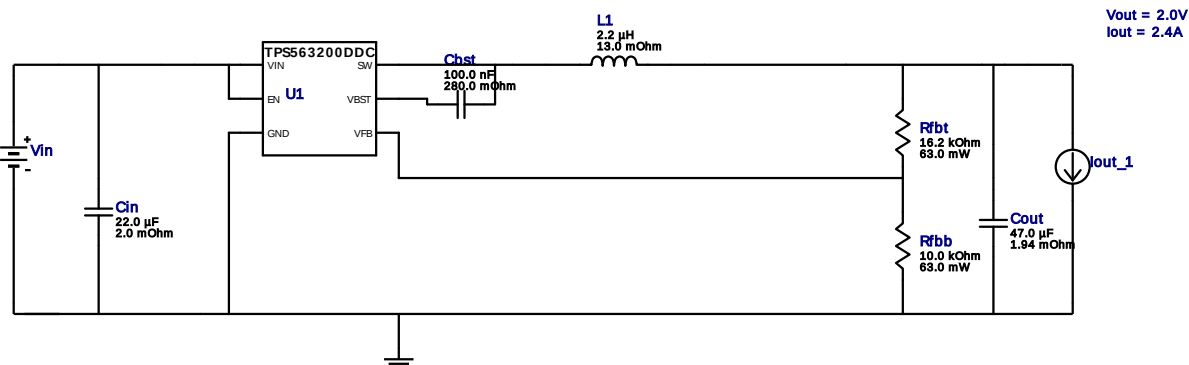


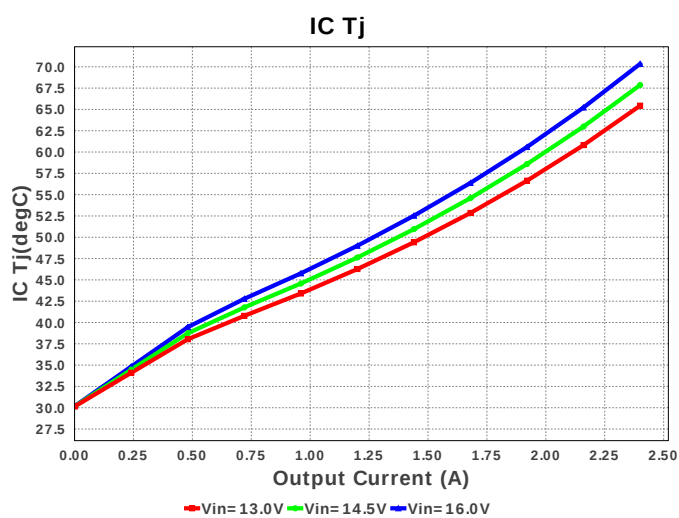
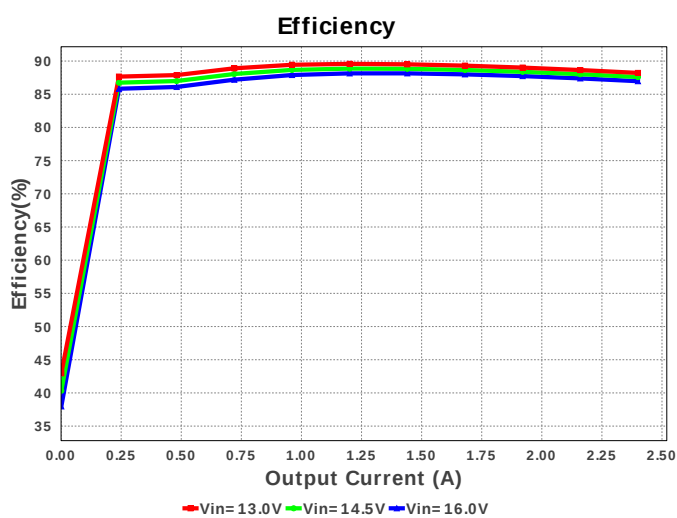
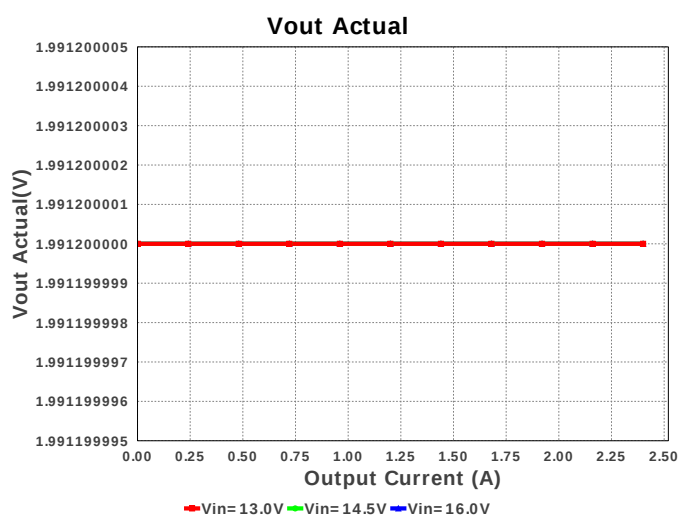
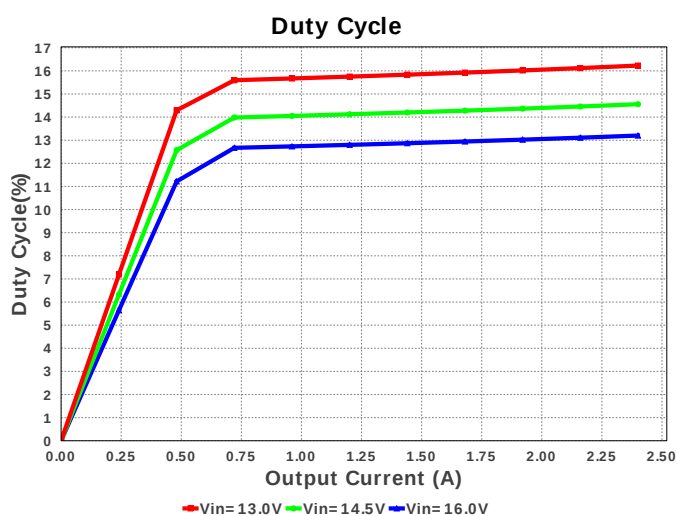
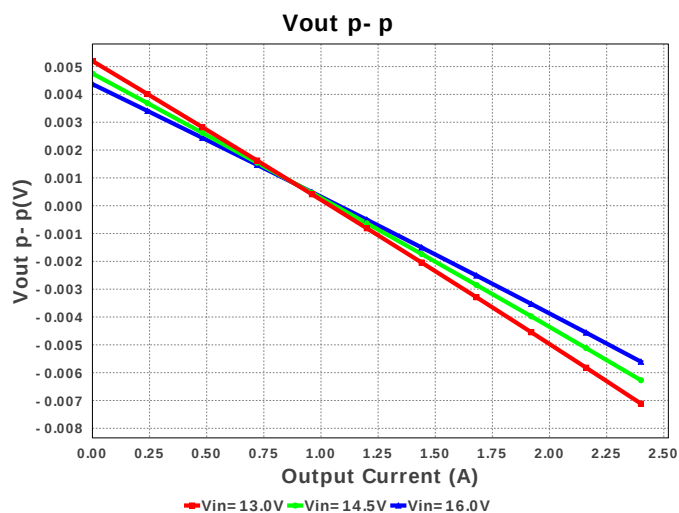
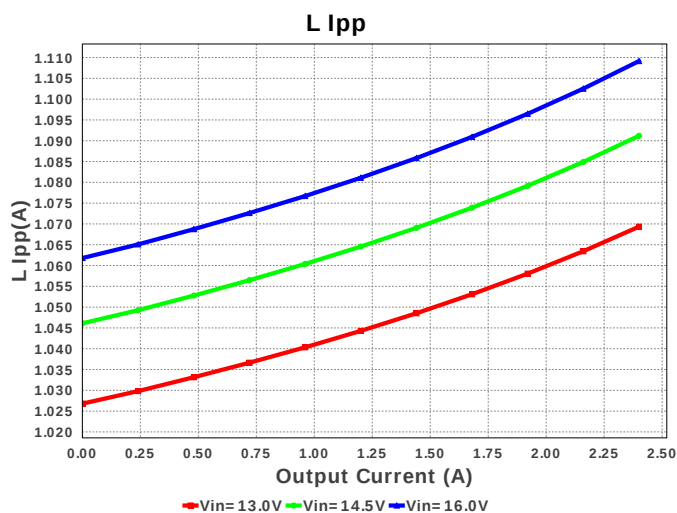
WEBENCH® Design Report

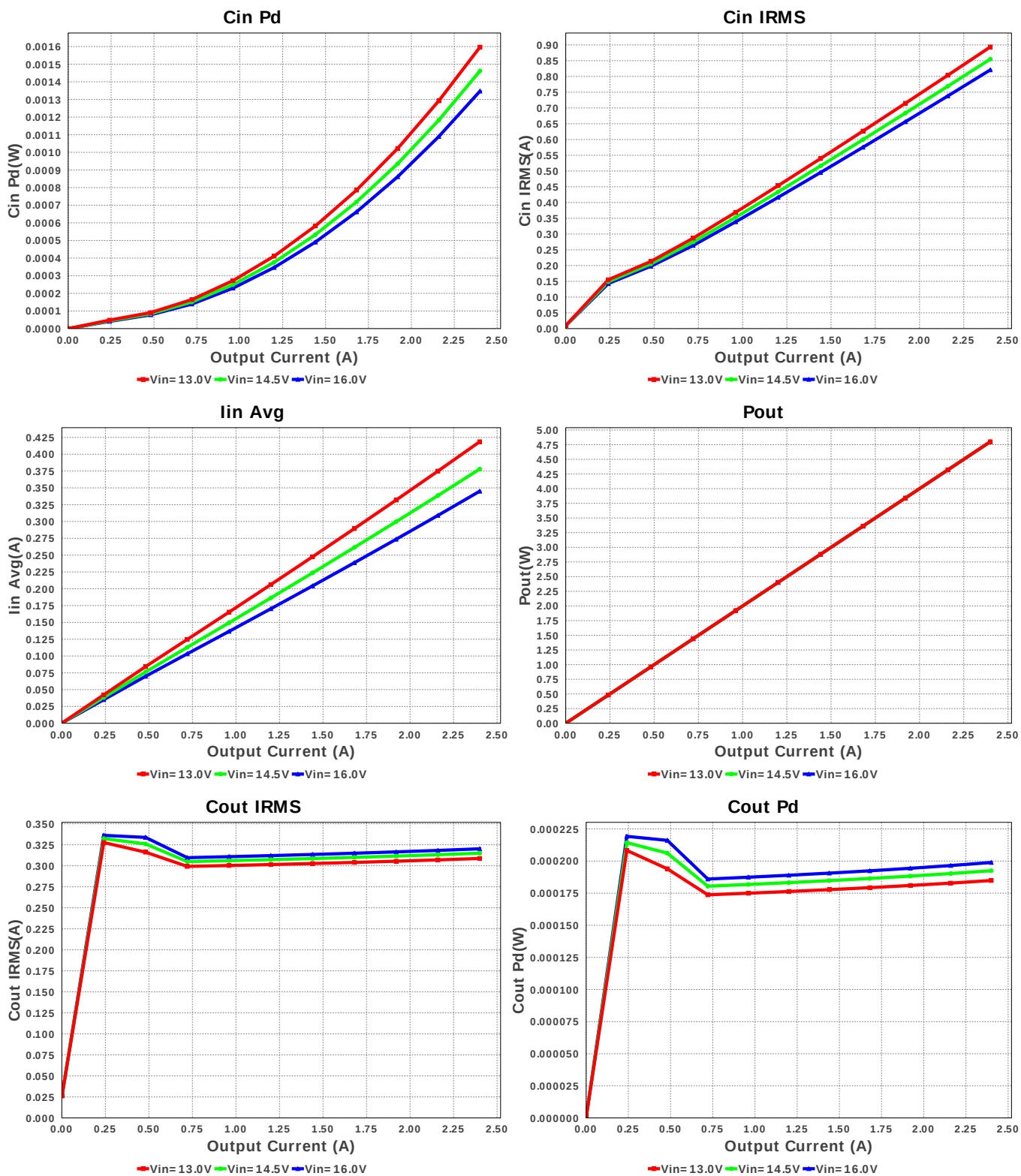
Design : 4749713/9 TPS563200DDCR
TPS563200DDCR 13.0V-16.0V to 2.00V @ 2.4A

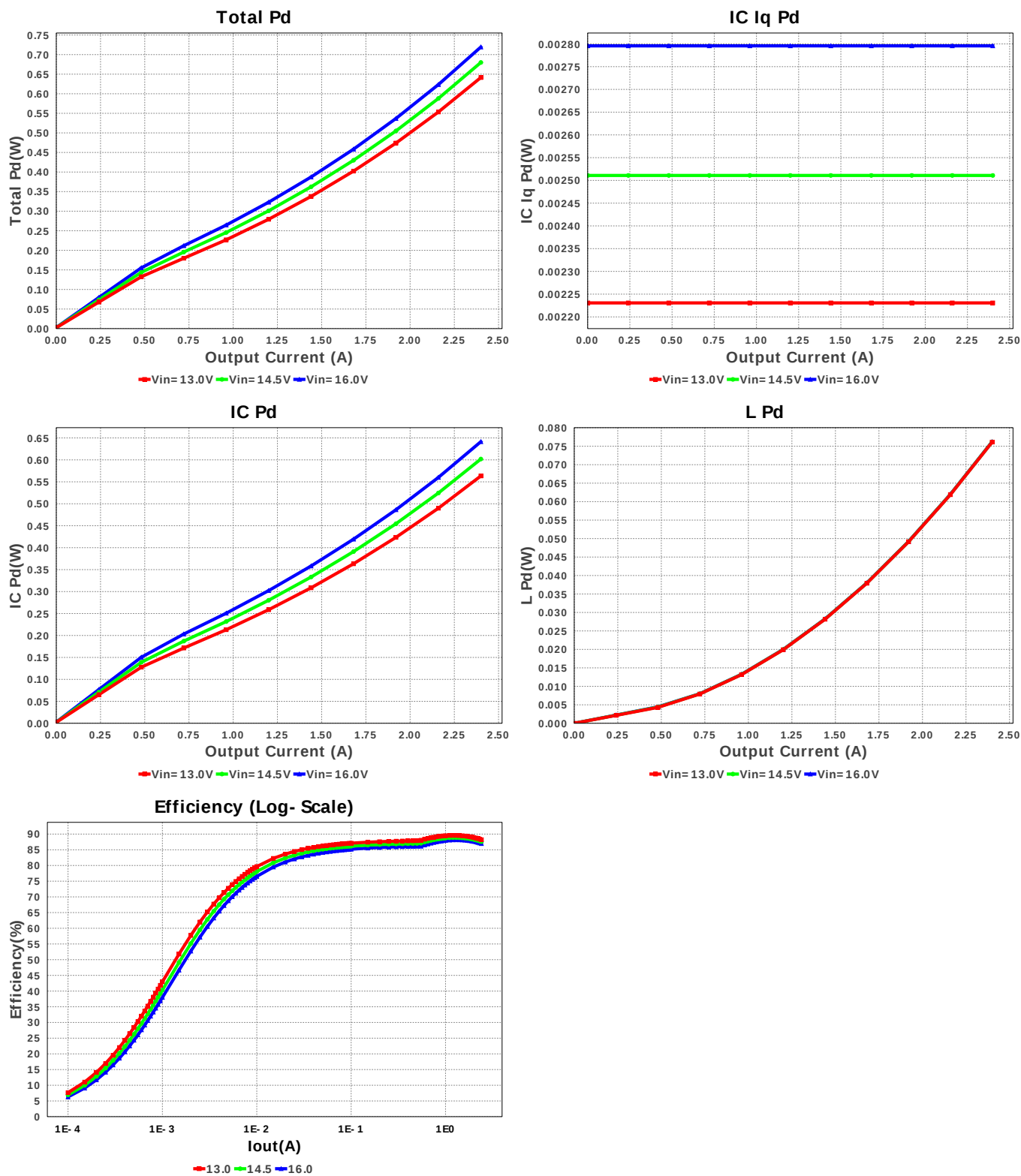


Electrical BOM

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cbst	AVX	08053C104KAT2A Series= X7R	Cap= 100.0 nF ESR= 280.0 mOhm VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	 0805 7 mm²
2.	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 mm²
3.	Cout	TDK	C3216X6S0G476M Series= X6S	Cap= 47.0 uF ESR= 1.94 mOhm VDC= 4.0 V IRMS= 0.0 A	1	\$0.13	 1206 11 mm²
4.	L1	Bourns	SRN8040-2R2Y	L= 2.2 uH DCR= 13.0 mOhm	1	\$0.22	 SRN8040 100 mm²
5.	Rfbb	Vishay-Dale	CRCW040210K0FKED Series= CRCW..e3	Res= 10.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm²
6.	Rfbs	Vishay-Dale	CRCW040216K2FKED Series= CRCW..e3	Res= 16.2 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm²
7.	U1	Texas Instruments	TPS563200DDCR	Switcher	1	\$0.52	 DDC0006A 10 mm²







Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	820.699 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	320.182 mA	Current	Output capacitor RMS ripple current
3.	Iin Avg	344.96 mA	Current	Average input current
4.	L Ipp	1.109 A	Current	Peak-to-peak inductor ripple current
5.	BOM Count	7	General	Total Design BOM count
6.	FootPrint	149.0 mm ²	General	Total Foot Print Area of BOM components
7.	Frequency	749.693 kHz	General	Switching frequency
8.	Pout	4.8 W	General	Total output power
9.	Total BOM	\$1.06	General	Total BOM Cost
10.	Vout Actual	1.991 V	Op_Point	Vout Actual calculated based on selected voltage divider resistors
11.	Vout OP	2.0 V	Op_Point	Operational Output Voltage

#	Name	Value	Category	Description
12.	Duty Cycle	13.201 %	Op_point	Duty cycle
13.	Efficiency	86.967 %	Op_point	Steady state efficiency
14.	IC Tj	70.345 degC	Op_point	IC junction temperature
15.	ICThetaJA	62.9 degC/W	Op_point	IC junction-to-ambient thermal resistance
16.	IOUT_OP	2.4 A	Op_point	Iout operating point
17.	VIN_OP	16.0 V	Op_point	Vin operating point
18.	Vout p-p	5.115 mV	Op_point	Peak-to-peak output ripple voltage
19.	Cin Pd	1.347 mW	Power	Input capacitor power dissipation
20.	Cout Pd	198.882 μ W	Power	Output capacitor power dissipation
21.	IC Iq Pd	2.796 mW	Power	IC Iq Pd
22.	IC Pd	641.417 mW	Power	IC power dissipation
23.	L Pd	76.213 mW	Power	Inductor power dissipation
24.	Total Pd	719.338 mW	Power	Total Power Dissipation
25.	Vout Tolerance	2.581 %		Vout Tolerance based on IC Tolerance (no load) and voltage divider resistors if applicable

Design Inputs

#	Name	Value	Description
1.	Iout	2.4	Maximum Output Current
2.	VinMax	16.0	Maximum input voltage
3.	VinMin	13.0	Minimum input voltage
4.	Vout	2.0	Output Voltage
5.	base_pn	TPS563200	Base Product Number
6.	source	DC	Input Source Type
7.	Ta	30.0	Ambient temperature

Design Assistance

1. **TPS563200** Product Folder : <http://www.ti.com/product/TPS563200> : contains the data sheet and other resources.

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