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

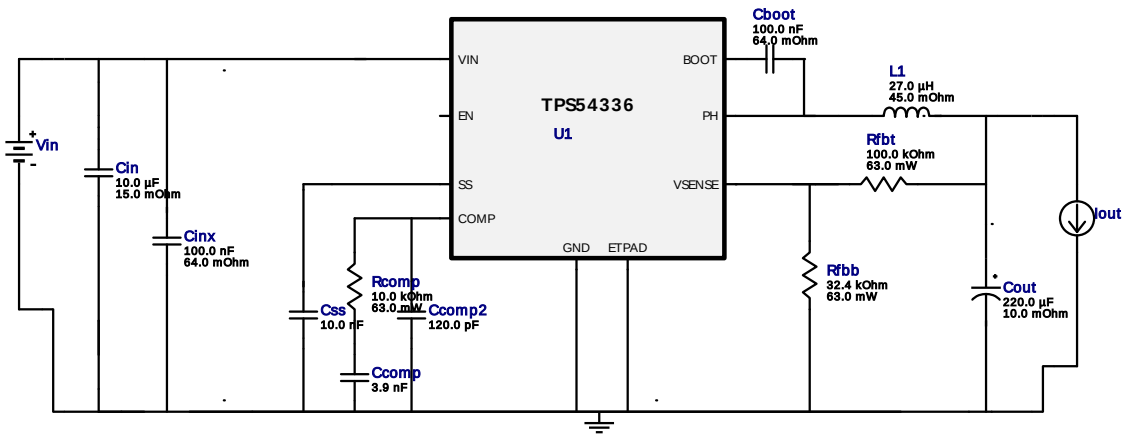
Device = TPS54336DDAR
Topology = Buck
Created = 3/3/14 4:50:33 AM
BOM Cost = $1.95
Total Pd = 1.06W
Footprint = 394.0mm2
BOM Count = 12

WEBENCH® Design Report

Design : 3840083/122 TPS54336DDAR
TPS54336DDAR 14.0V-22.0V to 3.3V @ 2.0A

VinMin = 14.0V
VinMax = 22.0V

Vout = 3.3V
Iout = 2.0A

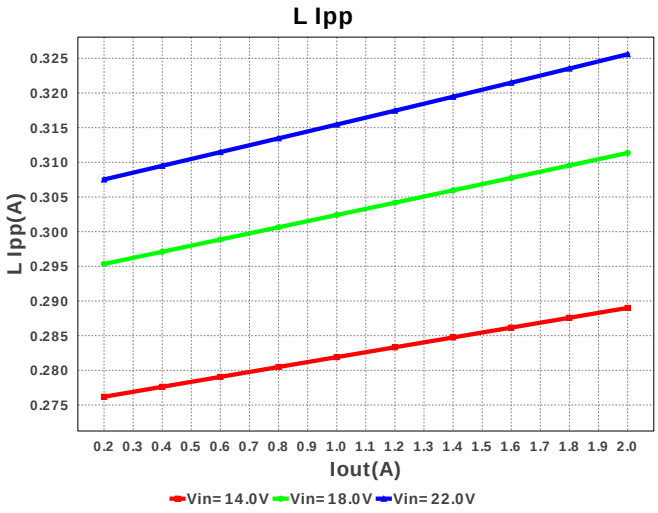


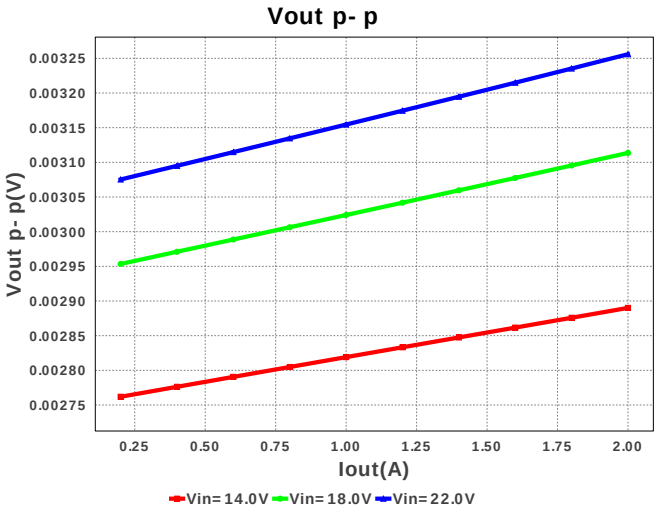
Electrical BOM

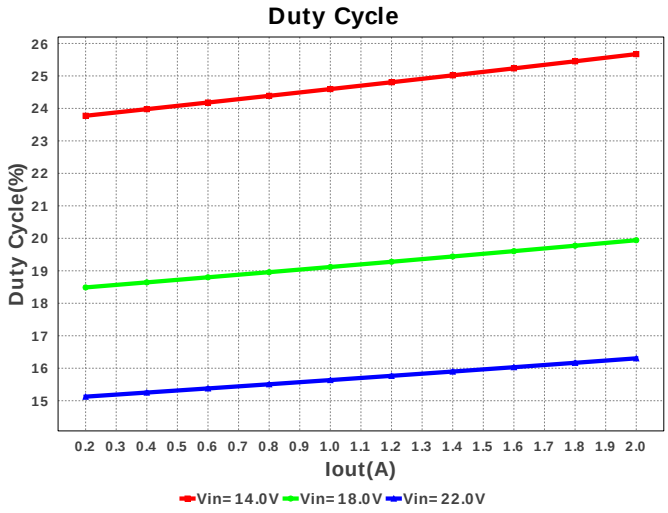
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cboot	Kemet	C0805C104K5RACTU Series= X7R	Cap= 100.0 nF ESR= 64.0 mOhm VDC= 50.0 V IRMS= 1.64 A	1	$0.01	0805 7mm2
2.	Ccomp	Yageo America	CC0805KRX7R9BB392 Series= X7R	Cap= 3.9 nF VDC= 50.0 V IRMS= 0.0 A	1	$0.01	0805 7mm2
3.	Ccomp2	Yageo America	CC0805JRNP09BN121 Series= C0G/NP0	Cap= 120.0 pF VDC= 50.0 V IRMS= 0.0 A	1	$0.01	0805 7mm2
4.	Cin	TDK	C3225X5R1E106K Series= X5R	Cap= 10.0 µF ESR= 15.0 mOhm VDC= 25.0 V IRMS= 3.0 A	1	$0.15	1210 15mm2
5.	Cinx	Kemet	C0805C104K5RACTU Series= X7R	Cap= 100.0 nF ESR= 64.0 mOhm VDC= 50.0 V IRMS= 1.64 A	1	$0.01	0805 7mm2
6.	Cout	Sanyo	6SVPE220M Series= 259	Cap= 220.0 µF ESR= 10.0 mOhm VDC= 6.3 V IRMS= 3.9 A	1	$0.41	CAPSMT_62_F61 74mm2
7.	Css	MuRata	GRM033R61A103KA01D Series= X5R	Cap= 10.0 nF VDC= 10.0 V IRMS= 0.0 A	1	$0.01	0201 2mm2
8.	L1	Bourns	SRR1260-270M	L= 27.0 µH DCR= 45.0 mOhm	1	$0.41	SRR1260 210mm2
9.	Rcomp	Vishay-Dale	CRCW040210K0FKED Series= CRCW..e3	Res= 10.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3mm2

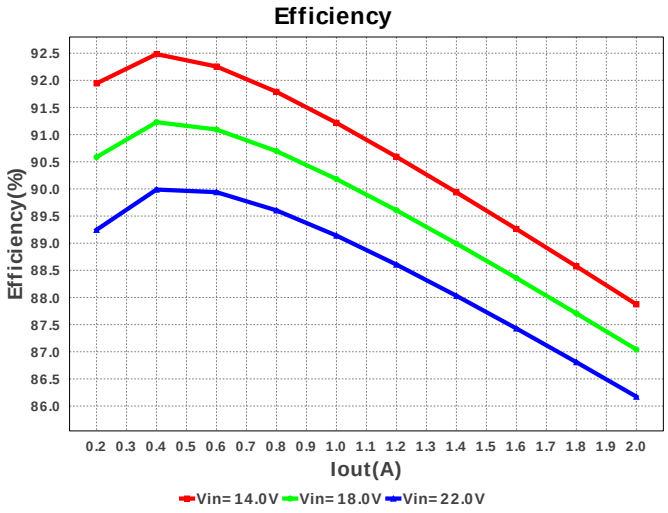
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
10.	Rfbb	Vishay-Dale	CRCW040232K4FKED Series= CRCW..e3	Res= 32.4 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3mm2
11.	Rfbt	Vishay-Dale	CRCW0402100KFKED Series= CRCW..e3	Res= 100.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3mm2
12.	U1	Texas Instruments	TPS54336DDAR	Switcher	1	$0.90	

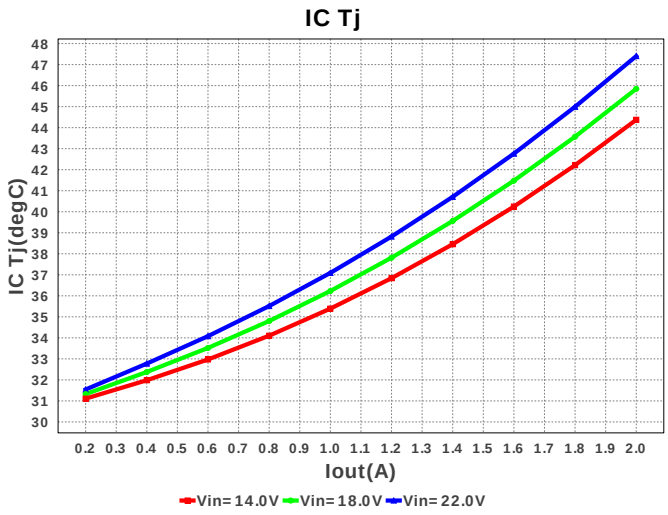
R-PDSO-G8 57mm2

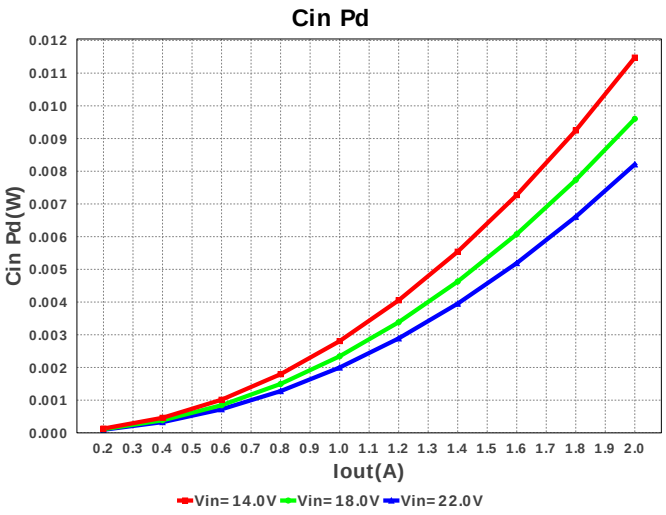


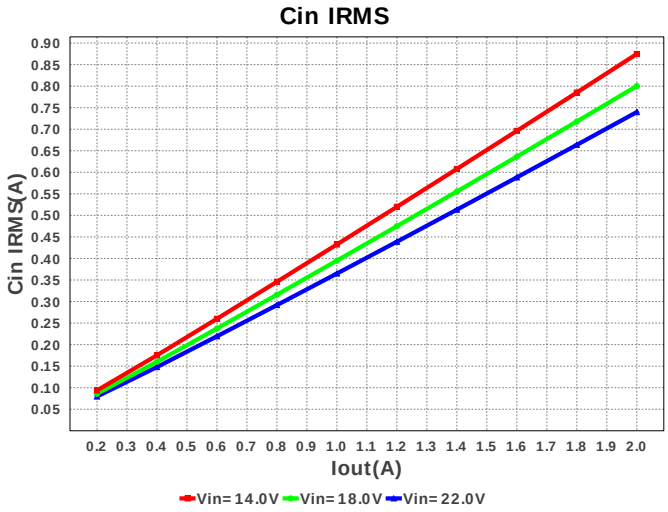


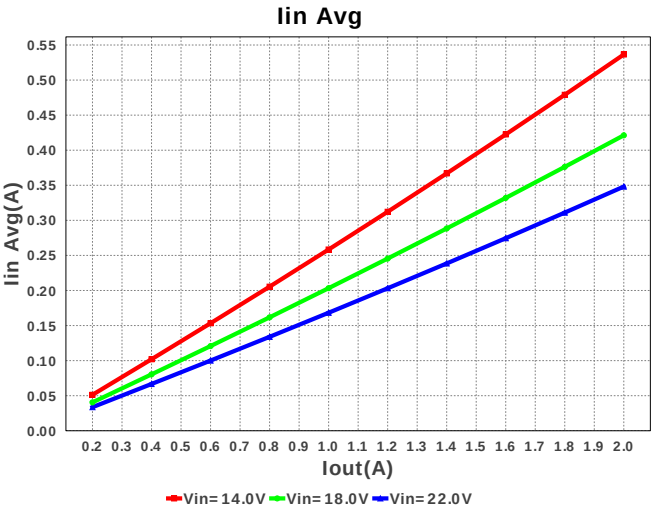


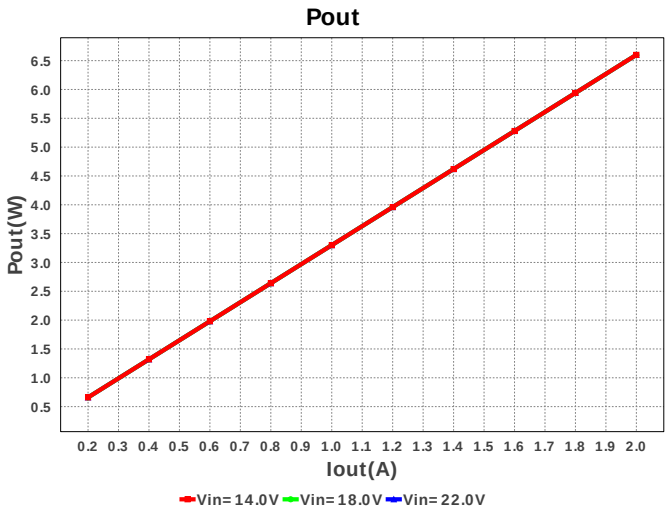


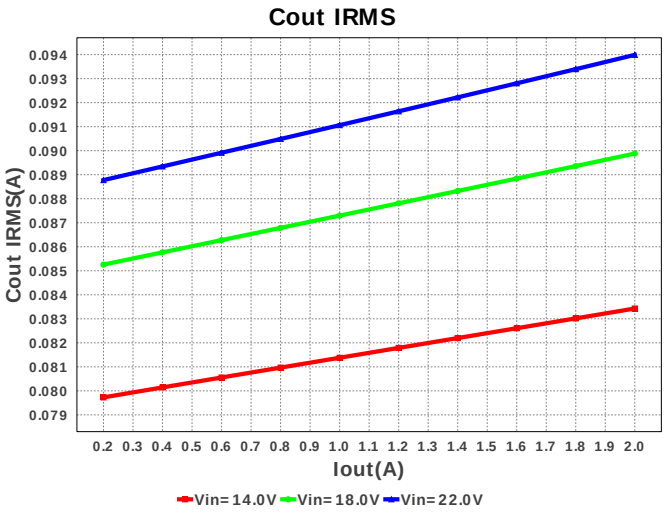


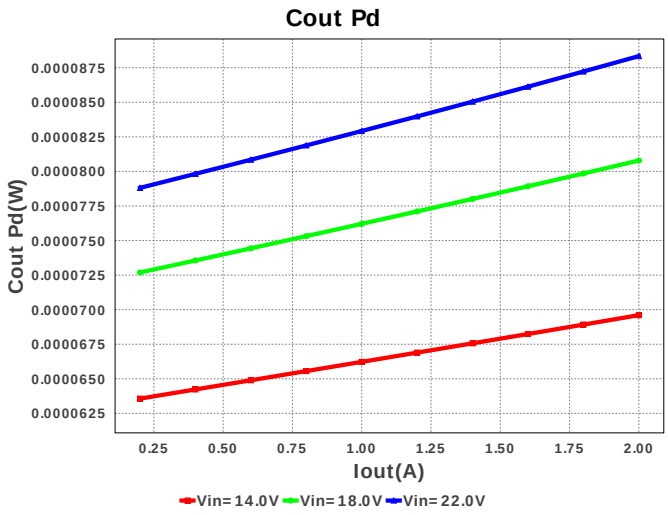


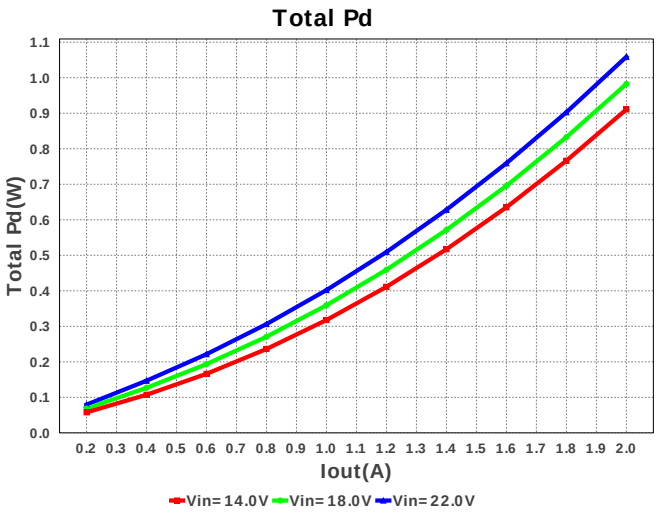


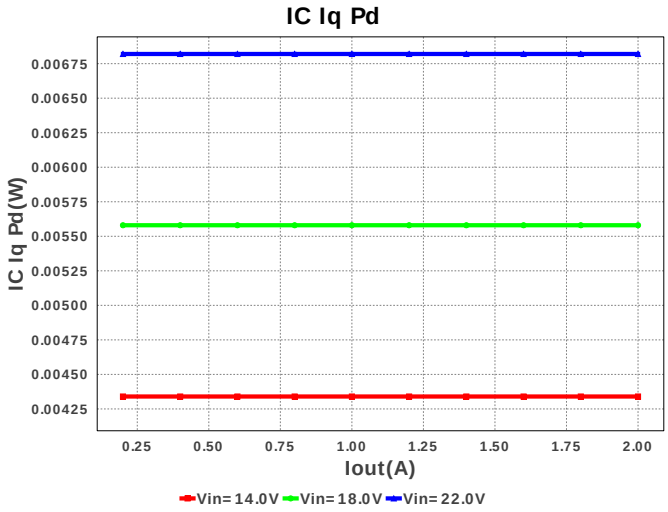


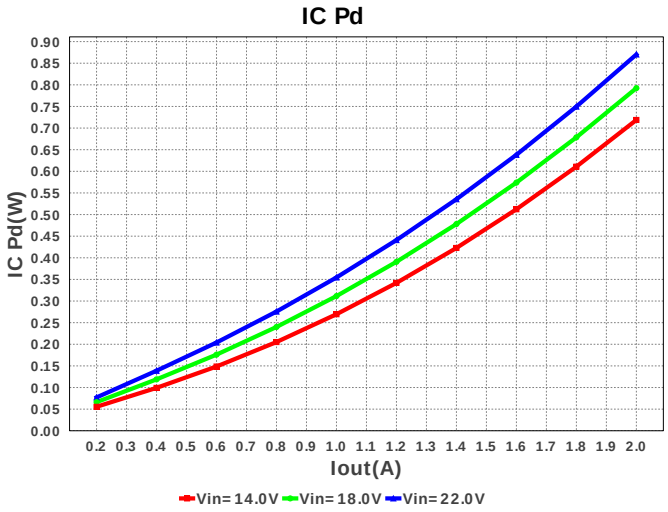


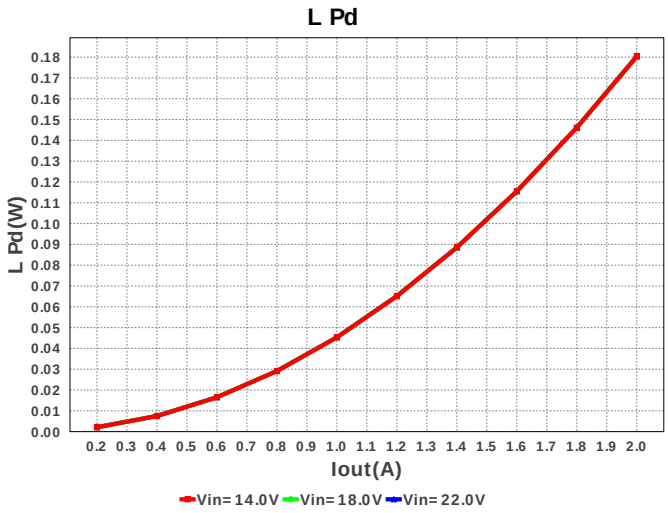


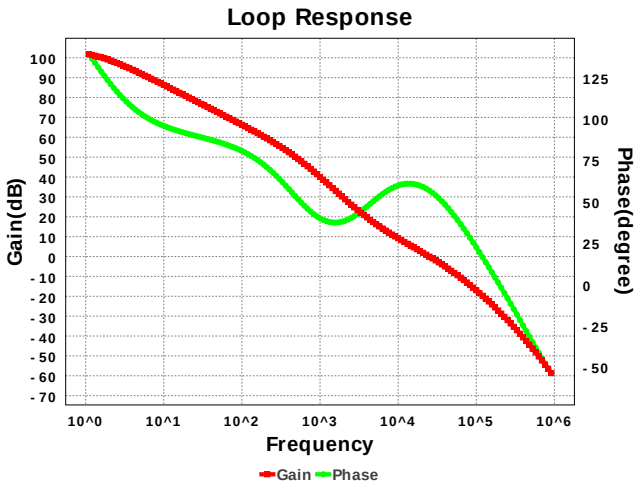












Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	739.789 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	93.99 mA	Current	Output capacitor RMS ripple current
3.	Iin Avg	348.14 mA	Current	Average input current
4.	L Ipp	325.59 mA	Current	Peak-to-peak inductor ripple current
5.	BOM Count	12	General	Total Design BOM count
6.	FootPrint	394.0 mm2	General	Total Foot Print Area of BOM components
7.	Frequency	340.0 kHz	General	Switching frequency
8.	IC Tolerance	10.0 mV	General	IC Feedback Tolerance
9.	Pout	6.6 W	General	Total output power
10.	Total BOM	$1.95	General	Total BOM Cost
11.	Vout OP	3.3 V	Op_Point	Operational Output Voltage

#	Name	Value	Category	Description
12.	Cross Freq	25.087 kHz	Op_point	Bode plot crossover frequency
13.	Duty Cycle	16.305 %	Op_point	Duty cycle
14.	Efficiency	86.173 %	Op_point	Steady state efficiency
15.	IC Tj	47.404 degC	Op_point	IC junction temperature
16.	ICThetaJA	20.0 degC/W	Op_point	IC junction-to-ambient thermal resistance
17.	IOUT_OP	2.0 A	Op_point	Iout operating point
18.	Phase Marg	57.388 deg	Op_point	Bode Plot Phase Margin
19.	VIN_OP	22.0 V	Op_point	Vin operating point
20.	Vout p-p	3.256 mV	Op_point	Peak-to-peak output ripple voltage
21.	Cin Pd	8.209 mW	Power	Input capacitor power dissipation
22.	Cout Pd	88.34 µW	Power	Output capacitor power dissipation
23.	IC Iq Pd	6.82 mW	Power	IC Iq Pd
24.	IC Pd	870.211 mW	Power	IC power dissipation
25.	L Pd	180.398 mW	Power	Inductor power dissipation
26.	Total Pd	1.059 W	Power	Total Power Dissipation

Design Inputs

#	Name	Value	Description
1.	Iout	2.0 A	Maximum Output Current
2.	Iout1	2.0 Amps	Output Current #1
3.	VinMax	22.0 V	Maximum input voltage
4.	VinMin	14.0 V	Minimum input voltage
5.	Vout	3.3 V	Output Voltage
6.	Vout1	3.3 Volt	Output Voltage #1
7.	base_pn	TPS54336	Texas Instruments Base Part Number
8.	source	DC	Input Source Type
9.	ta	30.0 degC	Ambient temperature

Design Assistance

1. TPS54336 Product Folder : http://www.ti.com/product/tps54336 : contains the data sheet and other resources.