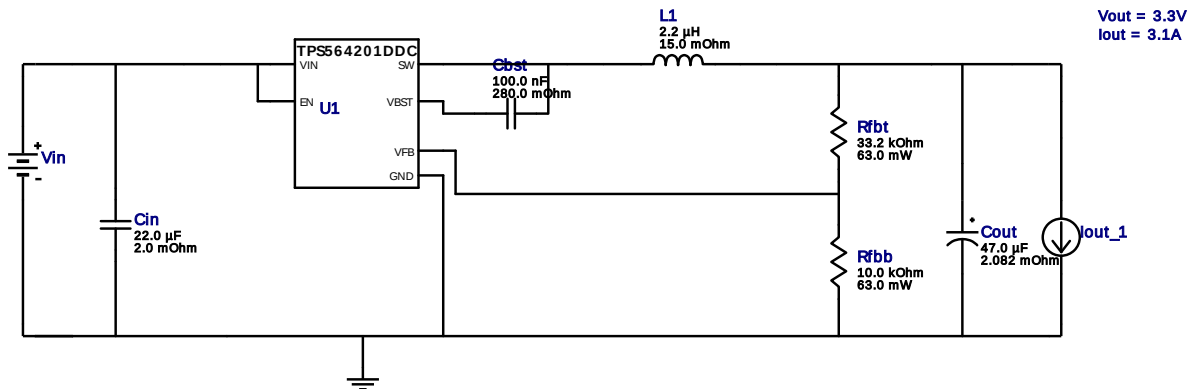


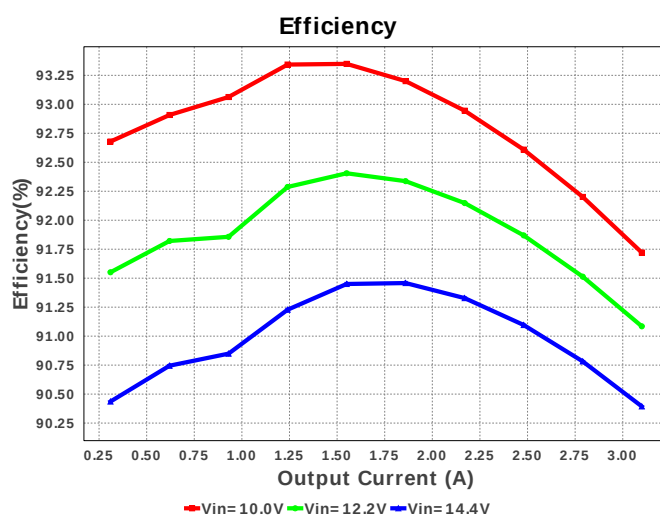
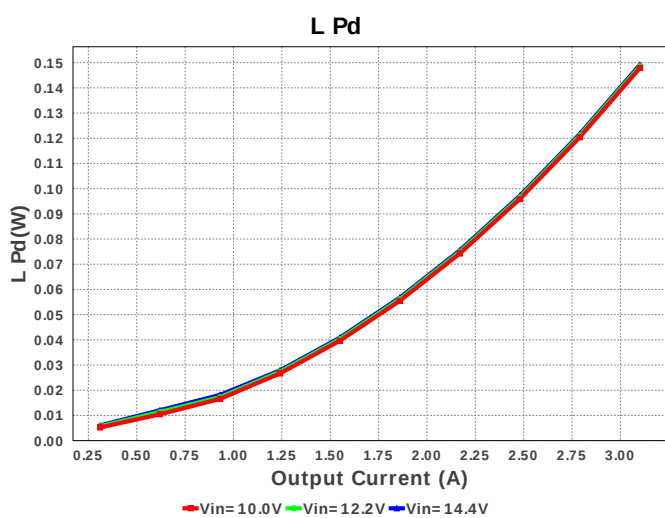
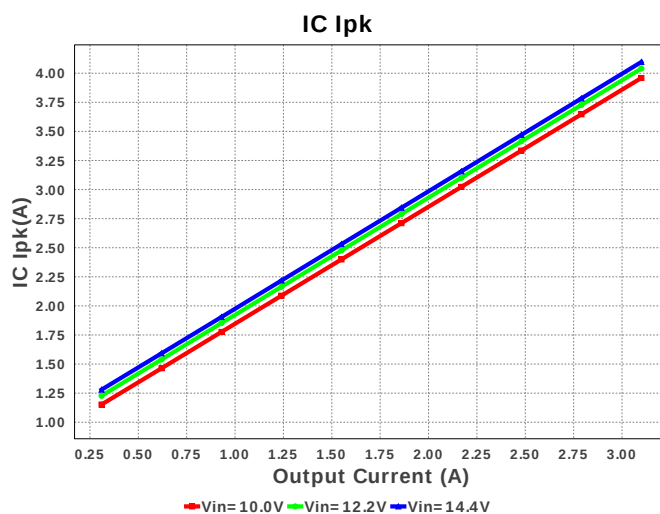
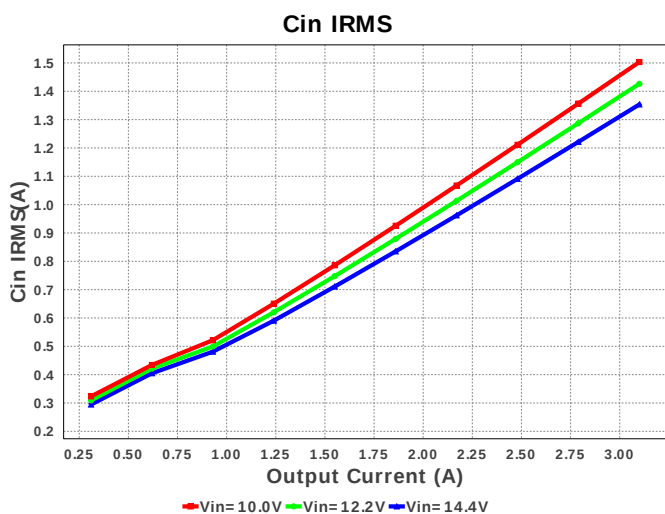
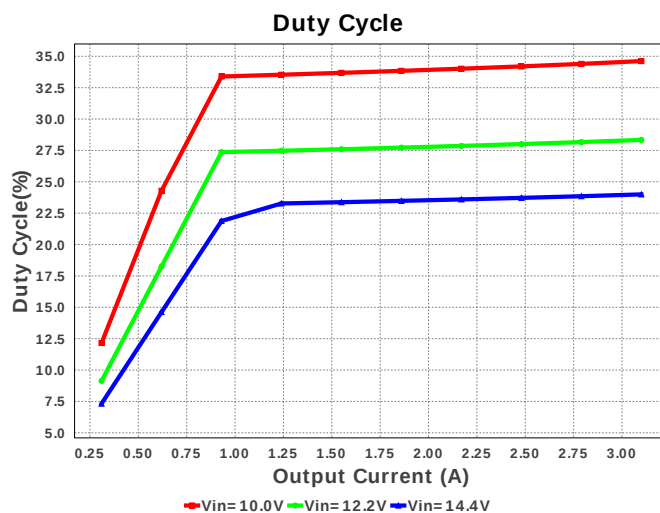
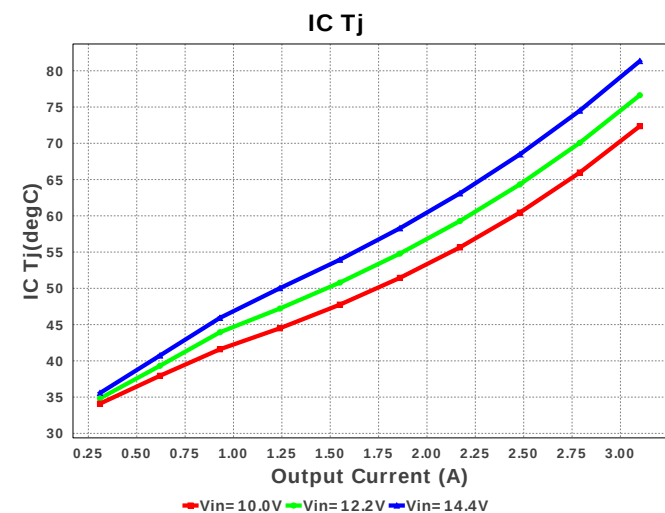
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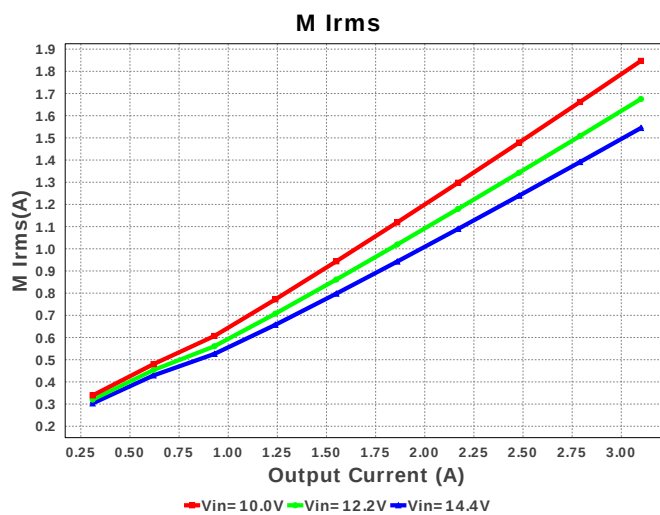
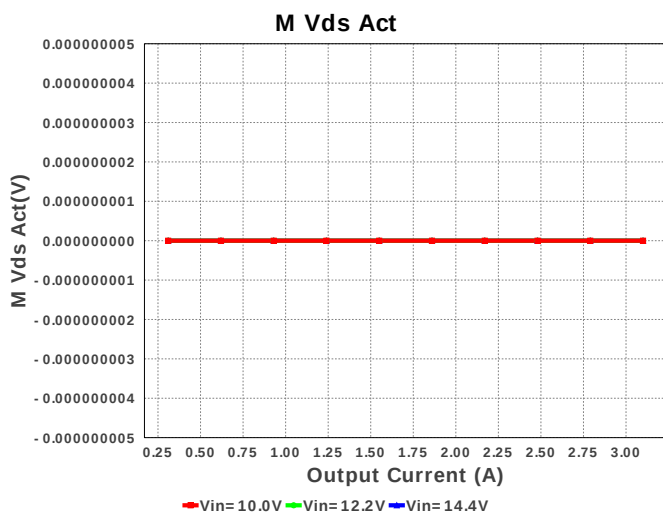
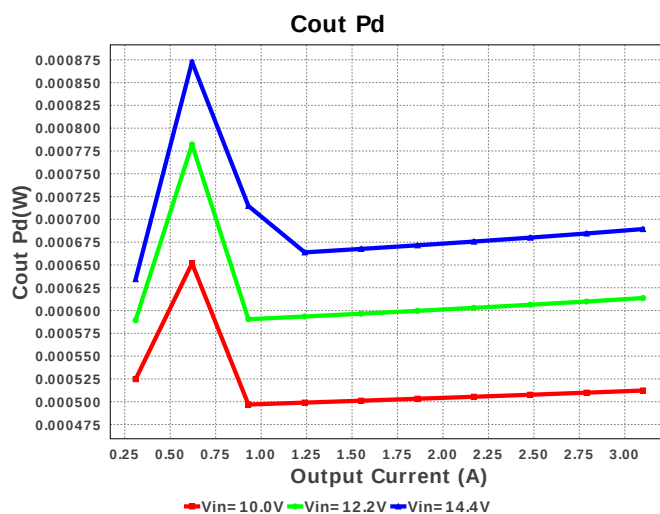
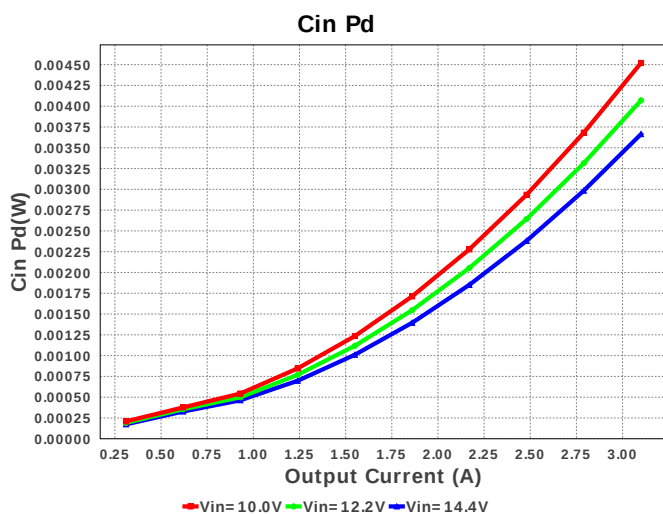
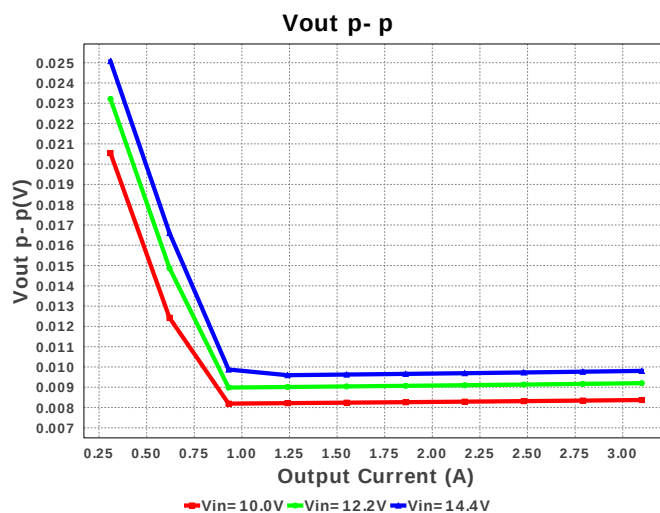
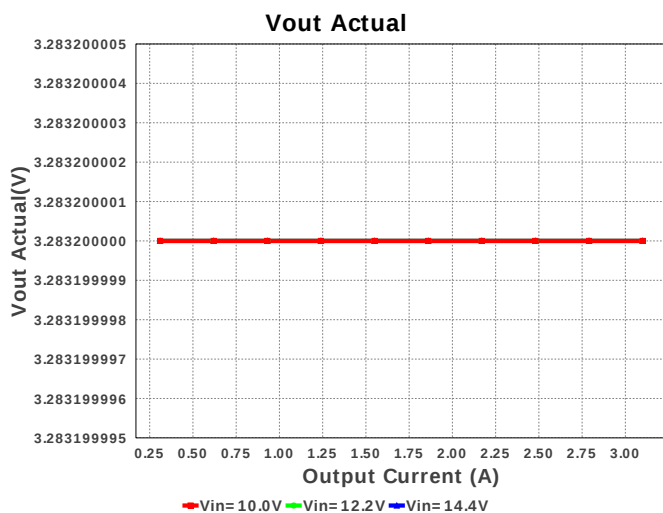
Design : 1641152/97 TPS564201DDCR
TPS564201DDCR 10.0V-14.4V to 3.30V @ 3.1A

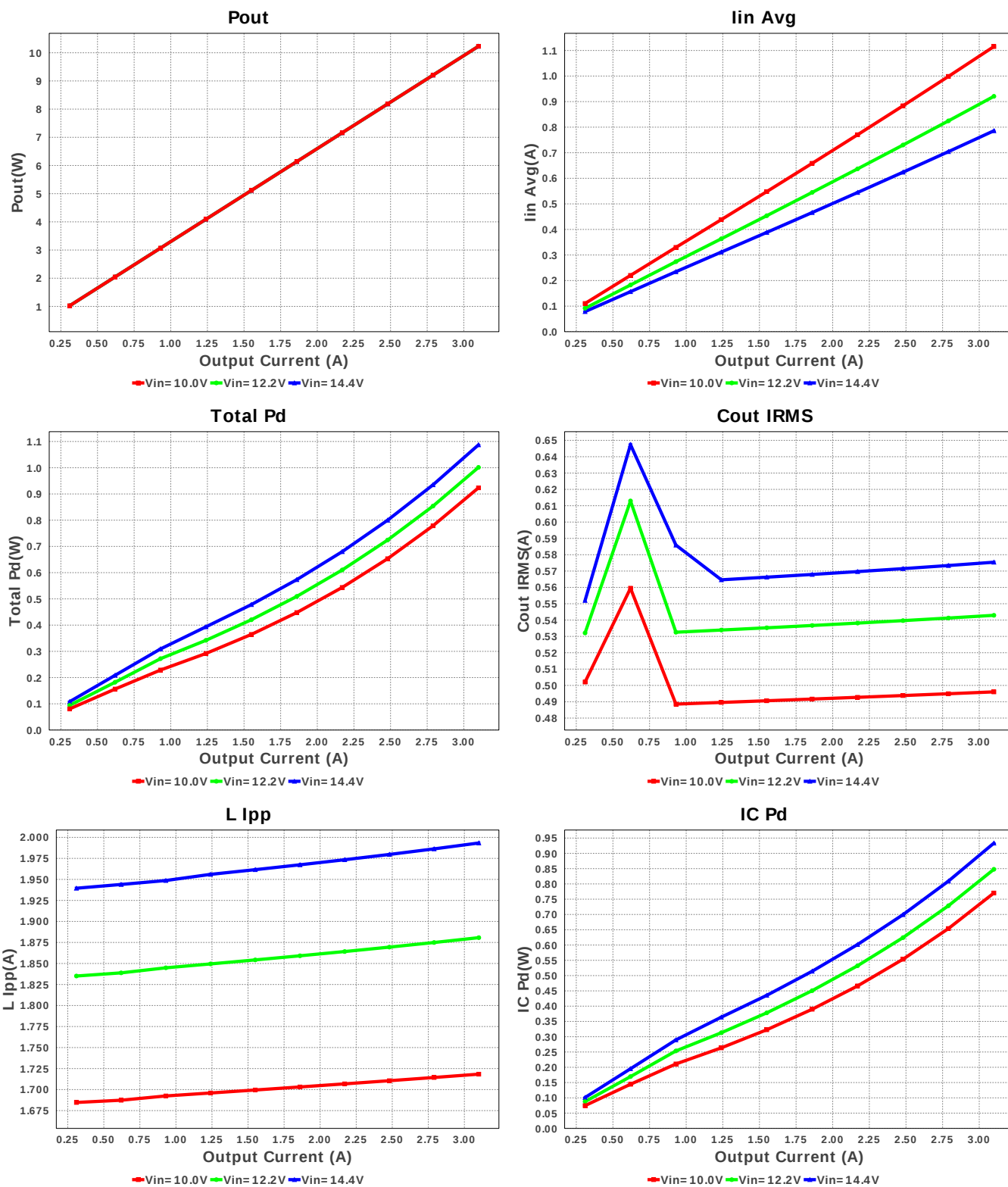


Electrical BOM

#	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	GRM32ER61E226KE15L Series= X5R	Cap= 22.0 uF ESR= 2.0 mOhm VDC= 25.0 V IRMS= 3.67 A	1	\$0.16	1210 15 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	TDK	VLP8040T-2R2N	L= 2.2 µH DCR= 15.0 mOhm	1	\$0.22	VLP8040 113 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	CRCW040233K2FKED Series= CRCW..e3	Res= 33.2 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	1.354 A	Current	Input capacitor RMS ripple current
2.	Cout IRMS	575.416 mA	Current	Output capacitor RMS ripple current
3.	IC Ipk	4.097 A	Current	Peak switch current in IC
4.	Iin Avg	785.91 mA	Current	Average input current
5.	L Ipp	1.993 A	Current	Peak-to-peak inductor ripple current
6.	M1 Irms	1.545 A	Current	Q lavg
7.	BOM Count	7	General	Total Design BOM count
8.	FootPrint	162.0 mm ²	General	Total Foot Print Area of BOM components
9.	Frequency	592.99 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	10.23 W	General	Total output power
13.	Total BOM	\$1.26	General	Total BOM Cost
14.	Vout Actual	3.283 V	Op_Point	Vout Actual calculated based on selected voltage divider resistors
15.	Vout OP	3.3 V	Op_Point	Operational Output Voltage
16.	Duty Cycle	23.997 %	Op_point	Duty cycle
17.	Efficiency	90.394 %	Op_point	Steady state efficiency
18.	IC Tj	81.335 degC	Op_point	IC junction temperature
19.	ICThetaJA	55.0 degC/W	Op_point	IC junction-to-ambient thermal resistance
20.	IOUT_OP	3.1 A	Op_point	Iout operating point
21.	VIN_OP	14.4 V	Op_point	Vin operating point
22.	Vout p-p	9.806 mV	Op_point	Peak-to-peak output ripple voltage
23.	Cin Pd	3.664 mW	Power	Input capacitor power dissipation
24.	Cout Pd	689.358 μ W	Power	Output capacitor power dissipation
25.	IC Pd	933.366 mW	Power	IC power dissipation
26.	L Pd	149.117 mW	Power	Inductor power dissipation
27.	Total Pd	1.087 W	Power	Total Power Dissipation
28.	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	3.1	Maximum Output Current
2.	VinMax	14.4	Maximum input voltage
3.	VinMin	10.0	Minimum input voltage
4.	Vout	3.3	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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