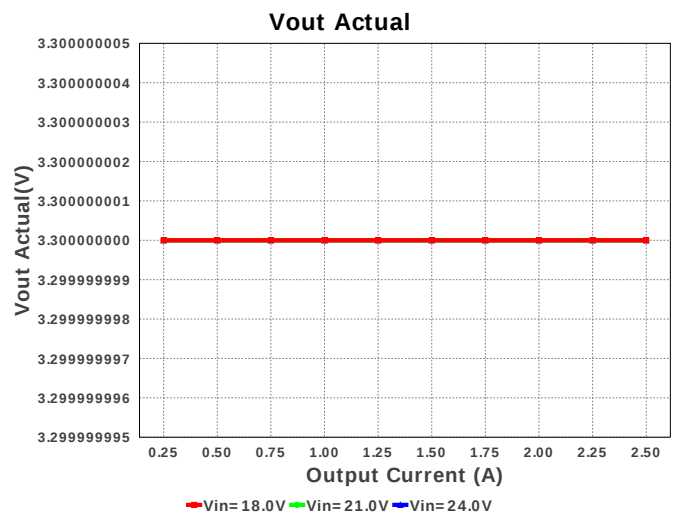
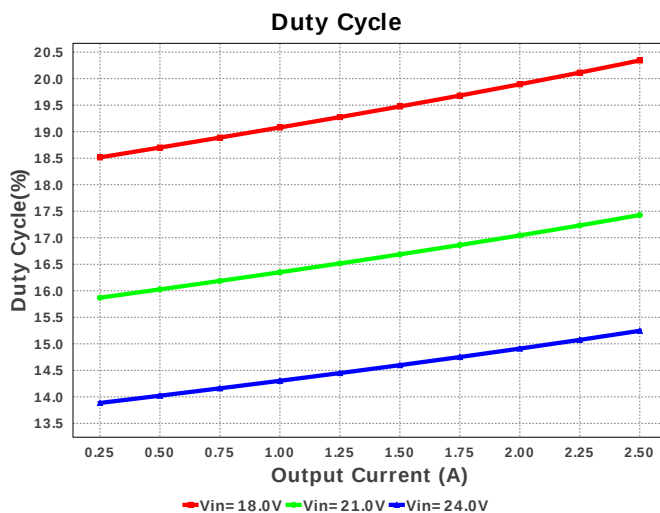
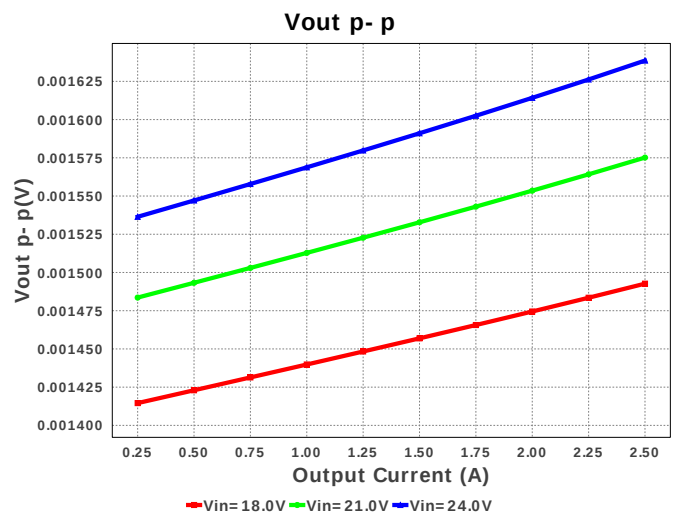
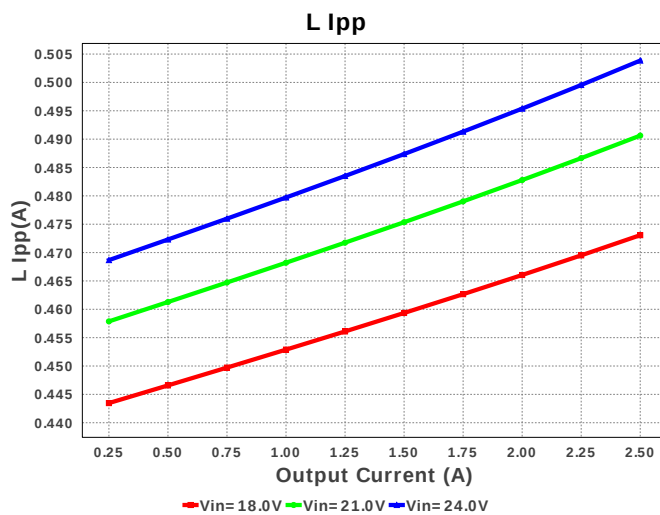
Design : 4774498/1 TPS54336ADDAR
TPS54336ADDAR 18.0V-24.0V to 3.30V @ 2.5A

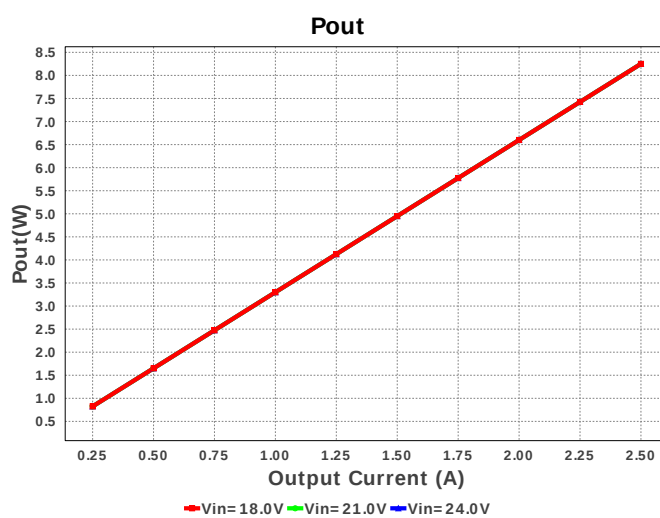
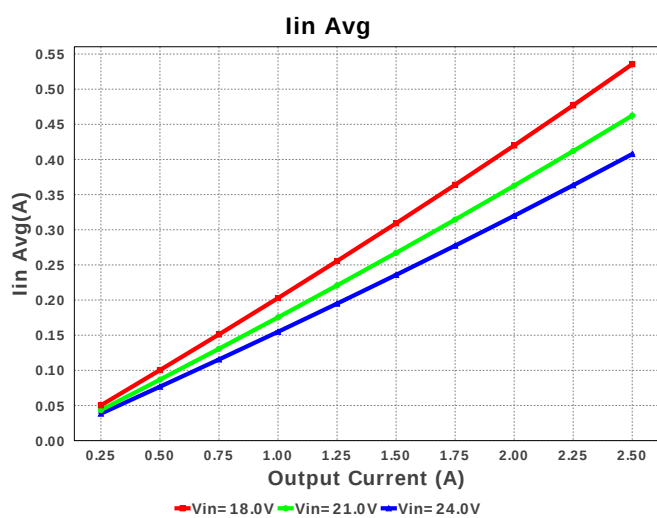
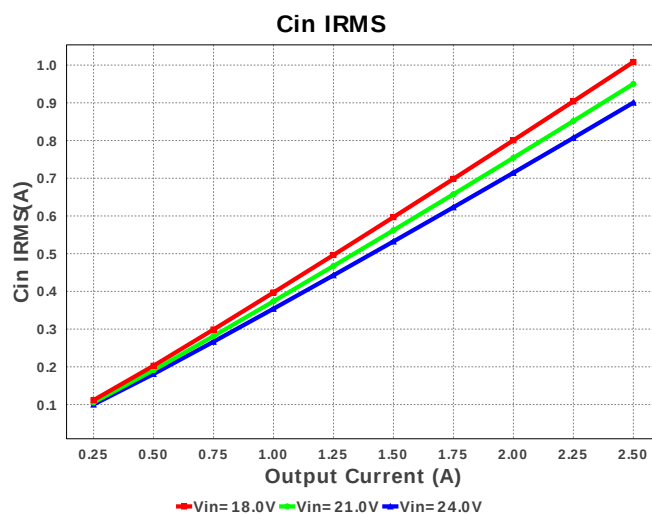
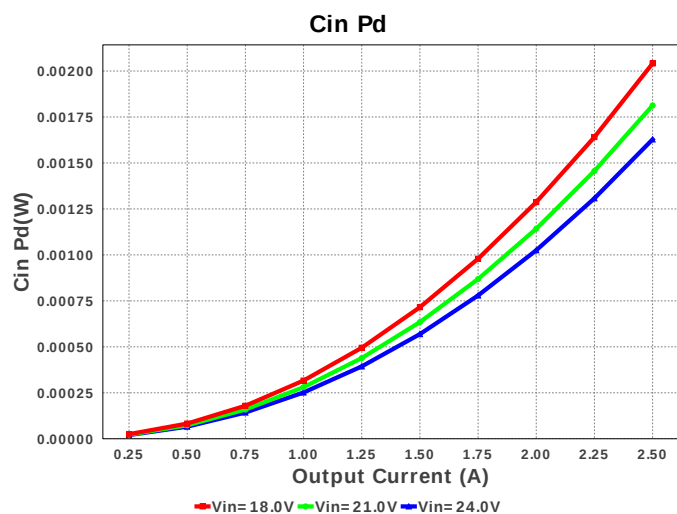
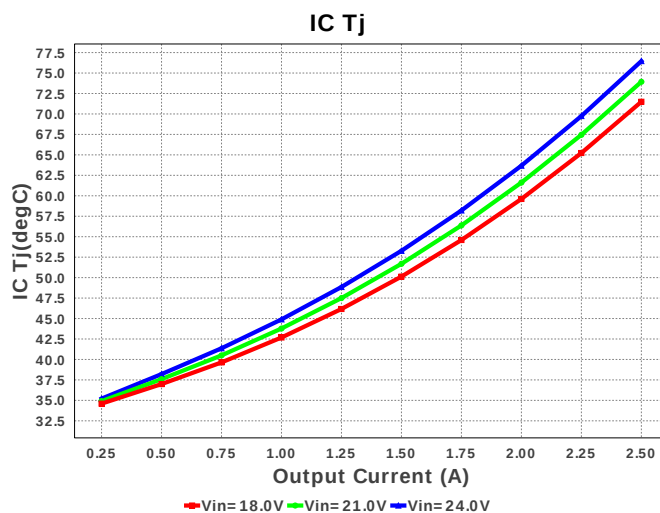
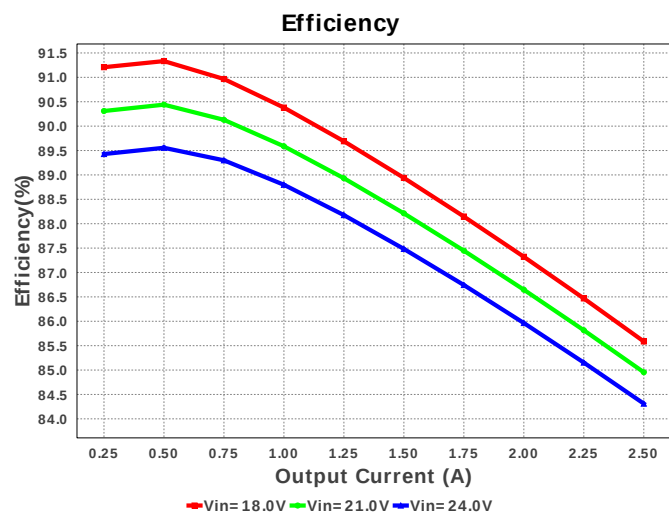


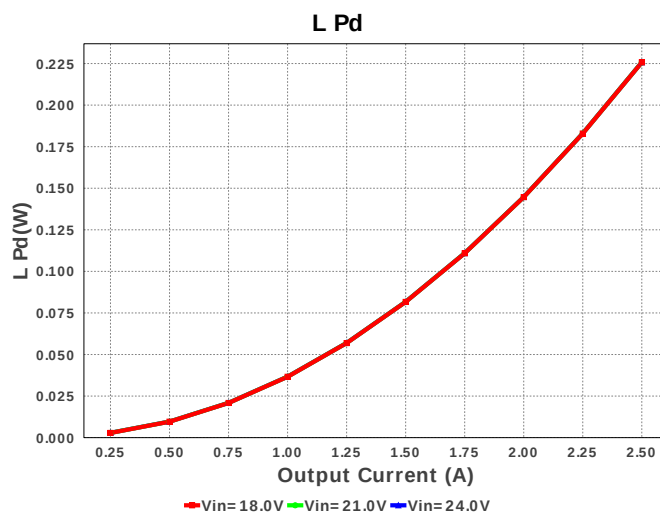
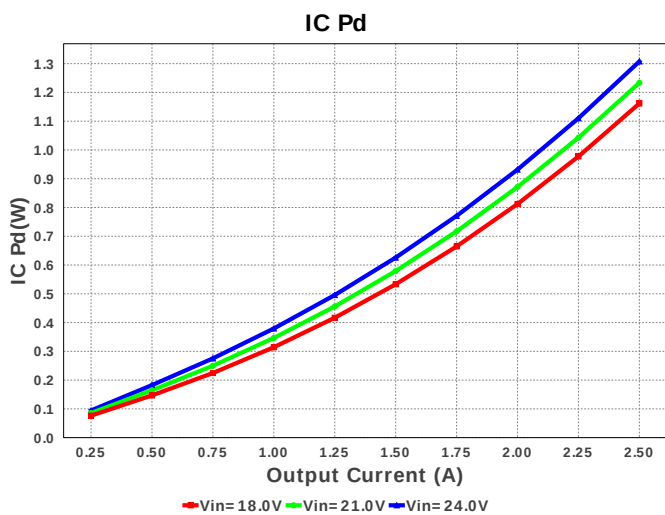
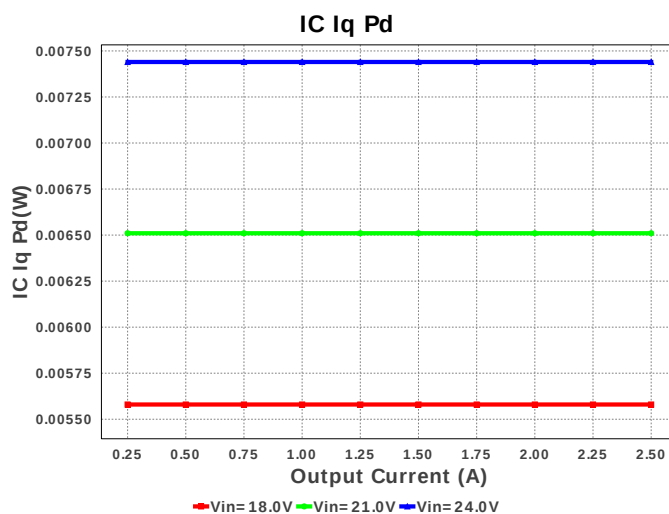
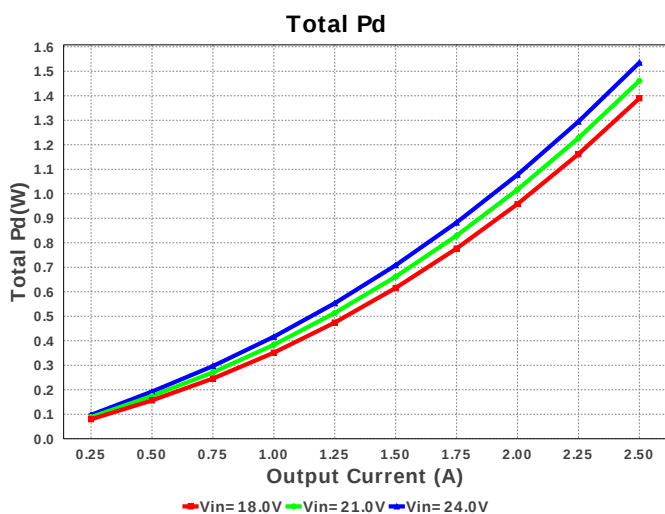
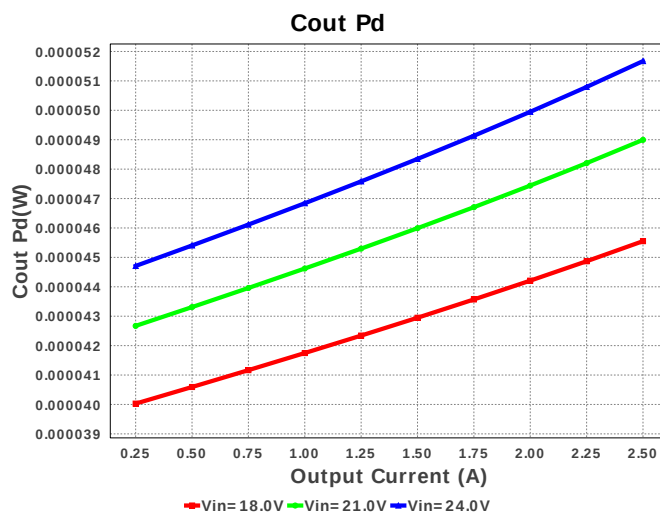
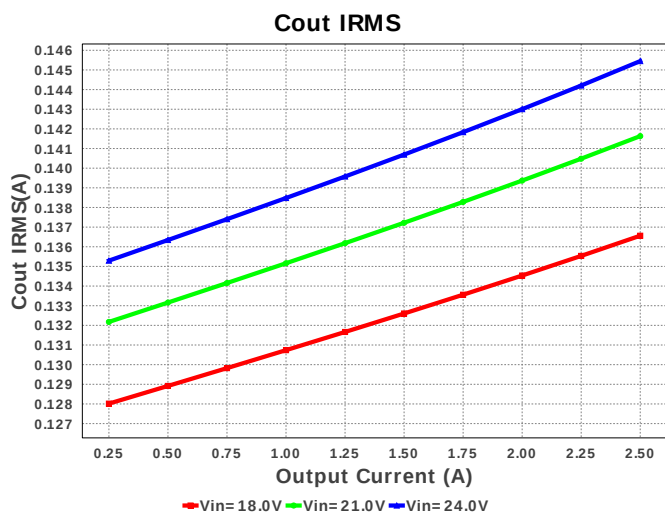
Electrical BOM

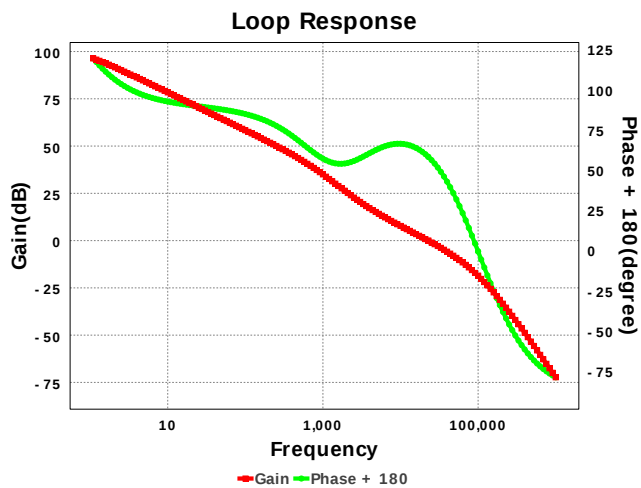
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cboot	Kemet	C0805C104K5RACTU Series= X7R	Cap= 100.0 nF ESR= 64.0 mOhm VDC= 50.0 V IRMS= 1.64 A	1	\$0.01	0805 7 mm ²
2.	Ccomp	MuRata	GRM033R61A822KA01D Series= X5R	Cap= 8.2 nF VDC= 10.0 V IRMS= 0.0 A	1	\$0.01	0201 2 mm ²
3.	Ccomp2	Samsung Electro-Mechanics	CL21C131JBANNNC Series= C0G/NP0	Cap= 130.0 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	GRM31CR60J107ME39L Series= X5R	Cap= 100.0 uF ESR= 4.885 mOhm VDC= 6.3 V IRMS= 4.4118 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	Bourns	SDR1307-180ML	L= 18.0 uH DCR= 36.0 mOhm	1	\$0.35	SDR1307 227 mm ²
9.	Rcomp	Vishay-Dale	CRCW04026K65FKED Series= CRCW..e3	Res= 6.65 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
10.	Rfbb	Yageo America	RT0805BRD0732KL Series= ?	Res= 32.0 kOhm Power= 125.0 mW Tolerance= 0.1%	1	\$0.05	0805 7 mm ²
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 55 mm²







Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	900.453 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	145.45 mA	Current	Output capacitor RMS ripple current
3.	Iin Avg	407.71 mA	Current	Average input current
4.	L Ipp	503.85 mA	Current	Peak-to-peak inductor ripple current
5.	BOM Count	13	General	Total Design BOM count
6.	FootPrint	355.0 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.	Mode	CCM	General	Conduction Mode
10.	Pout	8.25 W	General	Total output power
11.	Total BOM	\$1.87	General	Total BOM Cost
12.	ICThetaJA Effective	34.0 degC/W	Op_Point	Effective IC Junction-to-Ambient Thermal Resistance
13.	Low Freq Gain	96.344 dB	Op_Point	Gain at 10Hz
14.	Vout Actual	3.3 V	Op_Point	Vout Actual calculated based on selected voltage divider resistors
15.	Vout OP	3.3 V	Op_Point	Operational Output Voltage
16.	Cross Freq	22.692 kHz	Op_point	Bode plot crossover frequency
17.	Duty Cycle	15.246 %	Op_point	Duty cycle
18.	Efficiency	84.312 %	Op_point	Steady state efficiency
19.	Gain Marg	-18.601 dB	Op_point	Bode Plot Gain Margin
20.	IC Tj	76.459 degC	Op_point	IC junction temperature
21.	IOUT_OP	2.5 A	Op_point	Iout operating point
22.	Phase Marg	58.878 deg	Op_point	Bode Plot Phase Margin
23.	VIN_OP	24.0 V	Op_point	Vin operating point
24.	Vout p-p	1.639 mV	Op_point	Peak-to-peak output ripple voltage
25.	Cin Pd	1.628 mW	Power	Input capacitor power dissipation
26.	Cout Pd	51.673 μ W	Power	Output capacitor power dissipation
27.	IC Iq Pd	7.44 mW	Power	IC Iq Pd
28.	IC Pd	1.308 W	Power	IC power dissipation
29.	L Pd	225.762 mW	Power	Inductor power dissipation
30.	Total Pd	1.535 W	Power	Total Power Dissipation
31.	Vout Tolerance	2.347 %		Vout Tolerance based on IC Tolerance (no load) and voltage divider resistors if applicable

Design Inputs

#	Name	Value	Description
1.	Iout	2.5	Maximum Output Current
2.	VinMax	24.0	Maximum input voltage
3.	VinMin	18.0	Minimum input voltage
4.	Vout	3.3	Output Voltage
5.	base_pn	TPS54336A	Base Product Number
6.	source	DC	Input Source Type
7.	Ta	32.0	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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