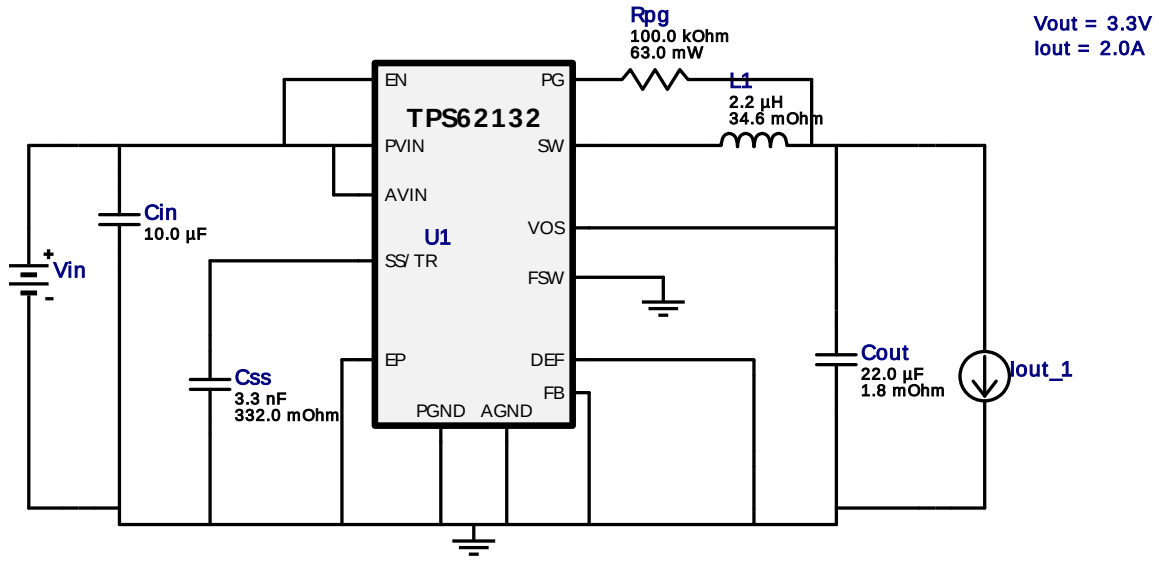
WEBENCH® Design Report

VinMin = 8.0V
VinMax = 12.0V
Vout = 3.3V
Iout = 2.0A

Device = TPS62132RGTR
Topology = Buck
Created = 7/9/13 1:20:44 AM
BOM Cost = $1.44
BOM Count = 6
Total Pd = 0.89W

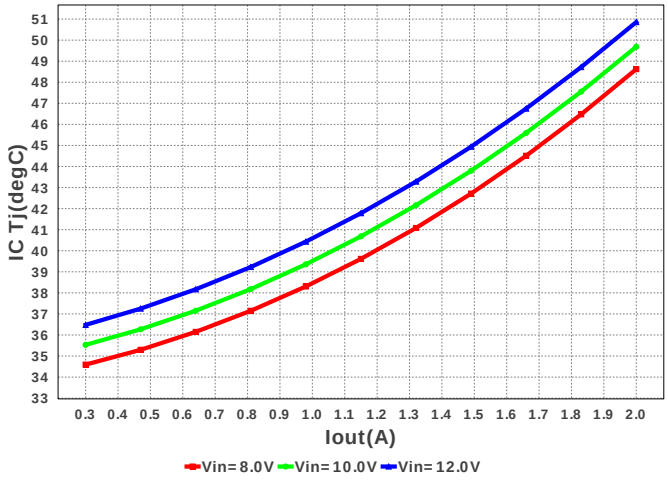
Design : 906020/19 TPS62132RGTR
TPS62132RGTR 8.0V-12.0V to 3.3V @ 2.0A



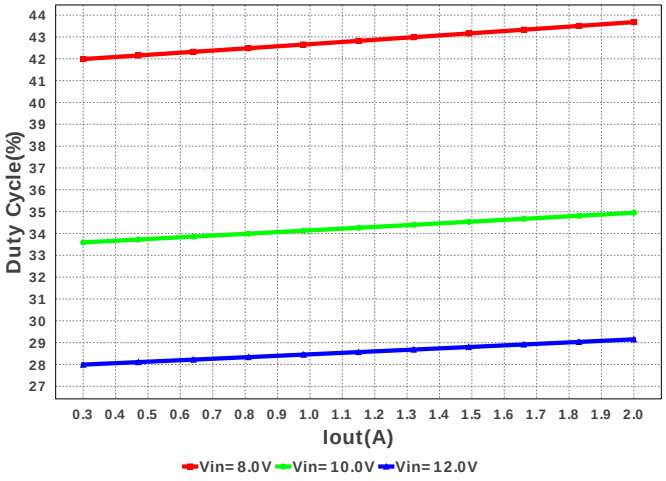
Electrical BOM

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cin	Nichicon	GRM219R61E106KA12 Series= ?	Cap= 10.0 uF VDC= 25.0 V IRMS= 0.0 A	1	$0.05	0805 13 mm²
2.	Cout	TDK	C2012X5R0J226M Series= X5R	Cap= 22.0 uF ESR= 1.8 mOhm VDC= 6.3 V IRMS= 0.0 A	1	$0.06	0805 13 mm²
3.	Css	Kemet	C0805C332K5RACTU Series= X7R	Cap= 3.3 nF ESR= 332.0 mOhm VDC= 50.0 V IRMS= 319.0 mA	1	$0.01	0805 13 mm²
4.	L1	Coilcraft	XAL5020-222MEB	L= 2.2 µH DCR= 34.6 mOhm	1	$0.01	XAL5020 54 mm²
5.	Rpg	Vishay-Dale	CRCW0402100KFKED Series= CRCW..e3	Res= 100.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 8 mm²
6.	U1	Texas Instruments	TPS62132RGTR	Switcher	1	$1.30	S-PVQFN-N16 36 mm²

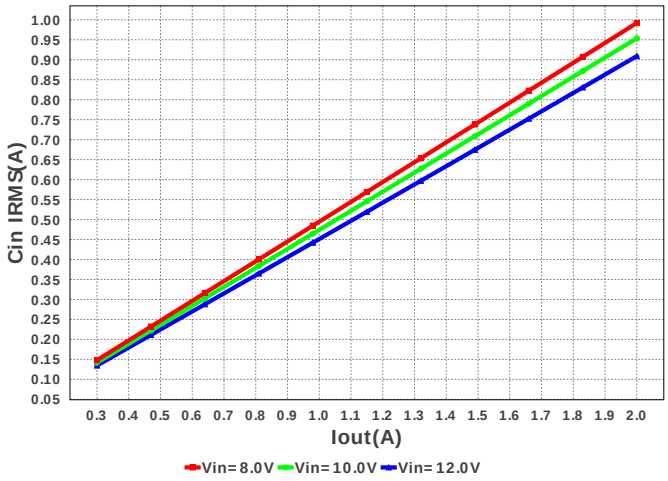
IC Tj



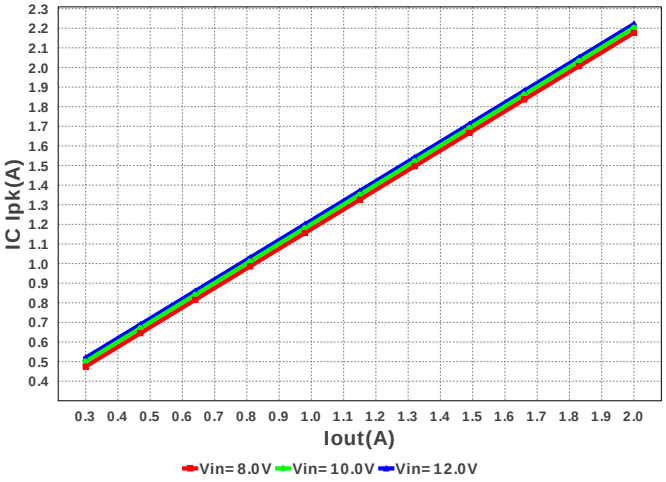
Duty Cycle



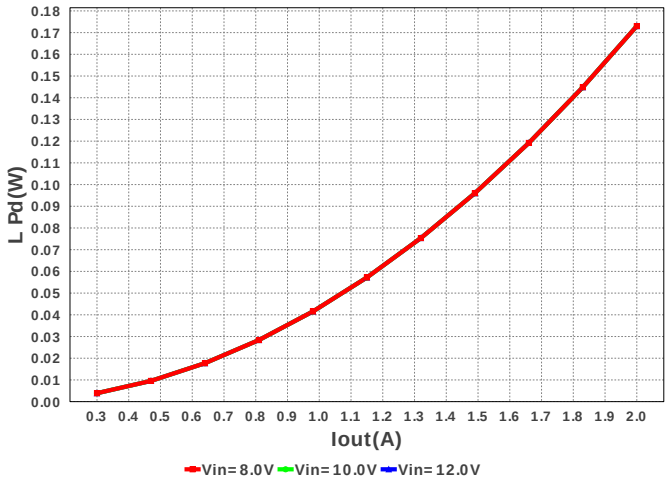
Cin IRMS



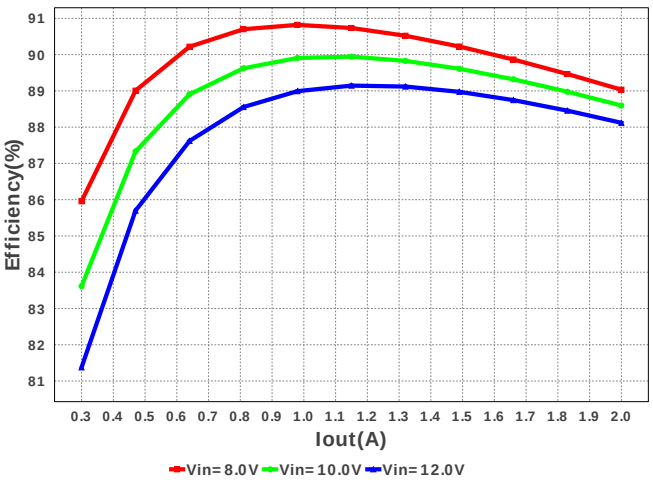
IC Ipk

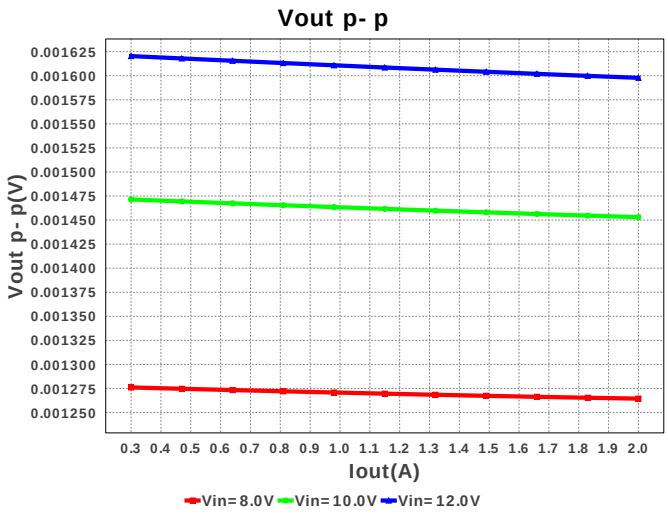


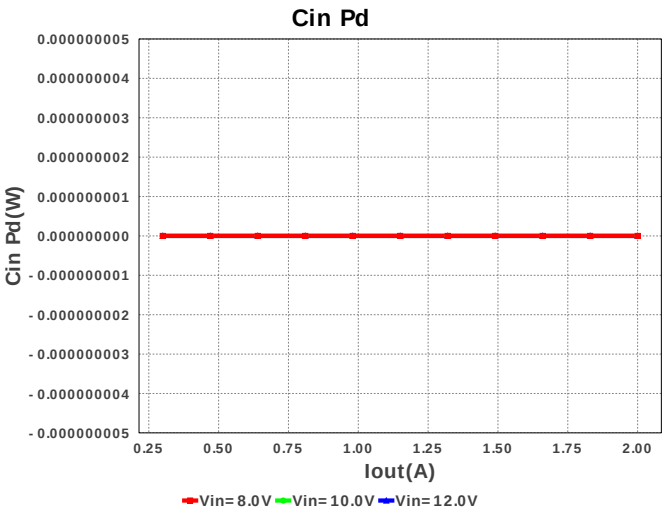
L Pd

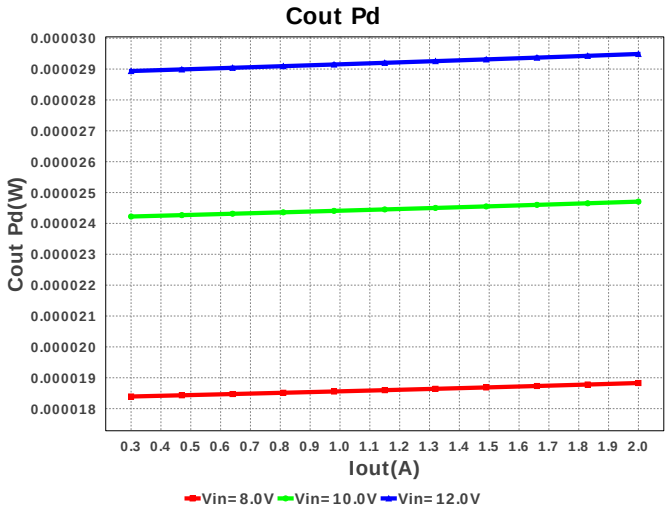


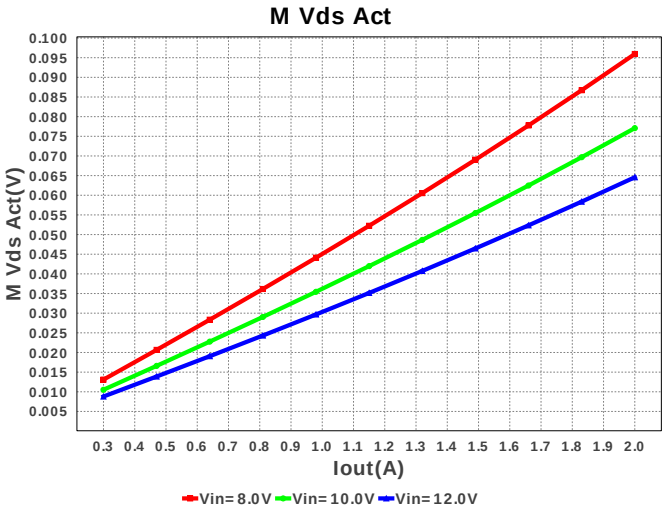
Efficiency

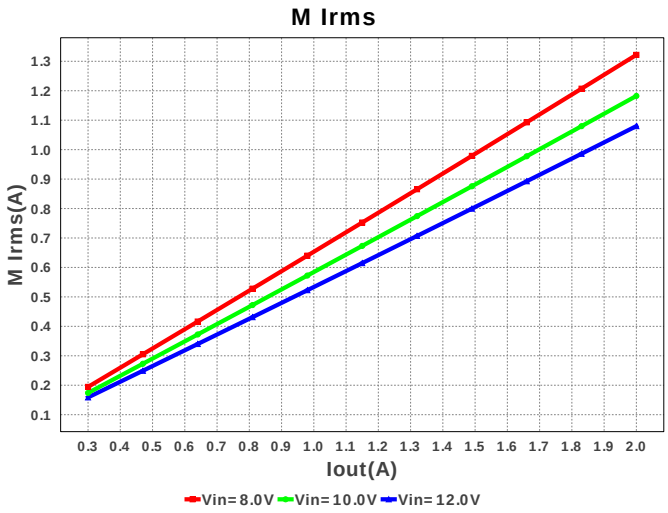


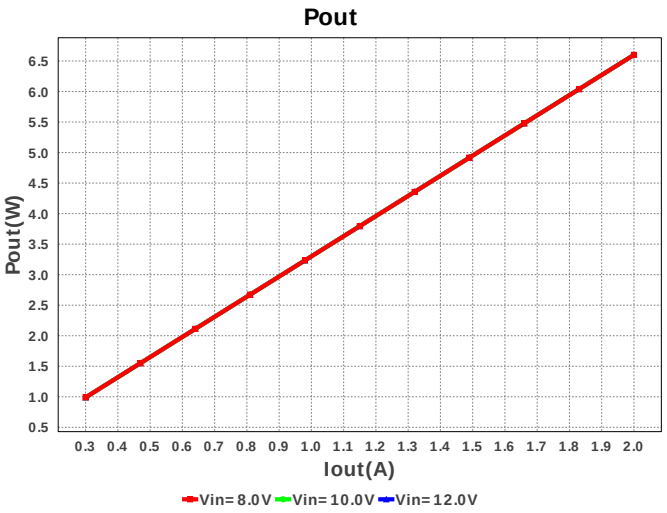


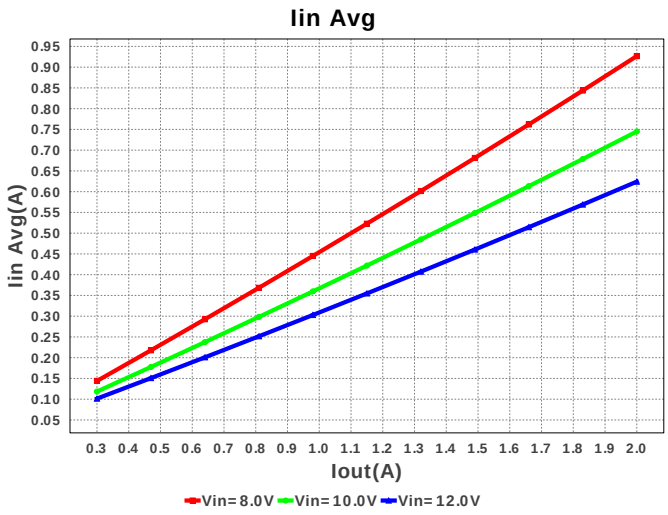


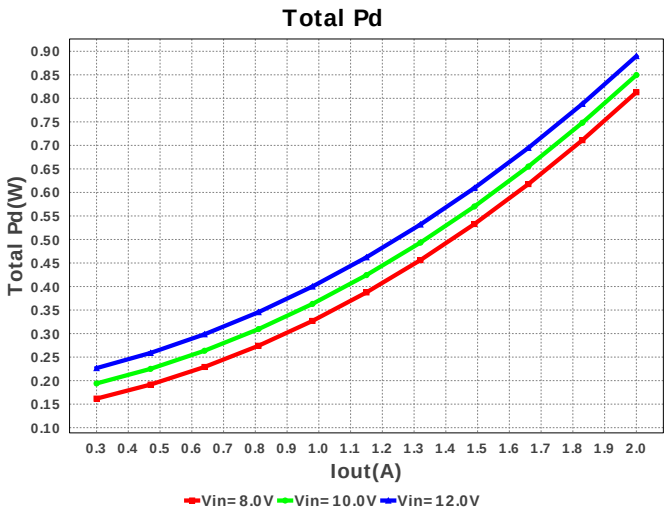


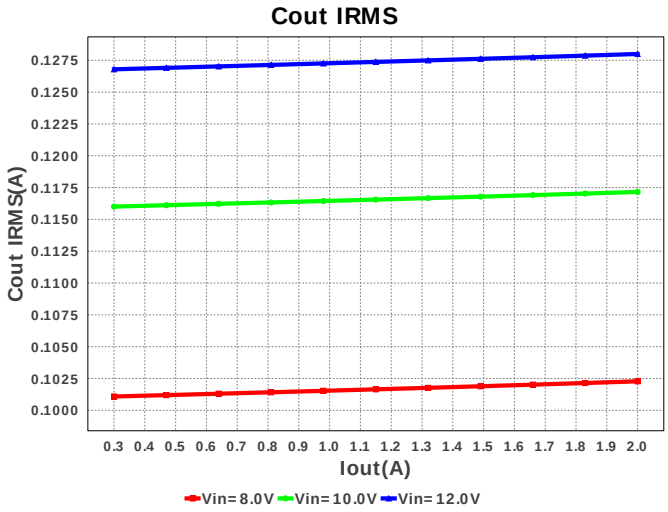


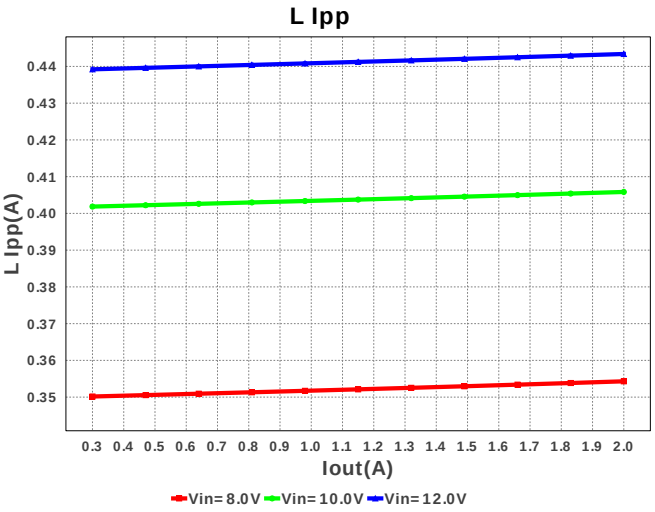


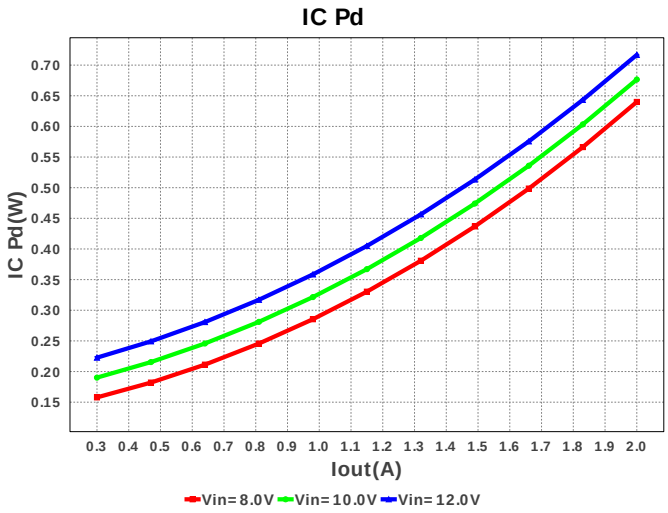


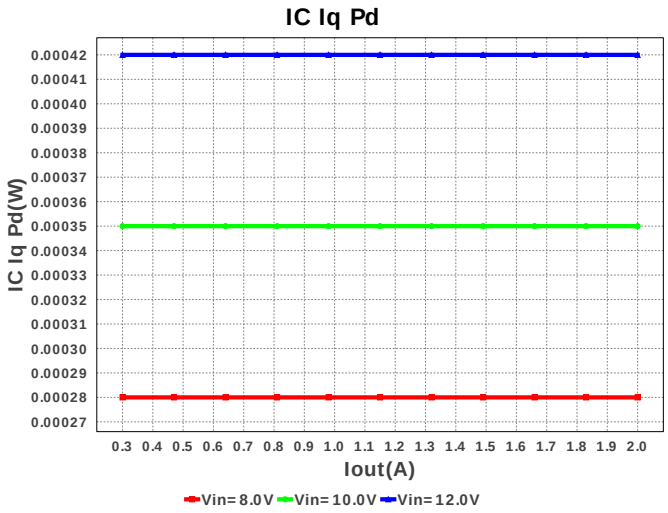












Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	908.918 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	127.994 mA	Current	Output capacitor RMS ripple current
3.	IC Ipk	2.222 A	Current	Peak switch current in IC
4.	Iin Avg	624.15 mA	Current	Average input current
5.	L Ipp	443.385 mA	Current	Peak-to-peak inductor ripple current
6.	M1 Irms	1.08 A	Current	Q Iavg
7.	BOM Count	6	General	Total Design BOM count
8.	FootPrint	137.0 mm^2	General	Total Foot Print Area of BOM components
9.	Frequency	2.6 MHz	General	Switching frequency
10.	IC Tolerance	59.4 mV	General	IC Feedback Tolerance
11.	M Vds Act	64.574 mV	General	Voltage drop across the MosFET

#	Name	Value	Category	Description
12.	Pout	6.6 W	General	Total output power
13.	Total BOM	$1.44	General	Total BOM Cost
14.	Vout OP	3.3 V	Op_Point	Operational Output Voltage
15.	Duty Cycle	29.151 %	Op_point	Duty cycle
16.	Efficiency	88.12 %	Op_point	Steady state efficiency
17.	IC Tj	50.857 degC	Op_point	IC junction temperature
18.	ICThetaJA	29.1 degC/W	Op_point	IC junction-to-ambient thermal resistance
19.	IOUT_OP	2.0 A	Op_point	Iout operating point
20.	VIN_OP	12.0 V	Op_point	Vin operating point
21.	Vout p-p	1.598 mV	Op_point	Peak-to-peak output ripple voltage
22.	Cin Pd	0.0 W	Power	Input capacitor power dissipation
23.	Cout Pd	29.489 µW	Power	Output capacitor power dissipation
24.	IC Pd	716.729 mW	Power	IC power dissipation
25.	L Pd	173.0 mW	Power	Inductor power dissipation
26.	Total Pd	889.788 mW	Power	Total Power Dissipation

Design Inputs

#	Name	Value	Description
1.	Iout	2.0	Maximum Output Current
2.	Iout1	2.0	Output Current #1
3.	SoftStart	1.65 ms	Soft Start Time (ms)
4.	VinMax	12.0	Maximum input voltage
5.	VinMin	8.0	Minimum input voltage
6.	Vout	3.3	Output Voltage
7.	Vout1	3.3	Output Voltage #1
8.	base_pn	TPS62132	Base Product Number
9.	source	DC	Input Source Type
10.	Ta	30.0	Ambient temperature

Design Assistance

1. Feature Highlights: DCS-Control(TM) Architecture with upto 3A output current, 3V to 17V Input Voltage Range, 3.3V Fixed Output voltageSelectable 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. **TPS62132** Product Folder : http://www.ti.com/product/tps62132 : contains the data sheet and other resources.