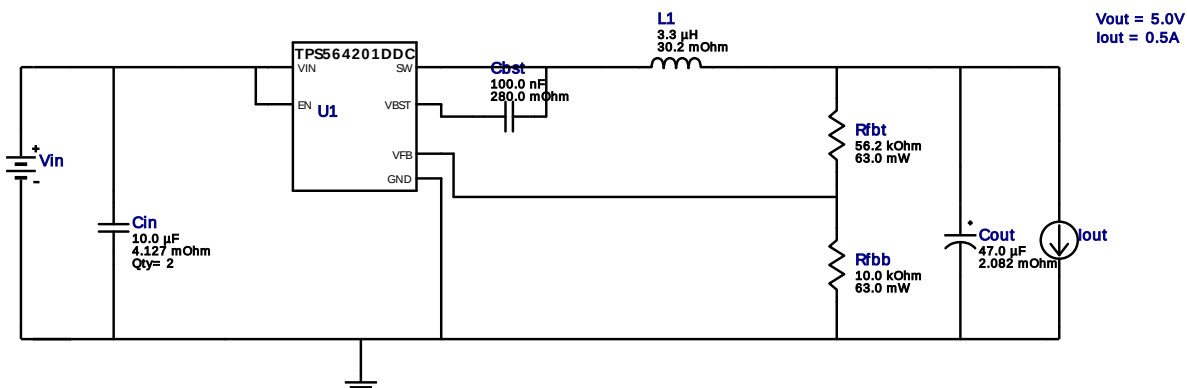


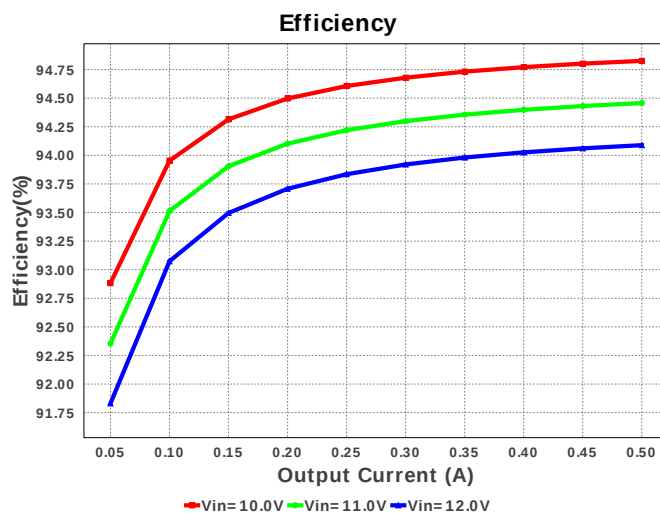
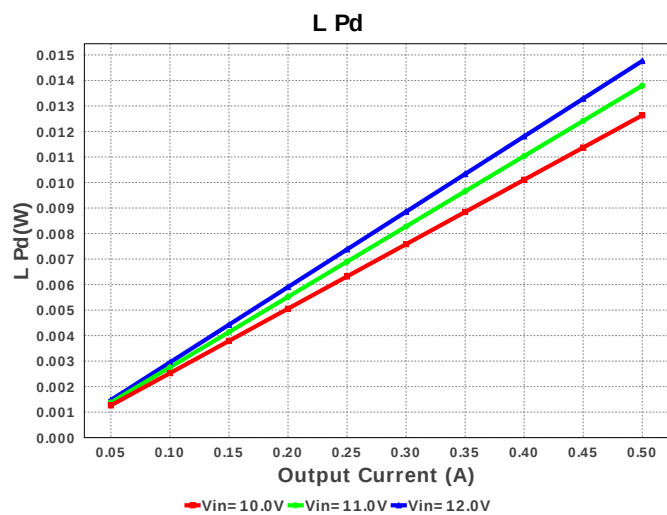
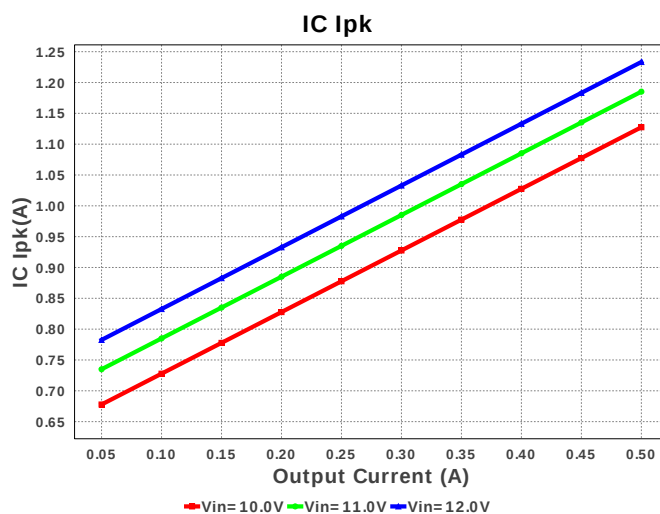
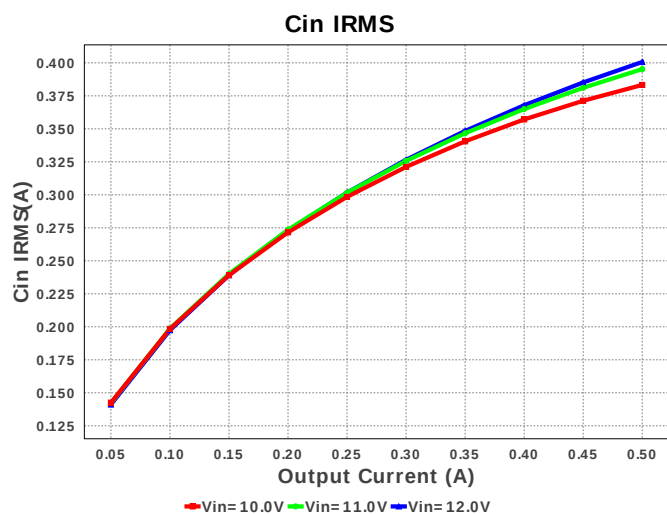
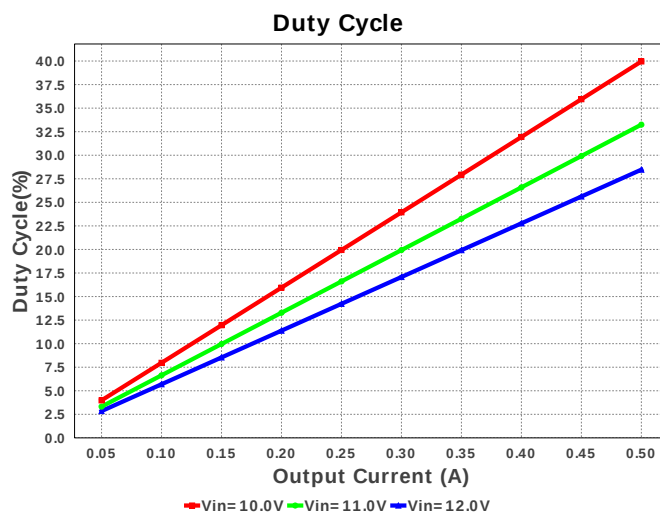
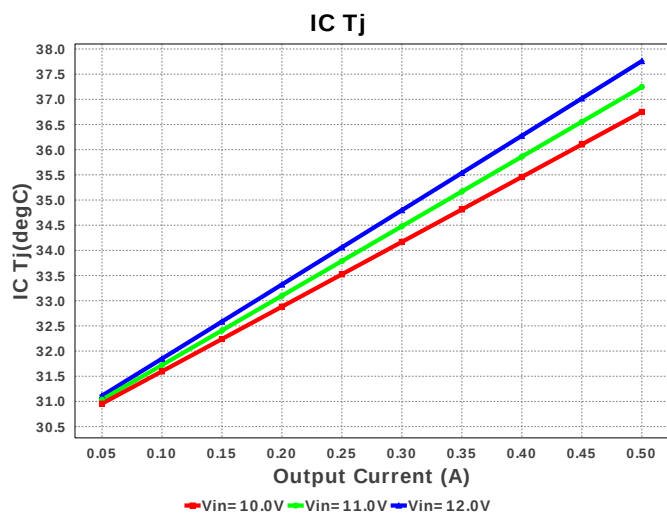
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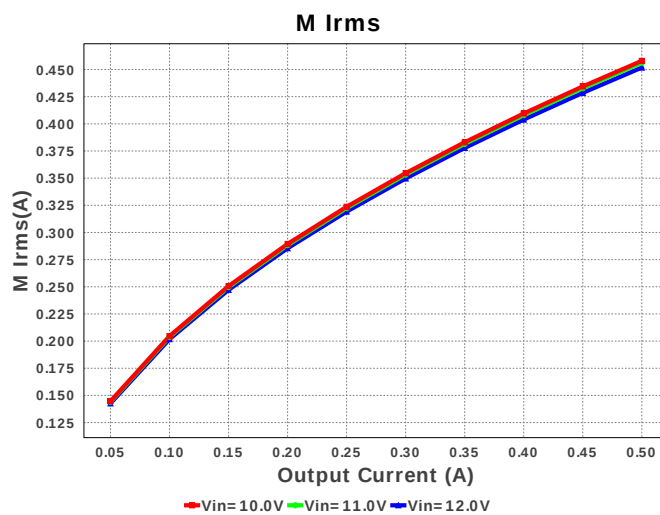
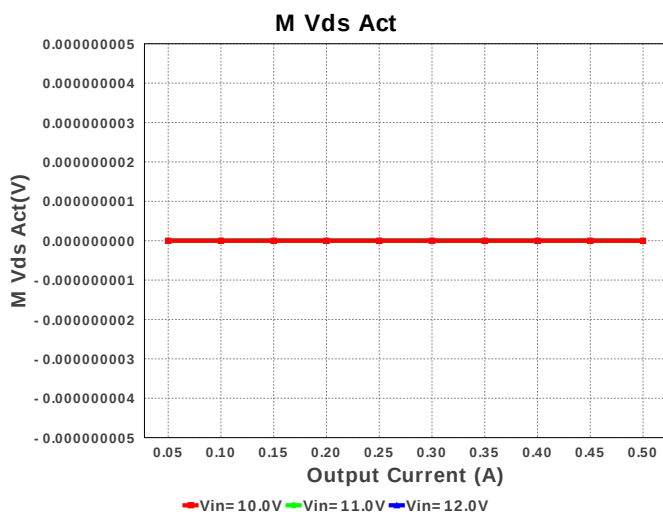
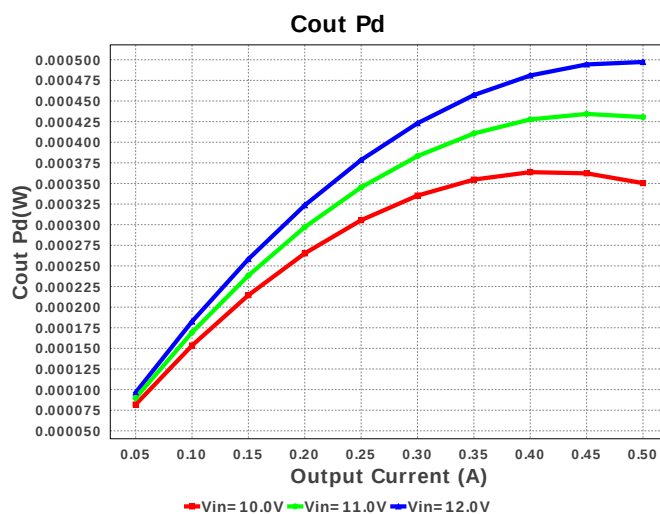
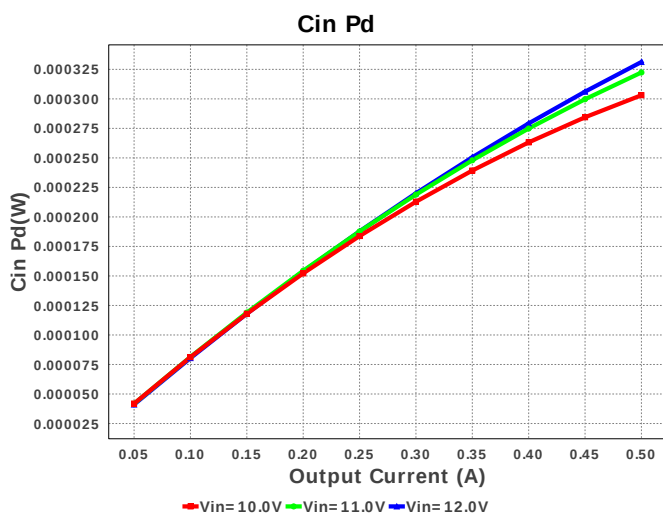
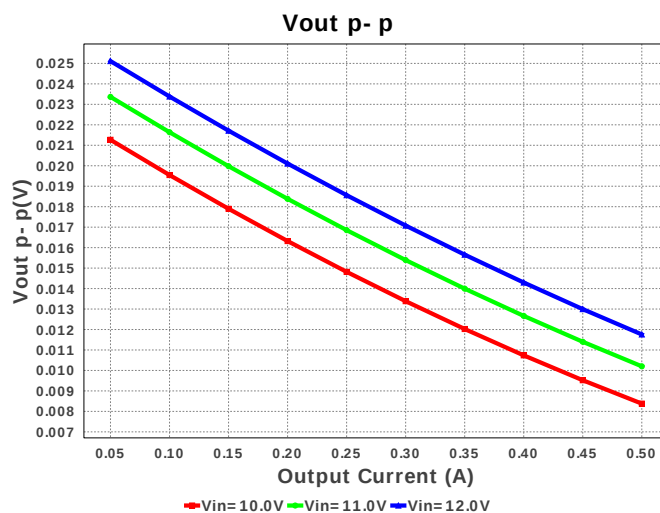
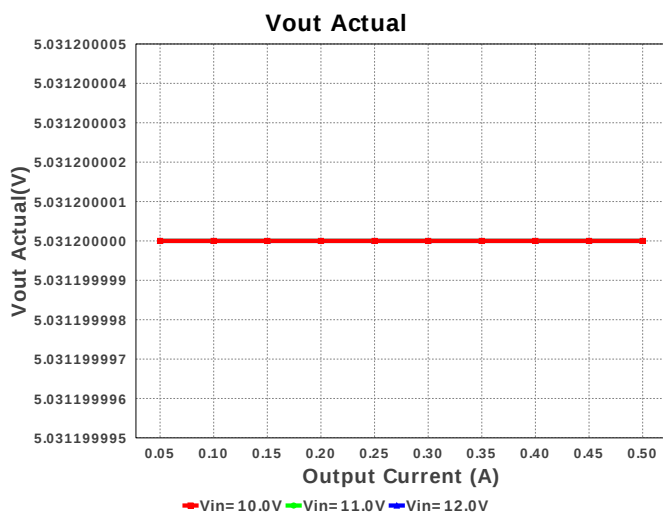
Design : 4742013/213 TPS564201DDCR
TPS564201DDCR 10.0V-12.0V to 5.00V @ 0.5A

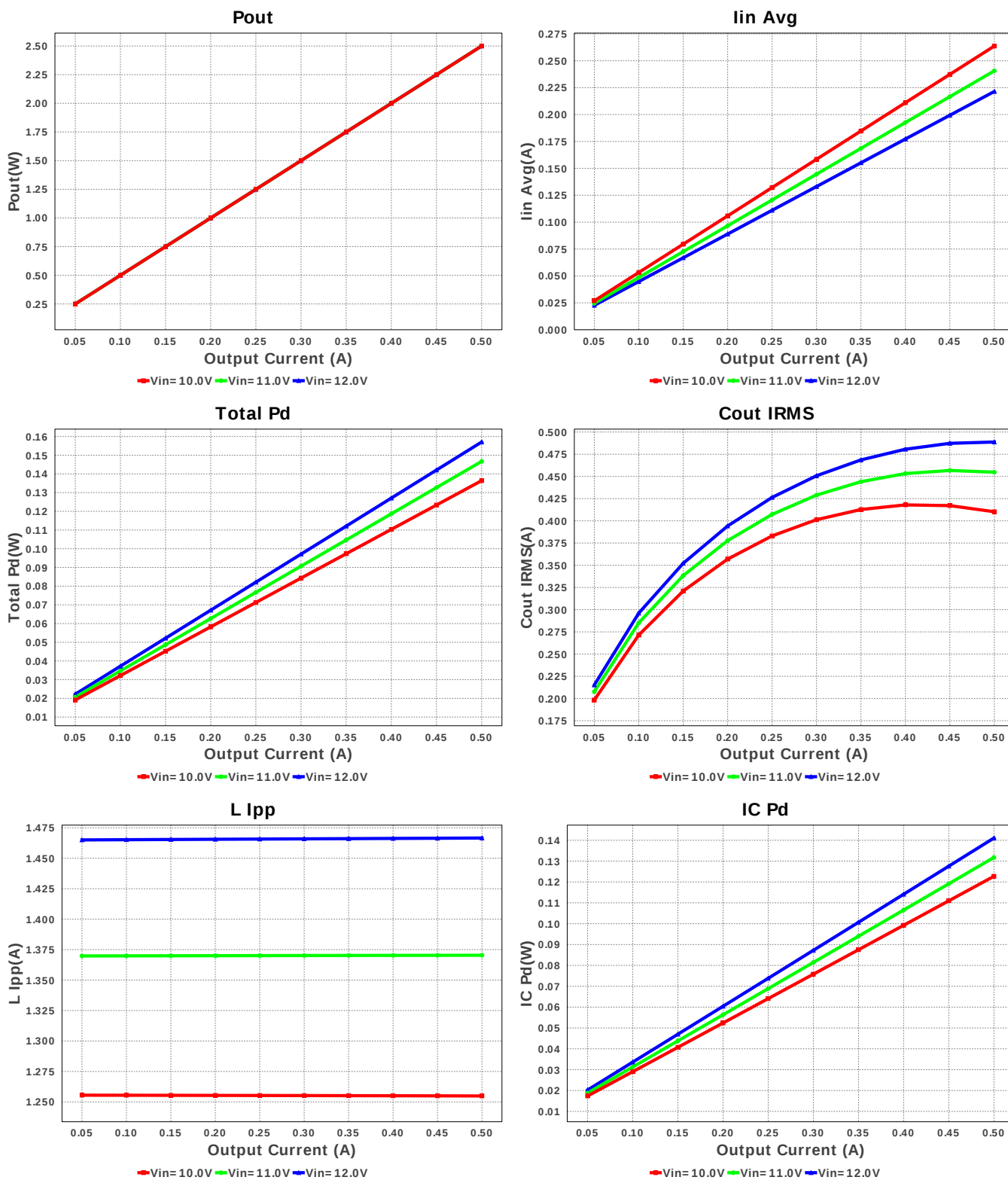


Electrical BOM

#	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 mm ²
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 mm ²
3.	Cout	TDK	C3216X5R1E476M160AC Series= X5R	Cap= 47.0 uF ESR= 2.082 mOhm VDC= 25.0 V IRMS= 5.0279 A	1	\$0.35	 1206 11 mm ²
4.	L1	Bourns	SRN6045-3R3Y	L= 3.3 uH DCR= 30.2 mOhm	1	\$0.16	 SRN6045 64 mm ²
5.	Rfbb	Vishay-Dale	CRCW040210K0FKED Series= CRCW..e3	Res= 10.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
6.	Rfht	Vishay-Dale	CRCW040256K2FKED Series= CRCW..e3	Res= 56.2 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
7.	U1	Texas Instruments	TPS564201DDCR	Switcher	1	\$0.50	 DDC0006A_N 10 mm ²







Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	400.662 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	488.736 mA	Current	Output capacitor RMS ripple current
3.	IC Ipk	1.233 A	Current	Peak switch current in IC
4.	Iin Avg	221.42 mA	Current	Average input current
5.	L Ipp	1.467 A	Current	Peak-to-peak inductor ripple current
6.	M1 Irms	451.787 mA	Current	Q lavg
7.	BOM Count	8	General	Total Design BOM count
8.	FootPrint	112.0 mm ²	General	Total Foot Print Area of BOM components
9.	Frequency	409.613 kHz	General	Switching frequency
10.	IC Tolerance	10.0 mV	General	IC Feedback Tolerance
11.	M Vds Act	0.0 V	General	Voltage drop across the MosFET

#	Name	Value	Category	Description
12.	Pout	2.5 W	General	Total output power
13.	Total BOM	\$1.1	General	Total BOM Cost
14.	Vout Actual	5.031 V	Op_Point	Vout Actual calculated based on selected voltage divider resistors
15.	Vout OP	5.0 V	Op_Point	Operational Output Voltage
16.	Duty Cycle	28.469 %	Op_point	Duty cycle
17.	Efficiency	94.089 %	Op_point	Steady state efficiency
18.	IC Tj	37.759 degC	Op_point	IC junction temperature
19.	ICThetaJA	55.0 degC/W	Op_point	IC junction-to-ambient thermal resistance
20.	IOUT_OP	500.0 mA	Op_point	Iout operating point
21.	VIN_OP	12.0 V	Op_point	Vin operating point
22.	Vout p-p	11.758 mV	Op_point	Peak-to-peak output ripple voltage
23.	Cin Pd	331.254 μ W	Power	Input capacitor power dissipation
24.	Cout Pd	497.312 μ W	Power	Output capacitor power dissipation
25.	IC Pd	141.08 mW	Power	IC power dissipation
26.	L Pd	14.764 mW	Power	Inductor power dissipation
27.	Total Pd	157.058 mW	Power	Total Power Dissipation
28.	Vout Tolerance	3.053 %		Vout Tolerance based on IC Tolerance (no load) and voltage divider resistors if applicable

Design Inputs

#	Name	Value	Description
1.	Iout	500.0 m	Maximum Output Current
2.	VinMax	12.0	Maximum input voltage
3.	VinMin	10.0	Minimum input voltage
4.	Vout	5.0	Output Voltage
5.	base_pn	TPS564201	Base Product Number
6.	source	DC	Input Source Type
7.	Ta	30.0	Ambient temperature

Design Assistance

1. **TPS564201** Product Folder : <http://www.ti.com/product/TPS564201> : contains the data sheet and other resources.

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