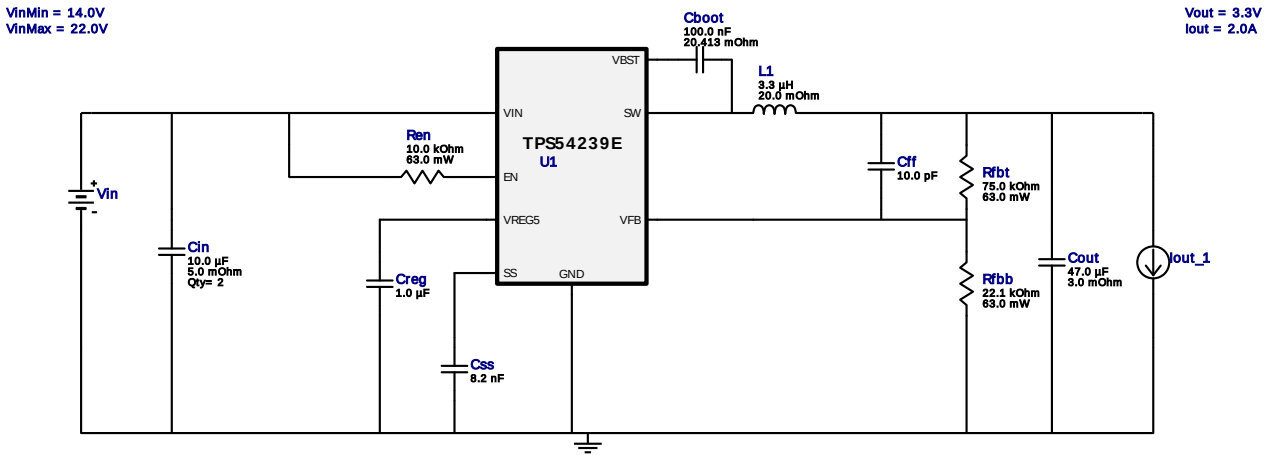
VinMin = 14.0V
VinMax = 22.0V
Vout = 3.3V
Iout = 2.0A

Device = TPS54239EDDAR
Topology = Buck
Created = 3/4/15 2:23:55 AM
BOM Cost = $3.04
Footprint = 298.0 mm^2
BOM Count = 12
Total Pd = 1.01W

WEBENCH® Design Report

Design : 3839279/368 TPS54239EDDAR
TPS54239EDDAR 14.0V-22.0V to 3.30V @ 2.0A

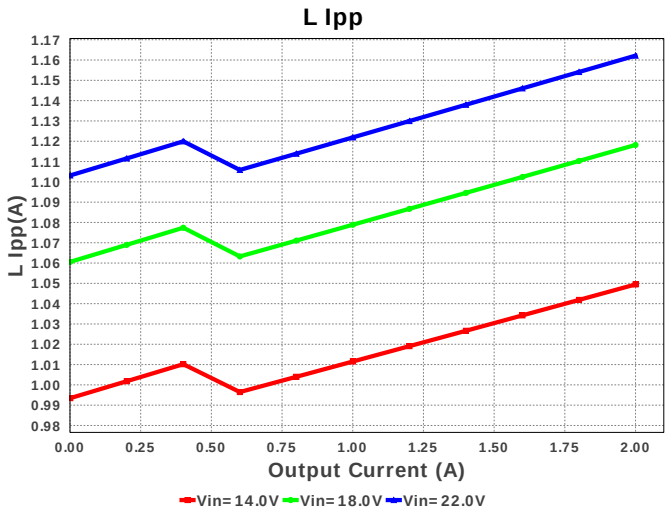


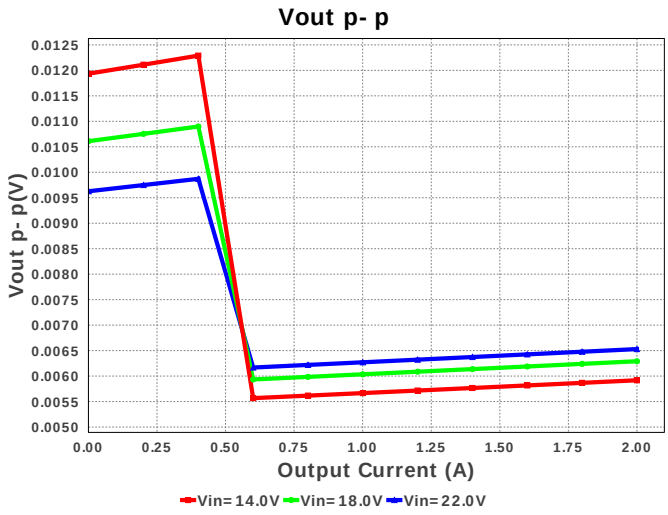
Electrical BOM

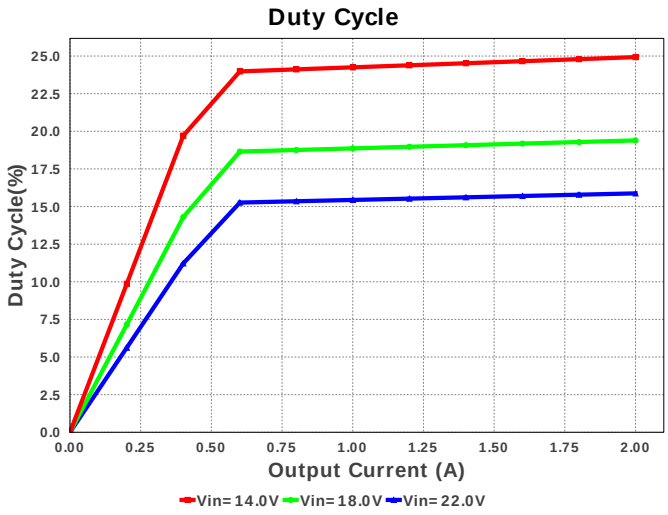
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cboot	TDK	C1005X5R1A104K Series= X5R	Cap= 100.0 nF ESR= 20.413 mOhm VDC= 10.0 V IRMS= 0.0 A	1	$0.01	0402 3 mm^2
2.	Cff	Kemet	C0805C100M4GACTU Series= C0G	Cap= 10.0 pF VDC= 16.0 V IRMS= 0.0 A	1	$0.01	0805 7 mm^2
3.	Cin	TDK	C5750X7S2A106M Series= 479	Cap= 10.0 uF ESR= 5.0 mOhm VDC= 100.0 V IRMS= 6.45 A	2	$0.84	2220 60 mm^2
4.	Cout	MuRata	GRM31CR60J476ME19L Series= X5R	Cap= 47.0 uF ESR= 3.0 mOhm VDC= 6.3 V IRMS= 0.0 A	1	$0.12	1206 11 mm^2
5.	Creg	MuRata	GRM155R61A105KE15D Series= X5R	Cap= 1.0 uF VDC= 10.0 V IRMS= 0.0 A	1	$0.01	0402 3 mm^2
6.	Css	MuRata	GRM155R71E822KA01D Series= X7R	Cap= 8.2 nF VDC= 25.0 V IRMS= 0.0 A	1	$0.01	0402 3 mm^2
7.	L1	TDK	CLF7045T-3R3N	L= 3.3 µH DCR= 20.0 mOhm	1	$0.42	CLF7045 86 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	CRCW040275K0FKED Series= CRCW..e3	Res= 75.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm^2

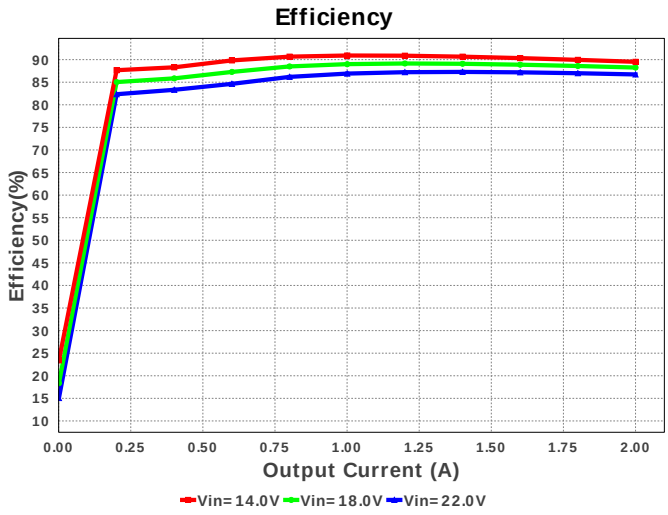
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
11.	U1	Texas Instruments	TPS54239EDDAR	Switcher	1	$0.75	

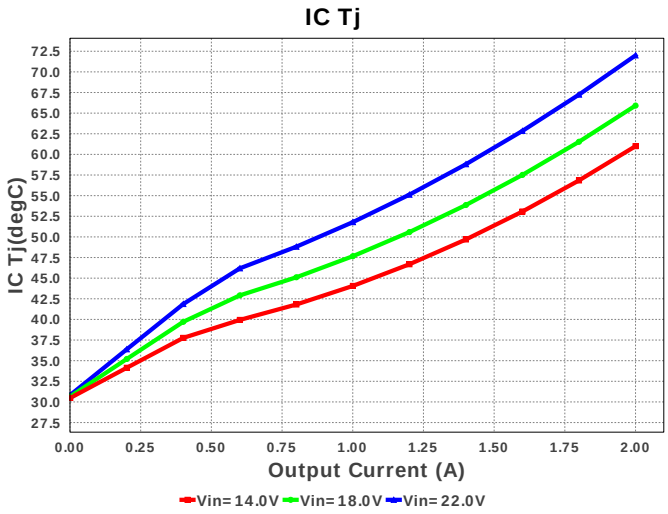
R-PDSO-G8 57 mm^2

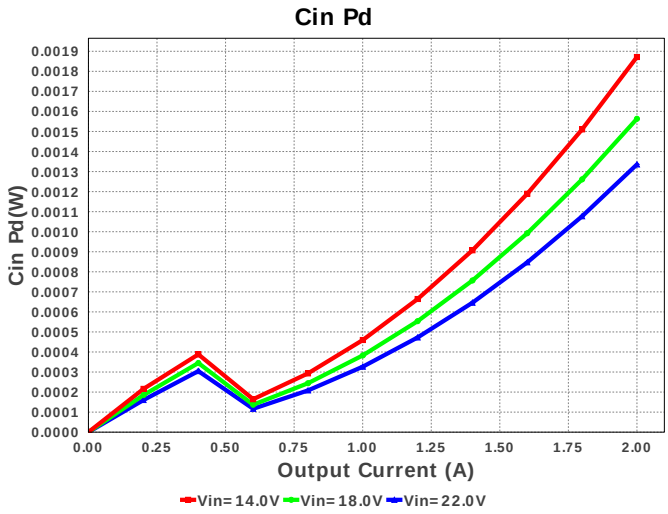


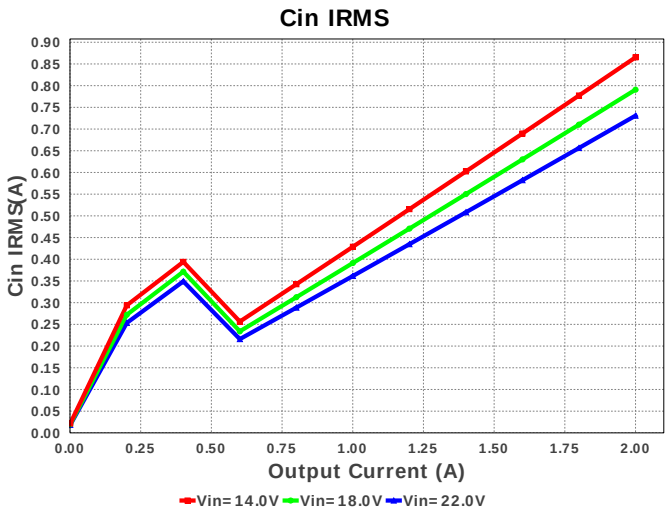


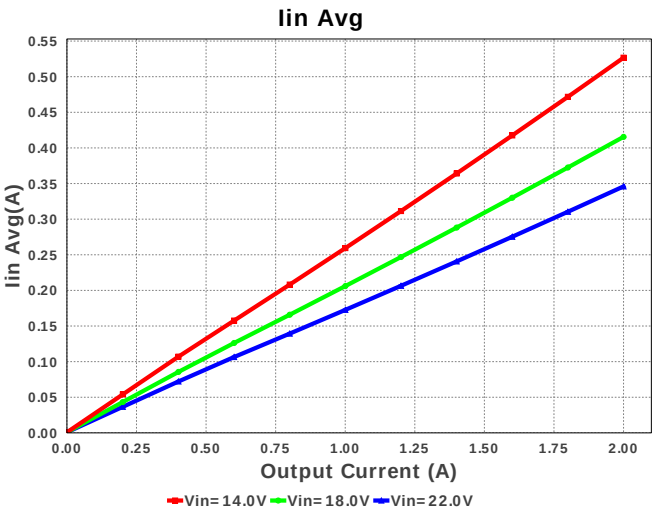


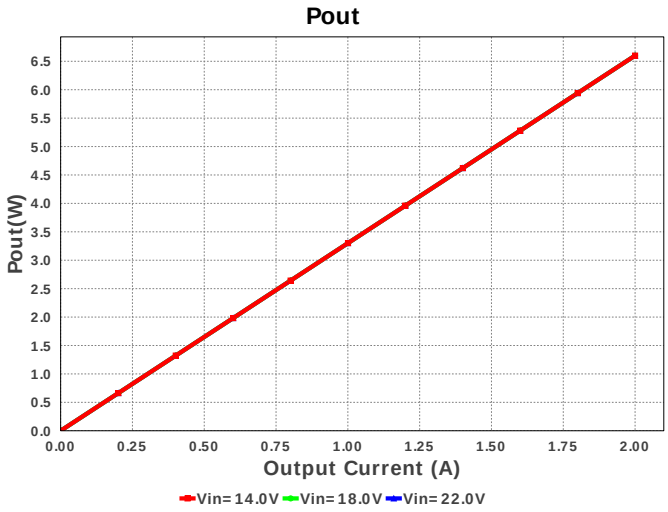


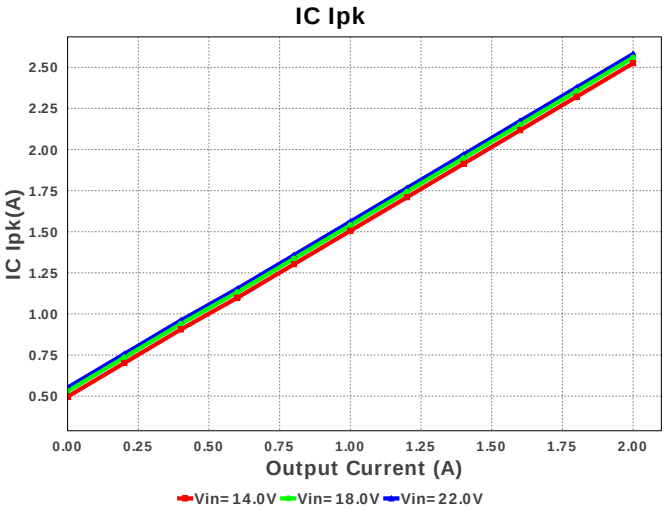


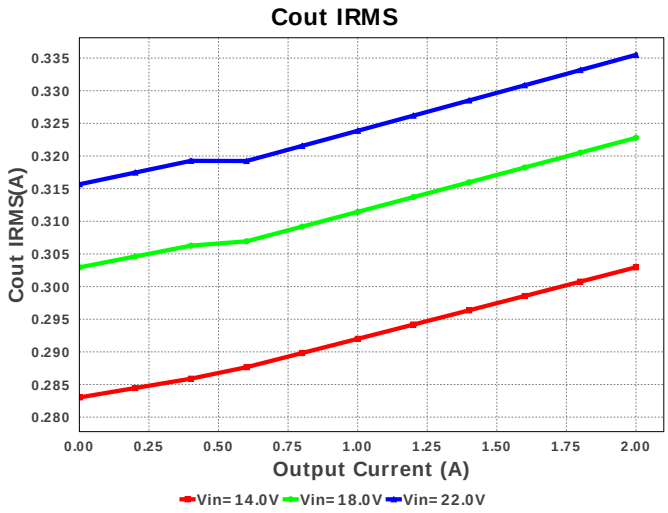


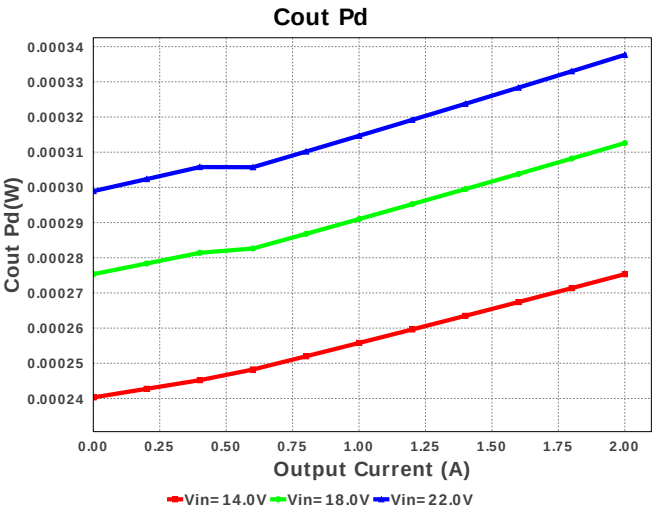


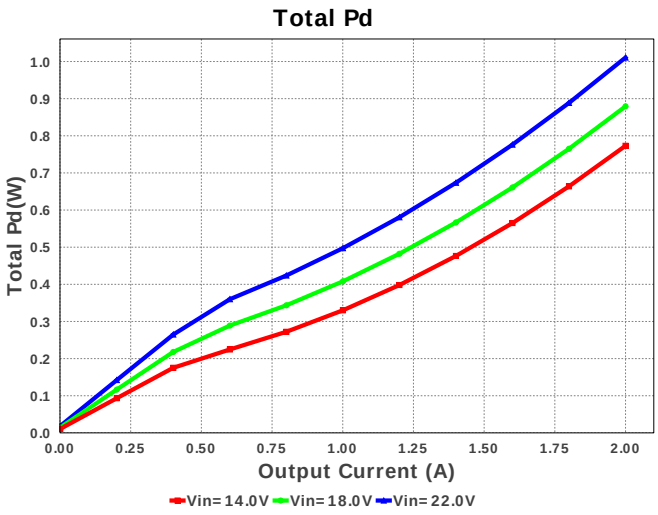


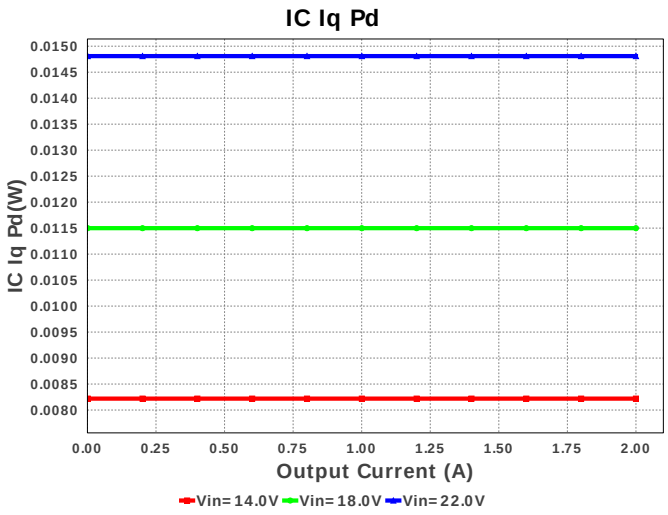


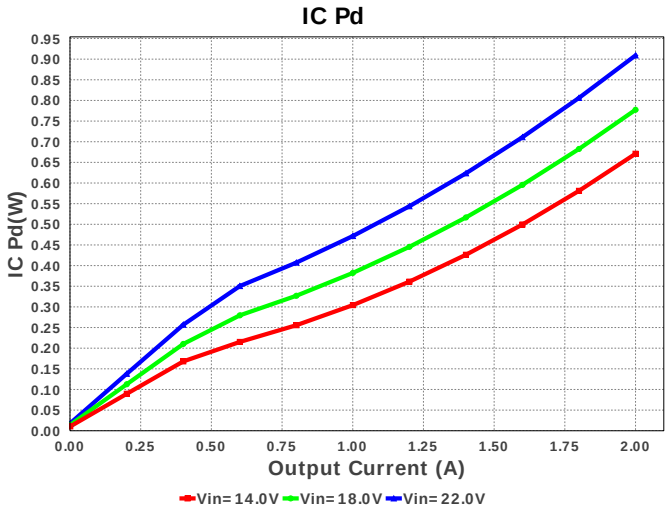


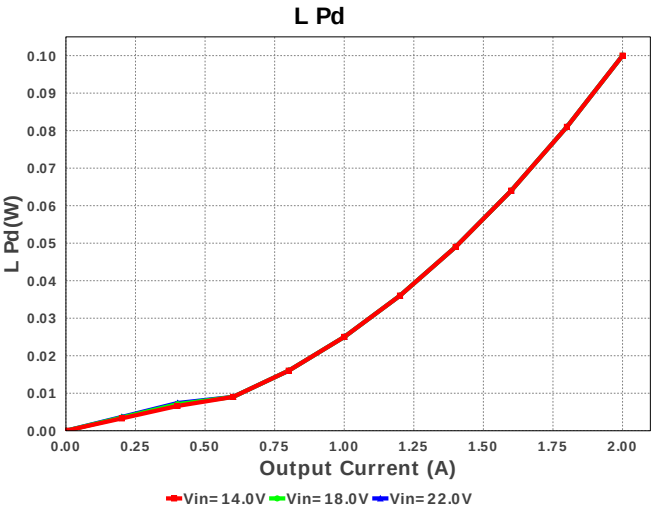


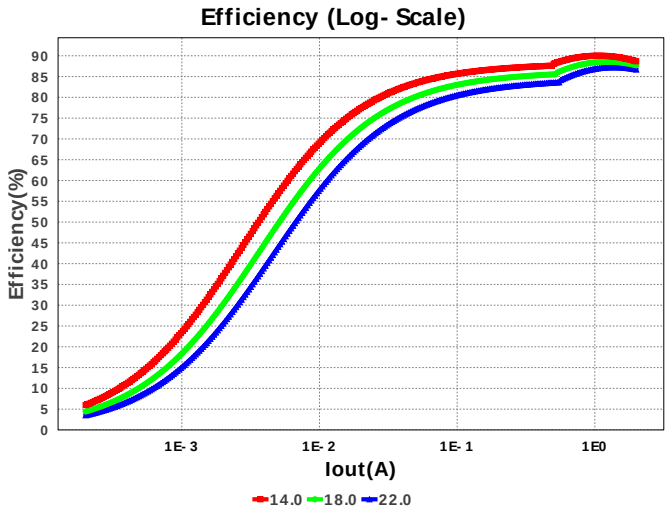












Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	730.882 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	338.866 mA	Current	Output capacitor RMS ripple current
3.	IC Ipk	2.587 A	Current	Peak switch current in IC
4.	Iin Avg	345.71 mA	Current	Average input current
5.	L Ipp	1.174 A	Current	Peak-to-peak inductor ripple current
6.	BOM Count	12	General	Total Design BOM count
7.	FootPrint	298.0 mm^2	General	Total Foot Print Area of BOM components
8.	Frequency	766.333 kHz	General	Switching frequency
9.	Pout	6.6 W	General	Total output power
10.	Total BOM	$3.04	General	Total BOM Cost
11.	Vout OP	3.3 V	Op_Point	Operational Output Voltage

#	Name	Value	Category	Description
12.	Duty Cycle	15.875 %	Op_point	Duty cycle
13.	Efficiency	86.777 %	Op_point	Steady state efficiency
14.	IC Tj	71.766 degC	Op_point	IC junction temperature
15.	ICThetaJA	46.2 degC/W	Op_point	IC junction-to-ambient thermal resistance
16.	IOUT_OP	2.0 A	Op_point	Iout operating point
17.	VIN_OP	22.0 V	Op_point	Vin operating point
18.	Vout p-p	6.643 mV	Op_point	Peak-to-peak output ripple voltage
19.	Cin Pd	1.335 mW	Power	Input capacitor power dissipation
20.	Cout Pd	344.49 µW	Power	Output capacitor power dissipation
21.	IC Iq Pd	14.809 mW	Power	IC Iq Pd
22.	IC Pd	904.032 mW	Power	IC power dissipation
23.	L Pd	100.0 mW	Power	Inductor power dissipation
24.	Total Pd	1.006 W	Power	Total Power Dissipation

Design Inputs

#	Name	Value	Description
1.	Iout	2.0	Maximum Output Current
2.	Iout1	2.0	Output Current #1
3.	VinMax	22.0	Maximum input voltage
4.	VinMin	14.0	Minimum input voltage
5.	Vout	3.3	Output Voltage
6.	Vout1	3.3	Output Voltage #1
7.	base_pn	TPS54239E	Texas Instruments Base Part Number
8.	source	DC	Input Source Type
9.	ta	30.0	Ambient temperature

Design Assistance

1. TPS54239E Product Folder : http://www.ti.com/product/tps54239E : contains the data sheet and other resources.