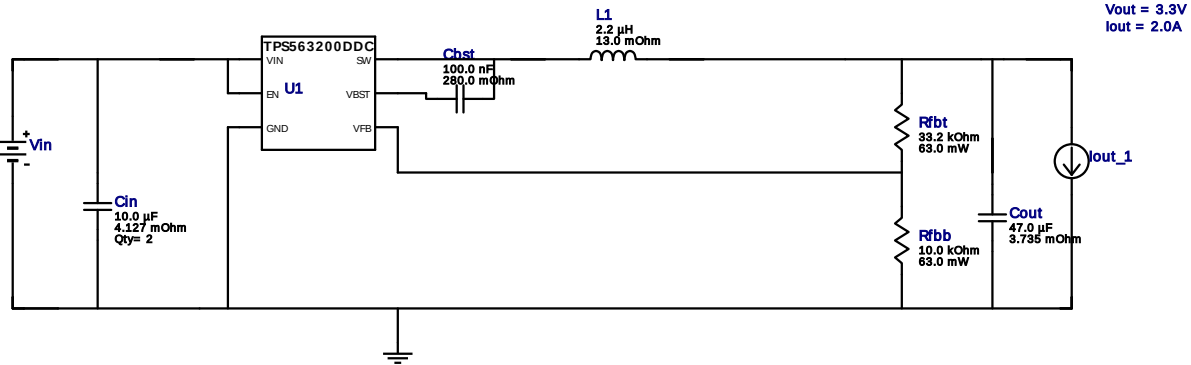


WEBENCH® Design Report

Design : 4738856/1 TPS563200DDCR
TPS563200DDCR 5.0V-12.0V to 3.30V @ 2.0A

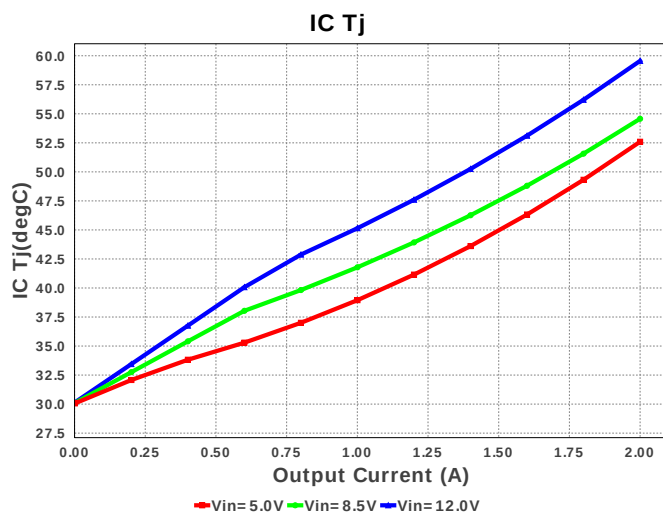
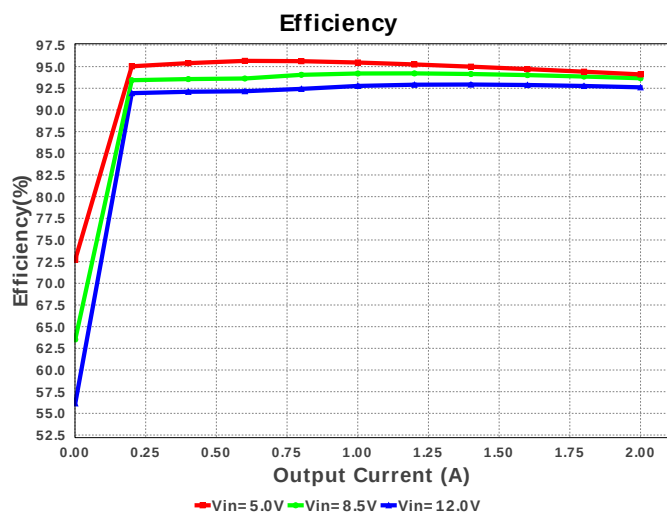
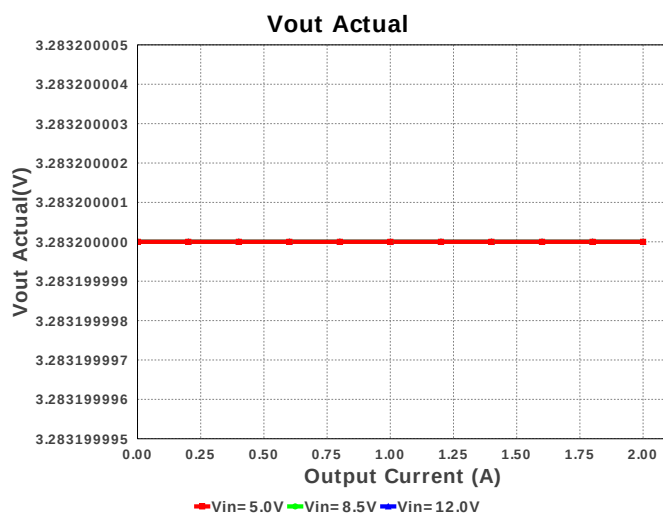
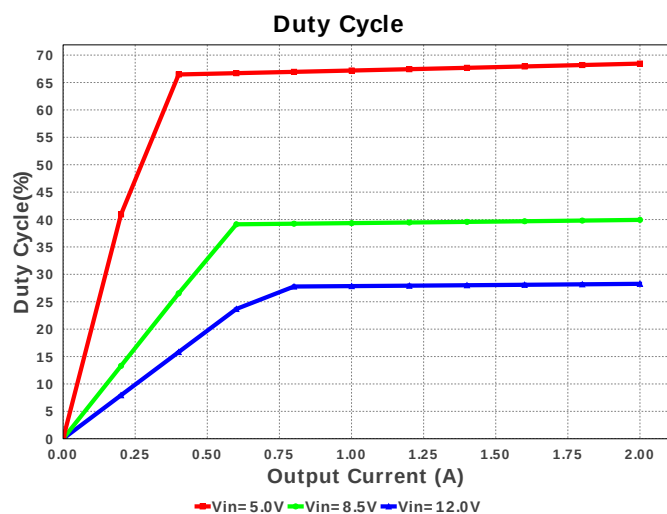
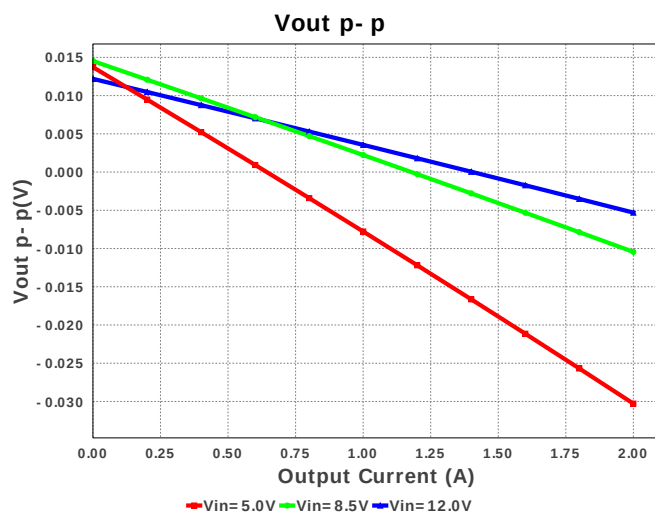
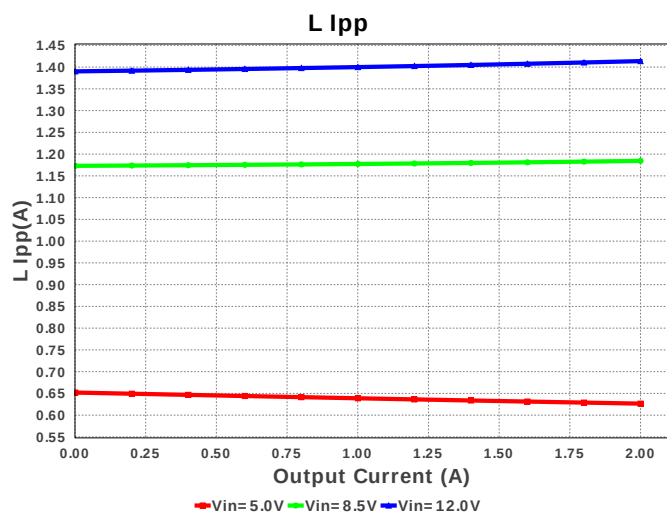


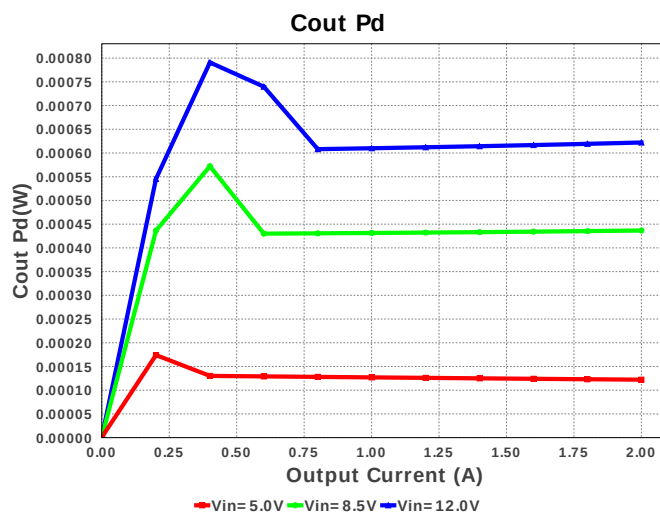
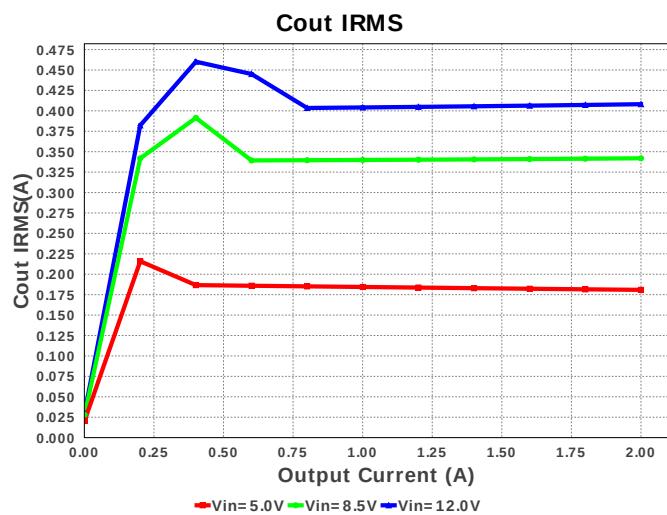
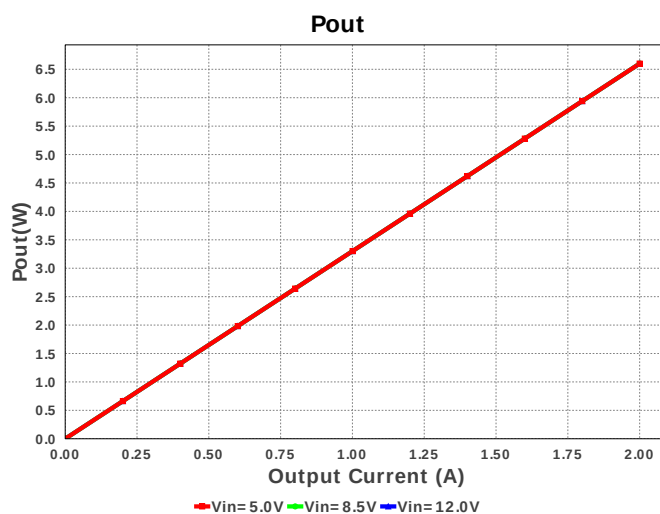
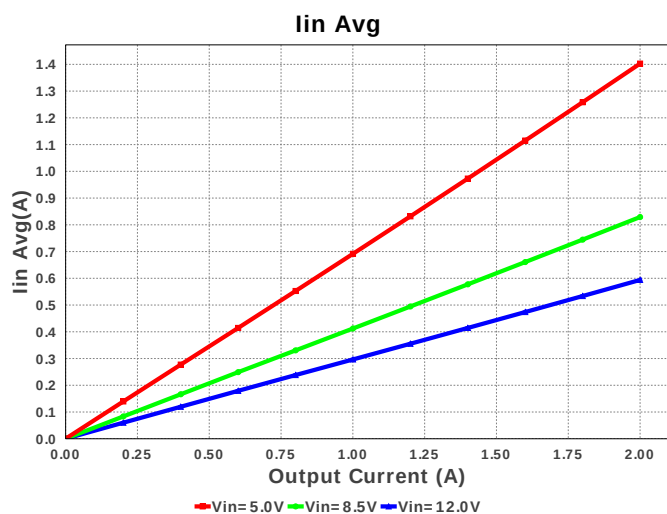
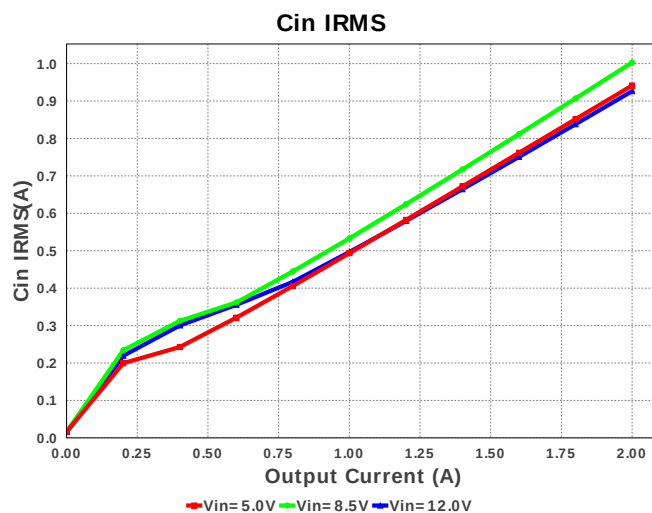
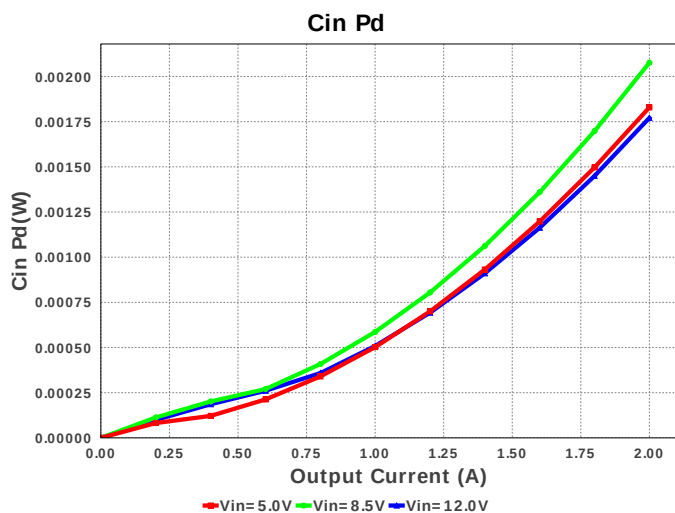
My Comments

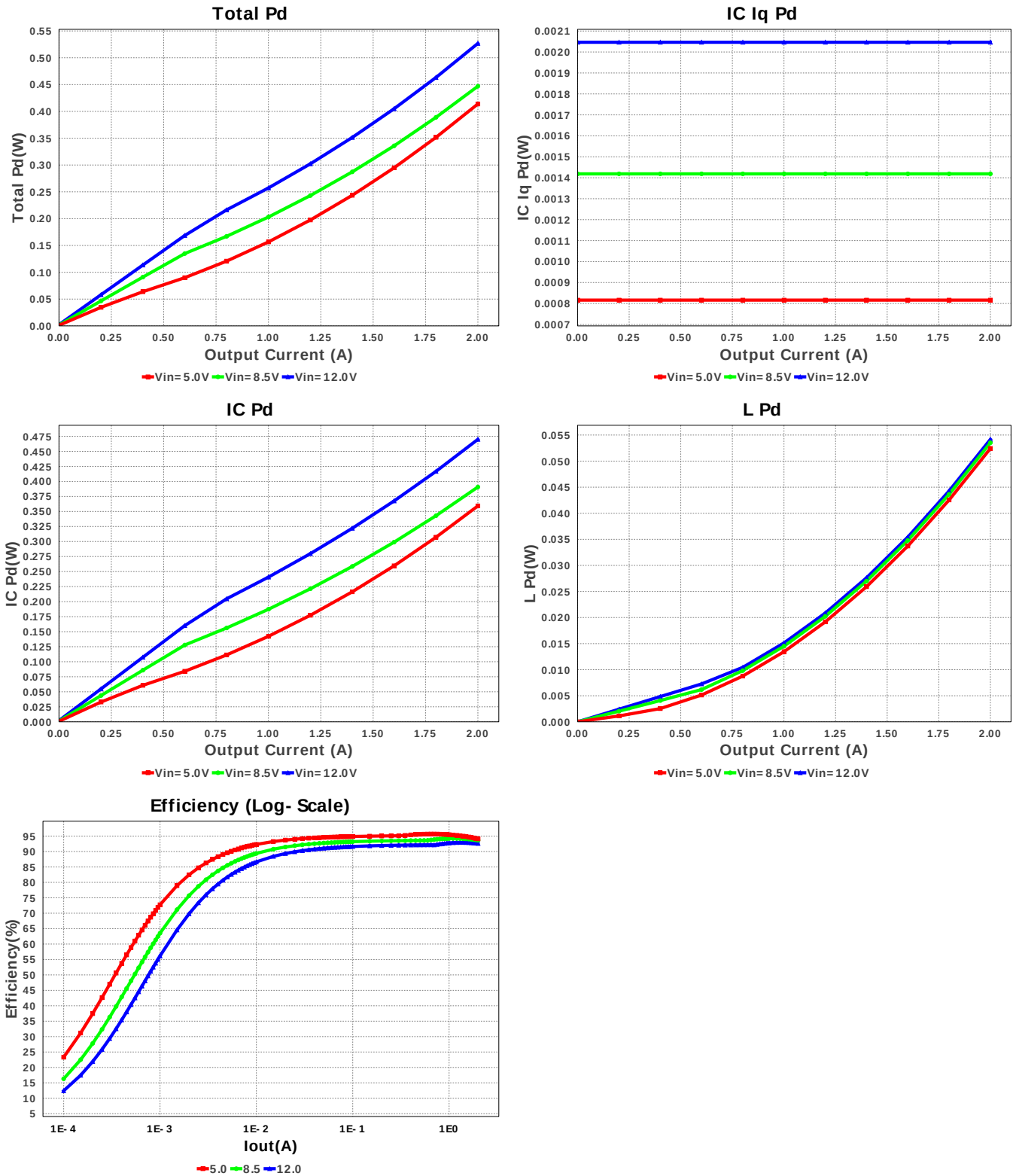
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Electrical BOM

#	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	GRM21BR61C106KE15L Series= X5R	Cap= 10.0 uF ESR= 4.127 mOhm VDC= 16.0 V IRMS= 2.46634 A	2	\$0.03	 0805 7 mm²
3.	Cout	MuRata	GRM31CC80J476KE18L Series= X6S	Cap= 47.0 uF ESR= 3.735 mOhm VDC= 6.3 V IRMS= 4.0522 A	1	\$0.10	 1206_190 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	CRCW040233K2FKED Series= CRCW..e3	Res= 33.2 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	926.384 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	408.114 mA	Current	Output capacitor RMS ripple current
3.	Iin Avg	593.9 mA	Current	Average input current
4.	L Ipp	1.414 A	Current	Peak-to-peak inductor ripple current
5.	BOM Count	8	General	Total Design BOM count
6.	FootPrint	148.0 mm ²	General	Total Foot Print Area of BOM components
7.	Frequency	779.926 kHz	General	Switching frequency
8.	Pout	6.6 W	General	Total output power
9.	Total BOM	\$0.93	General	Total BOM Cost
10.	Vout Actual	3.283 V	Op_Point	Vout Actual calculated based on selected voltage divider resistors
11.	Vout OP	3.3 V	Op_Point	Operational Output Voltage

#	Name	Value	Category	Description
12.	Duty Cycle	28.269 %	Op_point	Duty cycle
13.	Efficiency	92.609 %	Op_point	Steady state efficiency
14.	IC Tj	59.56 degC	Op_point	IC junction temperature
15.	ICThetaJA	62.9 degC/W	Op_point	IC junction-to-ambient thermal resistance
16.	IOUT_OP	2.0 A	Op_point	Iout operating point
17.	VIN_OP	12.0 V	Op_point	Vin operating point
18.	Vout p-p	7.173 mV	Op_point	Peak-to-peak output ripple voltage
19.	Cin Pd	1.771 mW	Power	Input capacitor power dissipation
20.	Cout Pd	622.089 μ W	Power	Output capacitor power dissipation
21.	IC Iq Pd	2.047 mW	Power	IC Iq Pd
22.	IC Pd	469.947 mW	Power	IC power dissipation
23.	L Pd	54.165 mW	Power	Inductor power dissipation
24.	Total Pd	526.742 mW	Power	Total Power Dissipation
25.	Vout Tolerance	2.889 %		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	12.0	Maximum input voltage
3.	VinMin	5.0	Minimum input voltage
4.	Vout	3.3	Output Voltage
5.	base_pn	TPS563200	Texas Instruments Base Part 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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