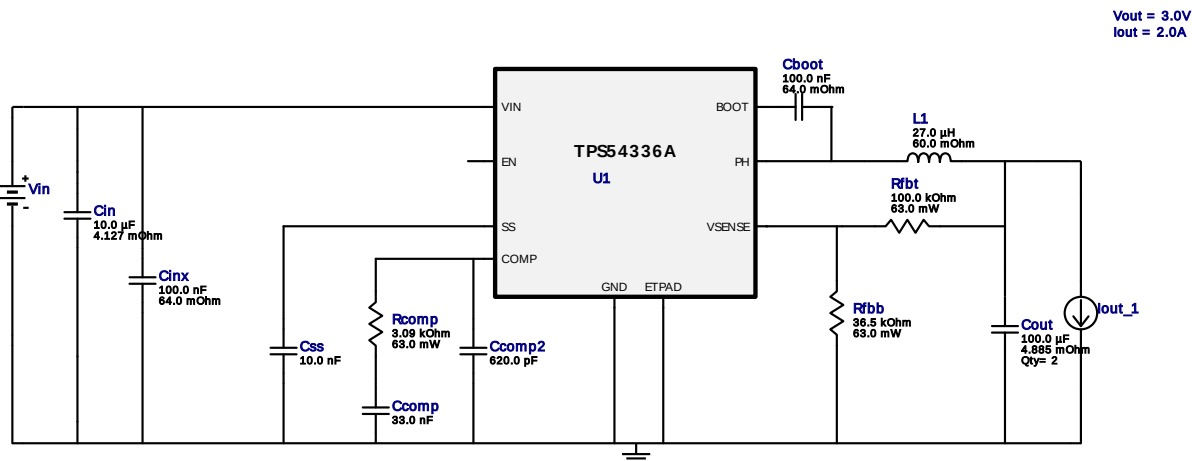


WEBENCH® Design Report

Design : 4800957/4 TPS54336ADDAR
TPS54336ADDAR 8.0V-11.0V to 3.00V @ 2.0A

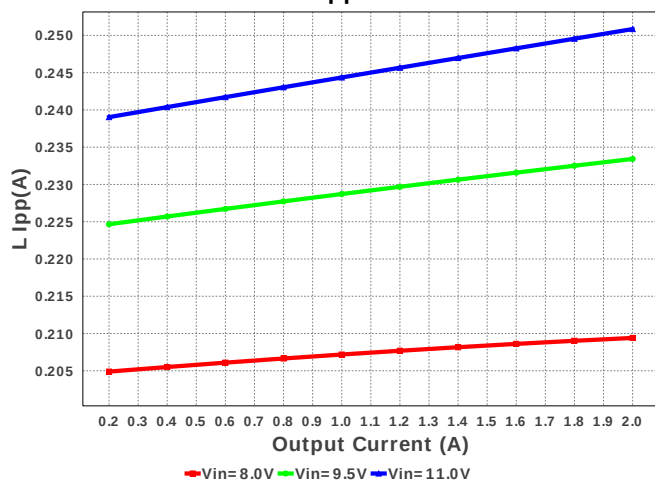


Electrical BOM

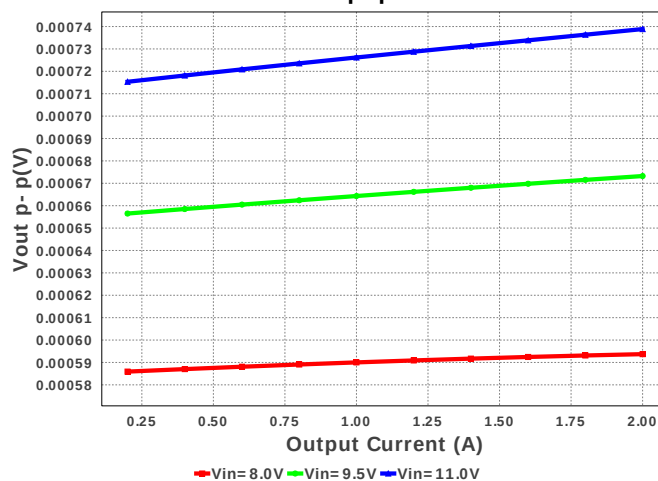
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cboot	Kemet	C0805C104K5RACTU Series= X7R	Cap= 100.0 nF ESR= 64.0 mOhm VDC= 50.0 V IRMS= 1.64 A	1	\$0.01	0805 7 mm ²
2.	Ccomp	MuRata	GRM033R60J333KE01D Series= X5R	Cap= 33.0 nF VDC= 6.3 V IRMS= 0.0 A	1	\$0.01	0201 2 mm ²
3.	Ccomp2	Samsung Electro-Mechanics	CL21C621JBCNNNC Series= C0G/NP0	Cap= 620.0 pF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	0805 7 mm ²
4.	Cin	MuRata	GRM21BR61C106KE15L Series= X5R	Cap= 10.0 uF ESR= 4.127 mOhm VDC= 16.0 V IRMS= 2.46634 A	1	\$0.03	0805 7 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	SDR1307-270ML	L= 27.0 uH DCR= 60.0 mOhm	1	\$0.35	SDR1307 227 mm ²
9.	Rcomp	Vishay-Dale	CRCW04023K09FKED Series= CRCW..e3	Res= 3.09 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	CRCW040236K5FKED Series= CRCW..e3	Res= 36.5 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 55 mm ²

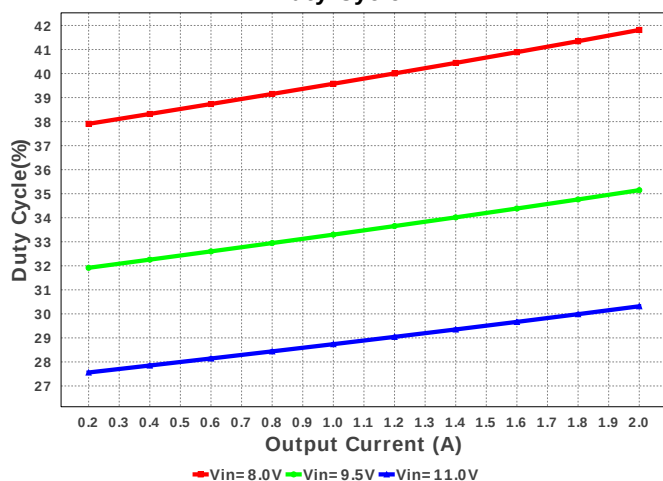
L Ipp



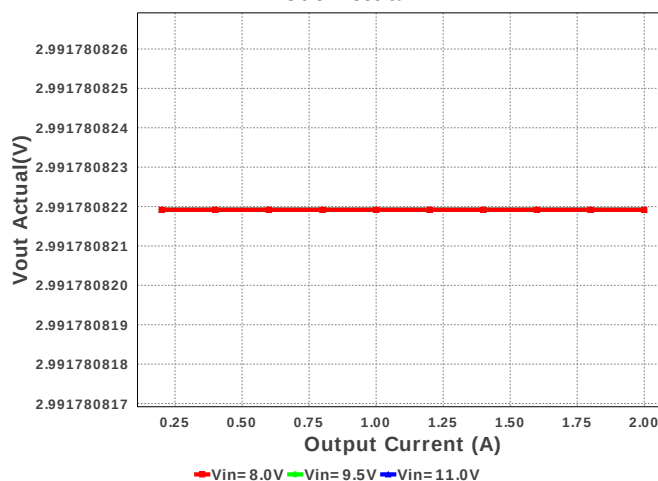
Vout p- p

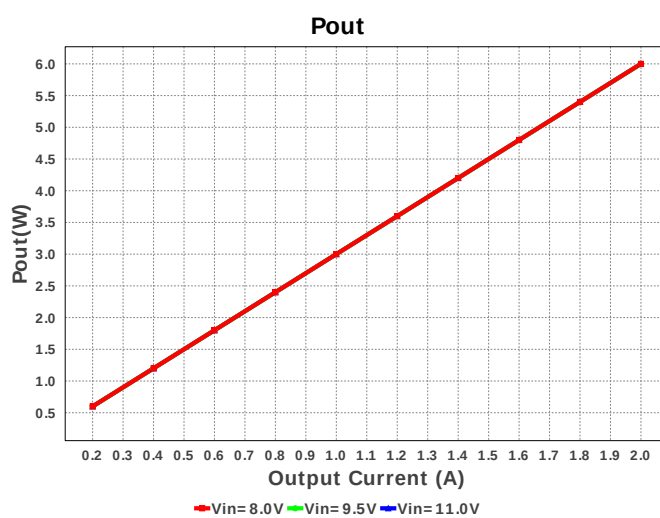
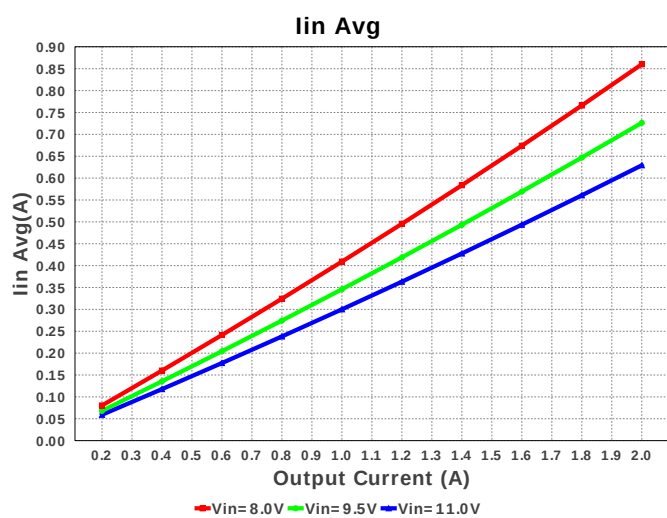
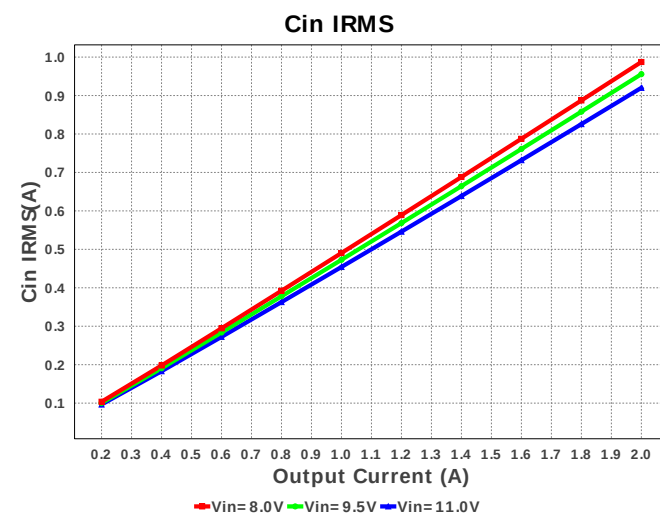
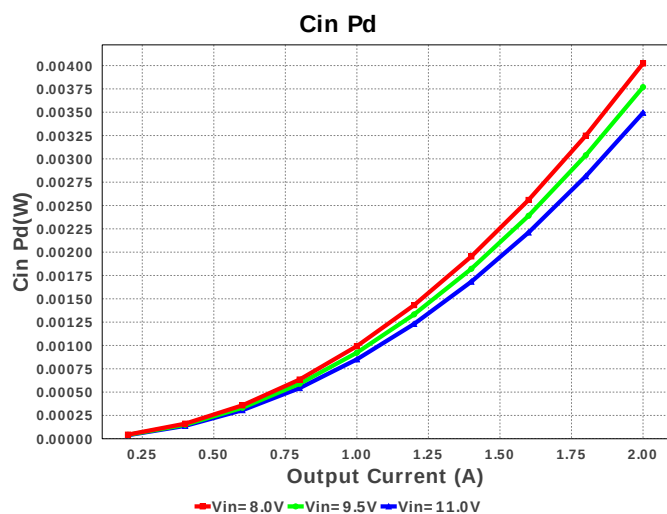
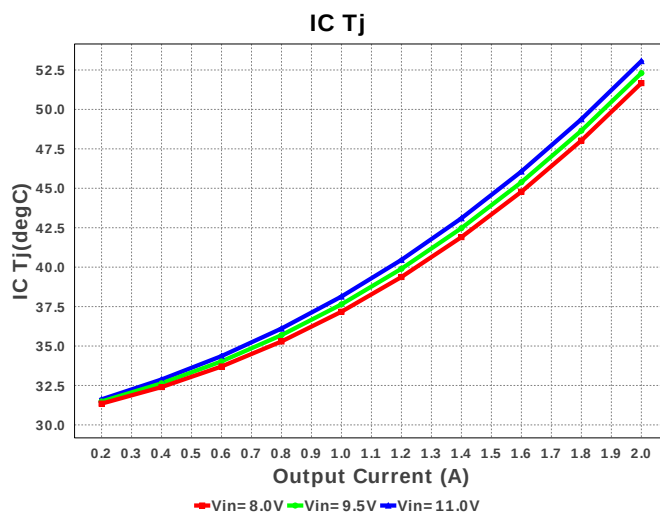
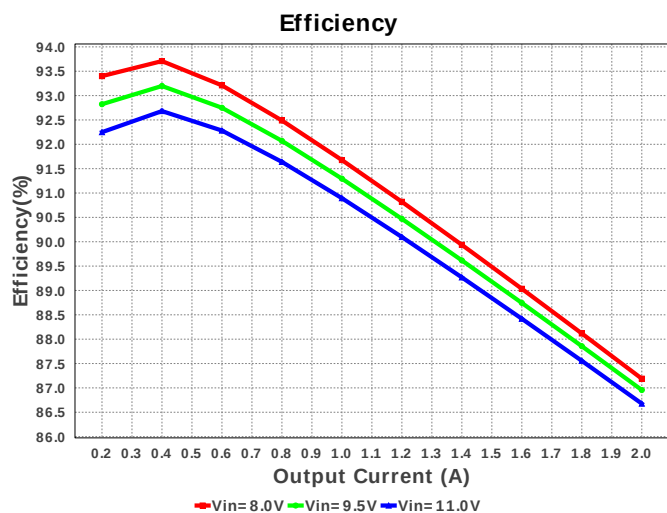


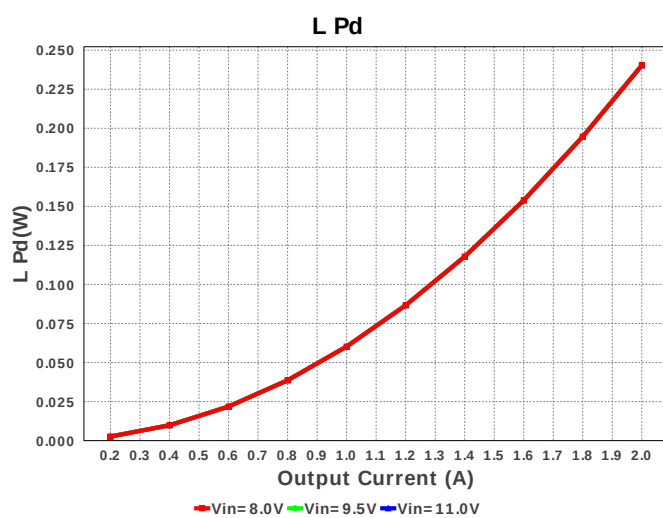
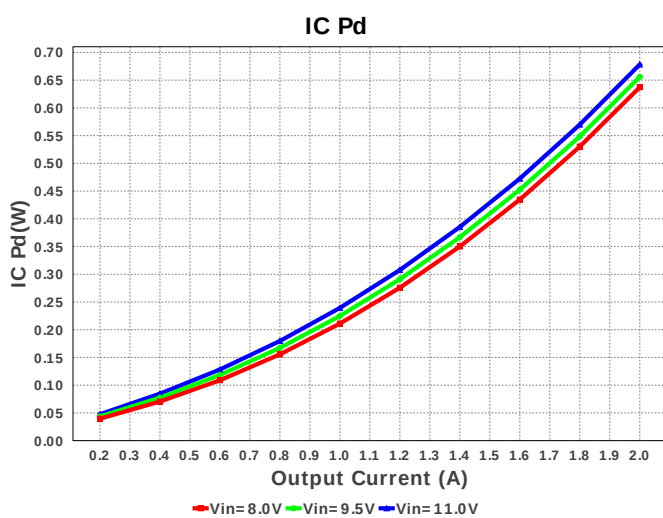
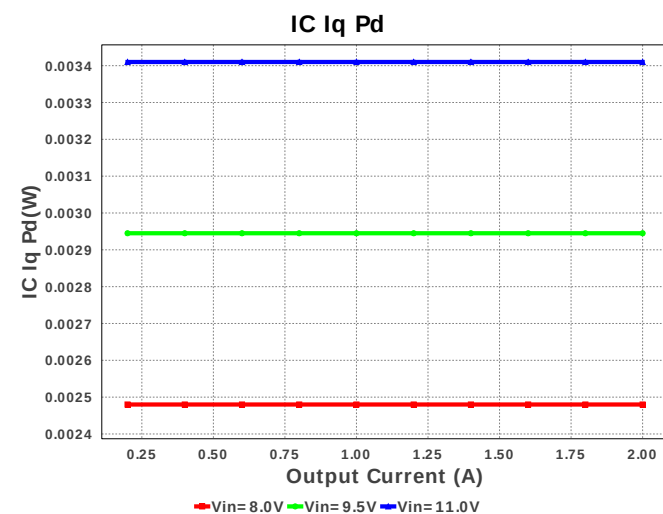
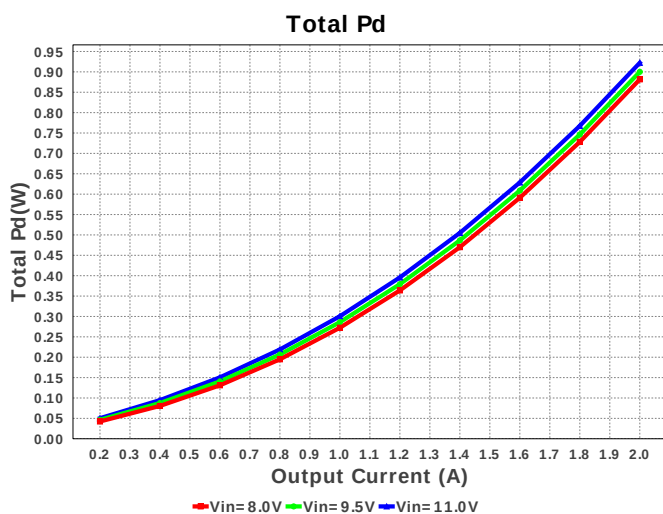
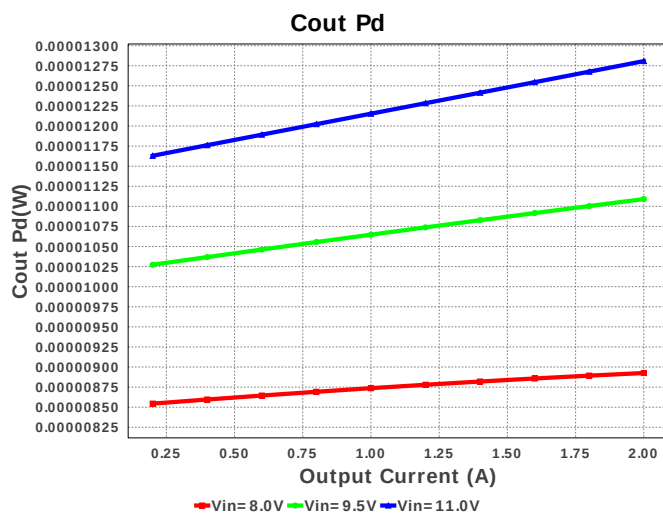
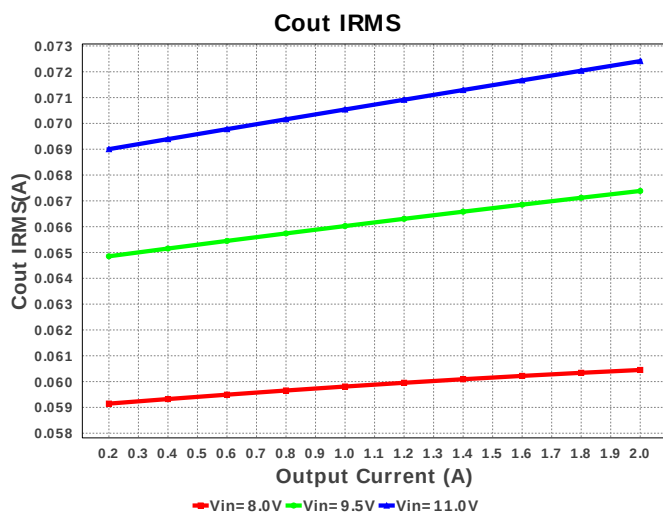
Duty Cycle

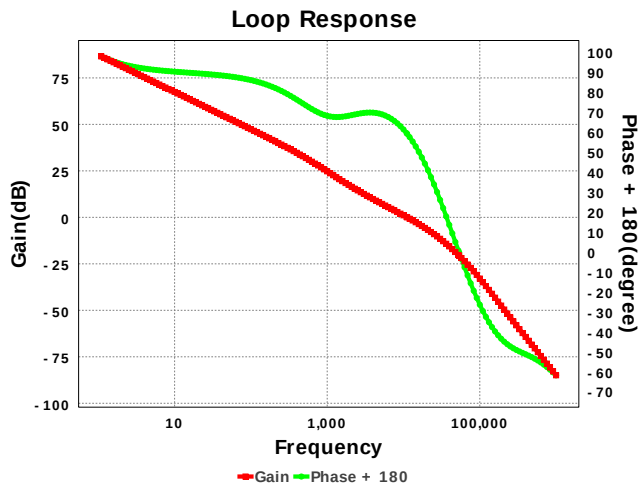


Vout Actual









Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	920.107 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	72.413 mA	Current	Output capacitor RMS ripple current
3.	Iin Avg	629.29 mA	Current	Average input current
4.	L Ipp	250.85 mA	Current	Peak-to-peak inductor ripple current
5.	BOM Count	13	General	Total Design BOM count
6.	FootPrint	344.0 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	6.0 W	General	Total output power
11.	Total BOM	\$1.64	General	Total BOM Cost
12.	ICThetaJA Effective	34.0 degC/W	Op_Point	Effective IC Junction-to-Ambient Thermal Resistance
13.	Low Freq Gain	86.547 dB	Op_Point	Gain at 10Hz
14.	Vout Actual	2.992 V	Op_Point	Vout Actual calculated based on selected voltage divider resistors
15.	Vout OP	3.0 V	Op_Point	Operational Output Voltage
16.	Cross Freq	11.173 kHz	Op_point	Bode plot crossover frequency
17.	Duty Cycle	30.315 %	Op_point	Duty cycle
18.	Efficiency	86.677 %	Op_point	Steady state efficiency
19.	Gain Marg	-20.629 dB	Op_point	Bode Plot Gain Margin
20.	IC Tj	53.063 degC	Op_point	IC junction temperature
21.	IOUT_OP	2.0 A	Op_point	Iout operating point
22.	Phase Marg	59.392 deg	Op_point	Bode Plot Phase Margin
23.	VIN_OP	11.0 V	Op_point	Vin operating point
24.	Vout p-p	738.864 μ V	Op_point	Peak-to-peak output ripple voltage
25.	Cin Pd	3.494 mW	Power	Input capacitor power dissipation
26.	Cout Pd	12.808 μ W	Power	Output capacitor power dissipation
27.	IC Iq Pd	3.41 mW	Power	IC Iq Pd
28.	IC Pd	678.329 mW	Power	IC power dissipation
29.	L Pd	240.315 mW	Power	Inductor power dissipation
30.	Total Pd	922.243 mW	Power	Total Power Dissipation
31.	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	2.0	Maximum Output Current
2.	VinMax	11.0	Maximum input voltage
3.	VinMin	8.0	Minimum input voltage
4.	Vout	3.0	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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