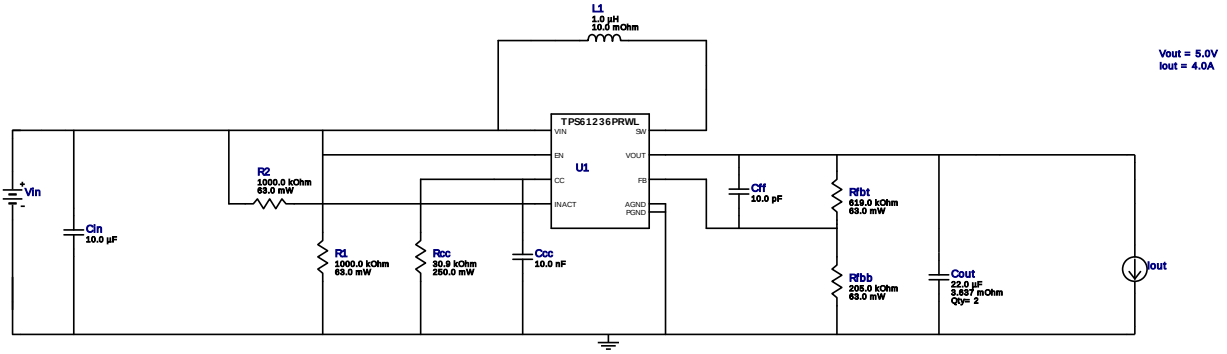
VinMin = 3.3V
VinMax = 4.2V
Vout = 5.0V
Iout = 4.0A

Device = TPS61236PRWLR
Topology = Boost
Created = 12/3/16 10:49:18 AM
BOM Cost = $2.07
BOM Count = 12
Total Pd = 1.33W

WEBENCH® Design Report

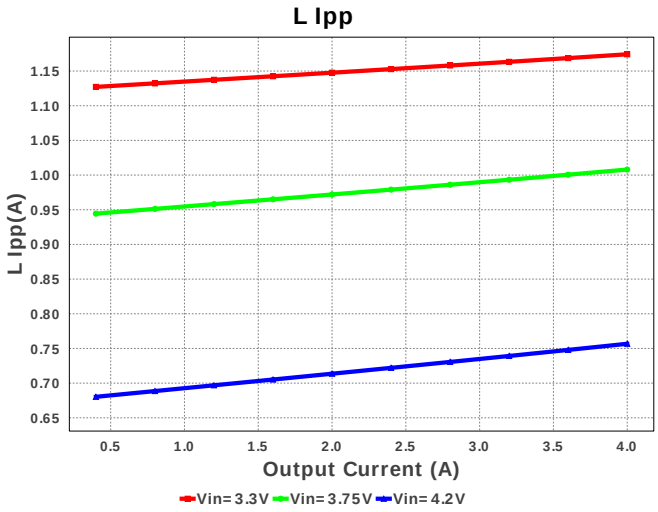
Design : 3569363/78 TPS61236PRWLR
TPS61236PRWLR 3.3V-4.2V to 5.00V @ 4.0A

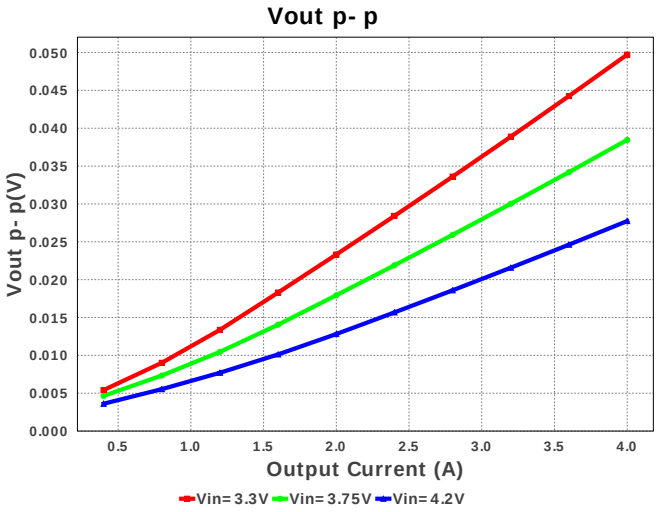


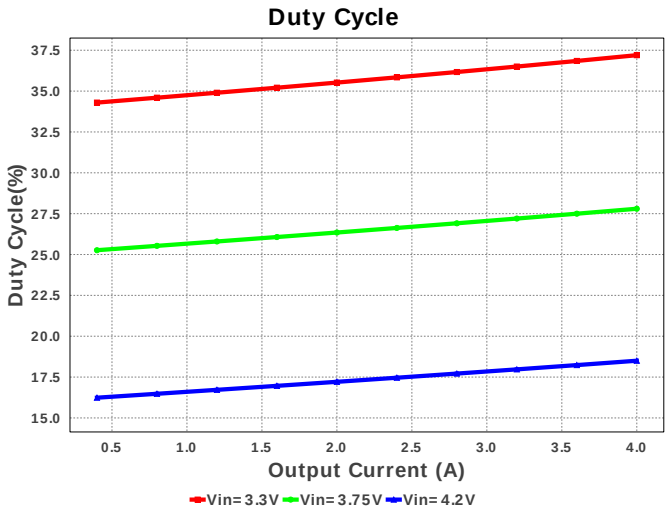
Electrical BOM

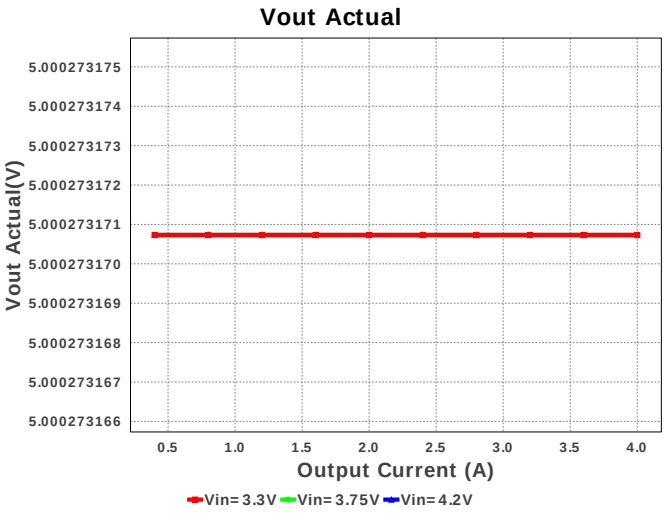
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Ccc	MuRata	GRM033R61A103KA01D Series= X5R	Cap= 10.0 nF VDC= 10.0 V IRMS= 0.0 A	1	$0.01	0201 2 mm²
2.	Cff	Kemet	C0805C100M4GACTU Series= C0G/NP0	Cap= 10.0 pF VDC= 16.0 V IRMS= 0.0 A	1	$0.01	0805 7 mm²
3.	Cin	Taiyo Yuden	LMK212BJ106KG-T Series= X5R	Cap= 10.0 uF VDC= 10.0 V IRMS= 0.0 A	1	$0.02	0805 7 mm²
4.	Cout	MuRata	GRM31CR61A226ME19L Series= X5R	Cap= 22.0 uF ESR= 3.637 mOhm VDC= 10.0 V IRMS= 3.56456 A	2	$0.08	1206_190 11 mm²
5.	L1	Bourns	SRN8040-1R0Y	L= 1.0 µH DCR= 10.0 mOhm	1	$0.22	SRN8040 100 mm²
6.	R1	Vishay-Dale	CRCW04021M00FKED Series= CRCW..e3	Res= 1000.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm²
7.	R2	Vishay-Dale	CRCW04021M00FKED Series= CRCW..e3	Res= 1000.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm²
8.	Rcc	Panasonic	ERJ-8ENF3092V Series= ERJ-8E	Res= 30.9 kOhm Power= 250.0 mW Tolerance= 1.0%	1	$0.01	1206 11 mm²
9.	Rfbb	Vishay-Dale	CRCW0402205KFKED Series= CRCW..e3	Res= 205.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm²
10.	Rfbt	Vishay-Dale	CRCW0402619KFKED Series= CRCW..e3	Res= 619.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm²

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
11.	U1	Texas Instruments	TPS61236PRWLR	Switcher	1	$1.60	RWL0009A 12 mm²

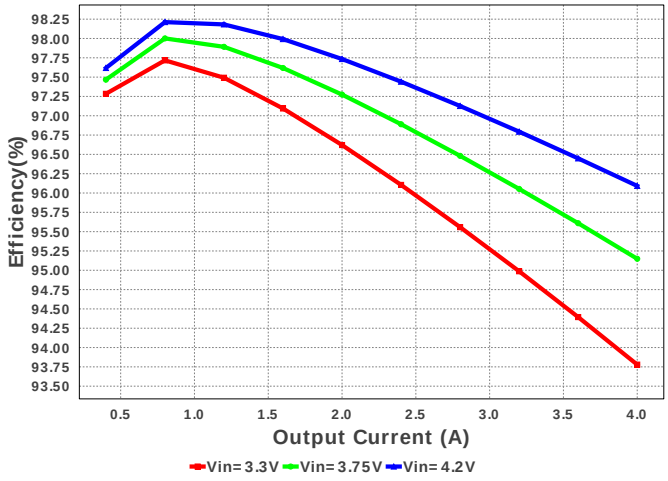




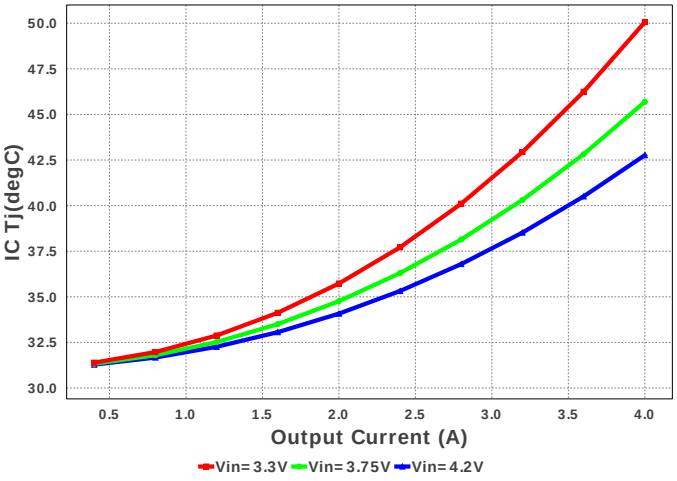




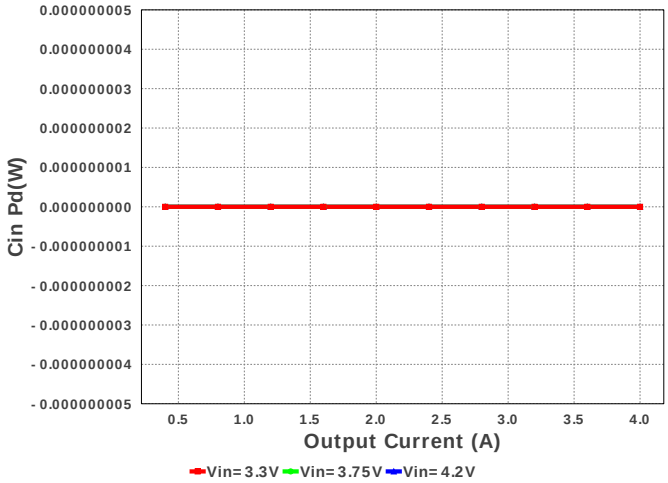
Efficiency



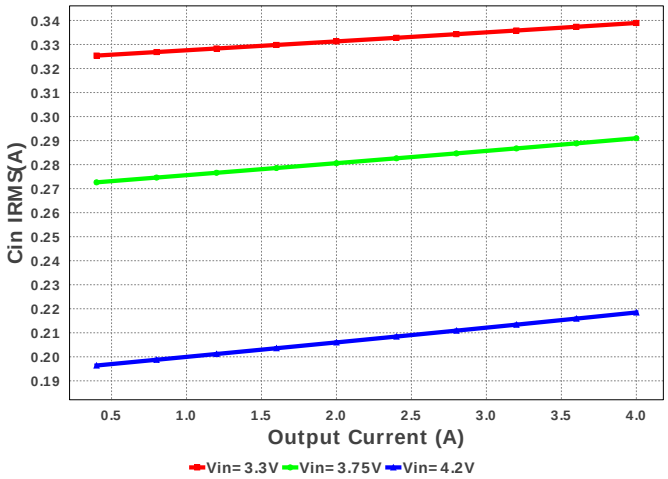
IC Tj



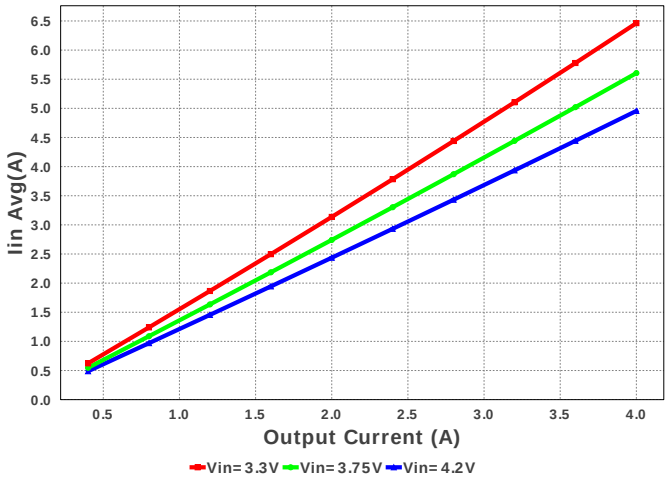
Cin Pd



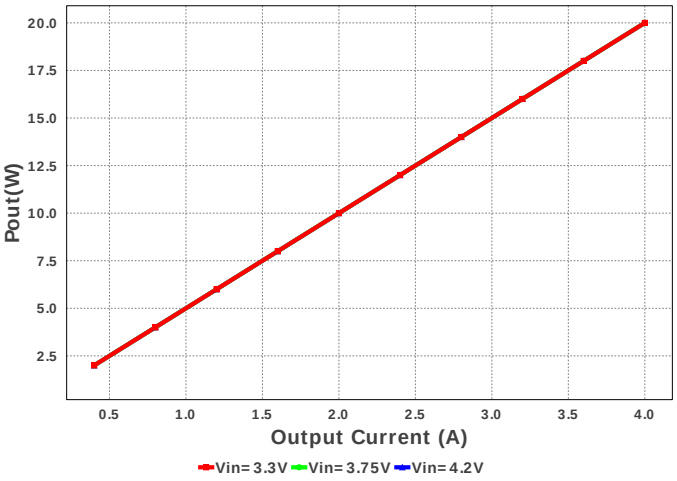
Cin IRMS

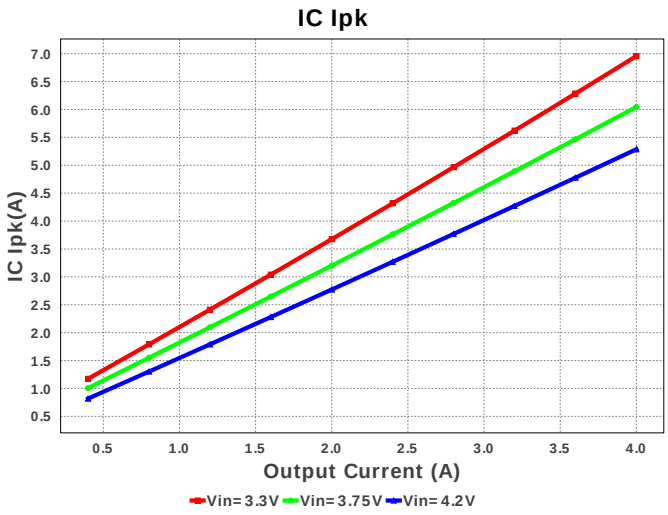


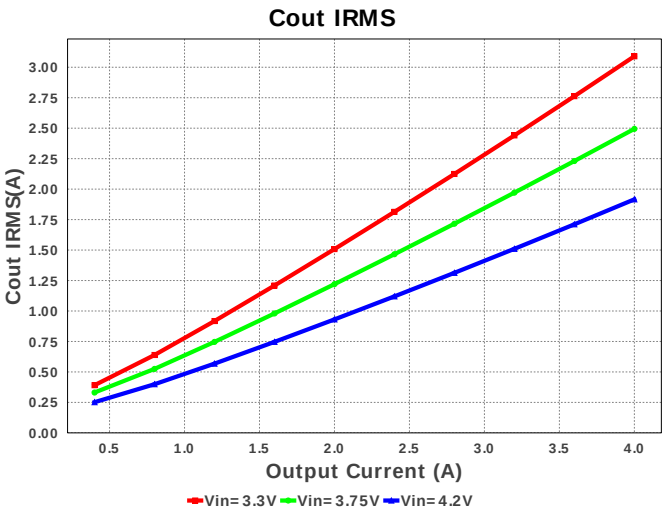
Iin Avg

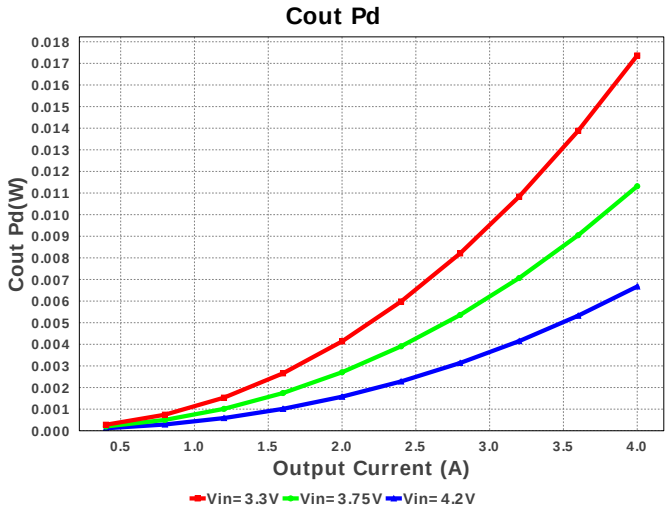


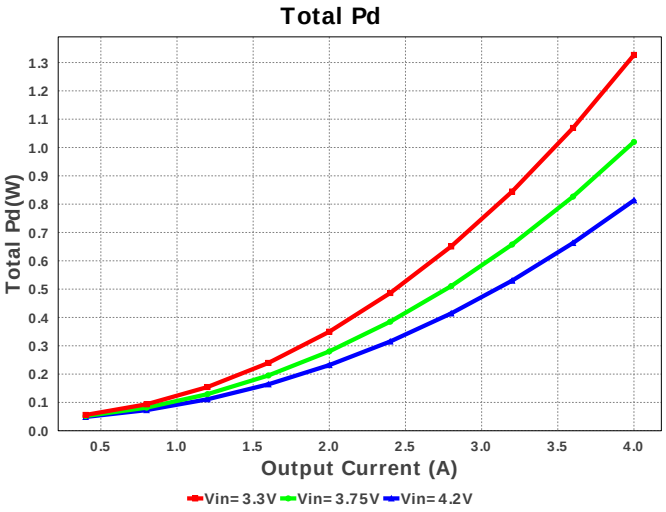
Pout

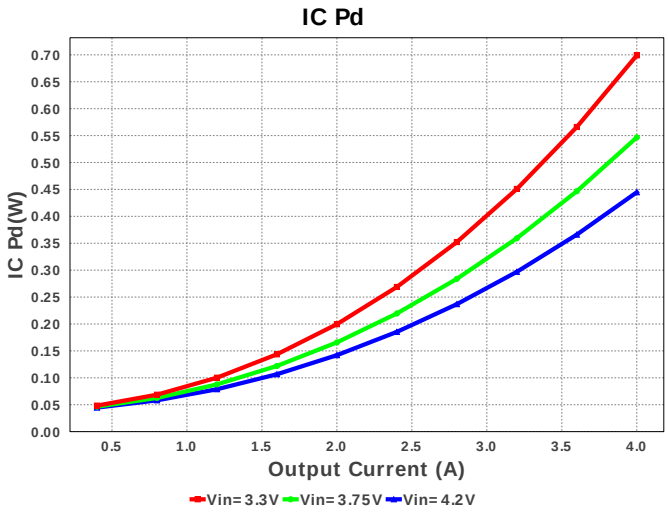


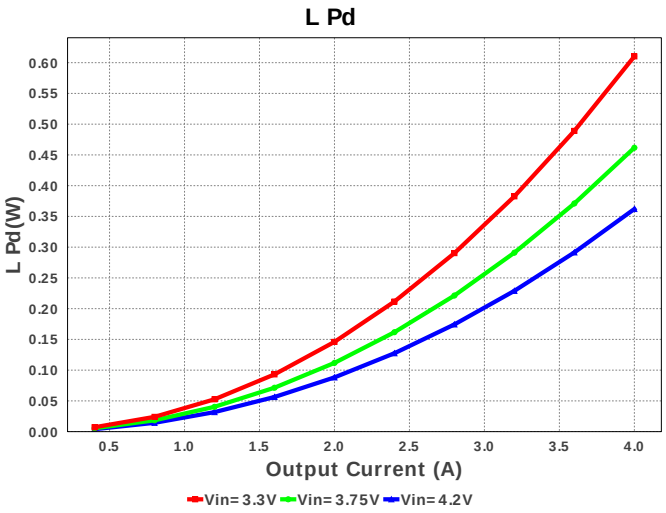


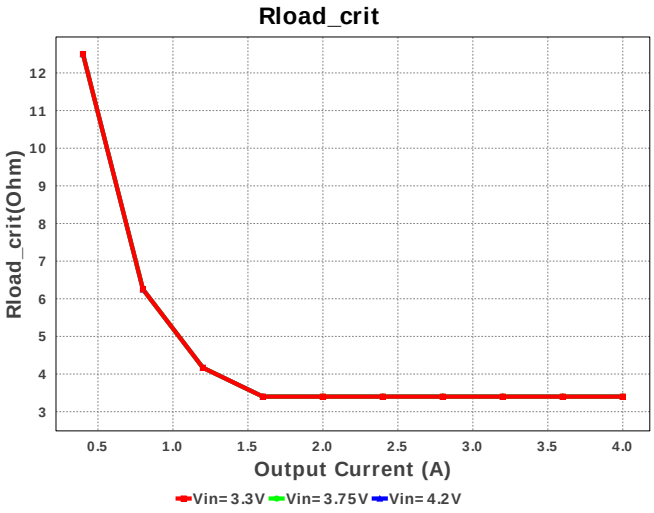












Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	338.95 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	3.09 A	Current	Output capacitor RMS ripple current
3.	IC Ipk	6.956 A	Current	Peak switch current in IC
4.	Iin Avg	6.463 A	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	173.0 mm^2	General	Total Foot Print Area of BOM components
8.	Frequency	1000.0 kHz	General	Switching frequency
9.	Mode	BOOST PWM CCM	General	PWM/PFM Mode
10.	Pout	20.0 W	General	Total output power
11.	Total BOM	$2.07	General	Total BOM Cost
12.	Vout Actual	5.0 V	Op_Point	Vout Actual calculated based on selected voltage divider resistors
13.	Duty Cycle	37.198 %	Op_point	Duty cycle
14.	Efficiency	93.779 %	Op_point	Steady state efficiency
15.	IC Tj	50.063 degC	Op_point	IC junction temperature
16.	ICThetaJA	28.7 degC/W	Op_point	IC junction-to-ambient thermal resistance
17.	IOUT_OP	4.0 A	Op_point	Iout operating point
18.	VIN_OP	3.3 V	Op_point	Vin operating point
19.	Vout p-p	49.721 mV	Op_point	Peak-to-peak output ripple voltage
20.	Cin Pd	0.0 W	Power	Input capacitor power dissipation
21.	Cout Pd	17.364 mW	Power	Output capacitor power dissipation
22.	IC Pd	699.065 mW	Power	IC power dissipation
23.	L Pd	610.226 mW	Power	Inductor power dissipation
24.	Total Pd	1.327 W	Power	Total Power Dissipation
25.	Rload_crit	3.4 Ohm		Minimum Rload required during Start up
26.	Vout Tolerance	3.15 %		Vout Tolerance based on IC Tolerance (no load) and voltage divider resistors if applicable

Design Inputs

#	Name	Value	Description
1.	Iout	4.0	Maximum Output Current
2.	VinMax	4.2	Maximum input voltage
3.	VinMin	3.3	Minimum input voltage
4.	Vout	5.0	Output Voltage
5.	base_pn	TPS61236P	Base Product Number
6.	source	DC	Input Source Type
7.	Ta	30.0	Ambient temperature

Design Assistance

1. **TPS61236P** Product Folder : http://www.ti.com/product/TPS61236 : contains the data sheet and other resources.