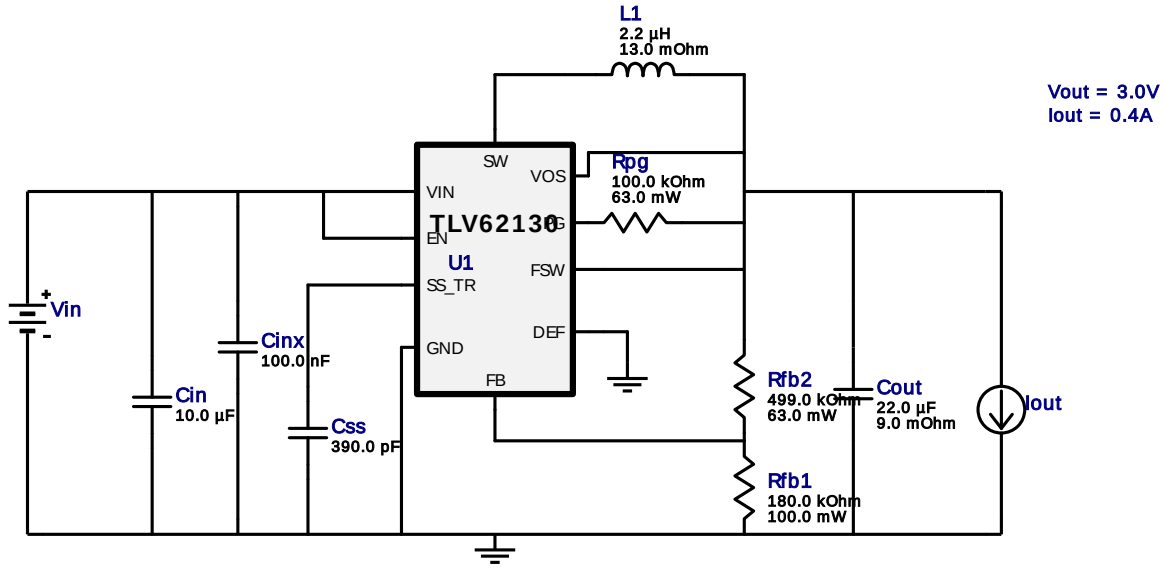
WEBENCH® Design Report

VinMin = 5.0V
VinMax = 15.0V
Vout = 3.0V
Iout = 0.4A

Device = TLV62130RGTR
Topology = Buck
Created = 9/14/16 6:31:57 AM
BOM Cost = $1.08
BOM Count = 9
Total Pd = 0.24W

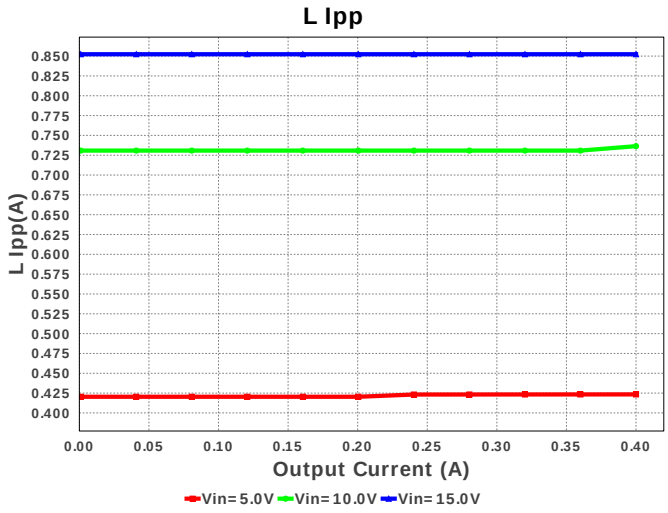
Design : 2425056/65 TLV62130RGTR
TLV62130RGTR 5.0V-15.0V to 3.00V @ 0.4A

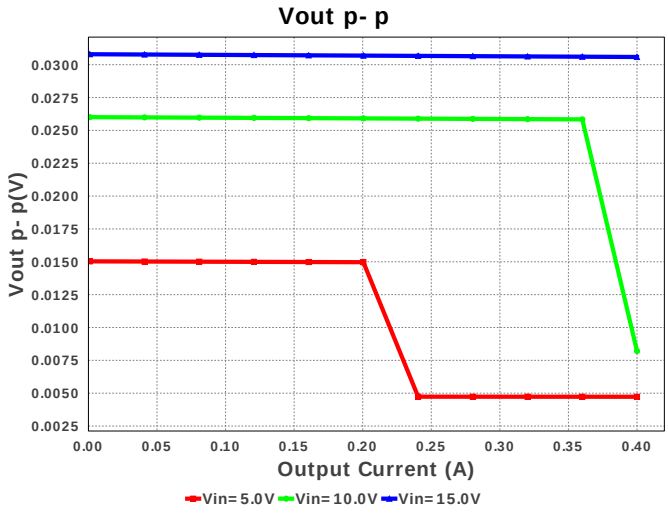


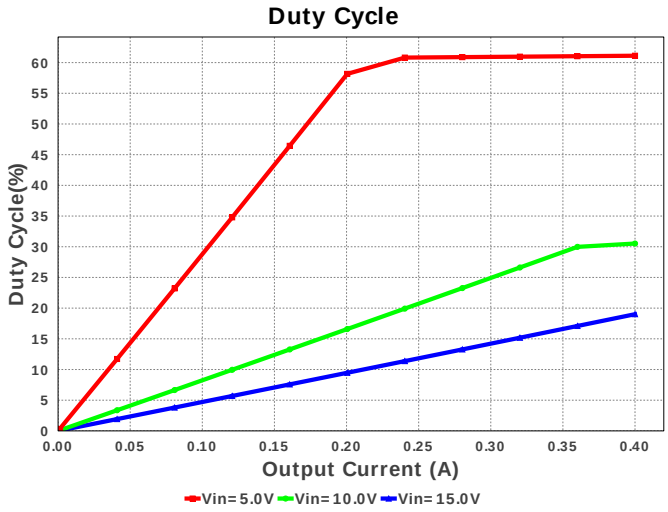
Electrical BOM

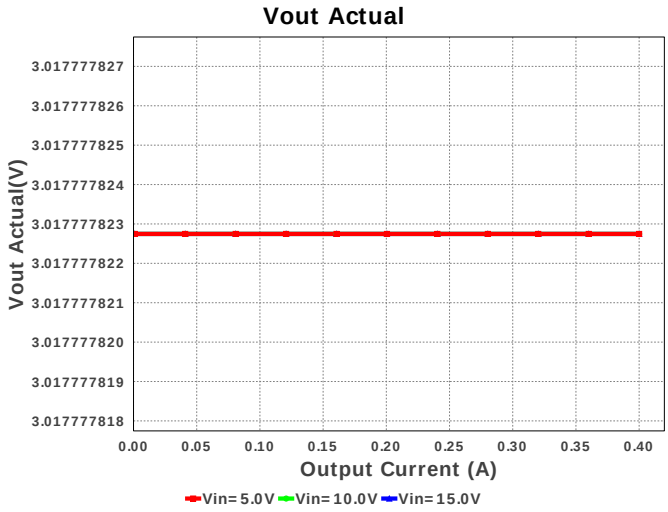
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cin	Taiyo Yuden	TMK316BJ106KL-T Series= X5R	Cap= 10.0 uF VDC= 25.0 V IRMS= 0.0 A	1	$0.05	1206 11 mm²
2.	Cinx	Kemet	C0603C104K3RACTU Series= X7R	Cap= 100.0 nF VDC= 25.0 V IRMS= 0.0 A	1	$0.01	0603 5 mm²
3.	Cout	MuRata	GRM21BR60J226ME39L Series= X5R	Cap= 22.0 uF ESR= 9.0 mOhm VDC= 6.3 V IRMS= 3.5 A	1	$0.04	0805 7 mm²
4.	Css	Yageo America	CC0805KRX7R9BB391 Series= X7R	Cap= 390.0 pF VDC= 50.0 V IRMS= 0.0 A	1	$0.01	0805 7 mm²
5.	L1	Bourns	SRN8040-2R2Y	L= 2.2 µH DCR= 13.0 mOhm	1	$0.22	SRN8040 100 mm²
6.	Rfb1	Yageo America	RC0603FR-07180KL Series= ?	Res= 180.0 kOhm Power= 100.0 mW Tolerance= 1.0%	1	$0.01	0603 5 mm²
7.	Rfb2	Vishay-Dale	CRCW0402499KFKED Series= CRCW..e3	Res= 499.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm²
8.	Rpg	Vishay-Dale	CRCW0402100KFKED Series= CRCW..e3	Res= 100.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm²

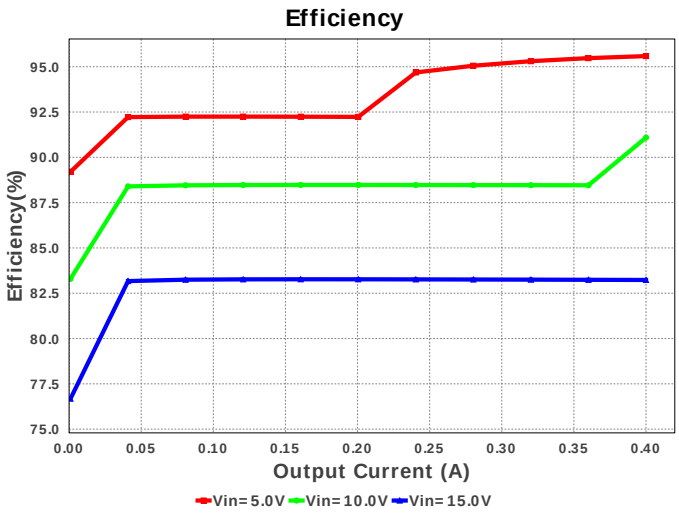
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
9.	U1	Texas Instruments	TLV62130RGTR	Switcher	1	$0.72	 S-PVQFN-N16 17 mm^2

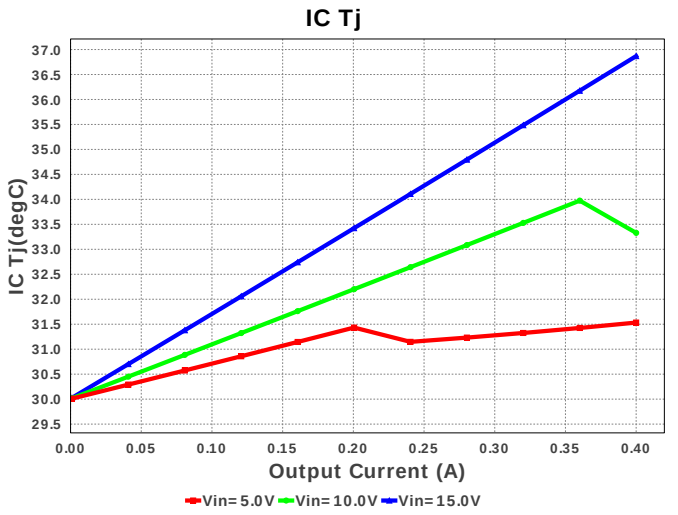


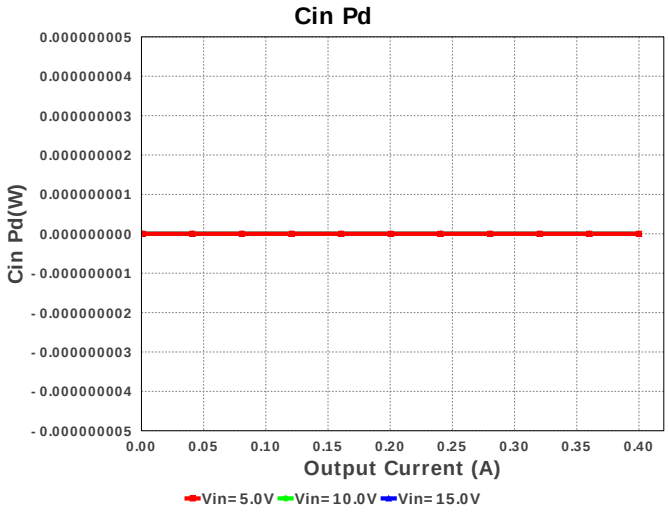


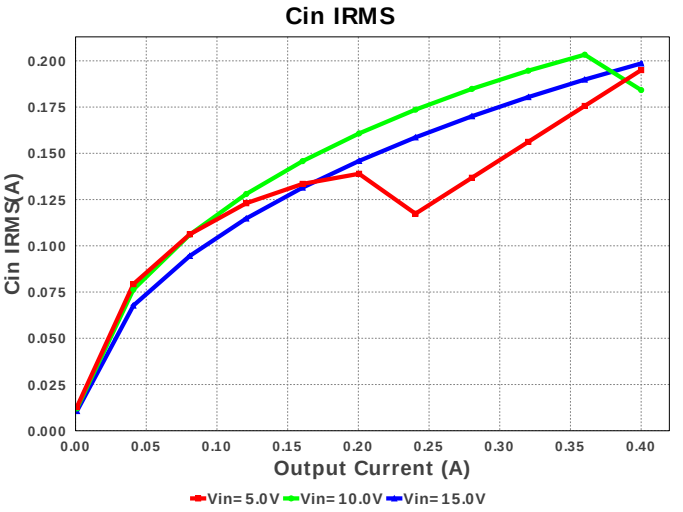


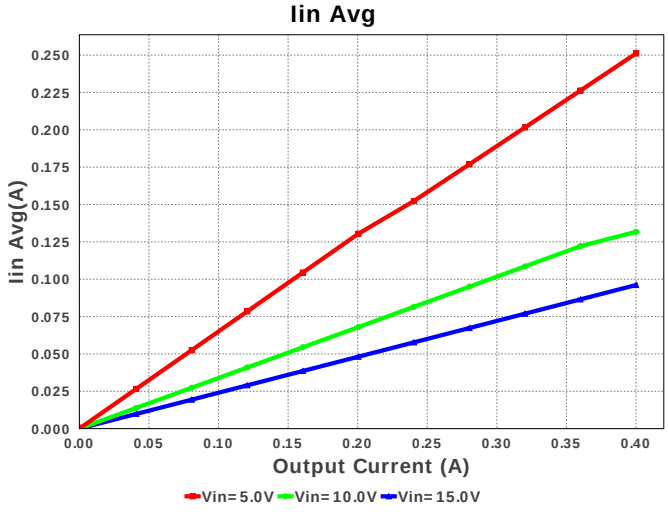


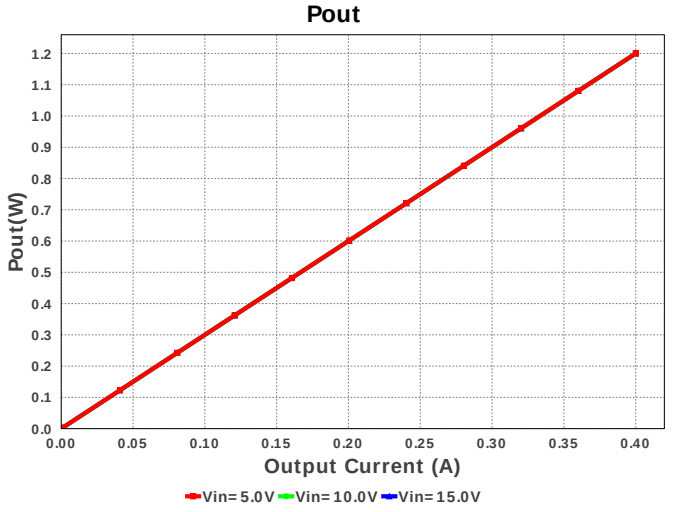


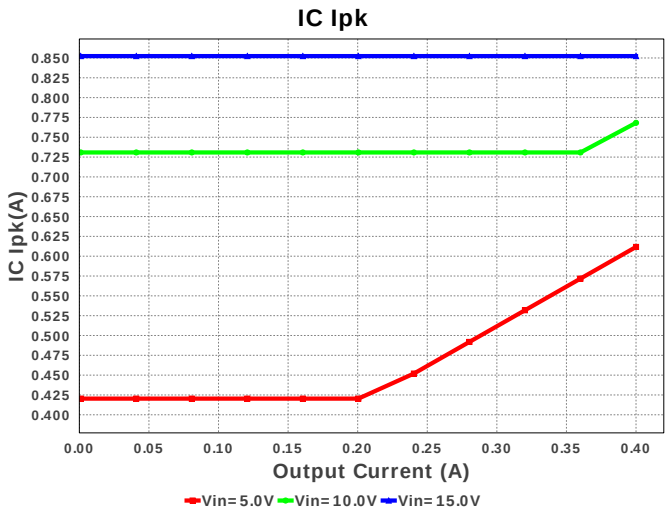


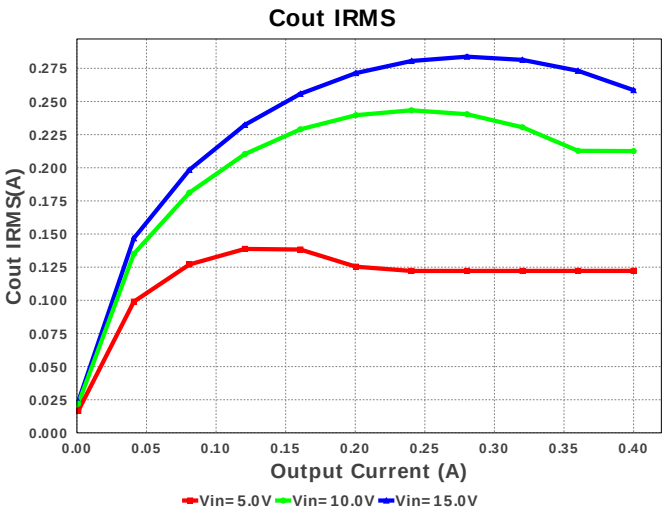


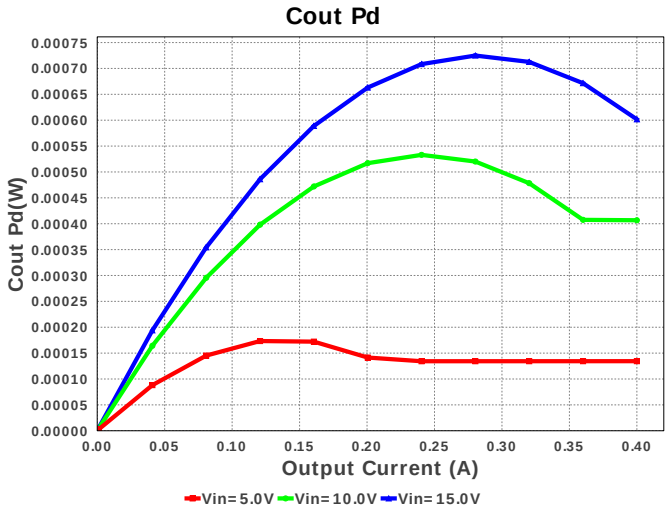


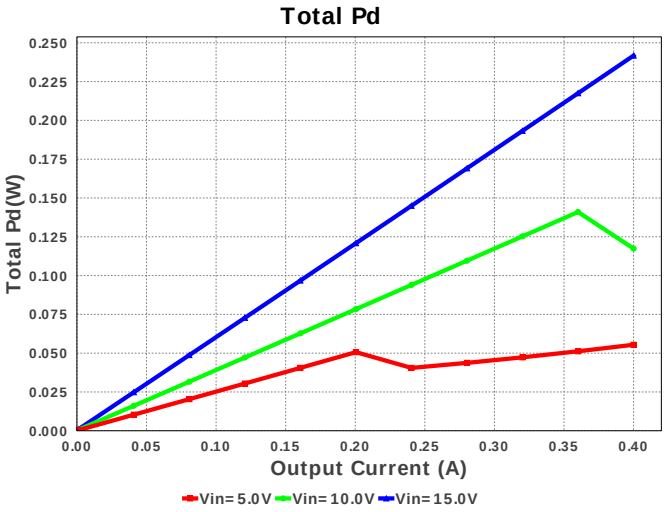


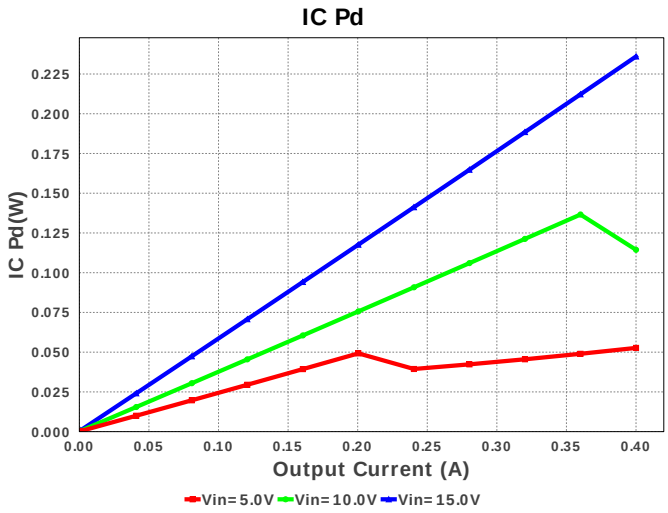


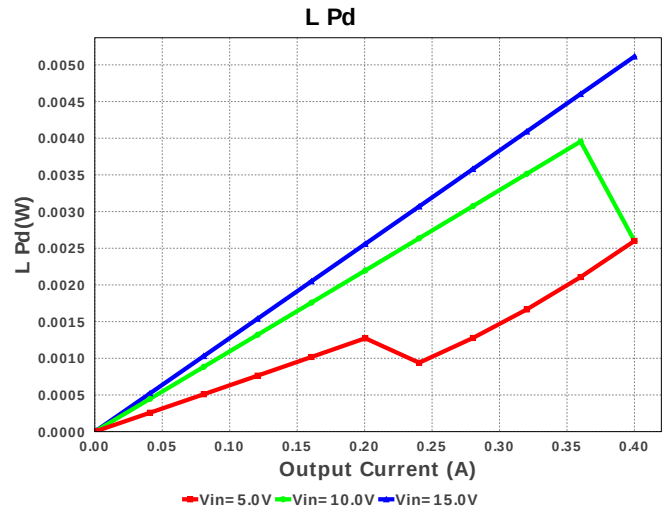


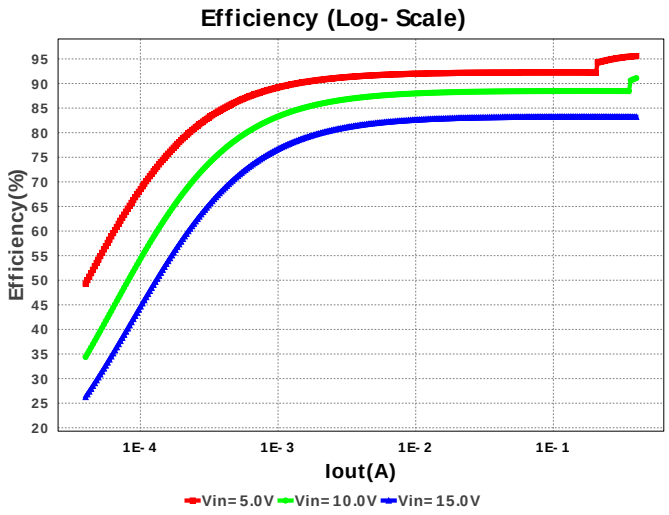












Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	198.586 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	258.567 mA	Current	Output capacitor RMS ripple current
3.	IC Ipk	852.353 mA	Current	Peak switch current in IC
4.	Iin Avg	96.116 mA	Current	Average input current
5.	L Ipp	852.35 mA	Current	Peak-to-peak inductor ripple current
6.	BOM Count	9	General	Total Design BOM count
7.	FootPrint	157.0 mm^2	General	Total Foot Print Area of BOM components
8.	Frequency	1.216 MHz	General	Switching frequency
9.	Mode	DCM	General	Conduction Mode
10.	Pout	1.2 W	General	Total output power
11.	Total BOM	$1.08	General	Total BOM Cost
12.	Vout Actual	3.018 V	Op_Point	Vout Actual calculated based on selected voltage divider resistors
13.	Vout OP	3.0 V	Op_Point	Operational Output Voltage
14.	Duty Cycle	19.009 %	Op_point	Duty cycle
15.	Efficiency	83.232 %	Op_point	Steady state efficiency
16.	IC Tj	36.868 degC	Op_point	IC junction temperature
17.	ICThetaJA	29.1 degC/W	Op_point	IC junction-to-ambient thermal resistance
18.	IOUT_OP	400.0 mA	Op_point	Iout operating point
19.	VIN_OP	15.0 V	Op_point	Vin operating point
20.	Vout p-p	30.586 mV	Op_point	Peak-to-peak output ripple voltage
21.	Cin Pd	0.0 W	Power	Input capacitor power dissipation
22.	Cout Pd	601.713 µW	Power	Output capacitor power dissipation
23.	IC Pd	236.03 mW	Power	IC power dissipation
24.	L Pd	5.114 mW	Power	Inductor power dissipation
25.	Total Pd	241.751 mW	Power	Total Power Dissipation
26.	Vout Tolerance	4.022 %		Vout Tolerance based on IC Tolerance (no load) and voltage divider resistors if applicable

Design Inputs

#	Name	Value	Description
1.	Iout	400.0 m	Maximum Output Current
2.	VinMax	15.0	Maximum input voltage
3.	VinMin	5.0	Minimum input voltage
4.	Vout	3.0	Output Voltage
5.	base_pn	TLV62130	Base Product Number
6.	source	DC	Input Source Type
7.	Ta	30.0	Ambient temperature

Design Assistance

1. Feature Highlights: DCS-Control(TM) Architecture with upto 3A output current, 4V to 17V Input Voltage Range, Adjustable output voltage from 0.9V to 6VSelectable operating frequency, Optional Softstart Capacitor for slow startup, Tracking,Pin selectable output voltage (nominal, +5%) Seamless Power Save Mode for Light Load Efficiency, Power Good Output, 100% Duty Cycle mode, Short Circuit Protection, Thermal Shutdown

2. **TLV62130** Product Folder : http://www.ti.com/product/TLV62130 : contains the data sheet and other resources.