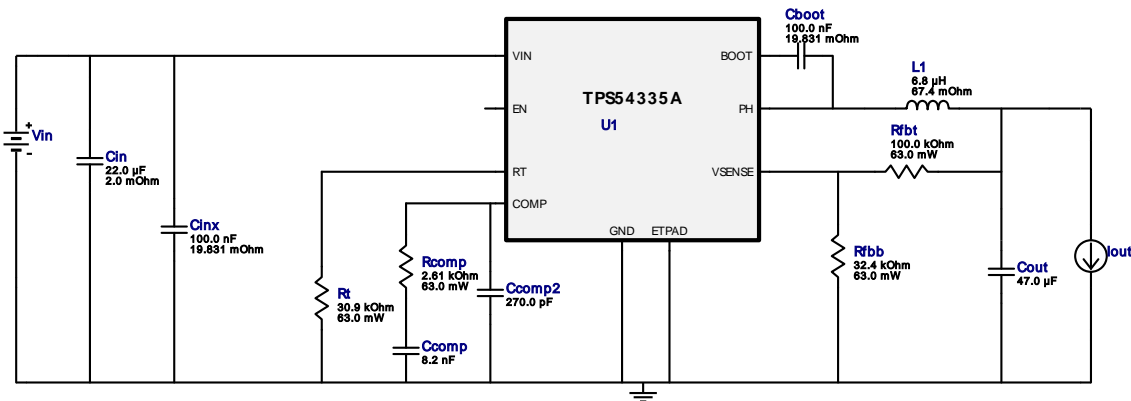


WEBENCH[®] Design Report

 Design : 4166583/36 TPS54335ADDAR
 TPS54335ADDAR 14.0V-22.0V to 3.30V @ 2.0A

 VinMin = 14.0V
 VinMax = 22.0V

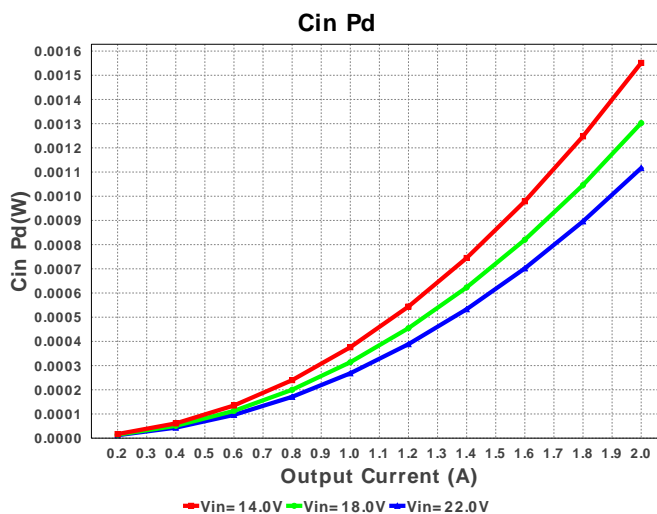
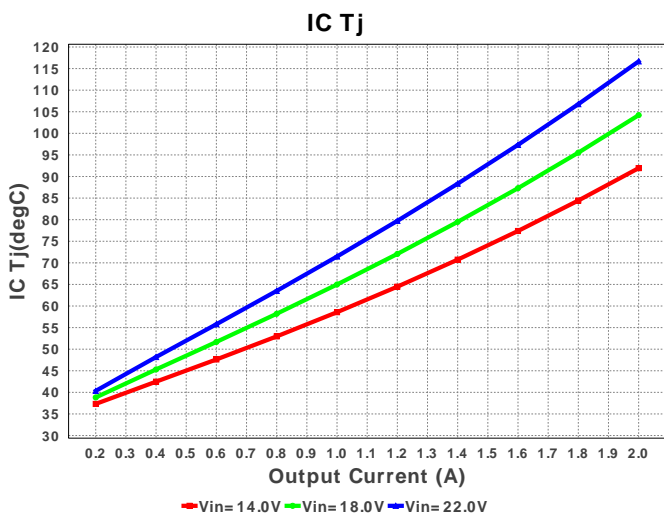
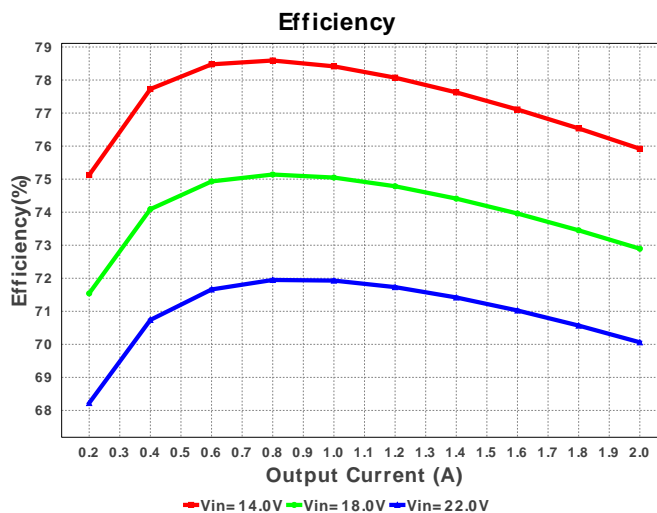
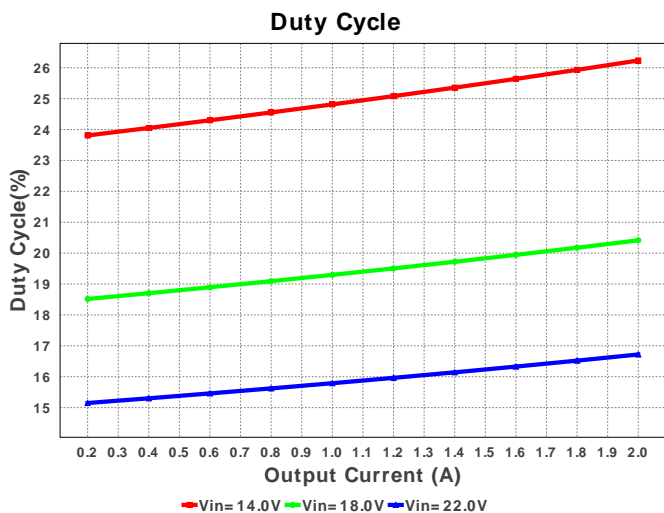
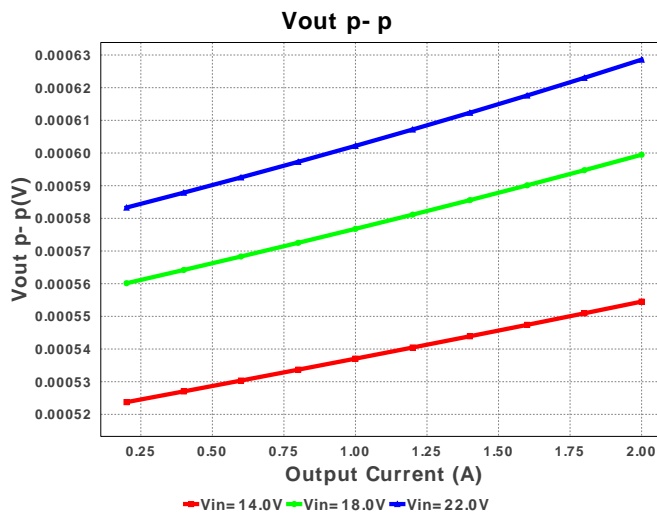
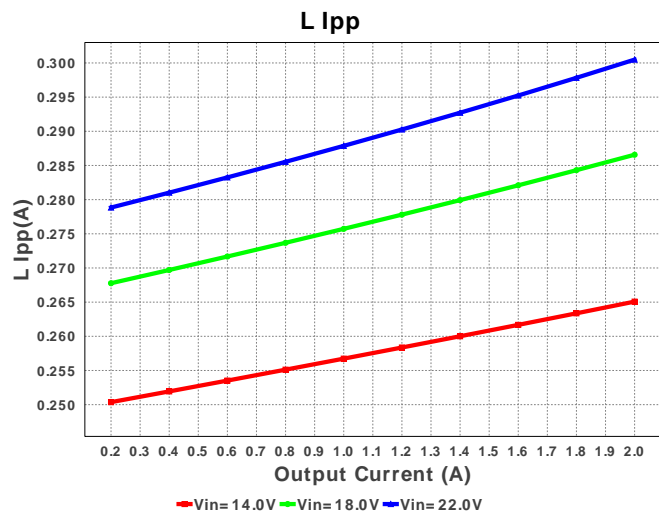
 Vout = 3.3V
 Iout = 2.0A

Electrical BOM

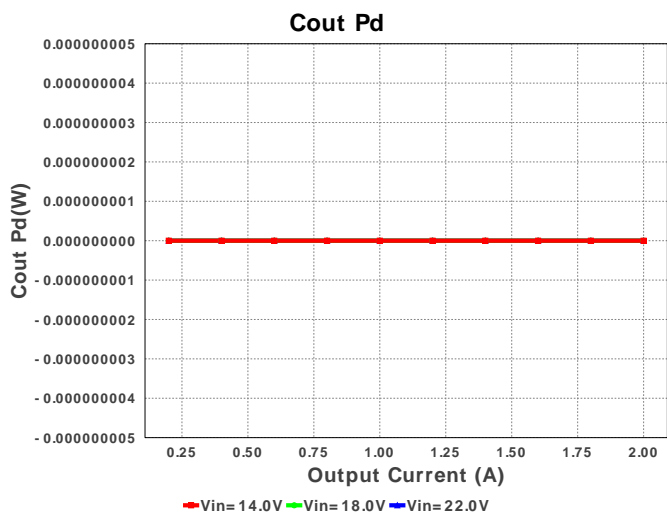
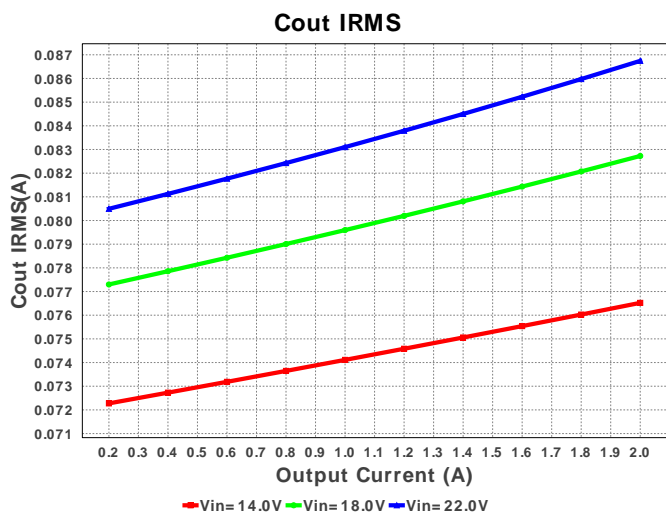
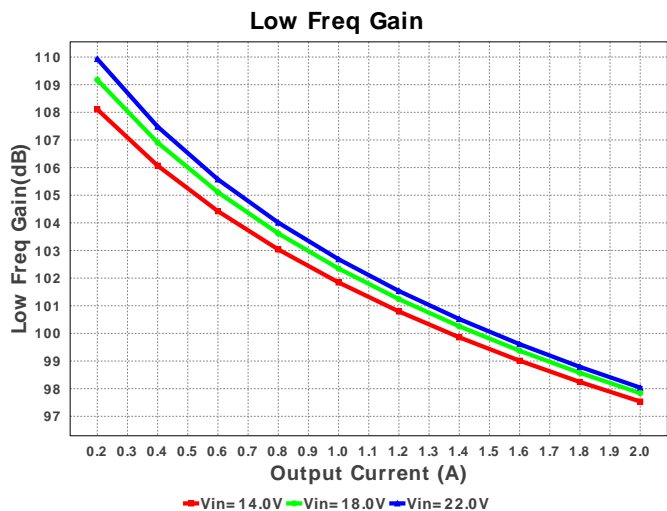
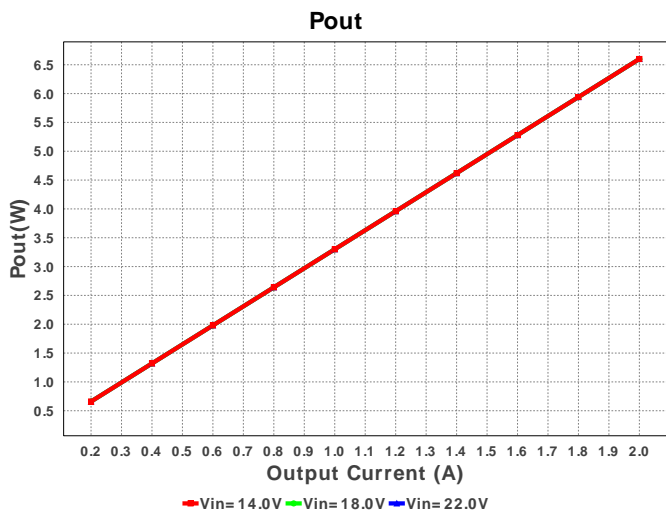
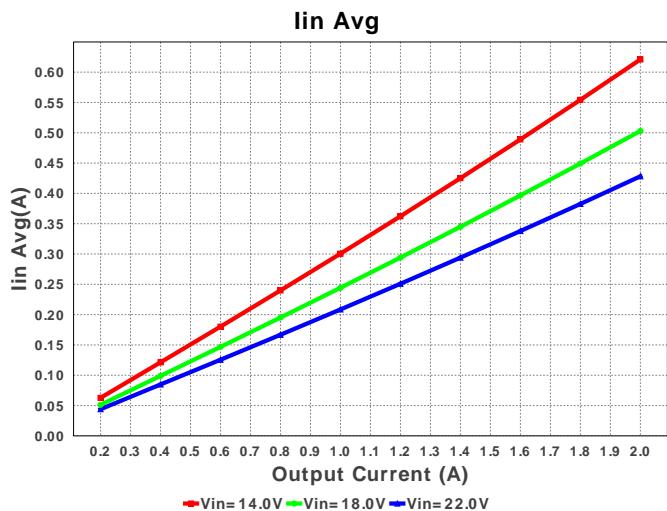
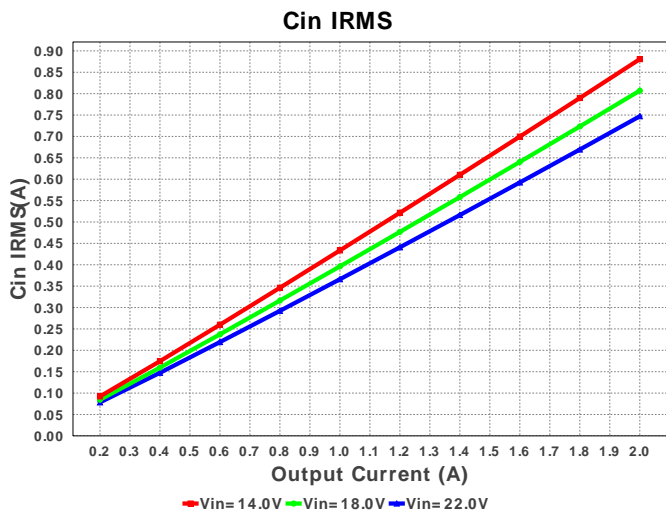
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cboot	TDK	C1005X7R1H104K Series= X7R	Cap= 100.0 nF ESR= 19.831 mOhm VDC= 50.0 V IRMS= 0.0 A	1	\$0.02	0402 3 mm ²
2.	Ccomp	MuRata	GRM033R61A822KA01D Series= X5R	Cap= 8.2 nF VDC= 10.0 V IRMS= 0.0 A	1	\$0.01	0201 2 mm ²
3.	Ccomp2	MuRata	GRM033R71E271KA01D Series= X7R	Cap= 270.0 pF VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	0201 2 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	TDK	C1005X7R1H104K Series= X7R	Cap= 100.0 nF ESR= 19.831 mOhm VDC= 50.0 V IRMS= 0.0 A	1	\$0.02	0402 3 mm ²
6.	Cout	Taiyo Yuden	JMK212BJ476MG-T Series= X5R	Cap= 47.0 uF VDC= 6.3 V IRMS= 0.0 A	1	\$0.18	0805 7 mm ²
7.	L1	Coilcraft	XAL4030-682MEB	L= 6.8 uH DCR= 67.4 mOhm	1	\$0.72	XAL4030 25 mm ²
8.	Rcomp	Vishay-Dale	CRCW04022K61FKED Series= CRCW..e3	Res= 2.61 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
9.	Rfbb	Vishay-Dale	CRCW040232K4FKED Series= CRCW..e3	Res= 32.4 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
10.	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
11.	Rt	Vishay-Dale	CRCW040230K9FKED Series= CRCW..e3	Res= 30.9 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²

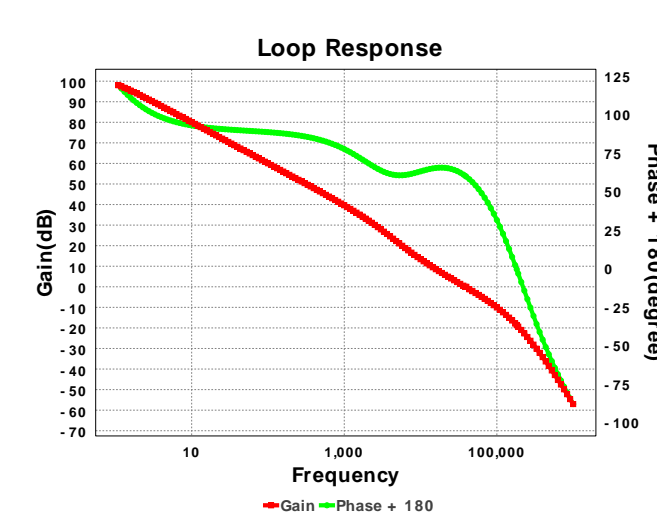
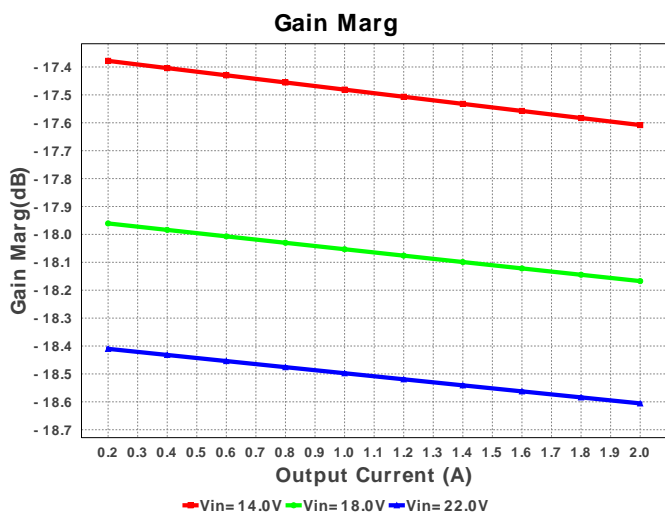
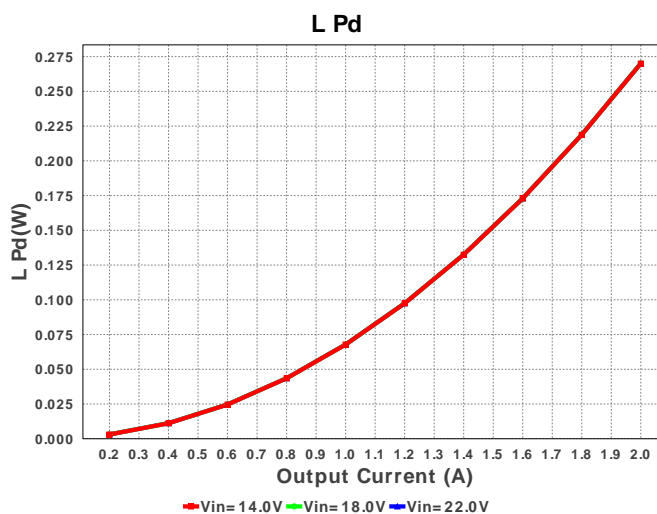
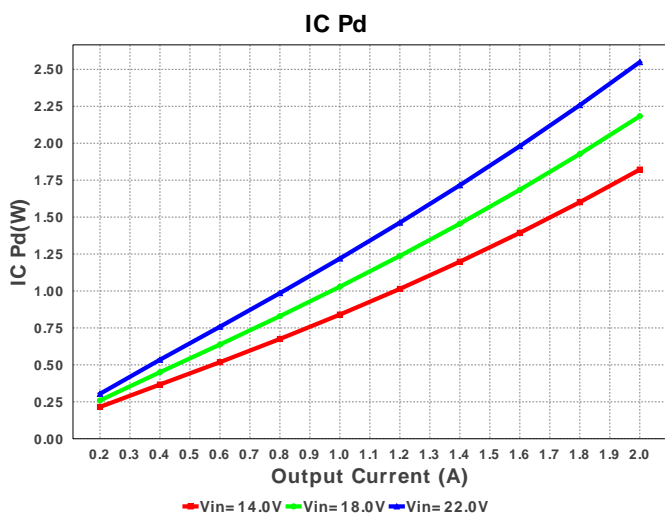
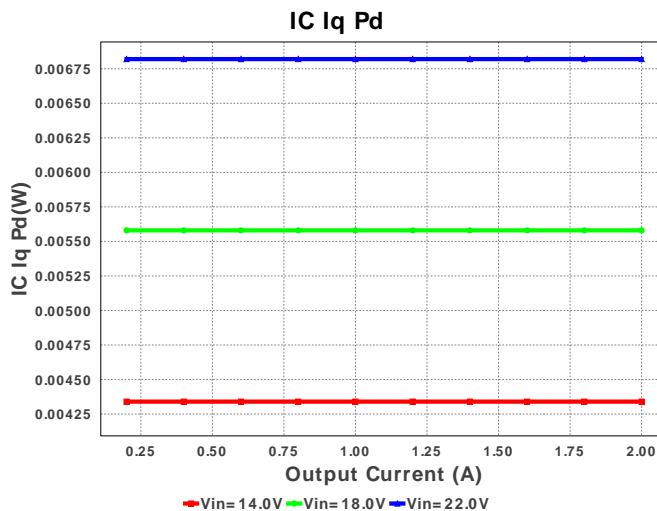
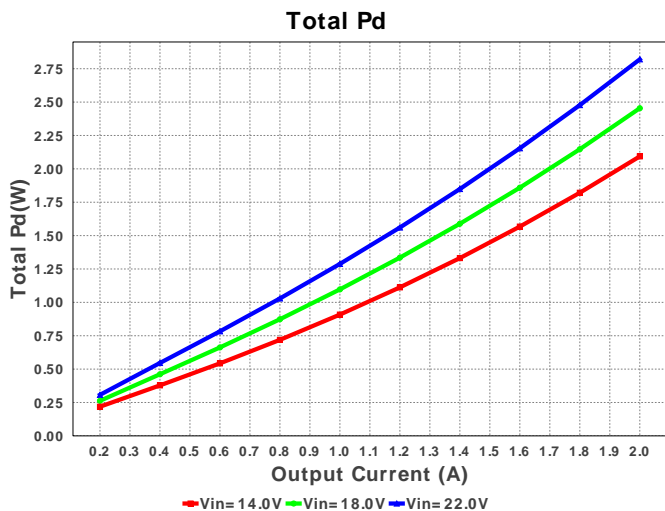
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
12.	U1	Texas Instruments	TPS54335ADDAR	Switcher	1	\$0.90	



R-PDSO-G8 57 mm²







Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	747.151 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	86.743 mA	Current	Output capacitor RMS ripple current
3.	Iin Avg	428.19 mA	Current	Average input current
4.	L Ipp	300.49 mA	Current	Peak-to-peak inductor ripple current
5.	BOM Count	12	General	Total Design BOM count
6.	FootPrint	126.0 mm ²	General	Total Foot Print Area of BOM components
7.	Frequency	1.491 MHz	General	Switching frequency
8.	IC Tolerance	10.0 mV	General	IC Feedback Tolerance
9.	Pout	6.6 W	General	Total output power
10.	Total BOM	\$2.06	General	Total BOM Cost
11.	ICThetaJA Effective	34.0 degC/W	Op_Point	Effective IC Junction-to-Ambient Thermal Resistance

#	Name	Value	Category	Description
12.	Low Freq Gain	98.037 dB	Op_Point	Gain at 10Hz
13.	Vout OP	3.3 V	Op_Point	Operational Output Voltage
14.	Cross Freq	38.496 kHz	Op_point	Bode plot crossover frequency
15.	Duty Cycle	16.72 %	Op_point	Duty cycle
16.	Efficiency	70.062 %	Op_point	Steady state efficiency
17.	Gain Marg	-18.606 dB	Op_point	Bode Plot Gain Margin
18.	IC Tj	116.665 degC	Op_point	IC junction temperature
19.	IOUT_OP	2.0 A	Op_point	Iout operating point
20.	Phase Marg	60.693 deg	Op_point	Bode Plot Phase Margin
21.	VIN_OP	22.0 V	Op_point	Vin operating point
22.	Vout p-p	628.588 µV	Op_point	Peak-to-peak output ripple voltage
23.	Cin Pd	1.116 mW	Power	Input capacitor power dissipation
24.	Cout Pd	0.0 W	Power	Output capacitor power dissipation
25.	IC Iq Pd	6.82 mW	Power	IC Iq Pd
26.	IC Pd	2.549 W	Power	IC power dissipation
27.	L Pd	270.107 mW	Power	Inductor power dissipation
28.	Total Pd	2.82 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	3.3	Output Voltage
6.	Vout1	3.3	Output Voltage #1
7.	base_pn	TPS54335A	Texas Instruments Base Part Number
8.	source	DC	Input Source Type
9.	ta	30.0	Ambient temperature
10.	userfsw	496.814 k	Customer Selected Frequency

Design Assistance

1. TPS54335A Product Folder : <http://www.ti.com/product/TPS54335A> : contains the data sheet and other resources.

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