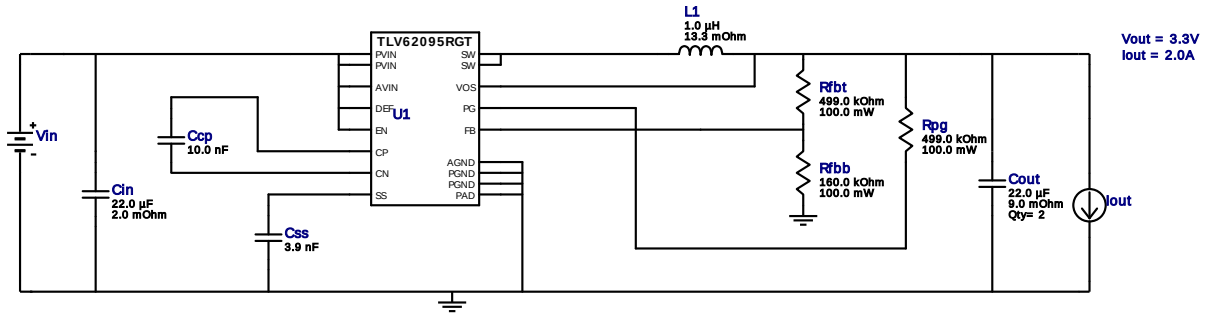
WEBENCH® Design Report

VinMin = 5.0V
VinMax = 5.0V
Vout = 3.3V
Iout = 2.0A

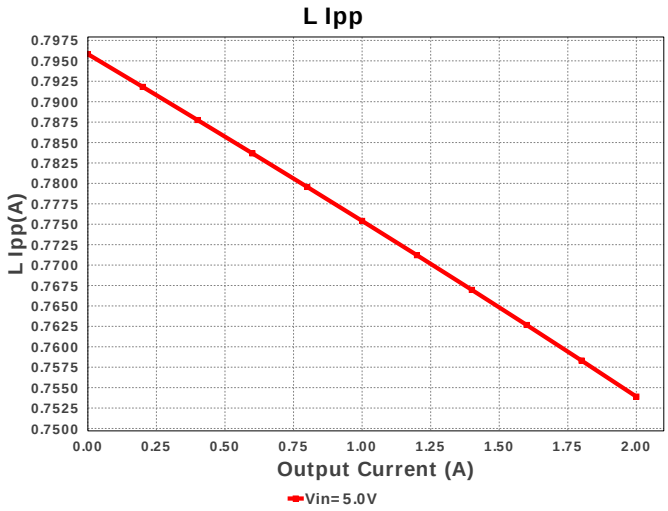
Device = TLV62095RGTR
Topology = Buck
Created = 8/11/16 8:10:05 AM
BOM Cost = $1.60
BOM Count = 10
Total Pd = 0.41W

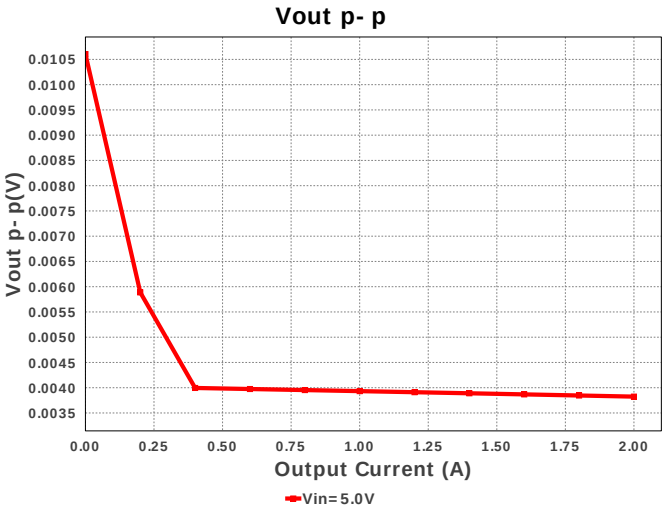
Design : 4085315/20 TLV62095RGTR
TLV62095RGTR 5.0V-5.0V to 3.30V @ 2.0A

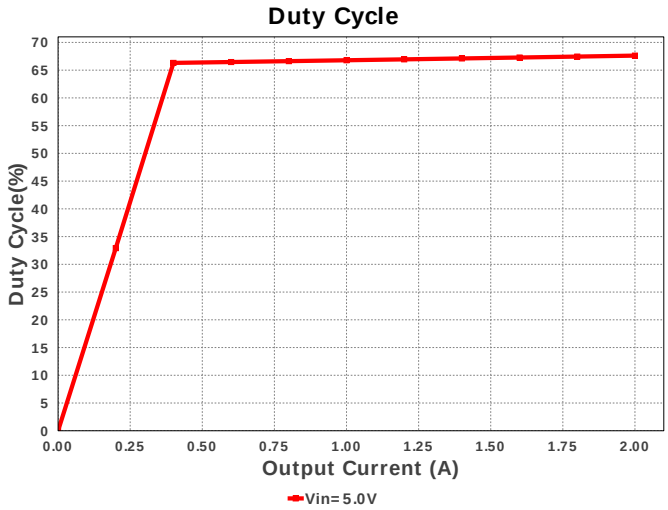


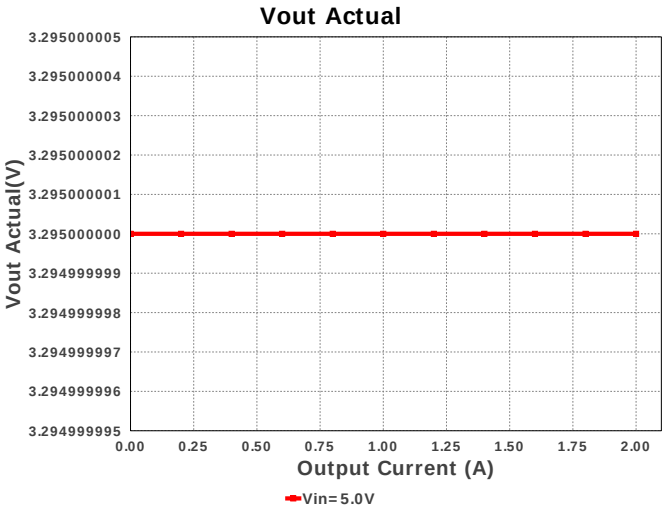
Electrical BOM

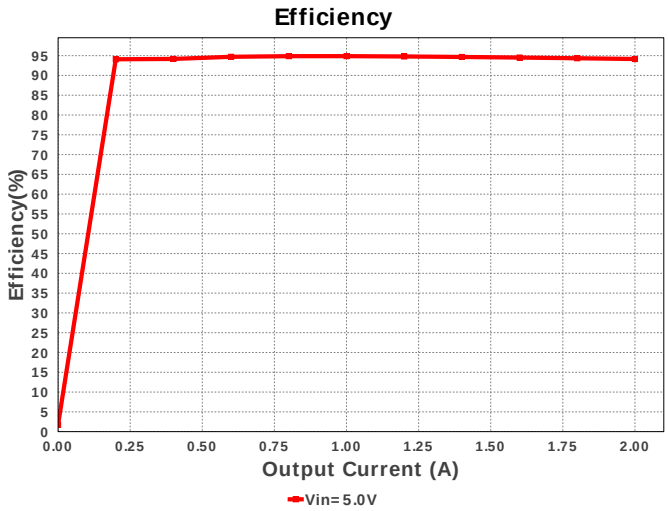
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Ccp	MuRata	GRM155R71E103KA01D Series= X7R	Cap= 10.0 nF VDC= 25.0 V IRMS= 0.0 A	1	$0.01	0402 3 mm²
2.	Cin	Taiyo Yuden	JMK212BJ226KG-T Series= X5R	Cap= 22.0 uF ESR= 2.0 mOhm VDC= 6.3 V IRMS= 0.0 A	1	$0.13	0805 7 mm²
3.	Cout	MuRata	GRM21BR60J226ME39L Series= X5R	Cap= 22.0 uF ESR= 9.0 mOhm VDC= 6.3 V IRMS= 3.5 A	2	$0.04	0805 7 mm²
4.	Css	MuRata	GRM033R71A392KA01D Series= X7R	Cap= 3.9 nF VDC= 10.0 V IRMS= 0.0 A	1	$0.01	0201 2 mm²
5.	L1	Coilcraft	XAL4020-102MEB	L= 1.0 µH DCR= 13.3 mOhm	1	$0.60	XAL4020 28 mm²
6.	Rfbb	Yageo America	RC0603FR-07160KL Series= ?	Res= 160.0 kOhm Power= 100.0 mW Tolerance= 1.0%	1	$0.01	0603 5 mm²
7.	Rfbt	Yageo America	RC0603FR-07499KL Series= ?	Res= 499.0 kOhm Power= 100.0 mW Tolerance= 1.0%	1	$0.01	0603 5 mm²
8.	Rpg	Yageo America	RC0603FR-07499KL Series= ?	Res= 499.0 kOhm Power= 100.0 mW Tolerance= 1.0%	1	$0.01	0603 5 mm²
9.	U1	Texas Instruments	TLV62095RGTR	Switcher	1	$0.74	RGT0016C 25 mm²

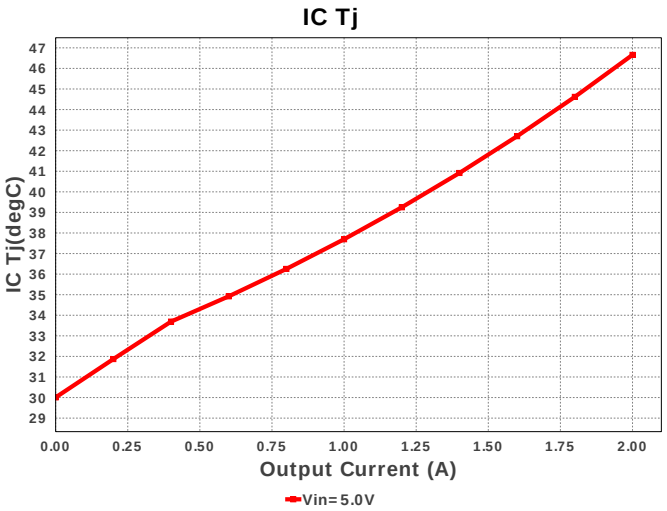


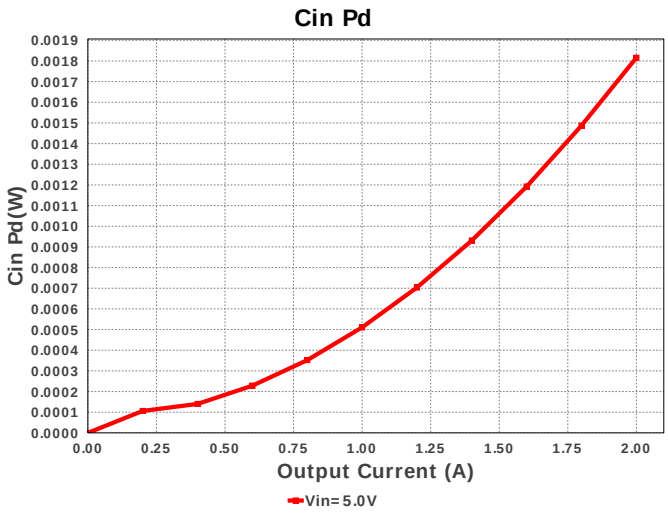


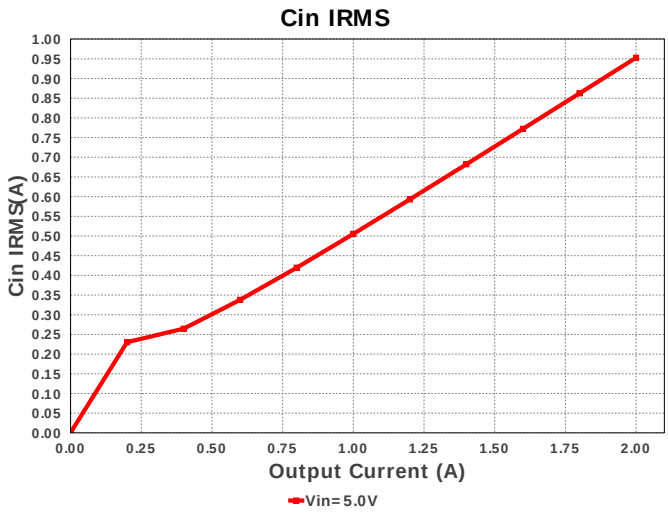


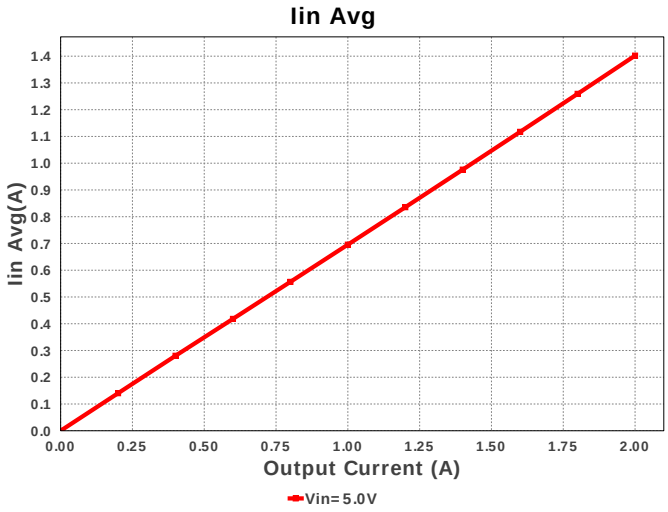


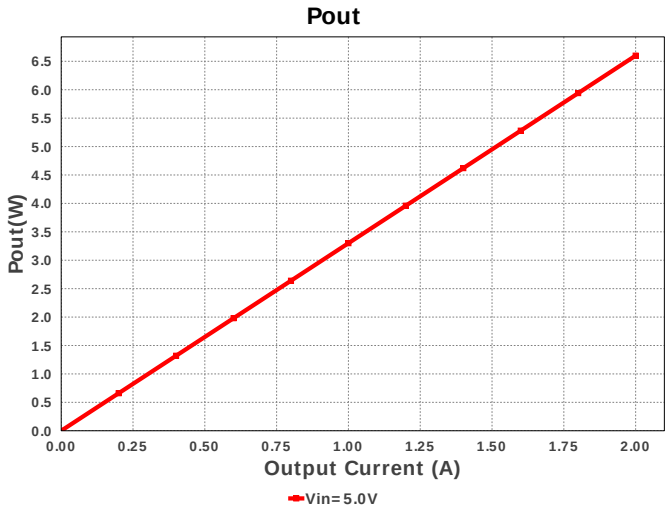


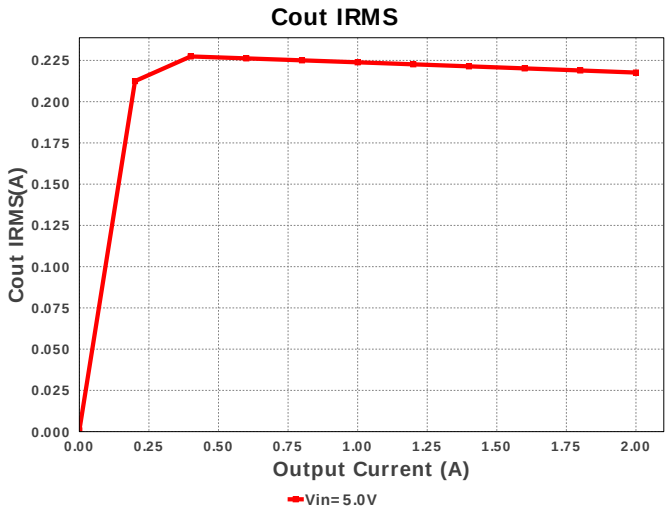


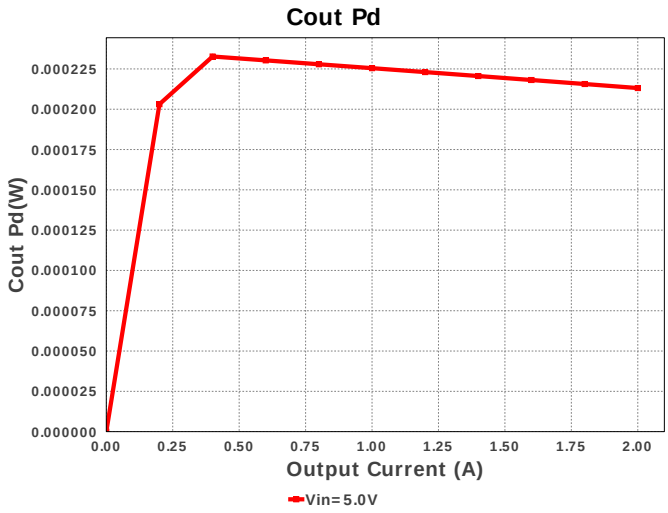


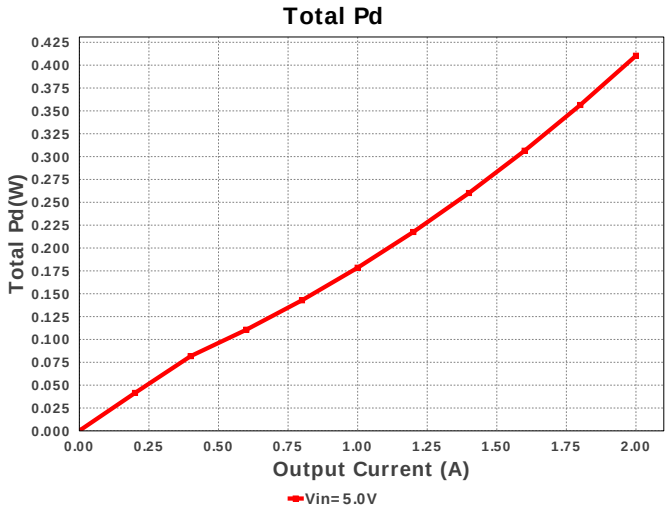


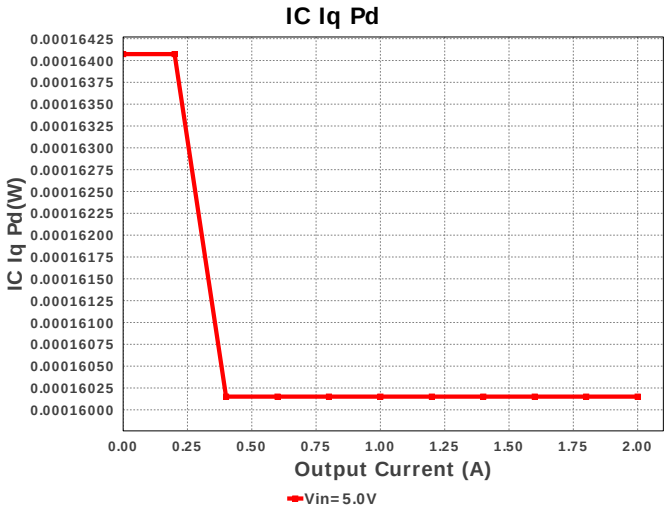


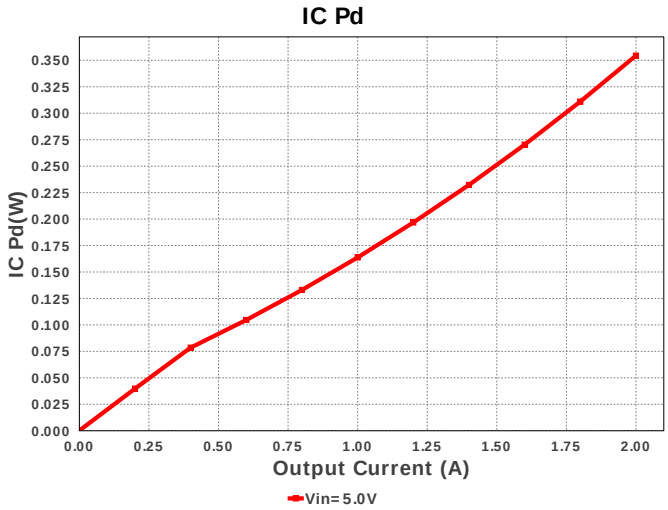


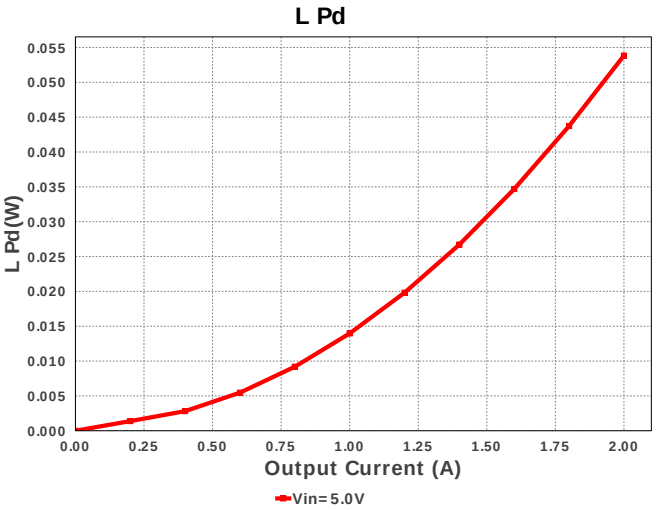


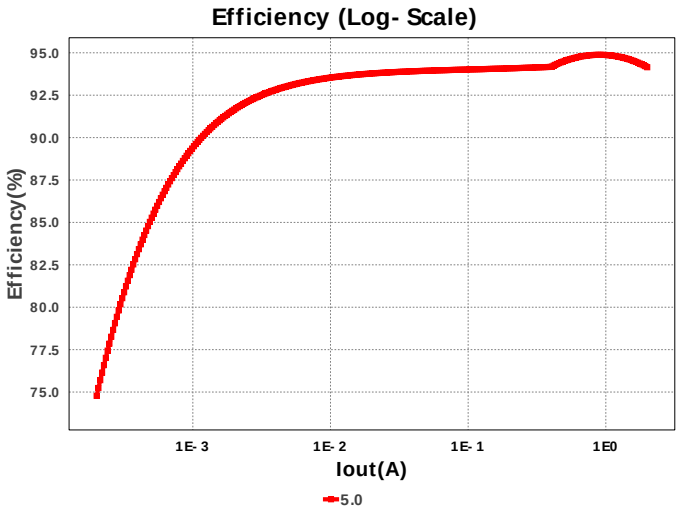












Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	952.798 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	217.632 mA	Current	Output capacitor RMS ripple current
3.	Iin Avg	1.402 A	Current	Average input current
4.	L Ipp	753.9 mA	Current	Peak-to-peak inductor ripple current
5.	BOM Count	10	General	Total Design BOM count
6.	FootPrint	92.0 mm^2	General	Total Foot Print Area of BOM components
7.	Frequency	1.404 MHz	General	Switching frequency
8.	IC Tolerance	20.0 mV	General	IC Feedback Tolerance
9.	Mode	CCM	General	Conduction Mode
10.	Pout	6.6 W	General	Total output power
11.	Total BOM	$1.6	General	Total BOM Cost

#	Name	Value	Category	Description
12.	Vout Actual	3.295 V	Op_Point	Vout Actual calculated based on selected voltage divider resistors
13.	Vout OP	3.3 V	Op_Point	Operational Output Voltage
14.	Duty Cycle	67.621 %	Op_point	Duty cycle
15.	Efficiency	94.147 %	Op_point	Steady state efficiency
16.	IC Tj	46.659 degC	Op_point	IC junction temperature
17.	ICThetaJA	47.0 degC/W	Op_point	IC junction-to-ambient thermal resistance
18.	IOUT_OP	2.0 A	Op_point	Iout operating point
19.	VIN_OP	5.0 V	Op_point	Vin operating point
20.	Vout p-p	3.824 mV	Op_point	Peak-to-peak output ripple voltage
21.	Cin Pd	1.816 mW	Power	Input capacitor power dissipation
22.	Cout Pd	213.136 µW	Power	Output capacitor power dissipation
23.	IC Iq Pd	160.151 µW	Power	IC Iq Pd
24.	IC Pd	354.437 mW	Power	IC power dissipation
25.	L Pd	53.83 mW	Power	Inductor power dissipation
26.	Total Pd	410.325 mW	Power	Total Power Dissipation
27.	Vout Tolerance	4.068 %		Vout Tolerance based on IC Tolerance (no load) and voltage divider resistors if applicable

Design Inputs

#	Name	Value	Description
1.	Iout	2.0	Maximum Output Current
2.	VinMax	5.0	Maximum input voltage
3.	VinMin	5.0	Minimum input voltage
4.	Vout	3.3	Output Voltage
5.	base_pn	TLV62095	Base Product Number
6.	source	DC	Input Source Type
7.	Ta	30.0	Ambient temperature

Design Assistance

1. **TLV62095** Product Folder : http://www.ti.com/product/TLV62095 : contains the data sheet and other resources.