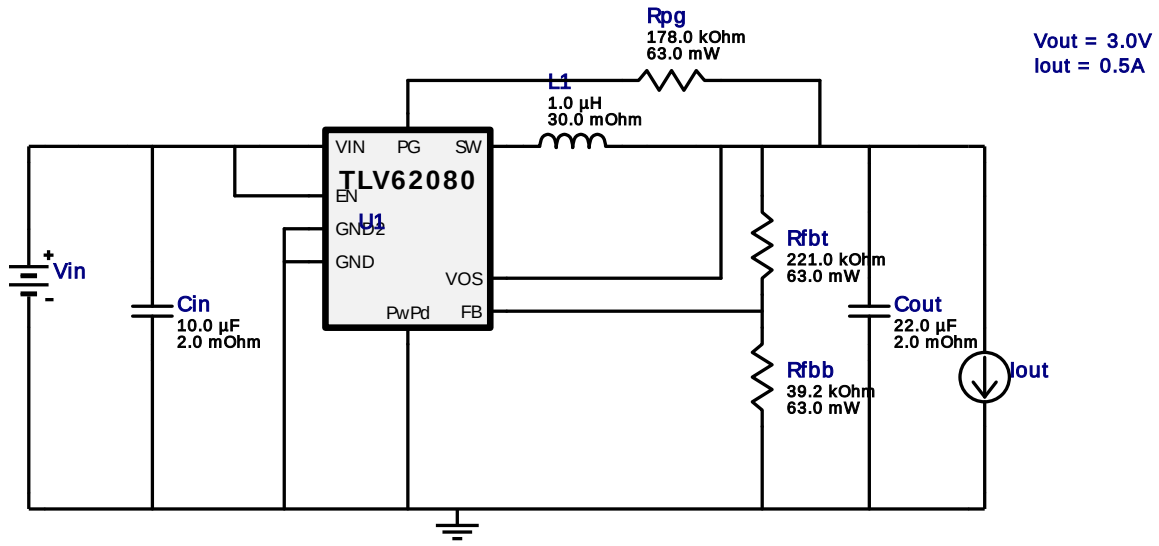
WEBENCH® Design Report

VinMin = 4.5V
VinMax = 5.5V
Vout = 3.0V
Iout = 0.5A

Device = TLV62080DSGR
Topology = Buck
Created = 7/19/16 5:31:52 AM
BOM Cost = $0.93
BOM Count = 7
Total Pd = 0.15W

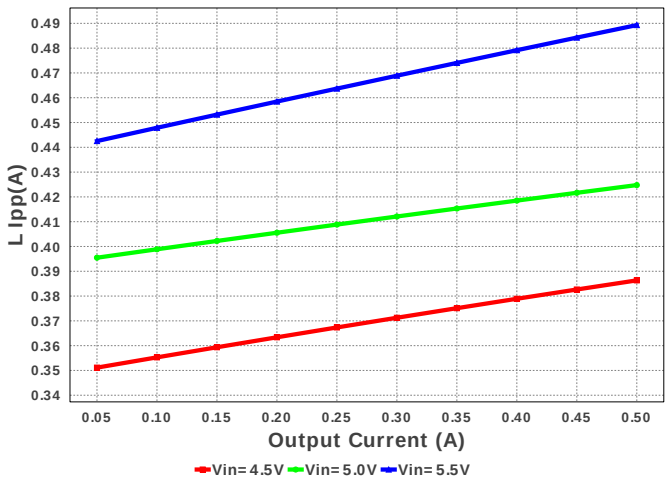
Design : 4742013/121 TLV62080DSGR
TLV62080DSGR 4.5V-5.5V to 3.00V @ 0.5A



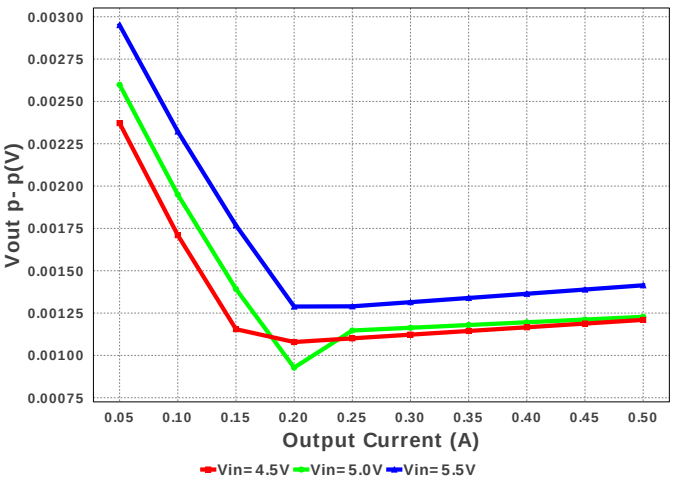
Electrical BOM

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cin	Taiyo Yuden	JMK212BJ106KD-T Series= X5R	Cap= 10.0 uF ESR= 2.0 mOhm VDC= 6.3 V IRMS= 0.0 A	1	$0.03	0805 7 mm²
2.	Cout	Taiyo Yuden	JMK212BJ226KG-T Series= X5R	Cap= 22.0 uF ESR= 2.0 mOhm VDC= 6.3 V IRMS= 0.0 A	1	$0.13	0805 7 mm²
3.	L1	Coilcraft	PFL3215-102MEB	L= 1.0 µH DCR= 30.0 mOhm	1	$0.28	PFL3215 14 mm²
4.	Rfbb	Vishay-Dale	CRCW040239K2FKED Series= CRCW..e3	Res= 39.2 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm²
5.	Rfbt	Vishay-Dale	CRCW0402221KFKED Series= CRCW..e3	Res= 221.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm²
6.	Rpg	Vishay-Dale	CRCW0402178KFKED Series= CRCW..e3	Res= 178.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm²
7.	U1	Texas Instruments	TLV62080DSGR	Switcher	1	$0.46	S-PWSON-N8 10 mm²

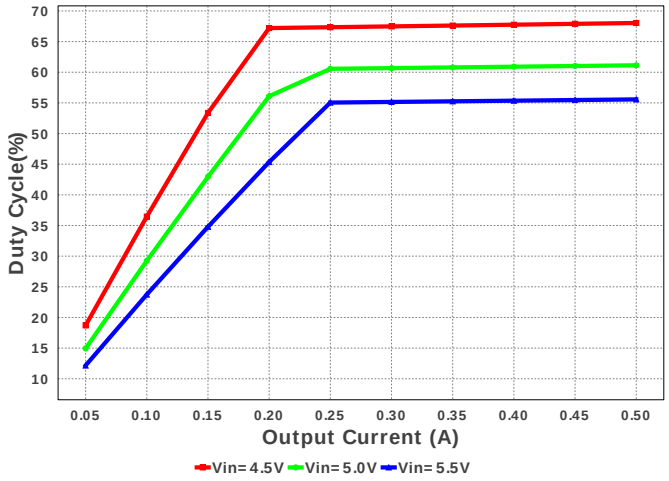
L Ipp



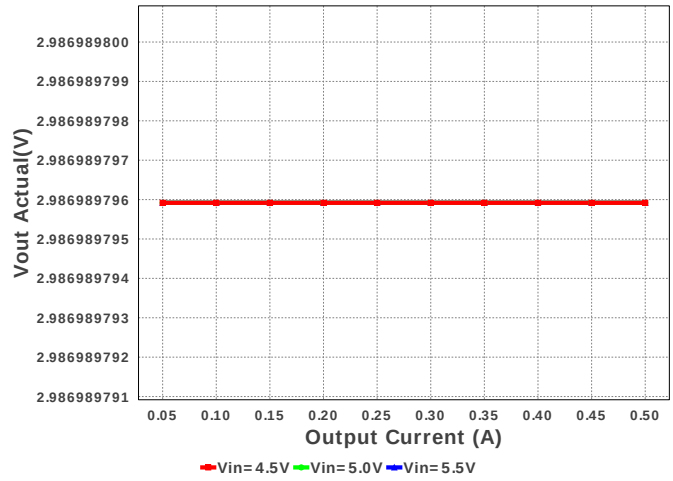
Vout p- p



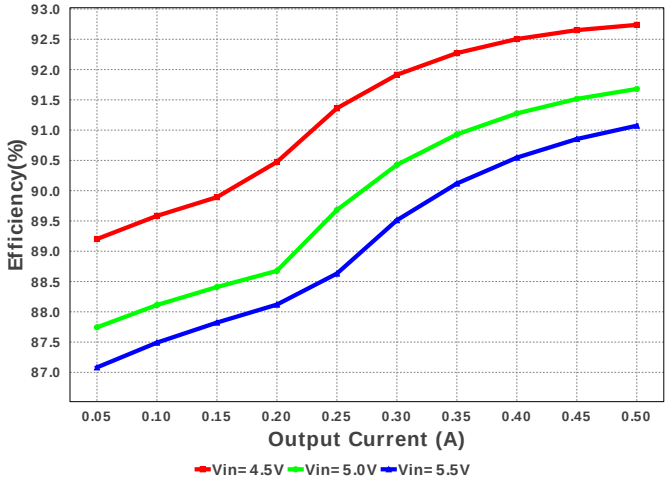
Duty Cycle



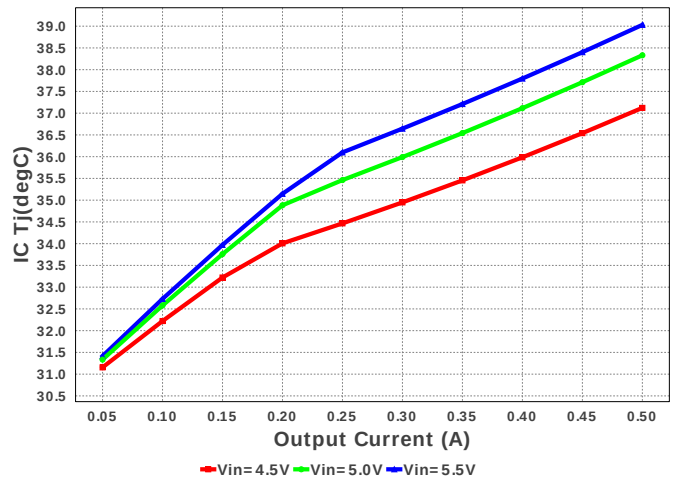
Vout Actual



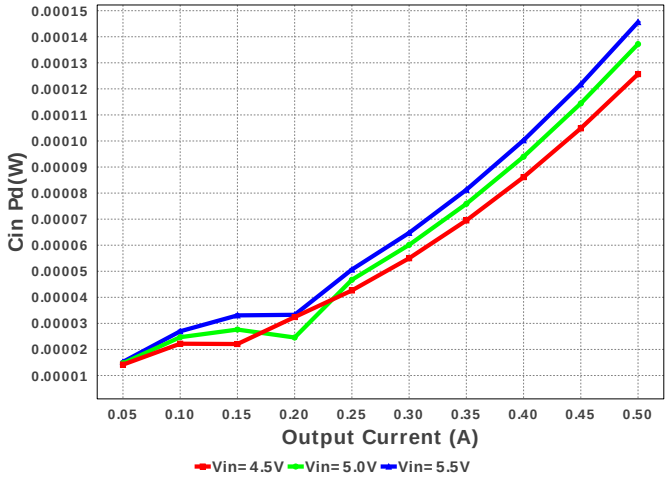
Efficiency



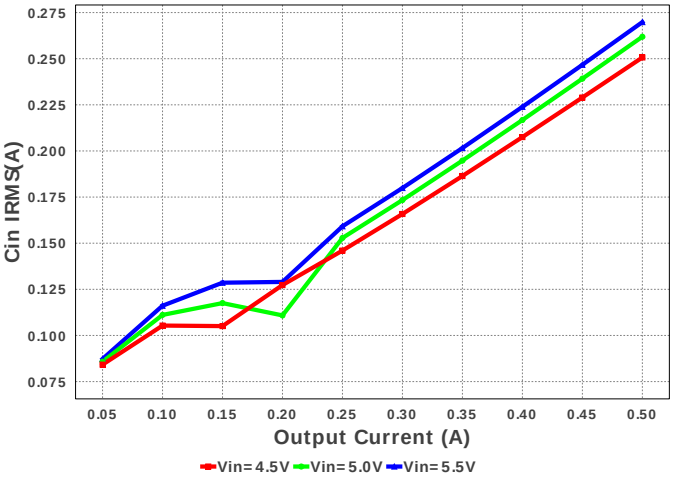
IC Tj



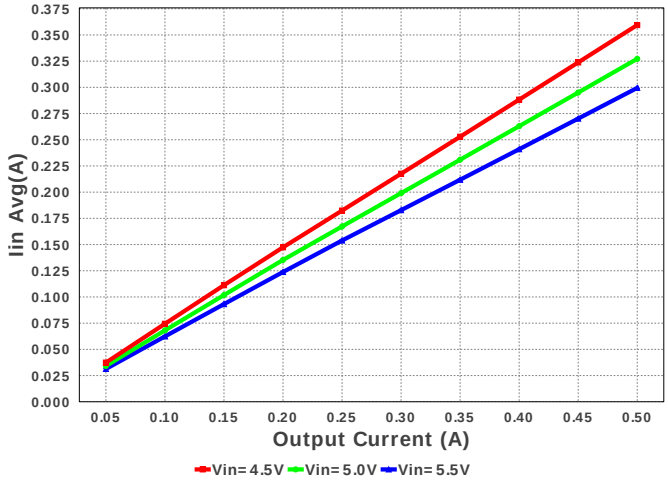
Cin Pd



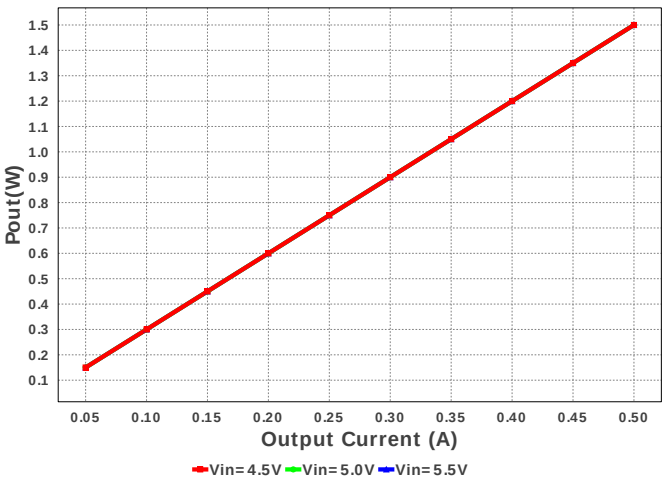
Cin IRMS



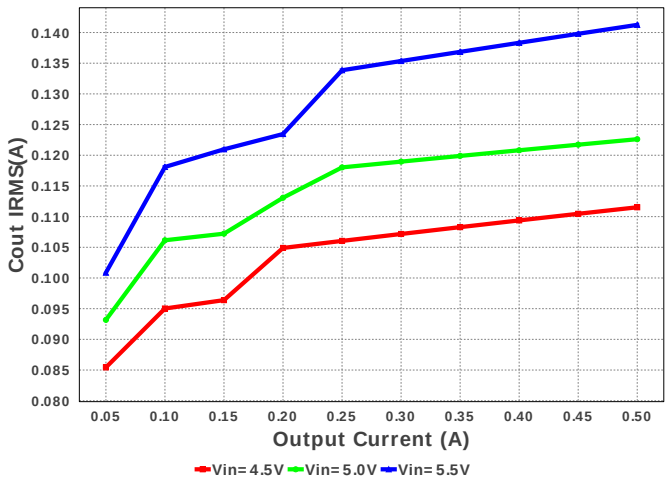
Iin Avg



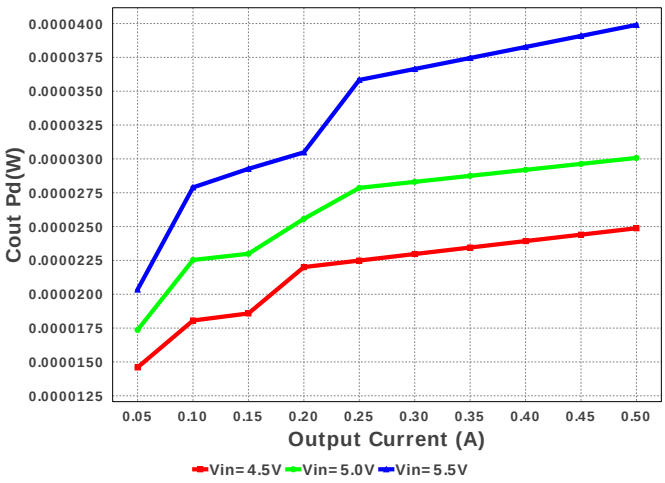
Pout

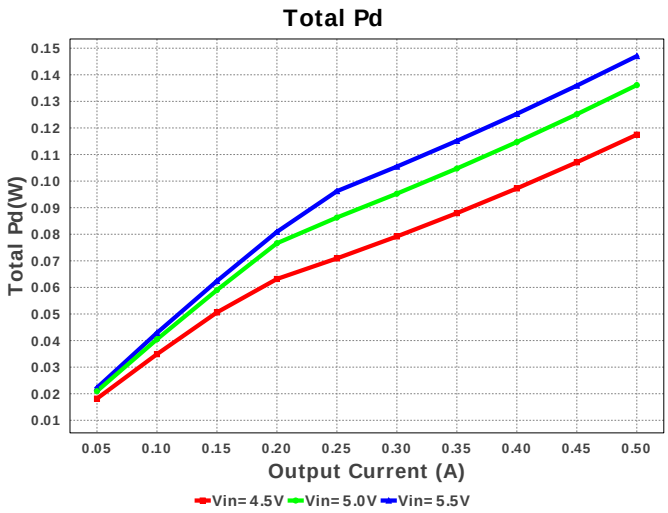


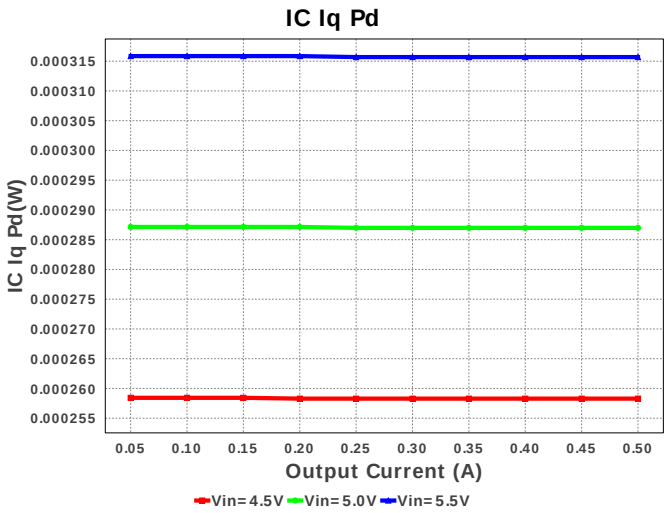
Cout IRMS

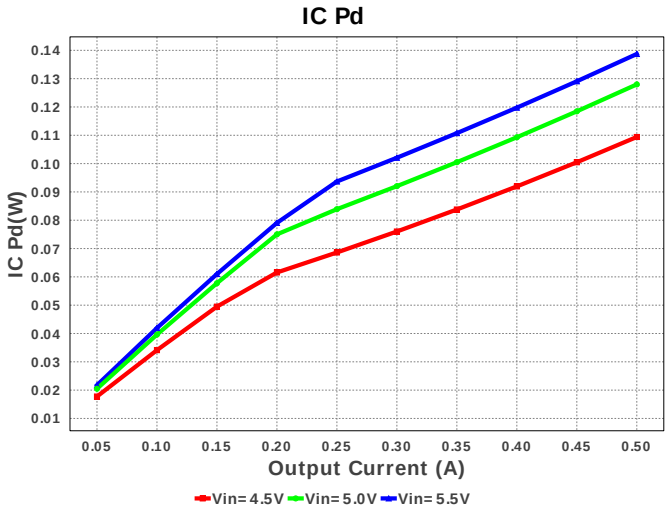


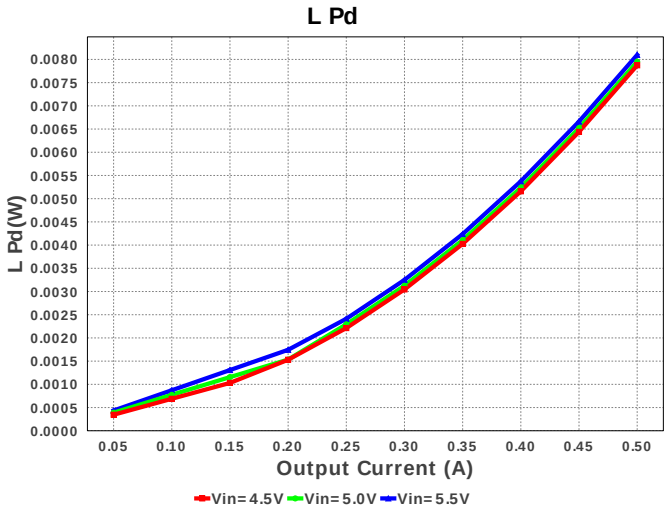
Cout Pd

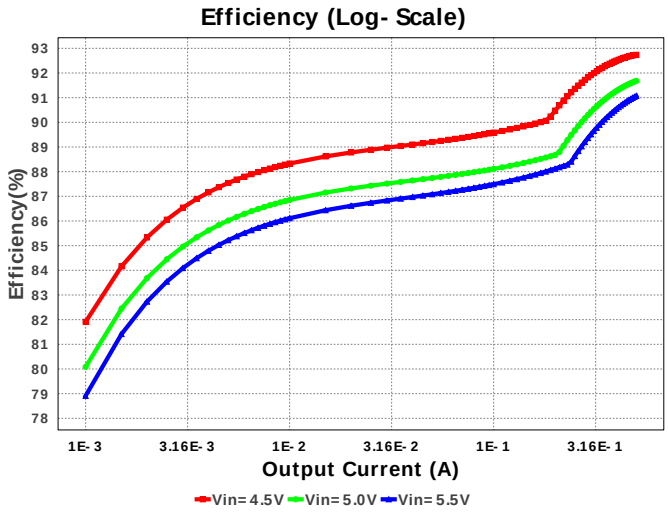












Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	269.835 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	141.247 mA	Current	Output capacitor RMS ripple current
3.	Iin Avg	299.46 mA	Current	Average input current
4.	L Ipp	489.29 mA	Current	Peak-to-peak inductor ripple current
5.	BOM Count	7	General	Total Design BOM count
6.	FootPrint	46.0 mm^2	General	Total Foot Print Area of BOM components
7.	Frequency	2.625 MHz	General	Switching frequency
8.	IC Tolerance	24.0 mV	General	IC Feedback Tolerance
9.	Pout	1.5 W	General	Total output power
10.	Total BOM	$0.93	General	Total BOM Cost
11.	Vout Actual	2.987 V	Op_Point	Vout Actual calculated based on selected voltage divider resistors

#	Name	Value	Category	Description
12.	Vout OP	3.0 V	Op_Point	Operational Output Voltage
13.	Duty Cycle	55.57 %	Op_point	Duty cycle
14.	Efficiency	91.073 %	Op_point	Steady state efficiency
15.	IC Tj	39.03 degC	Op_point	IC junction temperature
16.	ICThetaJA	65.1 degC/W	Op_point	IC junction-to-ambient thermal resistance
17.	IOUT_OP	500.0 mA	Op_point	Iout operating point
18.	VIN_OP	5.5 V	Op_point	Vin operating point
19.	Vout p-p	1.288 mV	Op_point	Peak-to-peak output ripple voltage
20.	Cin Pd	145.622 µW	Power	Input capacitor power dissipation
21.	Cout Pd	39.901 µW	Power	Output capacitor power dissipation
22.	IC Iq Pd	315.689 µW	Power	IC Iq Pd
23.	IC Pd	138.712 mW	Power	IC power dissipation
24.	L Pd	8.099 mW	Power	Inductor power dissipation
25.	Total Pd	147.03 mW	Power	Total Power Dissipation
26.	Vout Tolerance	7.141 %		Vout Tolerance based on IC Tolerance (no load) and voltage divider resistors if applicable

Design Inputs

#	Name	Value	Description
1.	Iout	500.0 m	Maximum Output Current
2.	VinMax	5.5	Maximum input voltage
3.	VinMin	4.5	Minimum input voltage
4.	Vout	3.0	Output Voltage
5.	base_pn	TLV62080	Base Product Number
6.	source	DC	Input Source Type
7.	Ta	30.0	Ambient temperature

Design Assistance

1. **TLV62080** Product Folder : http://www.ti.com/product/TLV62080 : contains the data sheet and other resources.