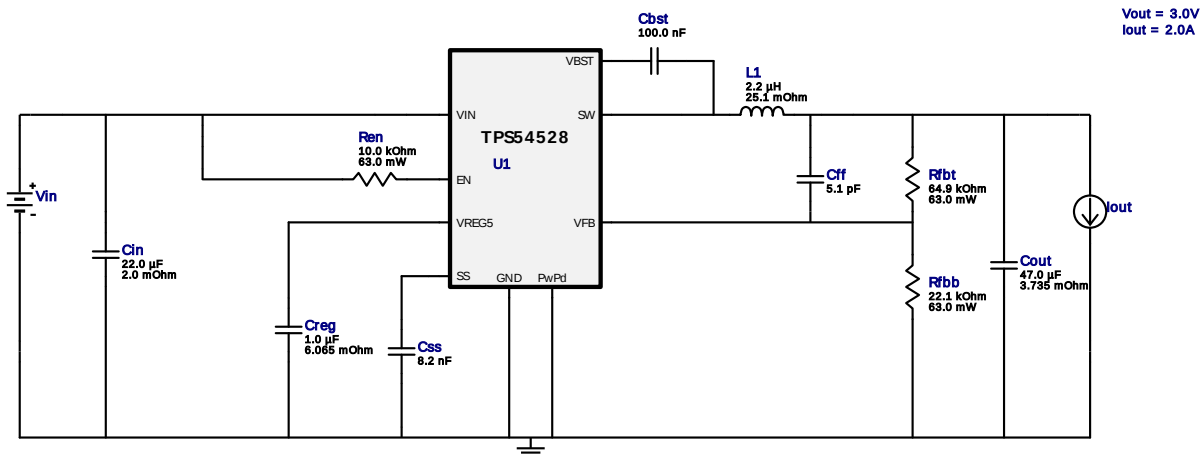


WEBENCH® Design Report

Design : 4743458/5 TPS54528DDAR
TPS54528DDAR 11.0V-15.0V to 3.00V @ 2.0A



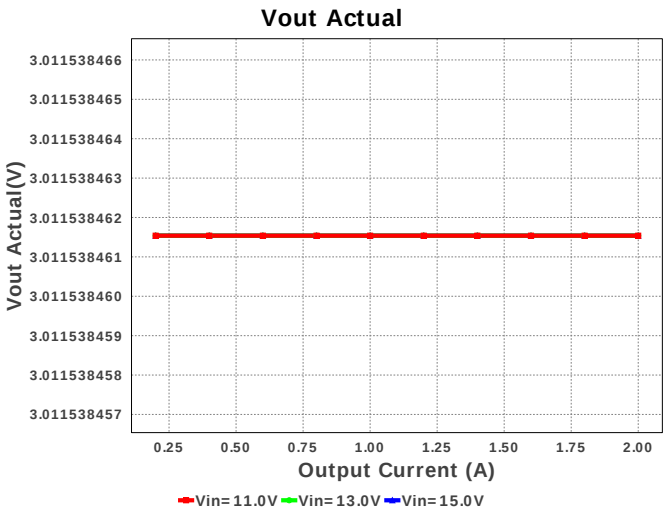
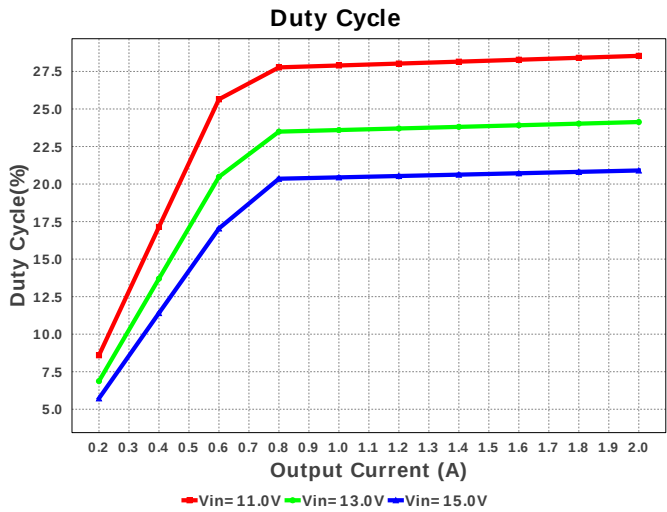
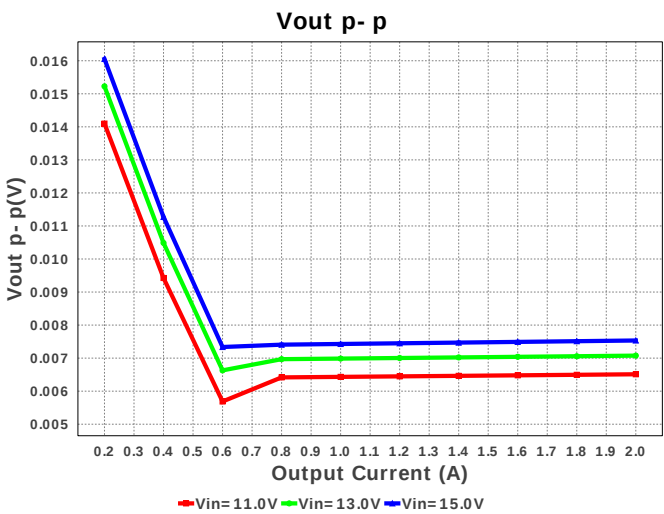
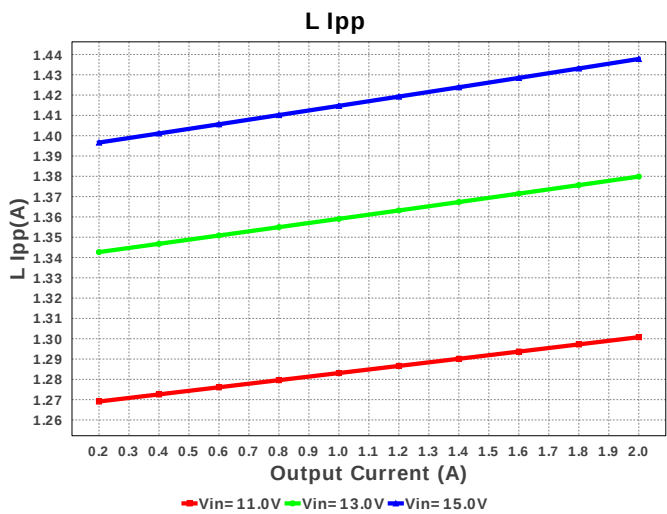
Electrical BOM

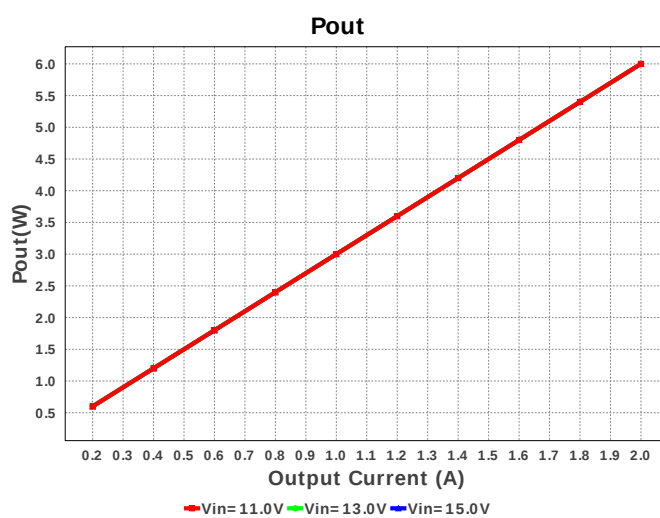
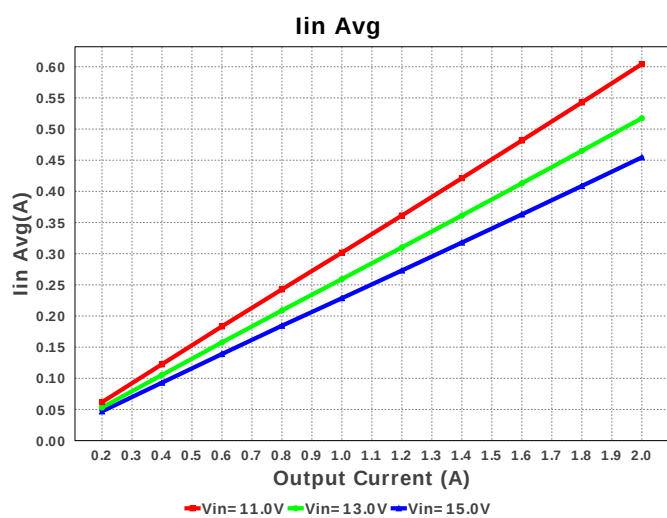
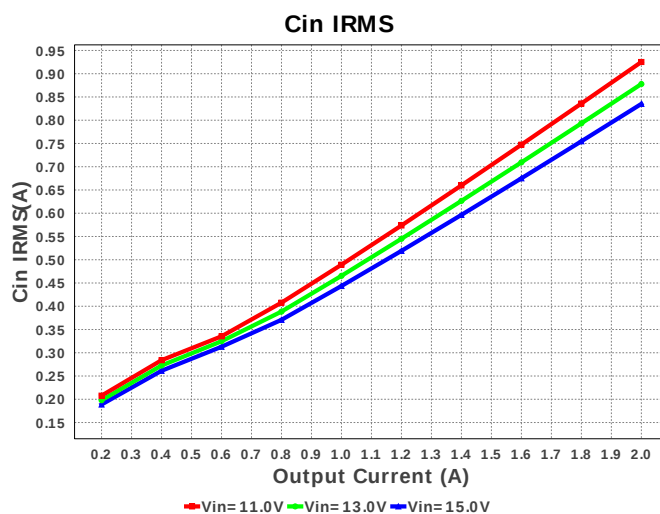
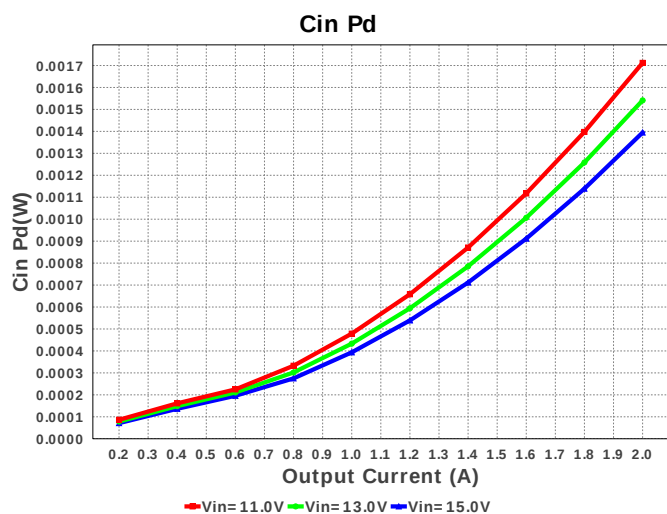
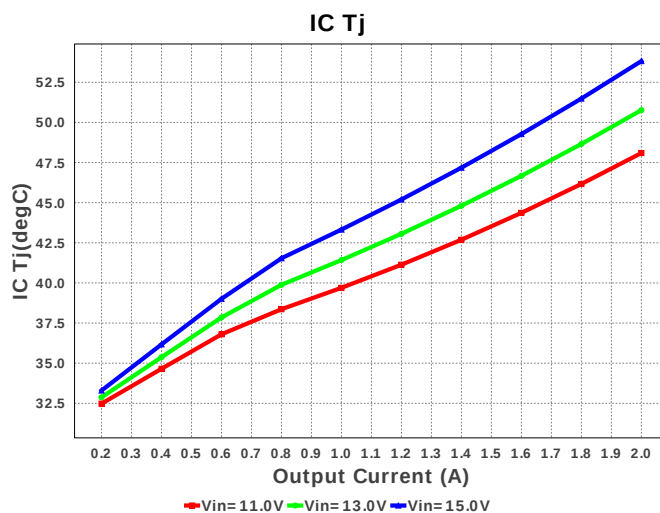
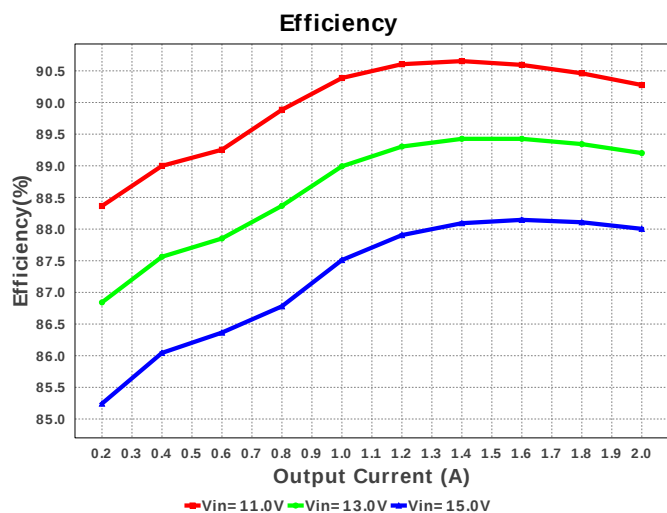
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cbst	MuRata	GRM155R61A104KA01D Series= X5R	Cap= 100.0 nF VDC= 10.0 V IRMS= 0.0 A	1	\$0.01	0402 3 mm ²
2.	Cff	MuRata	GRM1555C1E5R1CA01D Series= C0G/NP0	Cap= 5.1 pF VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	0402 3 mm ²
3.	Cin	MuRata	GRM32ER61E226KE15L 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
4.	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 mm ²
5.	Creg	MuRata	GRM188R61A105KA61D Series= X5R	Cap= 1.0 uF ESR= 6.065 mOhm VDC= 10.0 V IRMS= 1.30675 A	1	\$0.01	0603 5 mm ²
6.	Css	MuRata	GRM033R61A822KA01D Series= X5R	Cap= 8.2 nF VDC= 10.0 V IRMS= 0.0 A	1	\$0.01	0201 2 mm ²
7.	L1	Bourns	SRN6045-2R2Y	L= 2.2 uH DCR= 25.1 mOhm	1	\$0.16	SRN6045 64 mm ²
8.	Ren	Vishay-Dale	CRCW040210K0FKED Series= CRCW..e3	Res= 10.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
9.	Rfbb	Vishay-Dale	CRCW040222K1FKED Series= CRCW..e3	Res= 22.1 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
10.	Rfbt	Vishay-Dale	CRCW040264K9FKED Series= CRCW..e3	Res= 64.9 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²

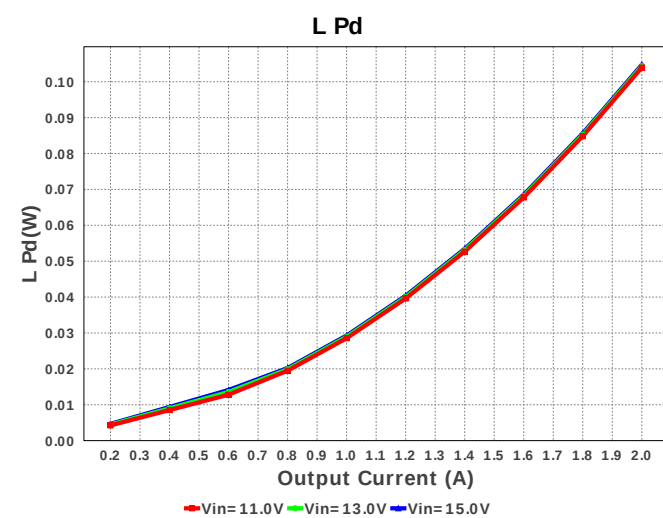
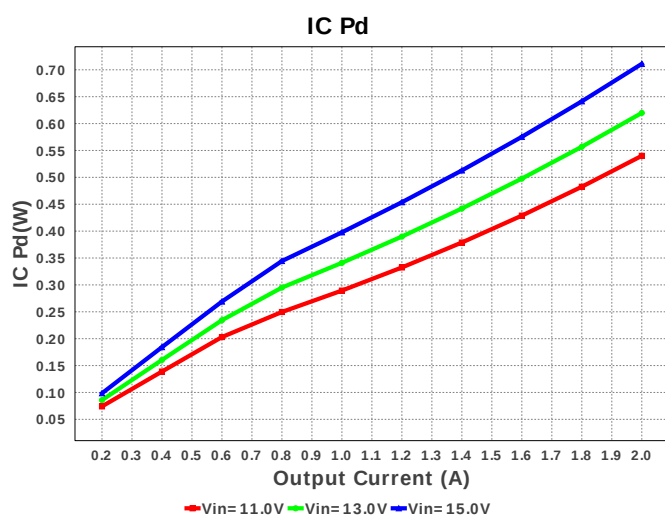
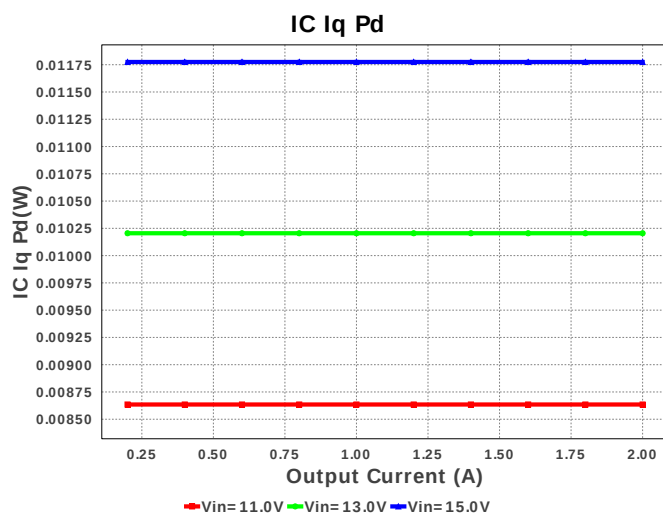
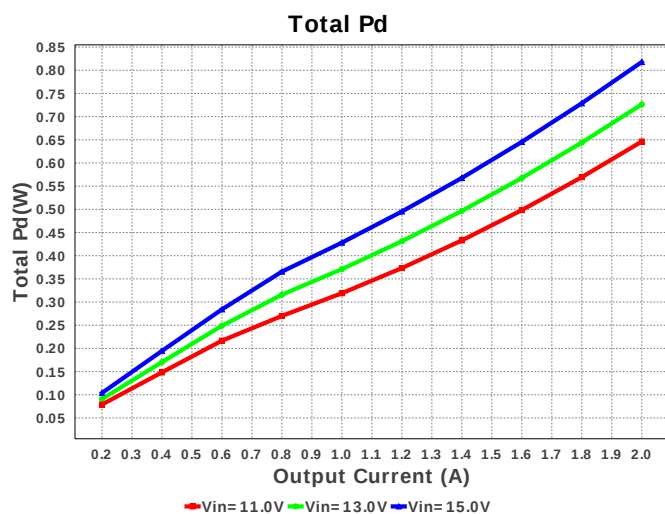
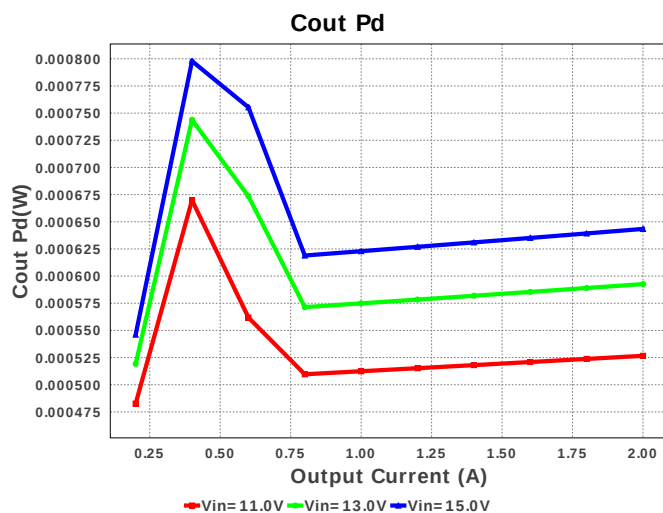
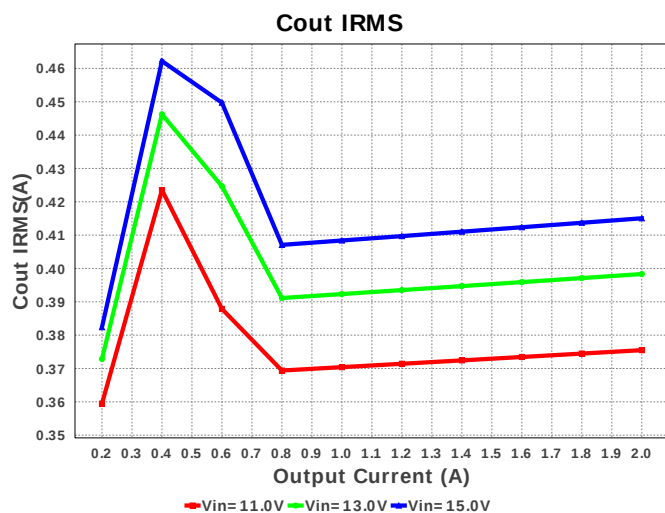
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11.	U1	Texas Instruments	TPS54528DDAR	Switcher	1	\$1.10	

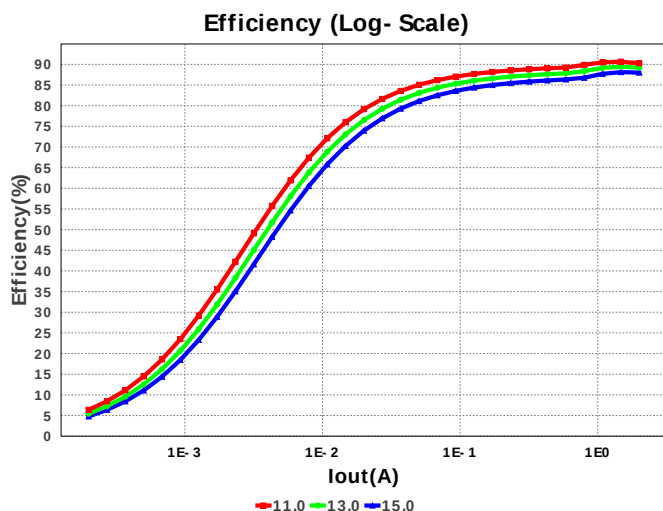


R-PDSO-G8 57 mm²









Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	835.086 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	415.055 mA	Current	Output capacitor RMS ripple current
3.	Iin Avg	454.53 mA	Current	Average input current
4.	L Ipp	1.438 A	Current	Peak-to-peak inductor ripple current
5.	BOM Count	11	General	Total Design BOM count
6.	FootPrint	169.0 mm ²	General	Total Foot Print Area of BOM components
7.	Frequency	780.764 kHz	General	Switching frequency
8.	Pout	6.0 W	General	Total output power
9.	Total BOM	\$1.59	General	Total BOM Cost
10.	ICThetaJA Effective	33.5 degC/W	Op_Point	Effective IC Junction-to-Ambient Thermal Resistance
11.	Vout Actual	3.012 V	Op_Point	Vout Actual calculated based on selected voltage divider resistors
12.	Vout OP	3.0 V	Op_Point	Operational Output Voltage
13.	Duty Cycle	20.903 %	Op_point	Duty cycle
14.	Efficiency	88.004 %	Op_point	Steady state efficiency
15.	IC Tj	53.82 degC	Op_point	IC junction temperature
16.	IOUT_OP	2.0 A	Op_point	Iout operating point
17.	VIN_OP	15.0 V	Op_point	Vin operating point
18.	Vout p-p	7.534 mV	Op_point	Peak-to-peak output ripple voltage
19.	Cin Pd	1.395 mW	Power	Input capacitor power dissipation
20.	Cout Pd	643.43 μW	Power	Output capacitor power dissipation
21.	IC Iq Pd	11.775 mW	Power	IC Iq Pd
22.	IC Pd	711.031 mW	Power	IC power dissipation
23.	L Pd	104.724 mW	Power	Inductor power dissipation
24.	Total Pd	817.881 mW	Power	Total Power Dissipation
25.	Vout Tolerance	3.365 %		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	15.0	Maximum input voltage
3.	VinMin	11.0	Minimum input voltage
4.	Vout	3.0	Output Voltage
5.	base_pn	TPS54528	Base Product Number
6.	source	DC	Input Source Type
7.	Ta	30.0	Ambient temperature

Design Assistance

1. **TPS54528** Product Folder : <http://www.ti.com/product/TPS54528> : contains the data sheet and other resources.

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