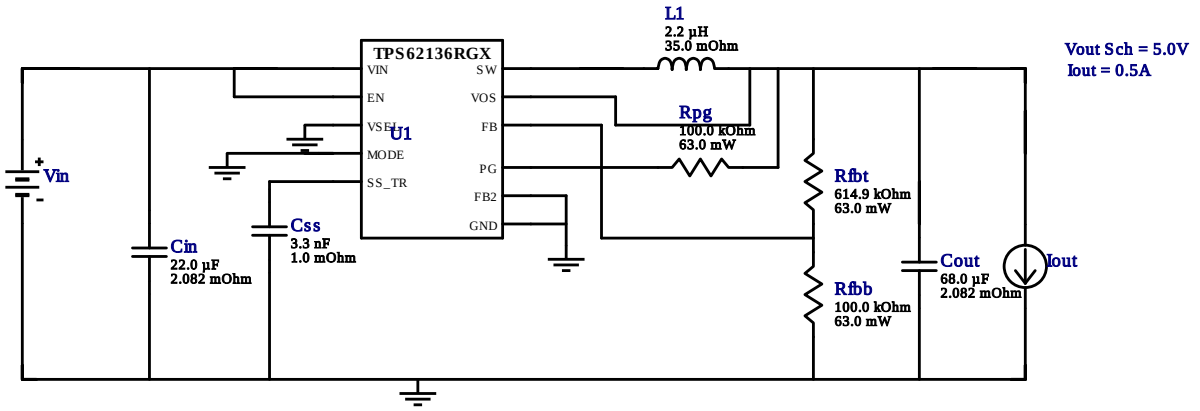
VinMin = 11.4V
VinMax = 12.6V
Vout = 5.0V
Vout Sch = 5.0V
Iout = 0.5A

Device = TPS62136RGXR
Topology = Buck
Created = 2019-01-07 00:32:25.745
BOM Cost = $1.26
BOM Count = 8
Total Pd = 0.28W

WEBENCH ® Design Report

Design : TPS62136RGXR
Design 33fromstefan.vranken@otnsystems.com



Electrical BOM

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cin	CUSTOM	CUSTOM_CAP_MD Series= CUSTOM	Cap= 22.0 uF ESR= 2.082 mOhm VDC= 17.64 V IRMS= 5.0279 A	1	$0.10	1210 8 mm^2
2.	Cout	CUSTOM	CUSTOM_CAP_MD Series= CUSTOM	Cap= 68.0 uF ESR= 2.082 mOhm VDC= 10.0 V IRMS= 5.0279 A	1	$0.10	1210 5 mm^2
3.	Css	MuRata	GRM216R71E332KA01D Series= X7R	Cap= 3.3 nF ESR= 1.0 mOhm VDC= 25.0 V IRMS= 0.0 A	1	$0.01	0805 7 mm^2
4.	L1	CUSTOM	CUSTOM_INDUCTOR_MD	L= 2.2 µH DCR= 35.0 mOhm	1	$0.10	XAL5030 17 mm^2
5.	Rfbb	Vishay-Dale	CRCW0402100KFKED Series= CRCW..e3	Res= 100000.0Ohm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm^2
6.	Rfbt	CUSTOM	CUSTOM_RESISTOR_MD Series= CUSTOM	Res= 614900.0Ohm Power= 63.0 mW Tolerance= 1.0%	1	$0.10	0805 1 mm^2
7.	Rpg	Vishay-Dale	CRCW0402100KFKED Series= CRCW..e3	Res= 100000.0Ohm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm^2
8.	U1	Texas Instruments	TPS62136RGXR	Switcher	1	$0.83	RGX0011A 12 mm^2

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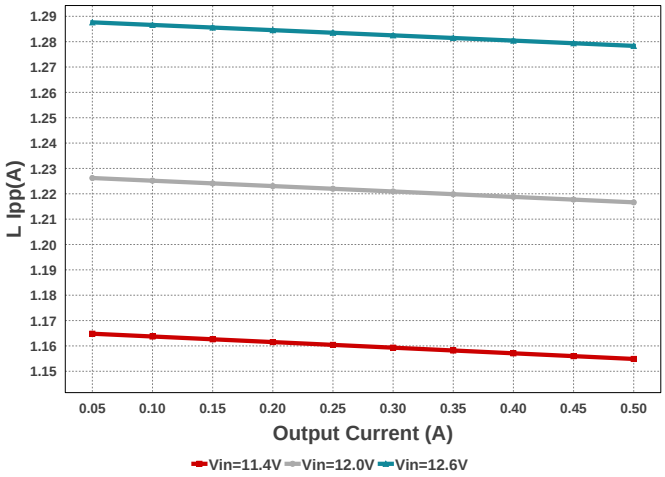
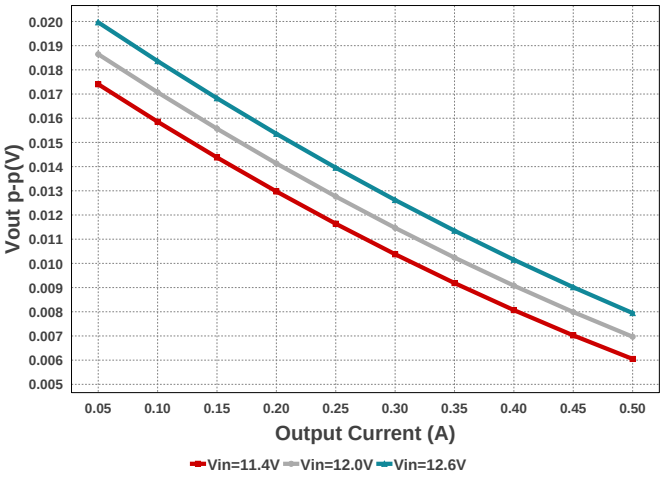


Vout p-p



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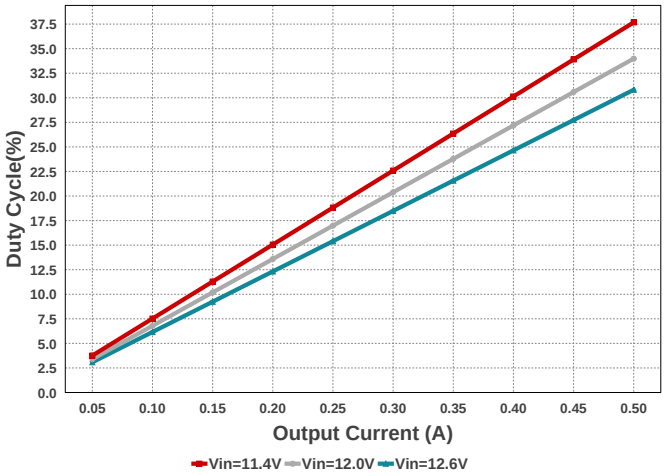

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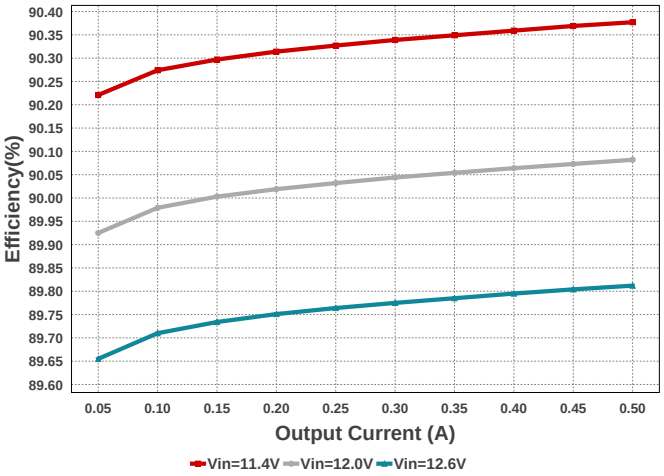

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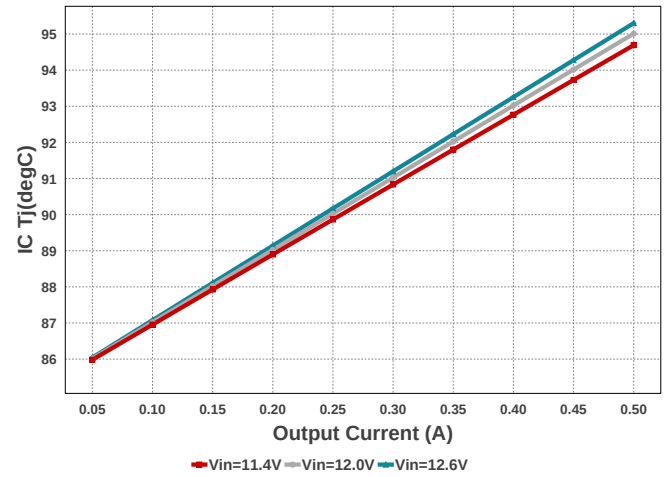
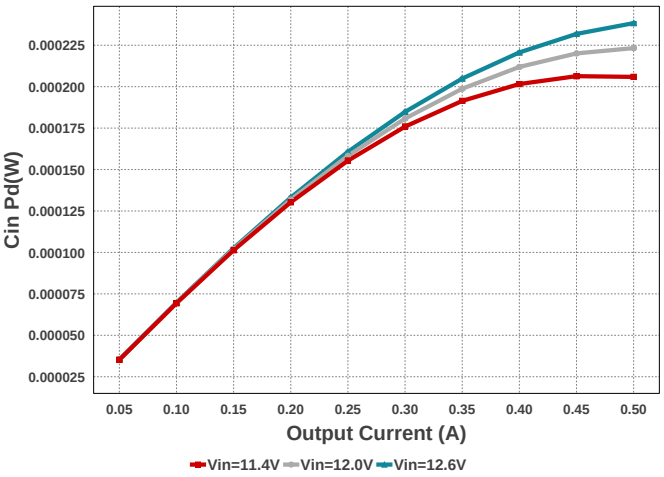


Cin Pd



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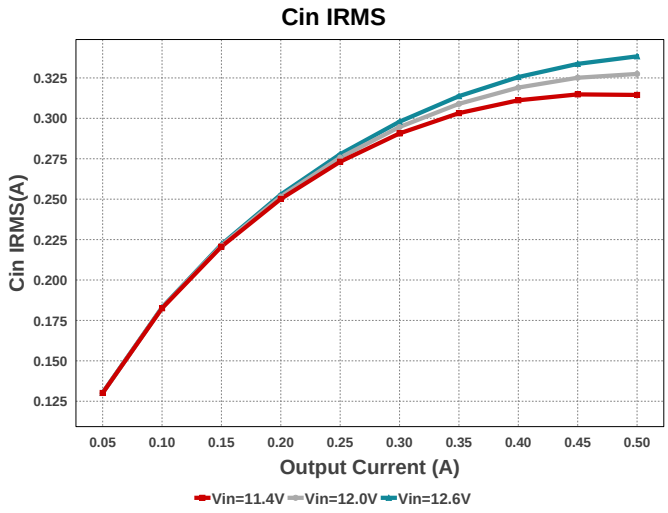

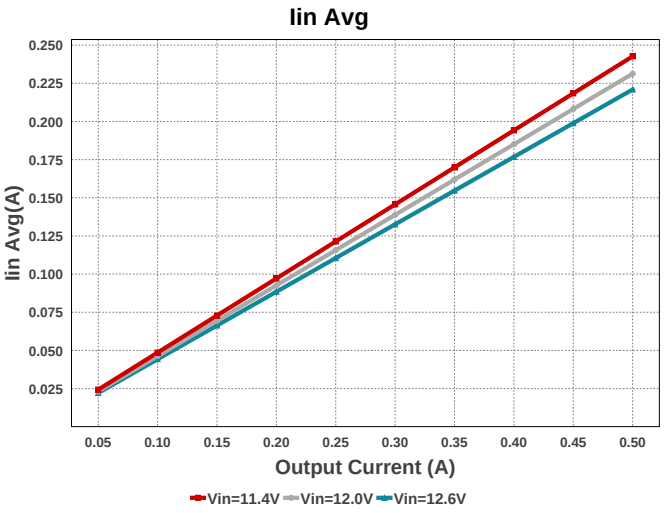

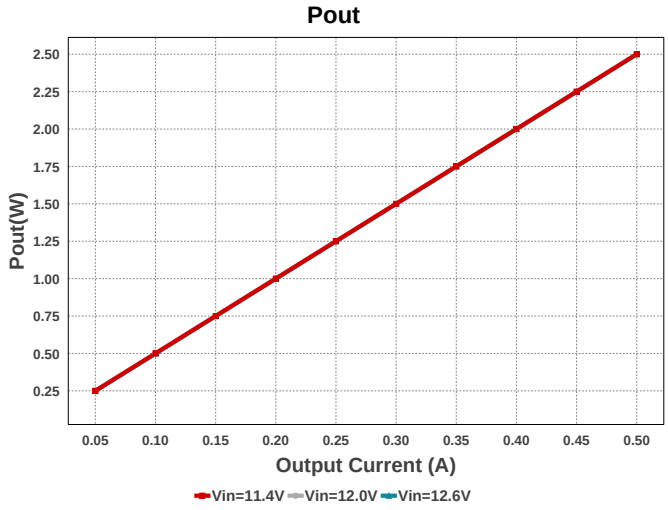

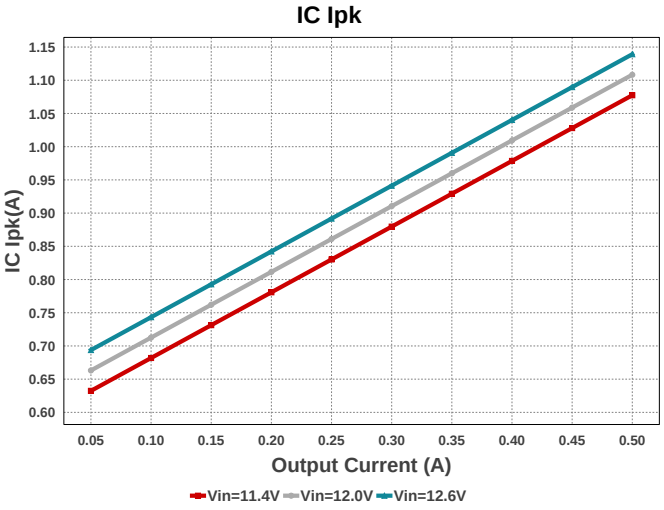

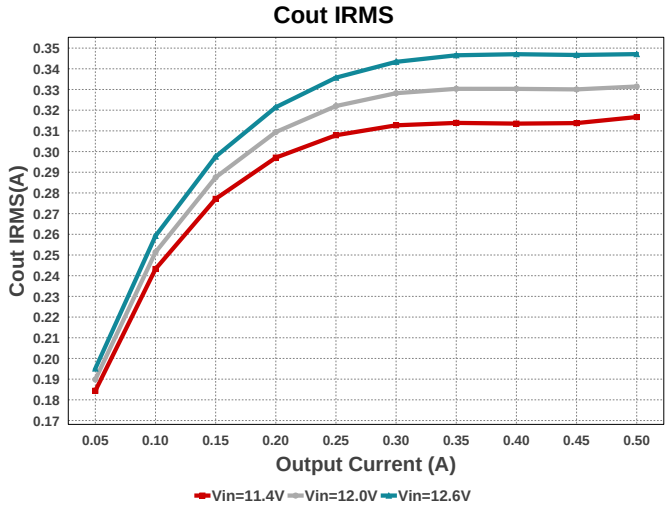

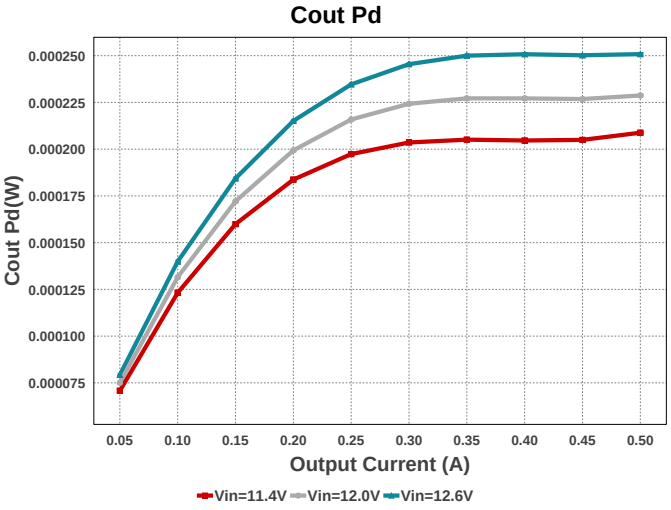

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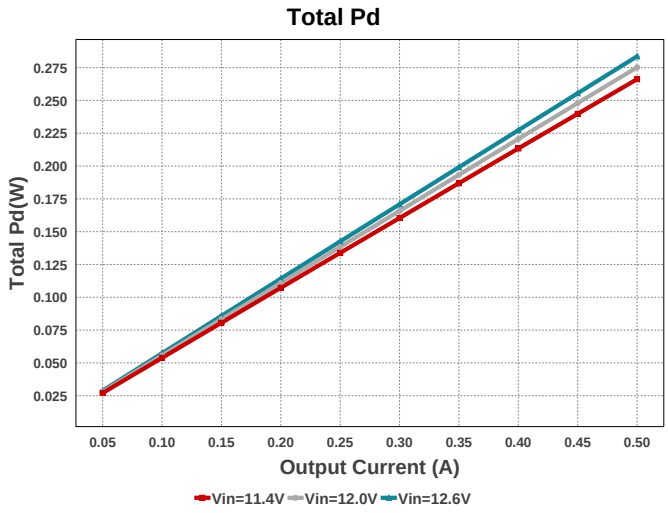

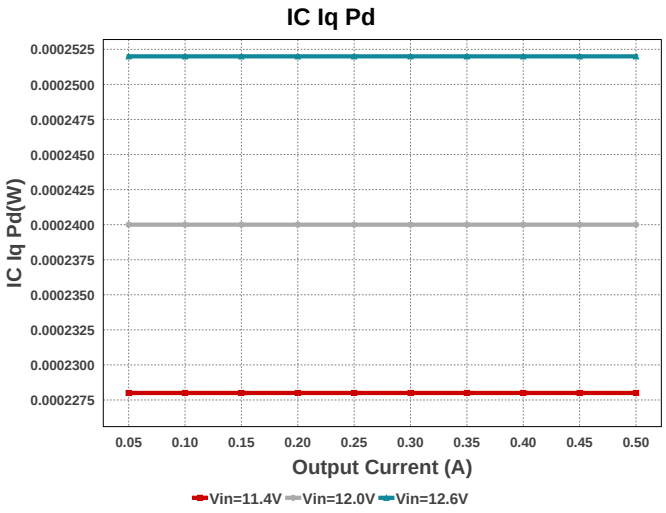

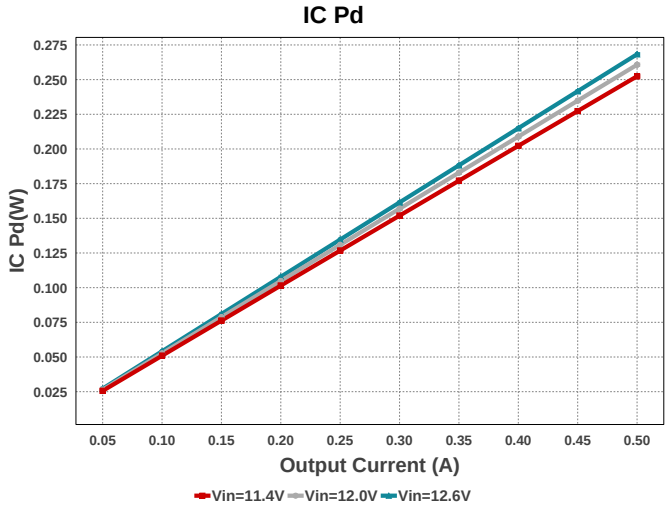

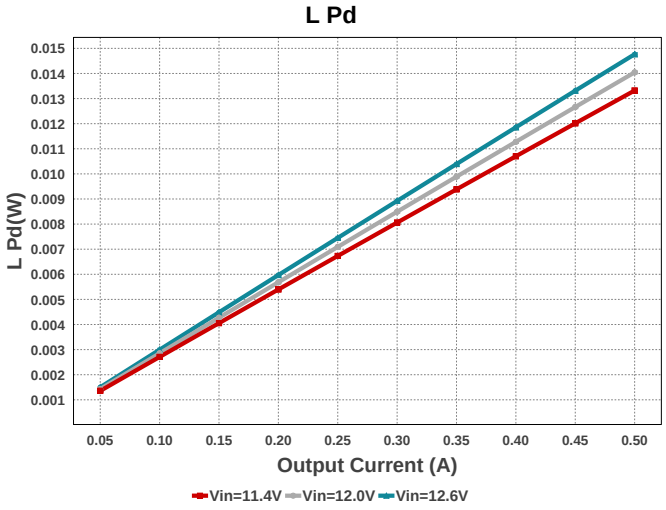

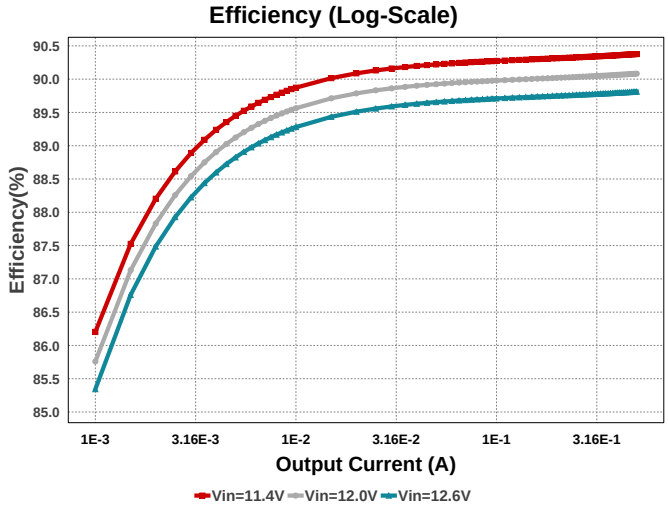

Operating Values

#	Name	Value	Category	Description
1.	BOM Count	8		Total Design BOM count
2.	Total BOM	$1.26		Total BOM Cost
3.	Cin IRMS	338.343 mA	Capacitor	Input capacitor RMS ripple current
4.	Cin Pd	238.34 µW	Capacitor	Input capacitor power dissipation
5.	Cout IRMS	347.093 mA	Capacitor	Output capacitor RMS ripple current
6.	Cout Pd	250.83 µW	Capacitor	Output capacitor power dissipation
7.	IC Ipk	1.139 A	IC	Peak switch current in IC
8.	IC Iq Pd	252.0 µW	IC	IC Iq Pd
9.	IC Pd	268.3 mW	IC	IC power dissipation
10.	IC Tj	95.303 degC	IC	IC junction temperature
11.	ICThetaJA	38.4 degC/W	IC	IC junction-to-ambient thermal resistance

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#	Name	Value	Category	Description
12.	Iin Avg	220.92 mA	IC	Average input current
13.	L Ipp	1.278 A	Inductor	Peak-to-peak inductor ripple current
14.	L Pd	14.766 mW	Inductor	Inductor power dissipation
15.	Cin Pd	238.34 µW	Power	Input capacitor power dissipation
16.	Cout Pd	250.83 µW	Power	Output capacitor power dissipation
17.	IC Pd	268.3 mW	Power	IC power dissipation
18.	L Pd	14.766 mW	Power	Inductor power dissipation
19.	Total Pd	283.592 mW	Power	Total Power Dissipation
20.	Duty Cycle	30.815 %	System Information	Duty cycle
21.	Efficiency	89.812 %	System Information	Steady state efficiency
22.	FootPrint	79.0 mm^2	System Information	Total Foot Print Area of BOM components
23.	Frequency	826.073 kHz	System Information	Switching frequency
24.	Iout	500.0 mA	System Information	Iout operating point
25.	Mode	PFM	System Information	Conduction Mode
26.	Pout	2.5 W	System Information	Total output power
27.	Vin	12.6 V	System Information	Vin operating point
28.	Vout	5.0 V	System Information	Operational Output Voltage
29.	Vout Actual	5.004 V	System Information	Vout Actual calculated based on selected voltage divider resistors
30.	Vout Sch	5.0 V	System Information	Output voltage selected
31.	Vout Tolerance	2.755 %	System Information	Vout Tolerance based on IC Tolerance (no load) and voltage divider resistors if applicable
32.	Vout p-p	7.946 mV	System Information	Peak-to-peak output ripple voltage

Design Inputs

#	Name	Value	Description
1.	Iout	500.0 m	Maximum Output Current
2.	SoftStart	0.9 ms	Soft Start Time (ms)
3.	VinMax	12.6	Maximum input voltage
4.	VinMin	11.4	Minimum input voltage
5.	Vout	5.0	Output Voltage
6.	acFrequency	0.0	AC Frequency
7.	base_pn	TPS62136	Base Product Number
8.	source	DC	Input Source Type
9.	Ta	85.0	Ambient temperature
1.	Vout Sch	5.0	Output voltage selected

Design Assistance

1. **TPS62136** Product Folder : http://www.ti.com/product/tps62136 : contains the data sheet and other resources.

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