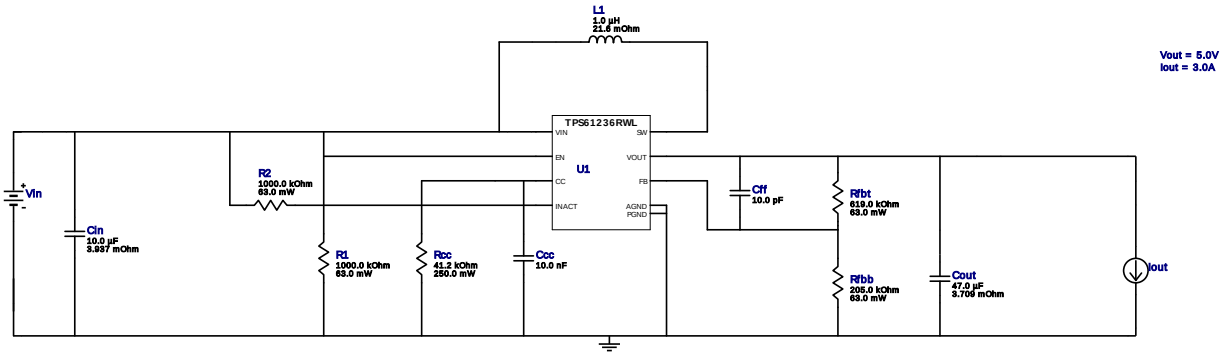
WEBENCH® Design Report

VinMin = 3.7V
VinMax = 4.2V
Vout = 5.0V
Iout = 3.0A

Device = TPS61236RWLR
Topology = Boost
Created = 7/12/16 12:30:21 AM
BOM Cost = $2.34
BOM Count = 11
Total Pd = 0.93W

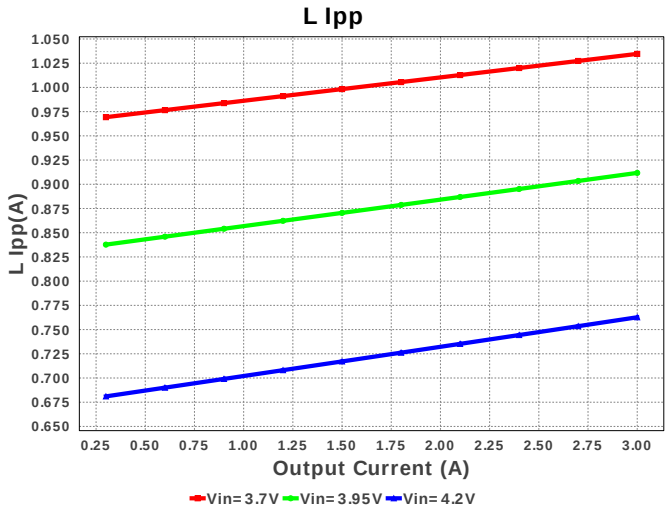
Design : 4737466/39 TPS61236RWLR
TPS61236RWLR 3.7V-4.2V to 5.00V @ 3.0A

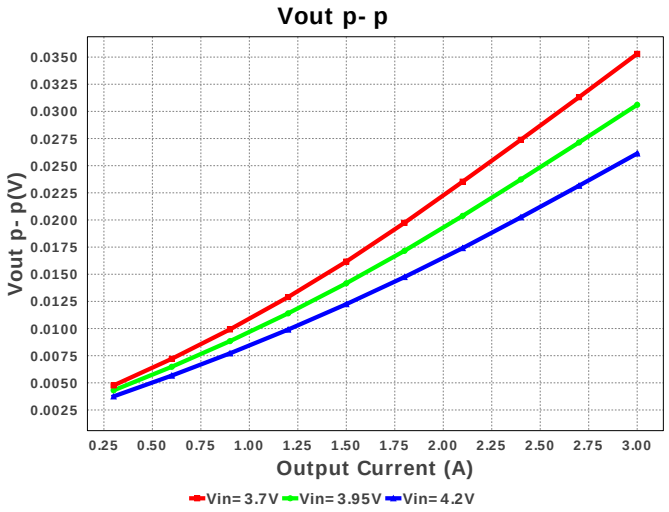


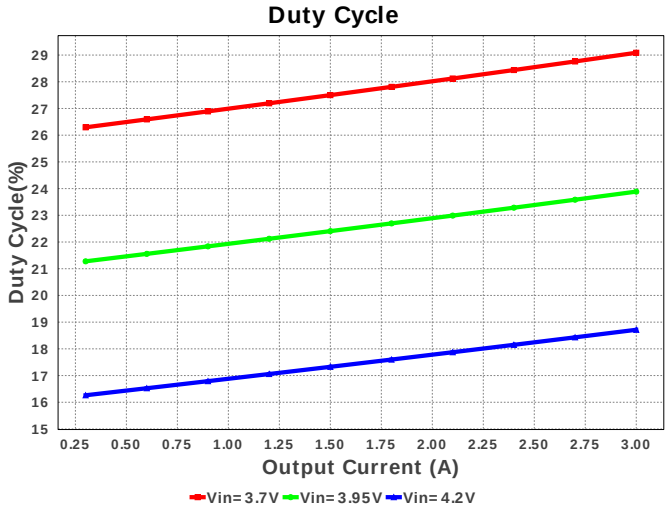
Electrical BOM

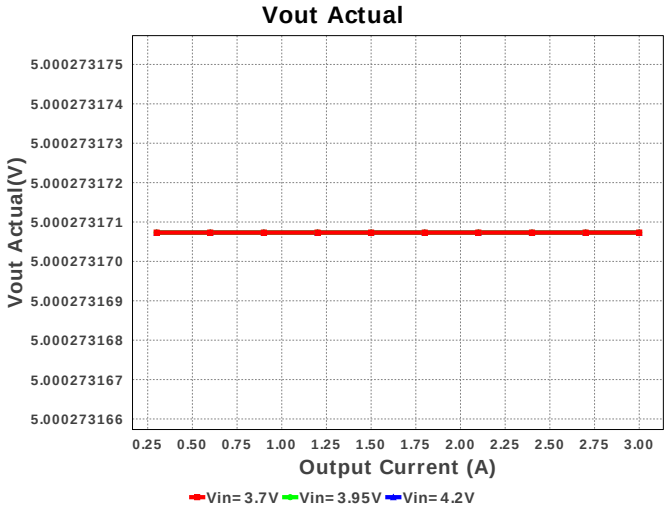
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Ccc	MuRata	GRM033R61A103KA01D Series= X5R	Cap= 10.0 nF VDC= 10.0 V IRMS= 0.0 A	1	$0.01	0201 2 mm²
2.	Cff	Kemet	C0805C100M4GACTU Series= C0G/NP0	Cap= 10.0 pF VDC= 16.0 V IRMS= 0.0 A	1	$0.01	0805 7 mm²
3.	Cin	MuRata	GRM219R61A106KE44D Series= X5R	Cap= 10.0 uF ESR= 3.937 mOhm VDC= 10.0 V IRMS= 2.7713 A	1	$0.03	0805 7 mm²
4.	Cout	MuRata	GRM31CR61A476KE15L Series= X5R	Cap= 47.0 uF ESR= 3.709 mOhm VDC= 10.0 V IRMS= 4.2862 A	1	$0.15	1206_190 11 mm²
5.	L1	Bourns	SRP4020-1R0M	L= 1.0 µH DCR= 21.6 mOhm	1	$0.49	SRP4020 29 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-8ENF4122V Series= ERJ-8E	Res= 41.2 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

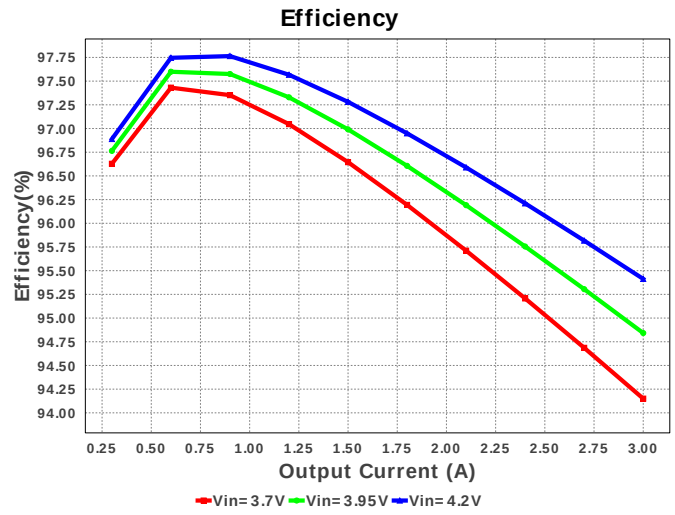
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
11.	U1	Texas Instruments	TPS61236RWLR	Switcher	1	$1.60	RWL0009A 12 mm²

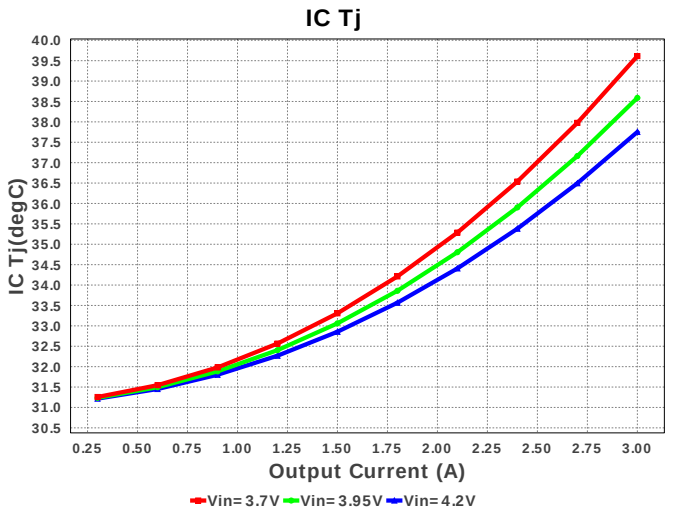


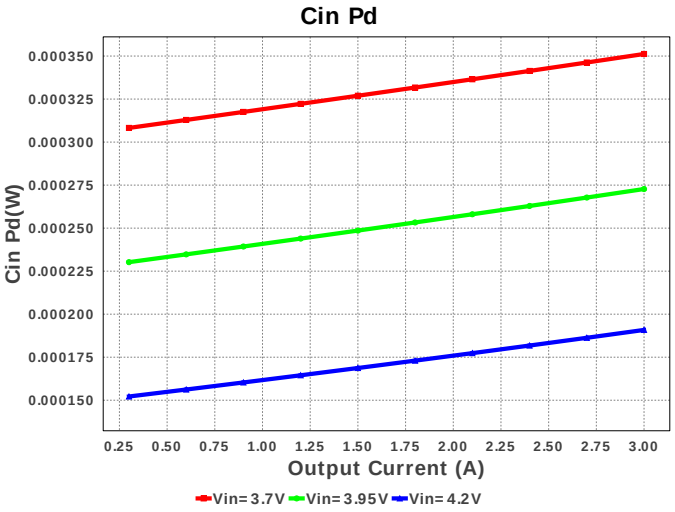


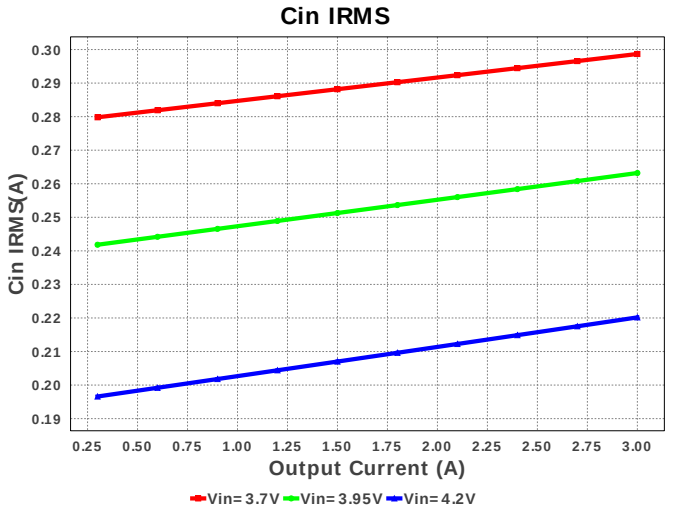


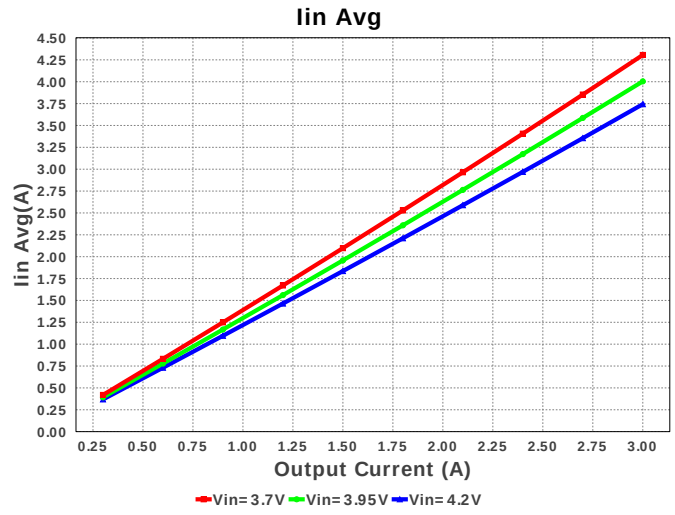


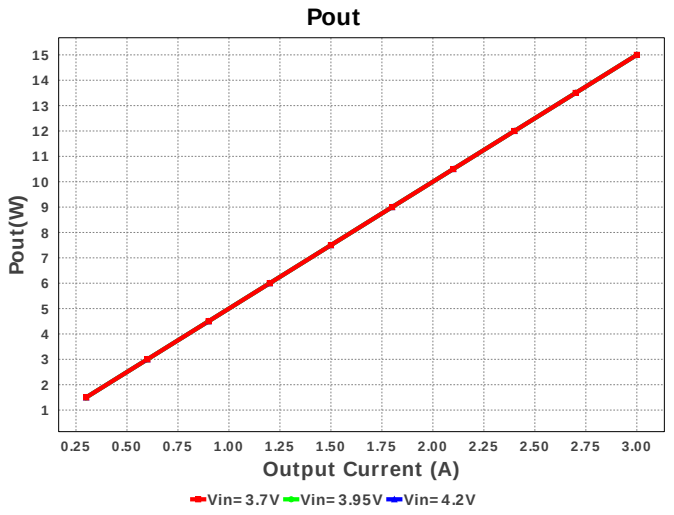


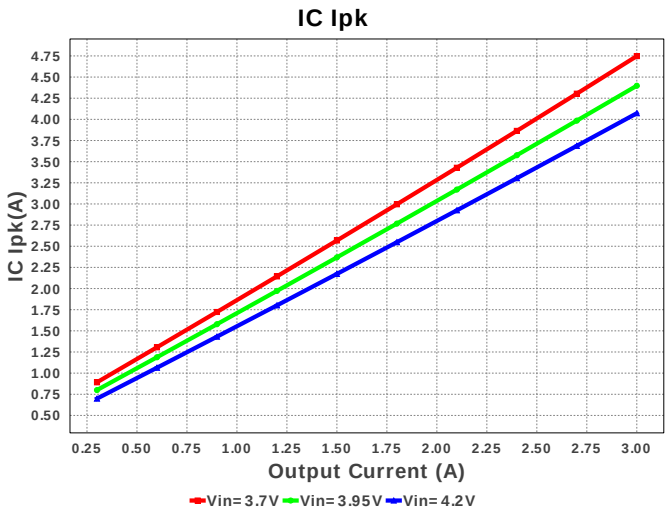


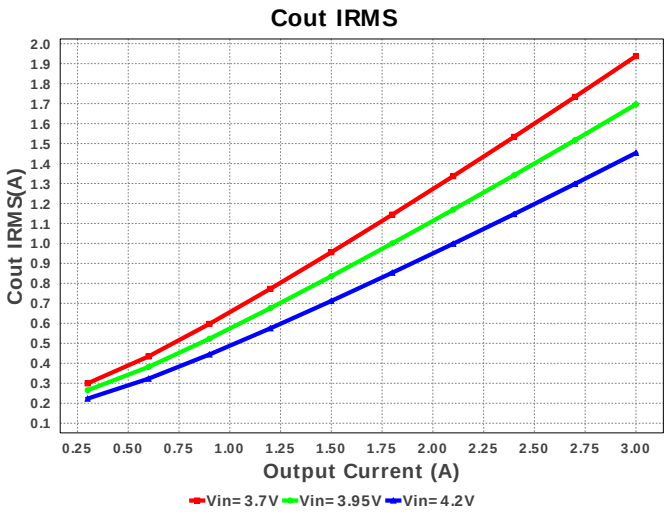


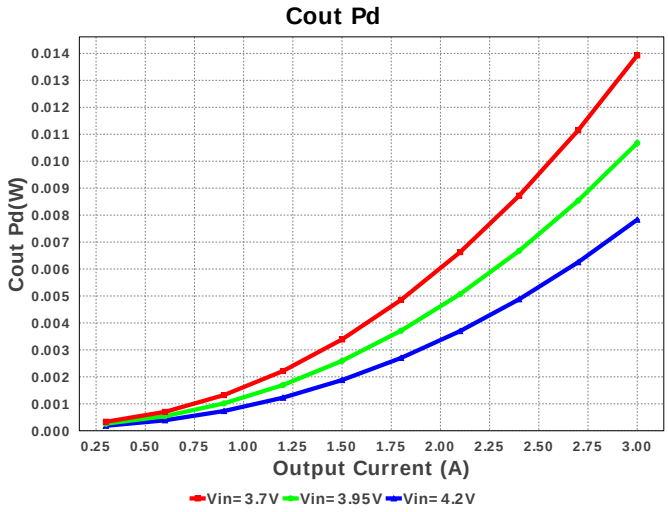


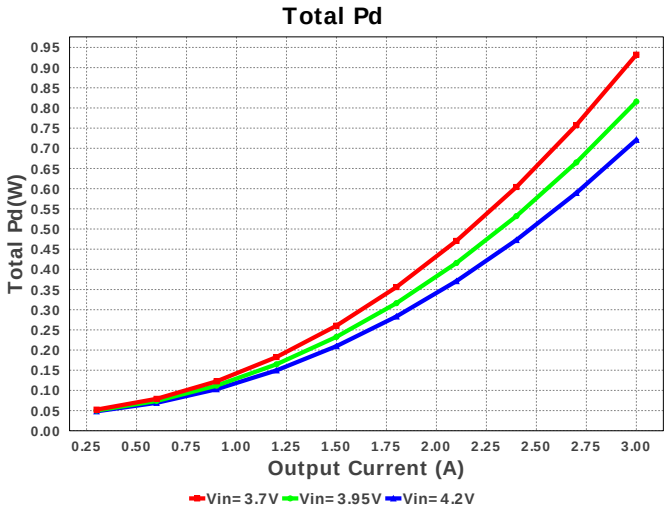


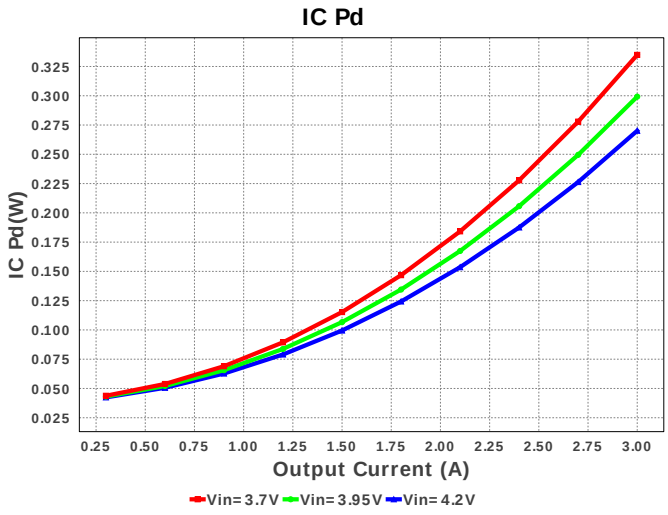


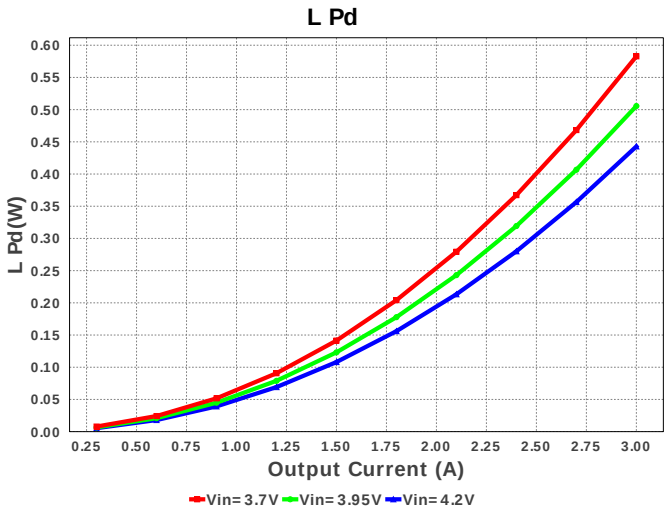


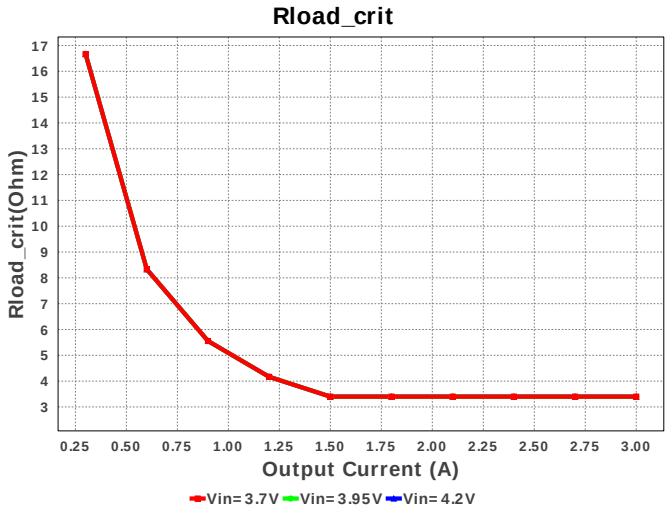












Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	298.673 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	1.938 A	Current	Output capacitor RMS ripple current
3.	IC Ipk	4.748 A	Current	Peak switch current in IC
4.	Iin Avg	4.306 A	Current	Average input current
5.	L Ipp	1.035 A	Current	Peak-to-peak inductor ripple current
6.	BOM Count	11	General	Total Design BOM count
7.	FootPrint	91.0 mm^2	General	Total Foot Print Area of BOM components
8.	Frequency	1000.0 kHz	General	Switching frequency
9.	Pout	15.0 W	General	Total output power
10.	Total BOM	$2.34	General	Total BOM Cost
11.	Vout Actual	5.0 V	Op_Point	Vout Actual calculated based on selected voltage divider resistors
12.	Duty Cycle	29.087 %	Op_point	Duty cycle
13.	Efficiency	94.15 %	Op_point	Steady state efficiency
14.	IC Tj	39.612 degC	Op_point	IC junction temperature
15.	ICThetaJA	28.7 degC/W	Op_point	IC junction-to-ambient thermal resistance
16.	IOUT_OP	3.0 A	Op_point	Iout operating point
17.	VIN_OP	3.7 V	Op_point	Vin operating point
18.	Vout p-p	35.297 mV	Op_point	Peak-to-peak output ripple voltage
19.	Cin Pd	351.203 µW	Power	Input capacitor power dissipation
20.	Cout Pd	13.926 mW	Power	Output capacitor power dissipation
21.	IC Pd	334.919 mW	Power	IC power dissipation
22.	L Pd	582.76 mW	Power	Inductor power dissipation
23.	Total Pd	932.012 mW	Power	Total Power Dissipation
24.	Rload_crit	3.4 Ohm		Minimum Rload required during Start up
25.	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	3.0	Maximum Output Current
2.	VinMax	4.2	Maximum input voltage
3.	VinMin	3.7	Minimum input voltage
4.	Vout	5.0	Output Voltage
5.	base_pn	TPS61236	Texas Instruments Base Part Number
6.	source	DC	Input Source Type
7.	ta	30.0	Ambient temperature

Design Assistance

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