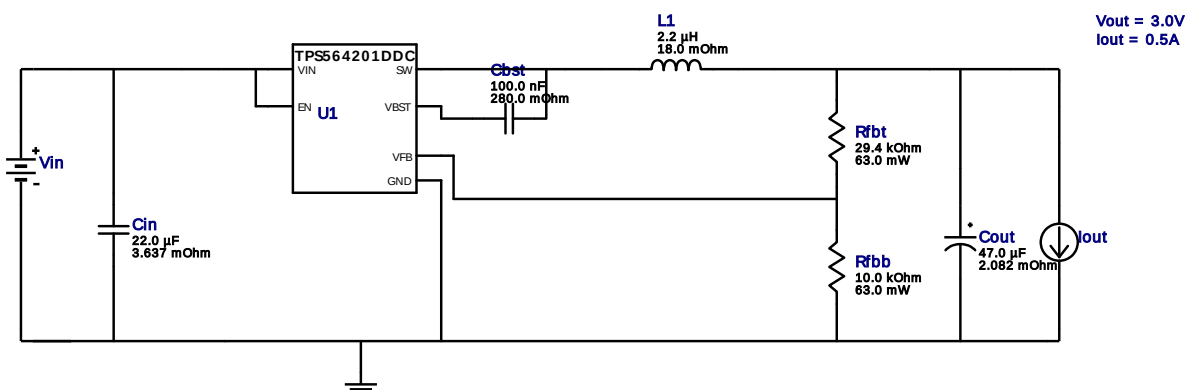


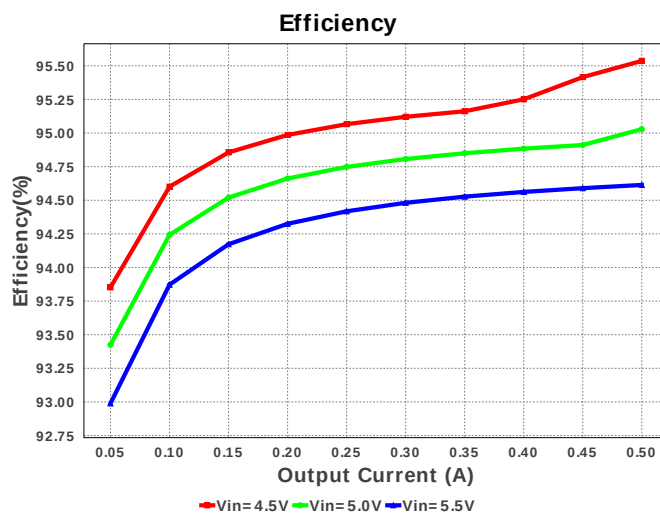
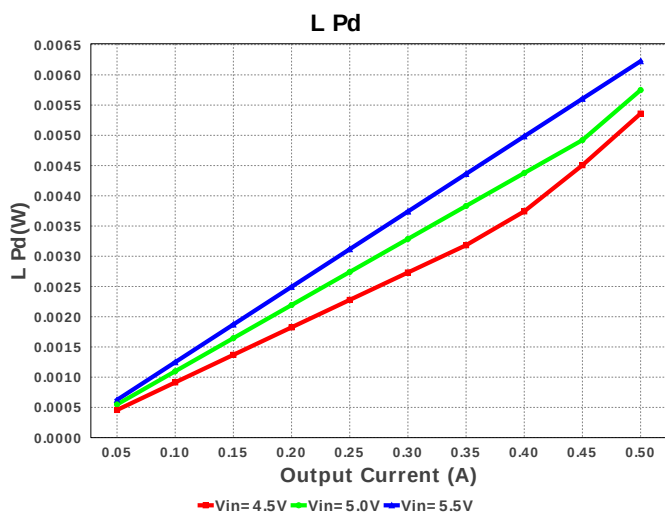
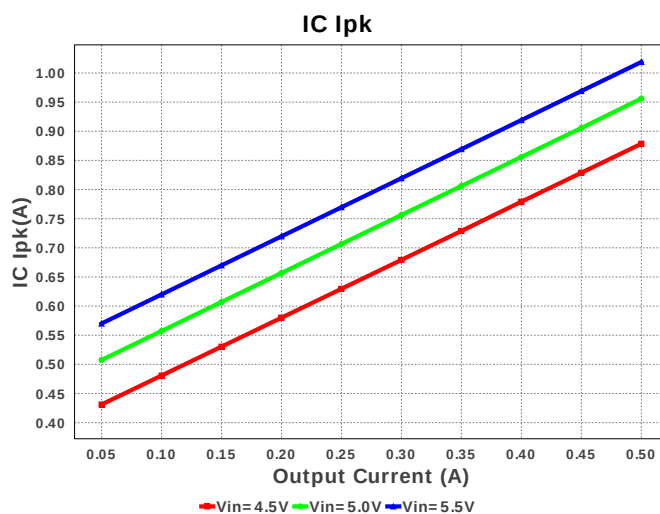
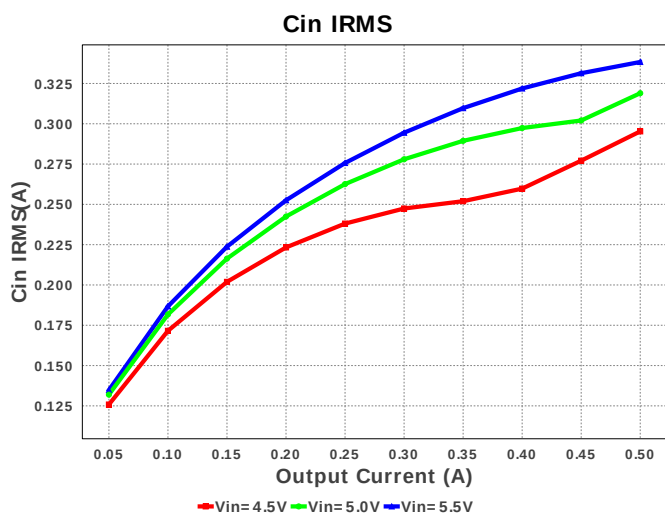
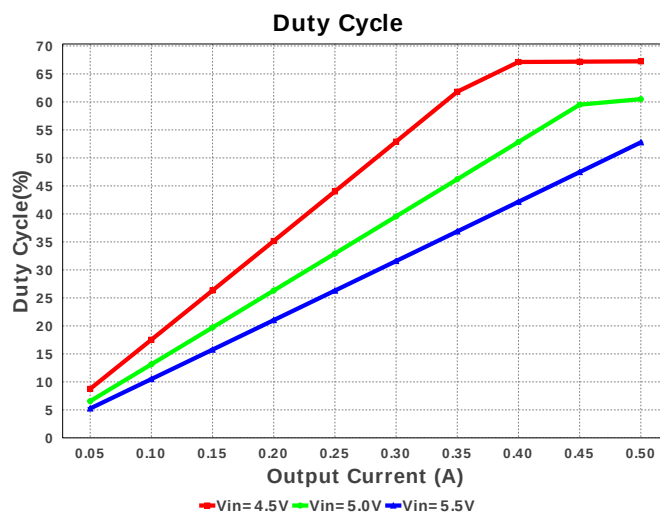
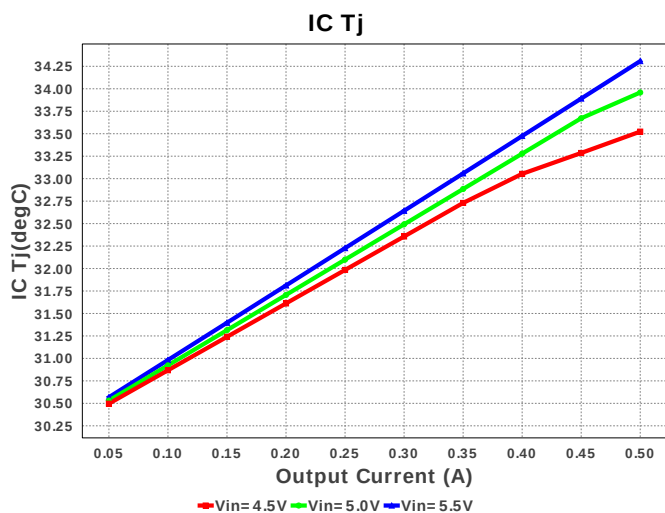
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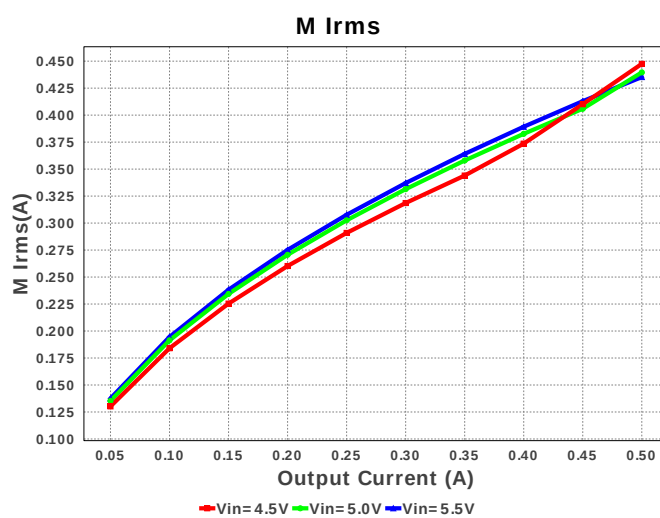
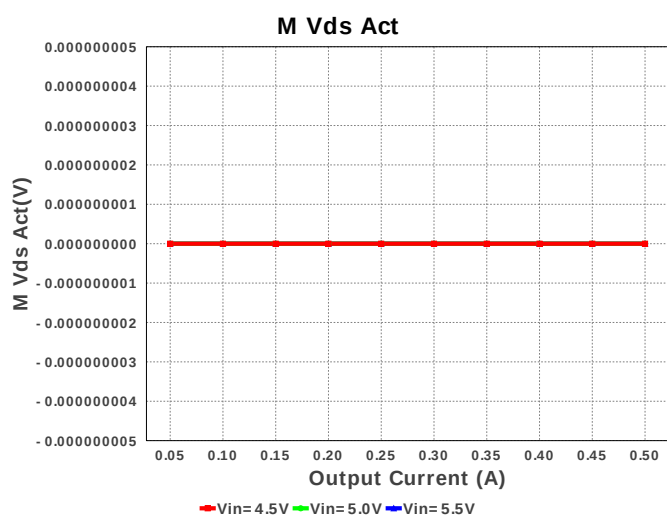
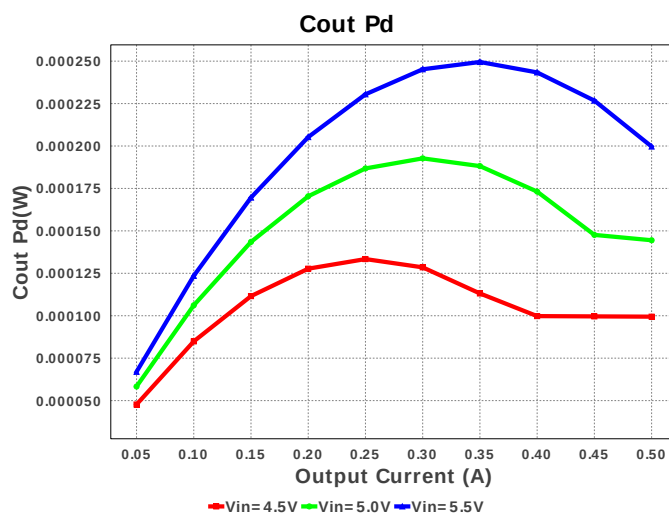
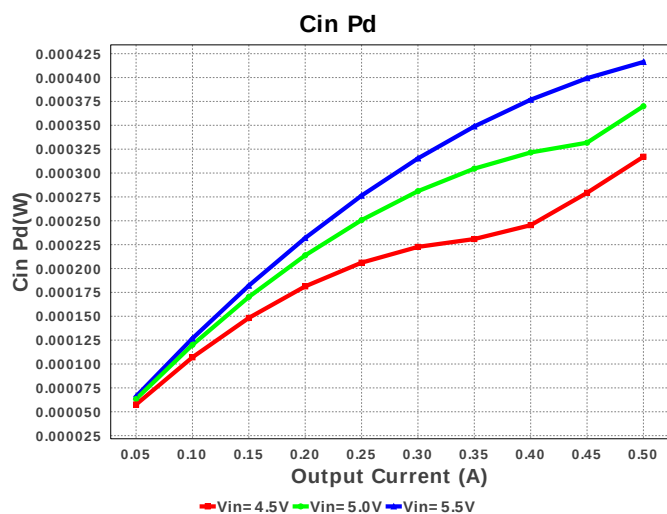
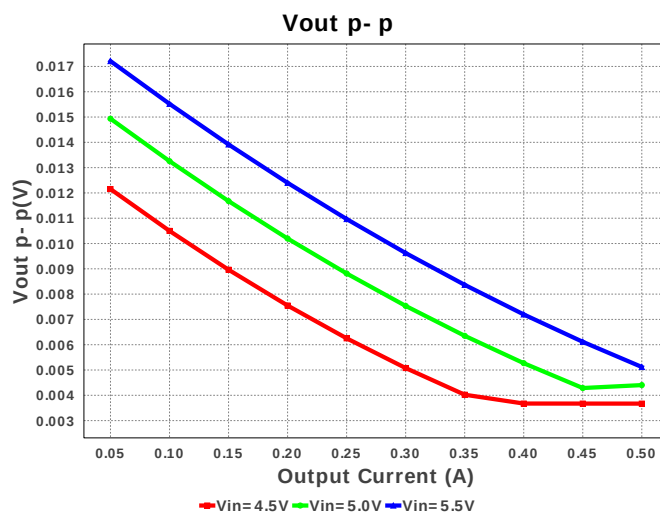
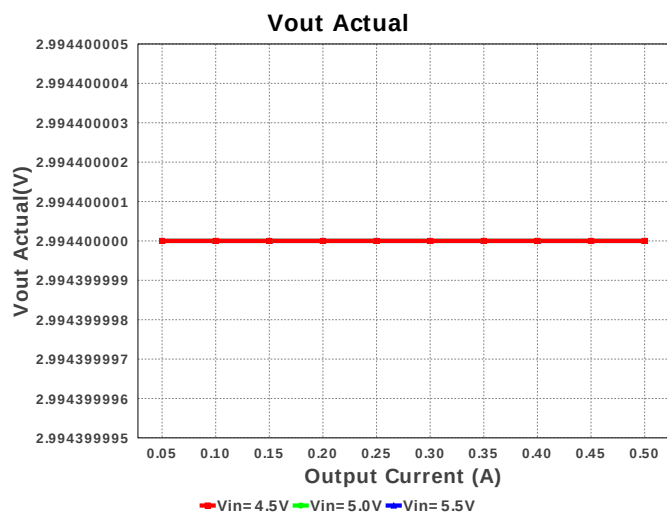
Design : 4742013/131 TPS564201DDCR
TPS564201DDCR 4.5V-5.5V to 3.00V @ 0.5A

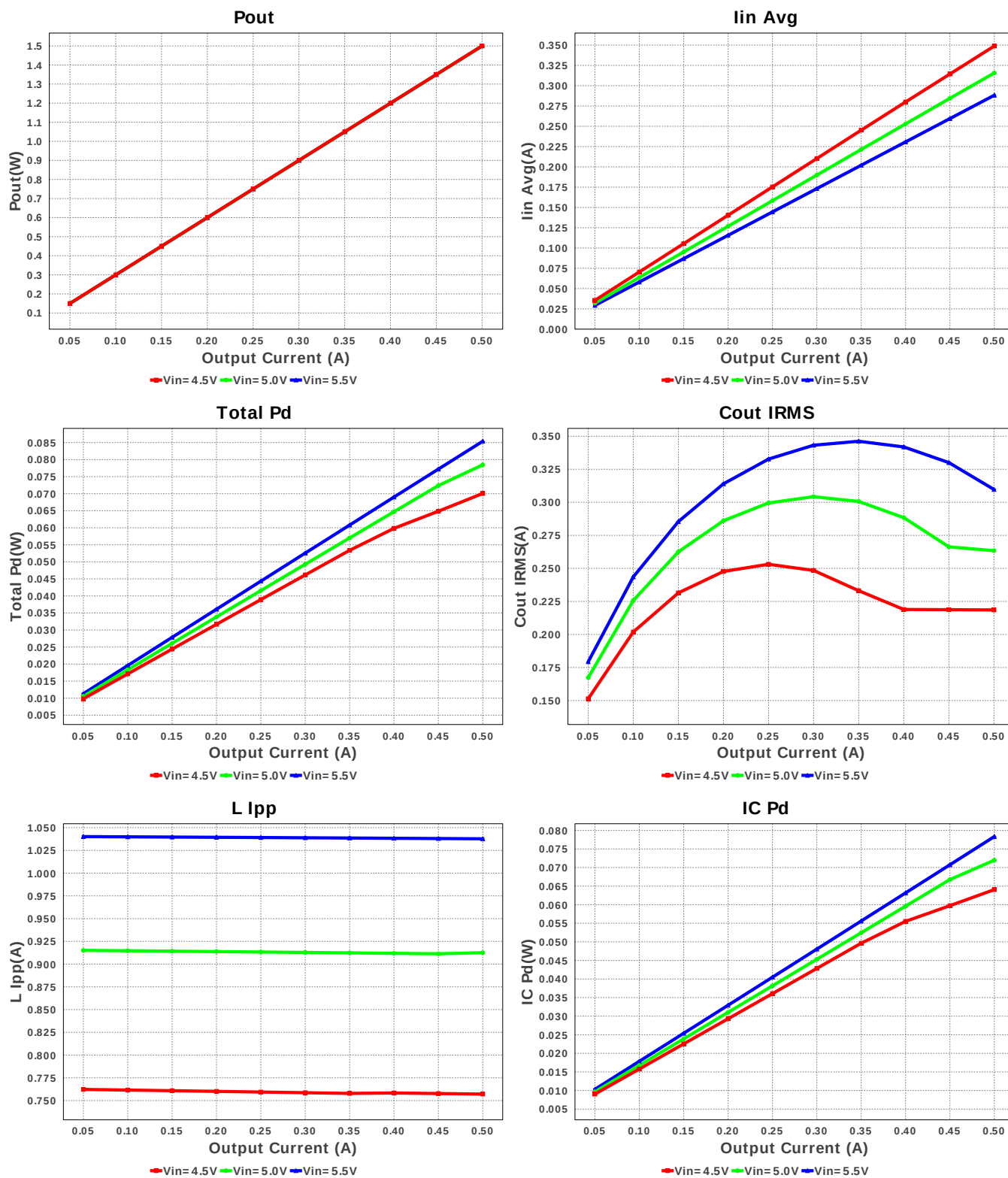


Electrical BOM

#	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	GRM31CR61A226KE19L Series= X5R	Cap= 22.0 uF ESR= 3.637 mOhm VDC= 10.0 V IRMS= 3.56456 A	1	\$0.07	1206_190 11 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	Coilcraft	MSS5131-222MLB	L= 2.2 µH DCR= 18.0 mOhm	1	\$0.48	MSS5131 50 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	CRCW040229K4FKED Series= CRCW..e3	Res= 29.4 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	338.326 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	309.702 mA	Current	Output capacitor RMS ripple current
3.	IC Ipk	1.019 A	Current	Peak switch current in IC
4.	Iin Avg	288.25 mA	Current	Average input current
5.	L Ipp	1.038 A	Current	Peak-to-peak inductor ripple current
6.	M1 Irms	435.269 mA	Current	Q lavg
7.	BOM Count	7	General	Total Design BOM count
8.	FootPrint	95.0 mm ²	General	Total Foot Print Area of BOM components
9.	Frequency	571.137 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	1.5 W	General	Total output power
13.	Total BOM	\$1.43	General	Total BOM Cost
14.	Vout Actual	2.994 V	Op_Point	Vout Actual calculated based on selected voltage divider resistors
15.	Vout OP	3.0 V	Op_Point	Operational Output Voltage
16.	Duty Cycle	52.778 %	Op_point	Duty cycle
17.	Efficiency	94.614 %	Op_point	Steady state efficiency
18.	IC Tj	34.308 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	5.5 V	Op_point	Vin operating point
22.	Vout p-p	5.119 mV	Op_point	Peak-to-peak output ripple voltage
23.	Cin Pd	416.307 μ W	Power	Input capacitor power dissipation
24.	Cout Pd	199.696 μ W	Power	Output capacitor power dissipation
25.	IC Pd	78.326 mW	Power	IC power dissipation
26.	L Pd	6.226 mW	Power	Inductor power dissipation
27.	Total Pd	85.388 mW	Power	Total Power Dissipation
28.	Vout Tolerance	2.843 %		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	5.5	Maximum input voltage
3.	VinMin	4.5	Minimum input voltage
4.	Vout	3.0	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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