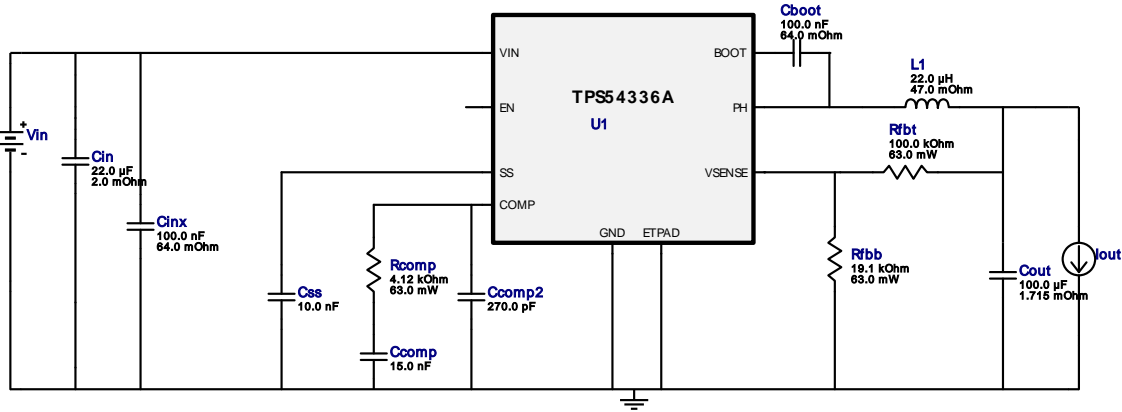






WEBENCH[®] Design Report

 Design : 4416832/1 TPS54336ADDAR
 TPS54336ADDAR 14.0V-22.0V to 5.00V @ 2.0A

 VinMin = 14.0V
 VinMax = 22.0V

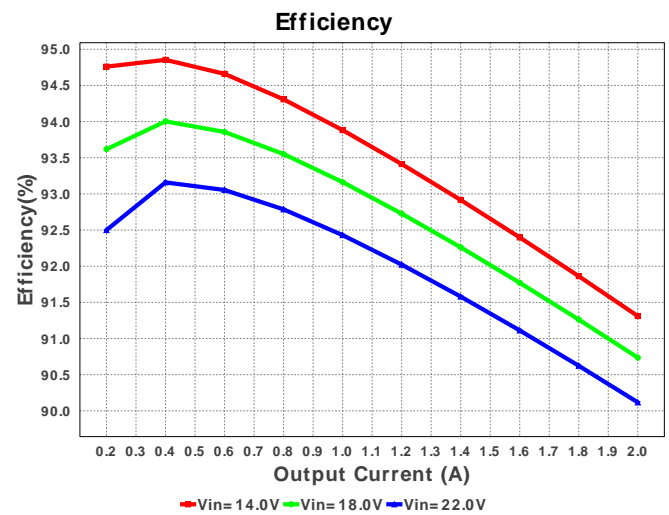
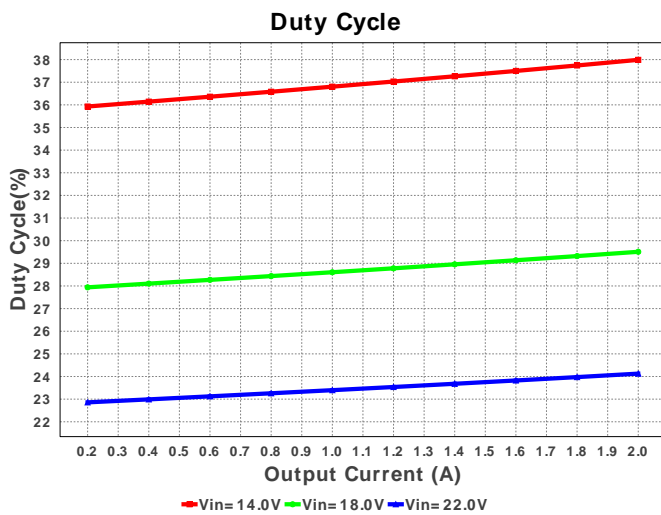
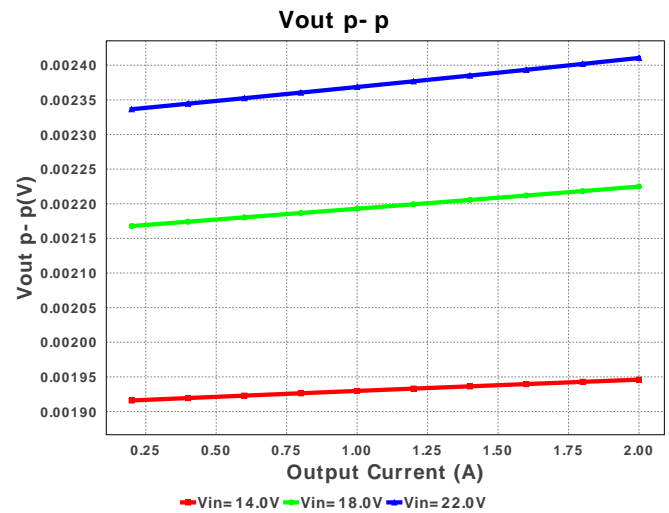
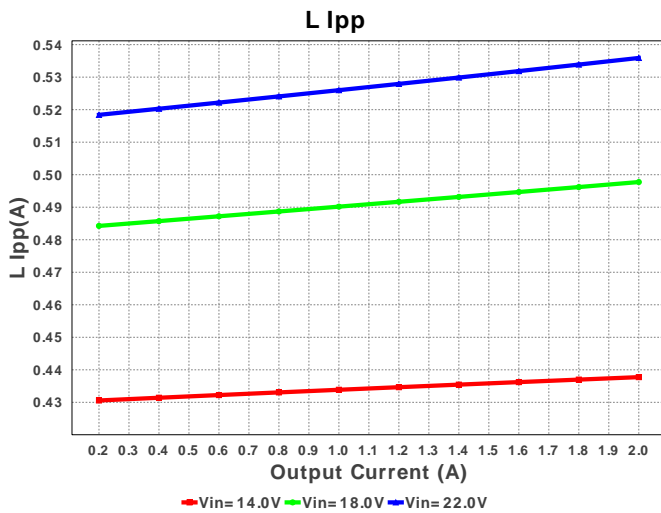
 Vout = 5.0V
 Iout = 2.0A

Electrical BOM

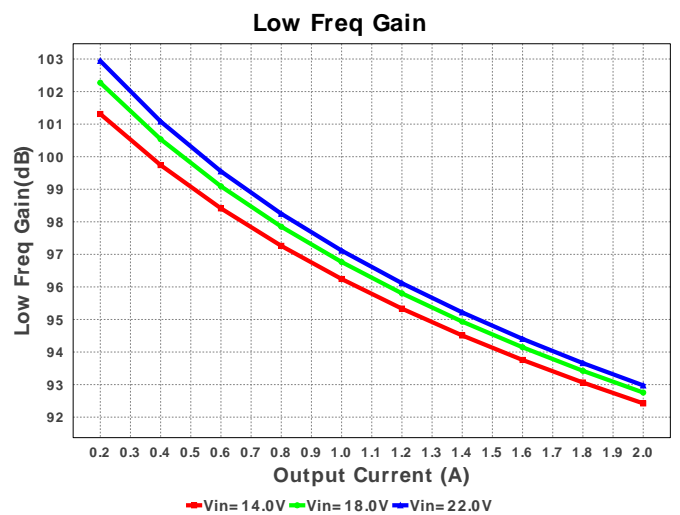
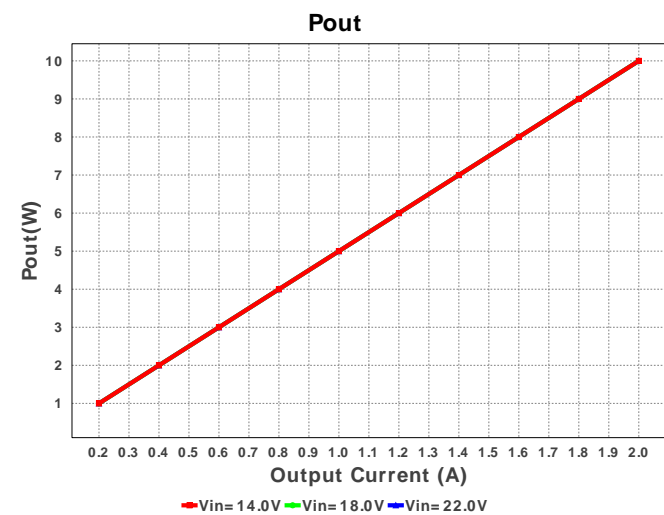
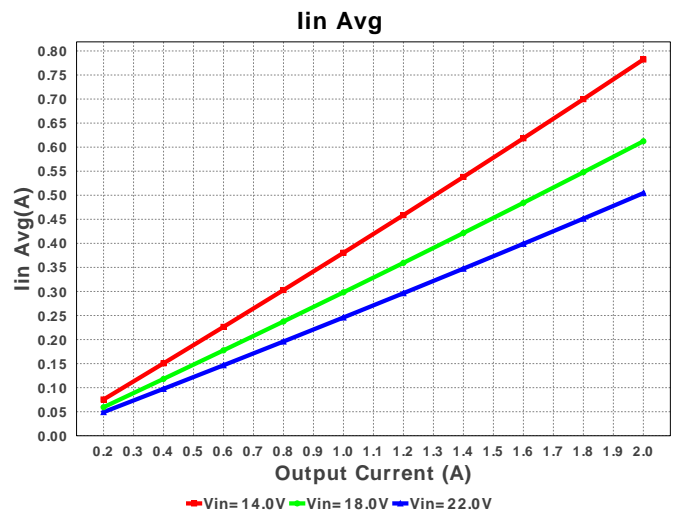
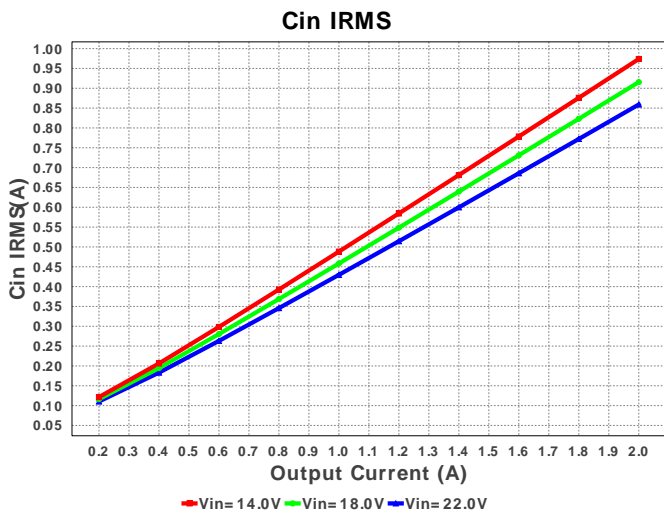
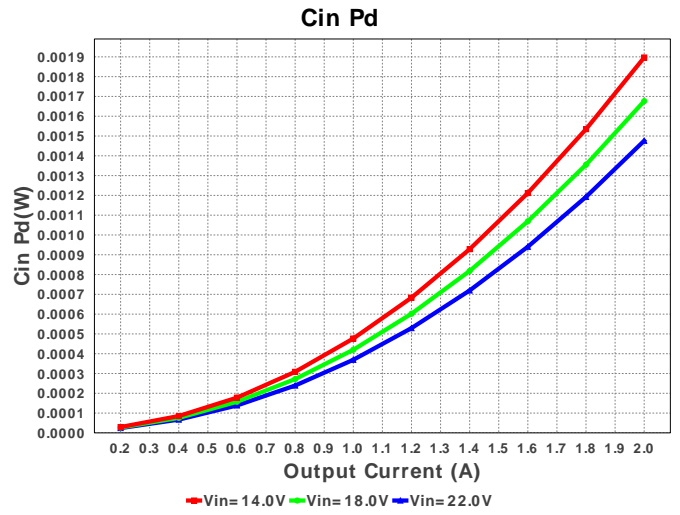
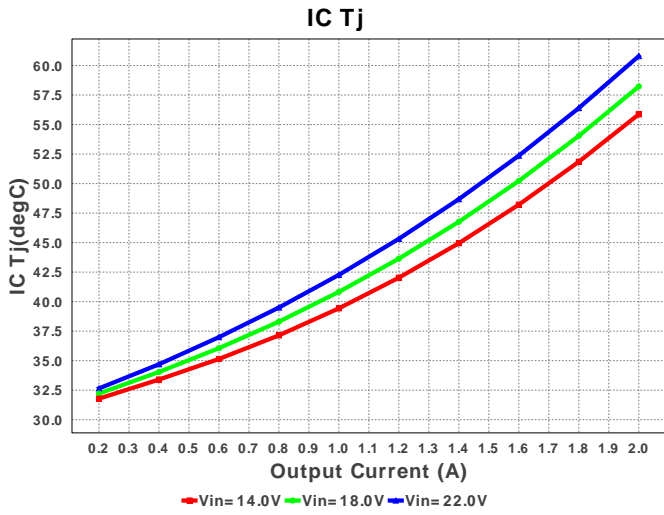
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cboot	Kemet	C0805C104K5RACTU Series= X7R	Cap= 100.0 nF ESR= 64.0 mOhm VDC= 50.0 V IRMS= 1.64 A	1	\$0.01	 0805 7 mm ²
2.	Ccomp	Yageo America	CC0805KRX7R9BB153 Series= X7R	Cap= 15.0 nF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	 0805 7 mm ²
3.	Ccomp2	TDK	C2012C0G1H271J Series= C0G/NP0	Cap= 270.0 pF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	 0805 7 mm ²
4.	Cin	MuRata	GRM32ER61E226KE15L Series= X5R	Cap= 22.0 uF ESR= 2.0 mOhm VDC= 25.0 V IRMS= 3.67 A	1	\$0.16	 1210 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	TDK	C3216JB1A107M Series= JB	Cap= 100.0 uF ESR= 1.715 mOhm VDC= 10.0 V IRMS= 0.0 A	1	\$0.46	 1206 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	SDR1307-220ML	L= 22.0 uH DCR= 47.0 mOhm	1	\$0.35	 SDR1307 227 mm ²
9.	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

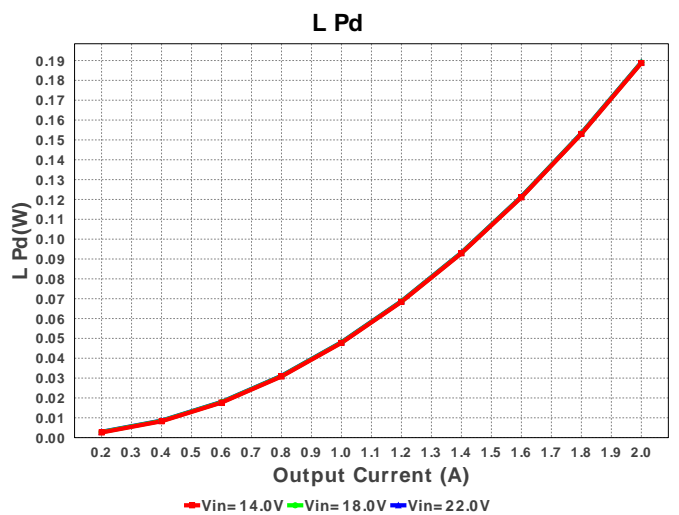
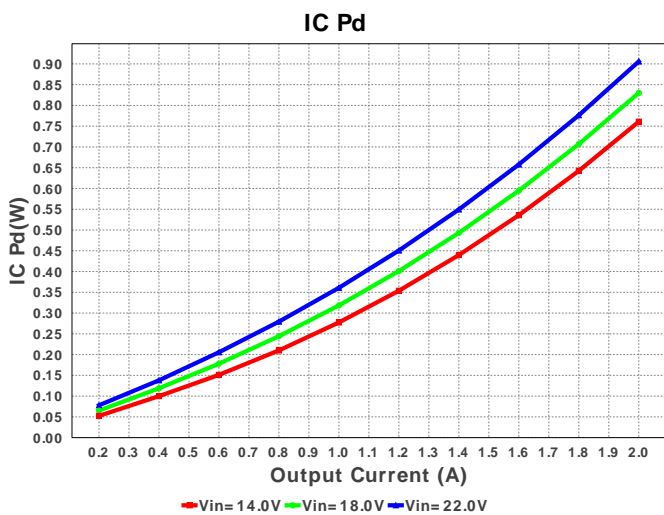
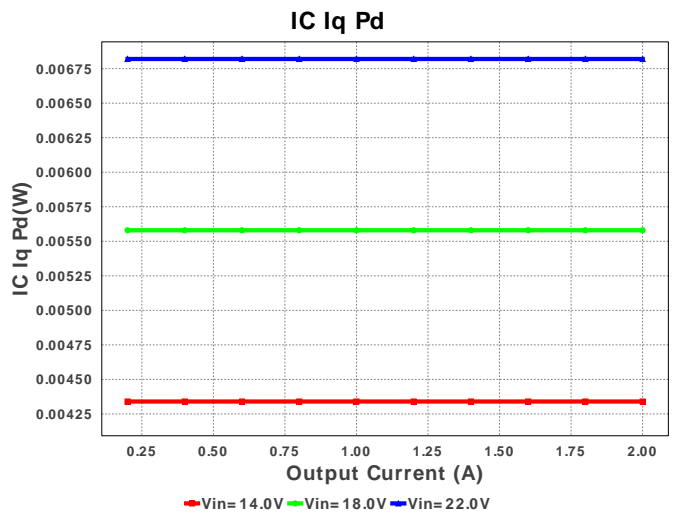
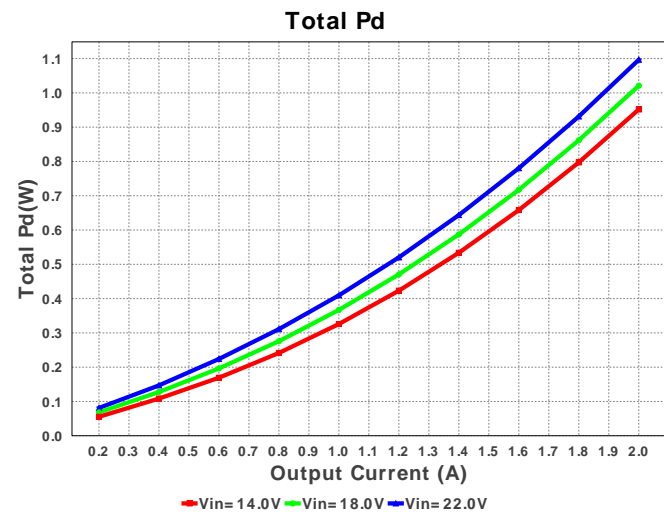
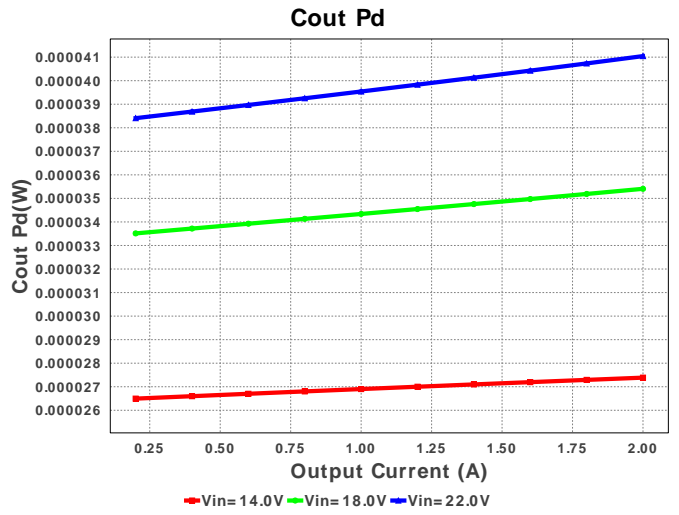
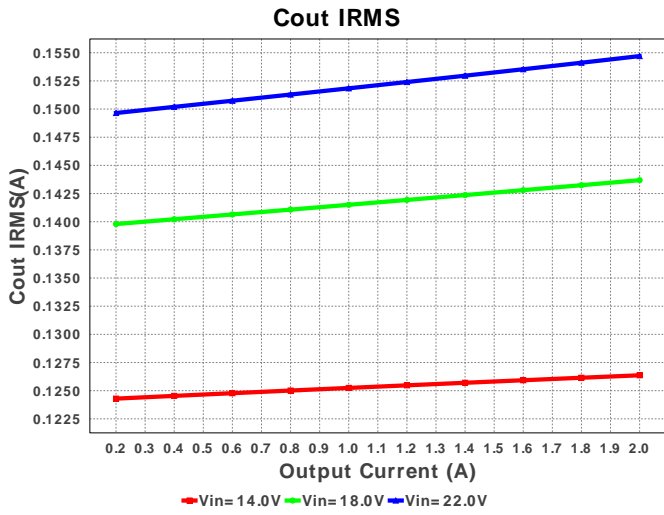
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
10.	Rfbb	Vishay-Dale	CRCW040219K1FKED Series= CRCW..e3	Res= 19.1 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
11.	Rfbt	Vishay-Dale	CRCW0402100KFKED Series= CRCW..e3	Res= 100.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
12.	U1	Texas Instruments	TPS54336ADDAR	Switcher	1	\$0.90	

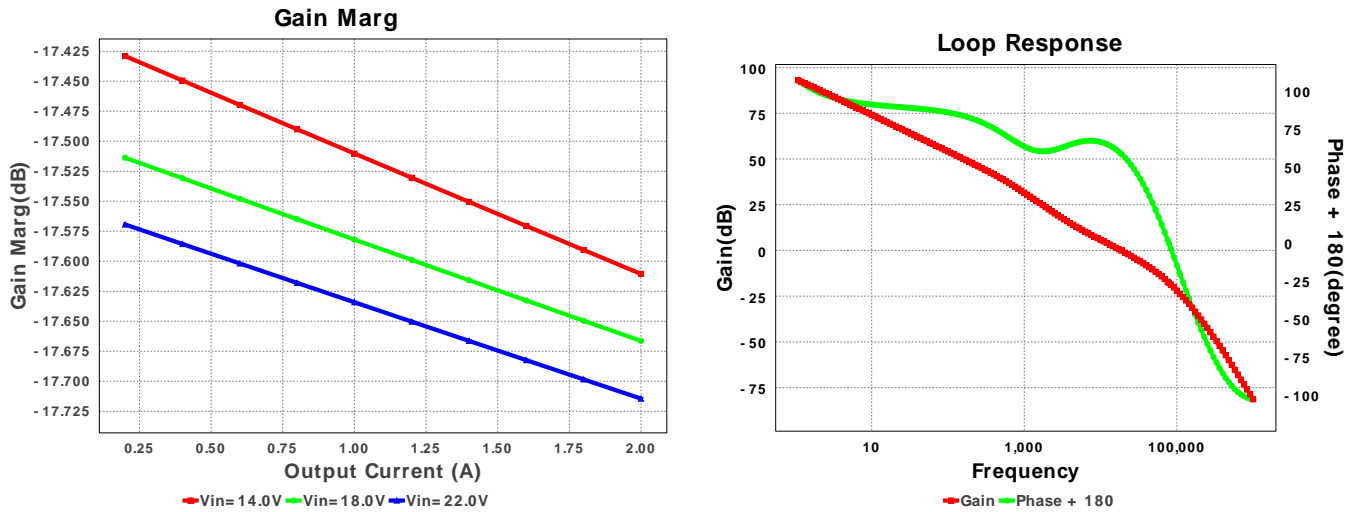


R-PDSO-G8 57 mm²









Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	859.074 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	154.701 mA	Current	Output capacitor RMS ripple current
3.	Iin Avg	504.4 mA	Current	Average input current
4.	L Ipp	535.9 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	340.0 kHz	General	Switching frequency
8.	IC Tolerance	10.0 mV	General	IC Feedback Tolerance
9.	Pout	10.0 W	General	Total output power
10.	Total BOM	\$1.95	General	Total BOM Cost
11.	ICThetaJA Effective	34.0 degC/W	Op_Point	Effective IC Junction-to-Ambient Thermal Resistance
12.	Low Freq Gain	92.974 dB	Op_Point	Gain at 10Hz
13.	Vout OP	5.0 V	Op_Point	Operational Output Voltage
14.	Cross Freq	18.541 kHz	Op_point	Bode plot crossover frequency
15.	Duty Cycle	24.127 %	Op_point	Duty cycle
16.	Efficiency	90.117 %	Op_point	Steady state efficiency
17.	Gain Marg	-17.714 dB	Op_point	Bode Plot Gain Margin
18.	IC Tj	60.799 degC	Op_point	IC junction temperature
19.	IOUT_OP	2.0 A	Op_point	Iout operating point
20.	Phase Marg	59.249 deg	Op_point	Bode Plot Phase Margin
21.	VIN_OP	22.0 V	Op_point	Vin operating point
22.	Vout p-p	2.41 mV	Op_point	Peak-to-peak output ripple voltage
23.	Cin Pd	1.476 mW	Power	Input capacitor power dissipation
24.	Cout Pd	41.044 μW	Power	Output capacitor power dissipation
25.	IC Iq Pd	6.82 mW	Power	IC Iq Pd
26.	IC Pd	905.849 mW	Power	IC power dissipation
27.	L Pd	189.125 mW	Power	Inductor power dissipation
28.	Total Pd	1.097 W	Power	Total Power Dissipation

Design Inputs

#	Name	Value	Description
1.	Iout	2.0	Maximum Output Current
2.	Iout1	2.0	Output Current #1
3.	VinMax	22.0	Maximum input voltage
4.	VinMin	14.0	Minimum input voltage
5.	Vout	5.0	Output Voltage
6.	Vout1	5.0	Output Voltage #1
7.	base_pn	TPS54336A	Base Product Number
8.	source	DC	Input Source Type
9.	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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