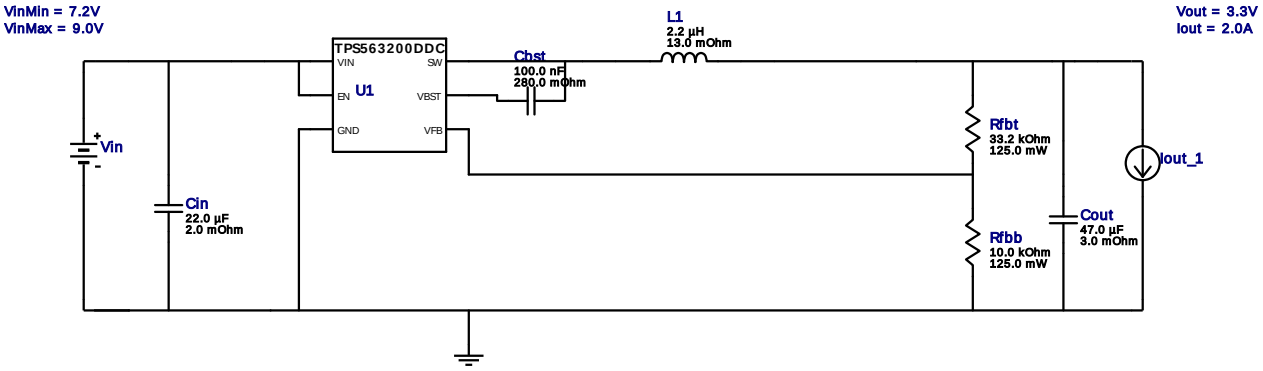
WEBENCH® Design Report

VinMin = 7.2V
VinMax = 9.0V
Vout = 3.3V
Iout = 2.0A

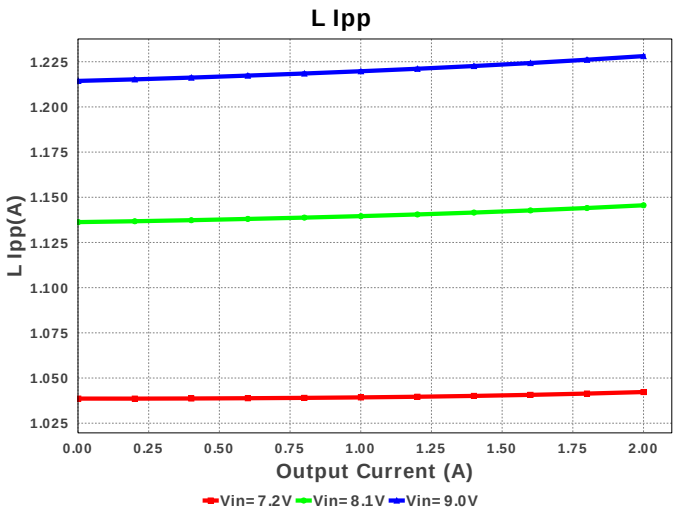
Device = TPS563200DDCR
Topology = Buck
Created = 7/8/15 7:33:25 AM
BOM Cost = $1.05
Footprint = 156.0 mm^2
BOM Count = 7
Total Pd = 0.46W

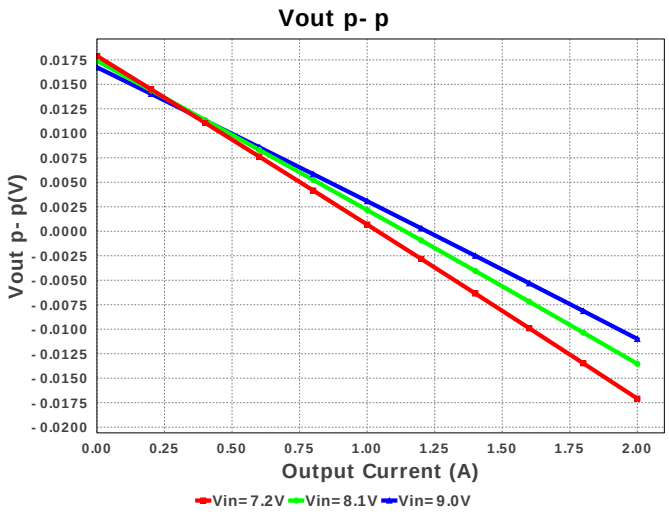
Design : 1836019/26 TPS563200DDCR
TPS563200DDCR 7.2V-9.0V to 3.30V @ 2.0A

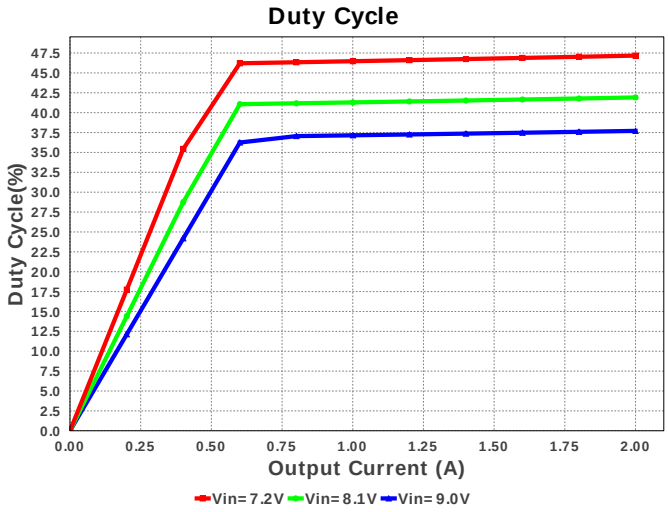


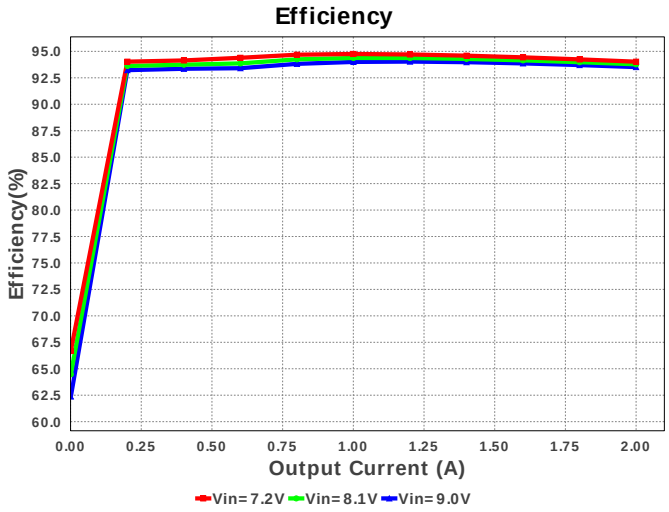
Electrical BOM

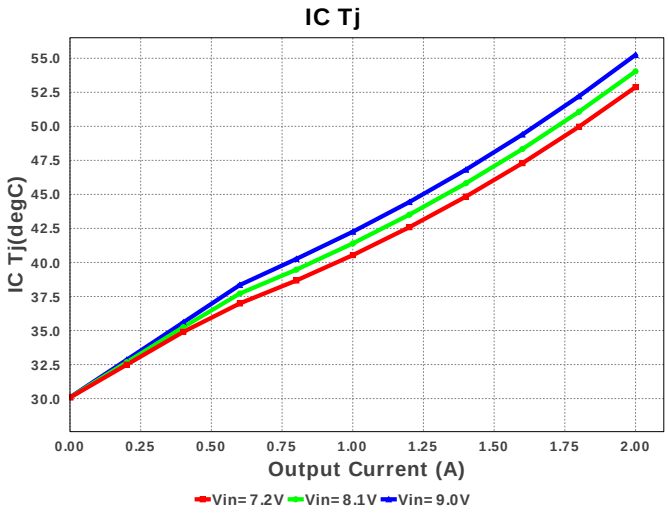
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cbst	AVX	08053C104KAT2A Series= X7R	Cap= 100.0 nF ESR= 280.0 mOhm VDC= 25.0 V IRMS= 0.0 A	1	$0.01	0805 7 mm^2
2.	Cin	MuRata	GRM32ER61C226KE20L Series= X5R	Cap= 22.0 uF ESR= 2.0 mOhm VDC= 16.0 V IRMS= 3.68 A	1	$0.16	1210 15 mm^2
3.	Cout	MuRata	GRM31CR60J476ME19L Series= X5R	Cap= 47.0 uF ESR= 3.0 mOhm VDC= 6.3 V IRMS= 0.0 A	1	$0.12	1206 11 mm^2
4.	L1	Bourns	SRN8040-2R2Y	L= 2.2 µH DCR= 13.0 mOhm	1	$0.22	SRN8040 100 mm^2
5.	Rfbb	Panasonic	ERJ-6ENF1002V Series= 225	Res= 10.0 kOhm Power= 125.0 mW Tolerance= 1.0%	1	$0.01	0805 7 mm^2
6.	Rfbt	Panasonic	ERJ-6ENF3322V Series= 225	Res= 33.2 kOhm Power= 125.0 mW Tolerance= 1.0%	1	$0.01	0805 7 mm^2
7.	U1	Texas Instruments	TPS563200DDCR	Switcher	1	$0.52	DDC0006A 10 mm^2

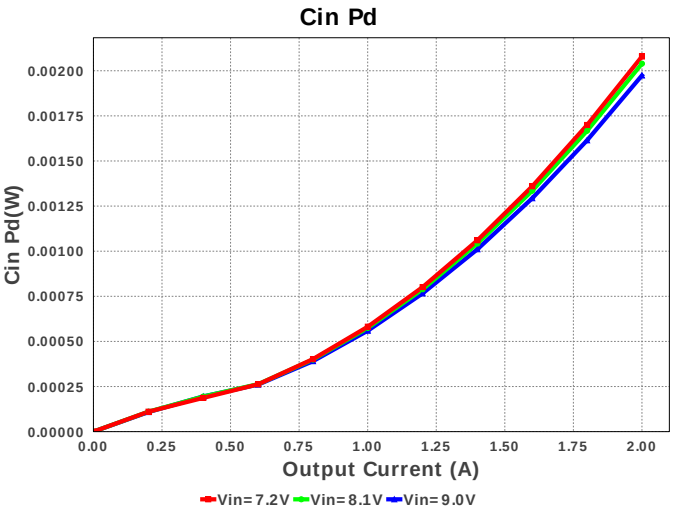


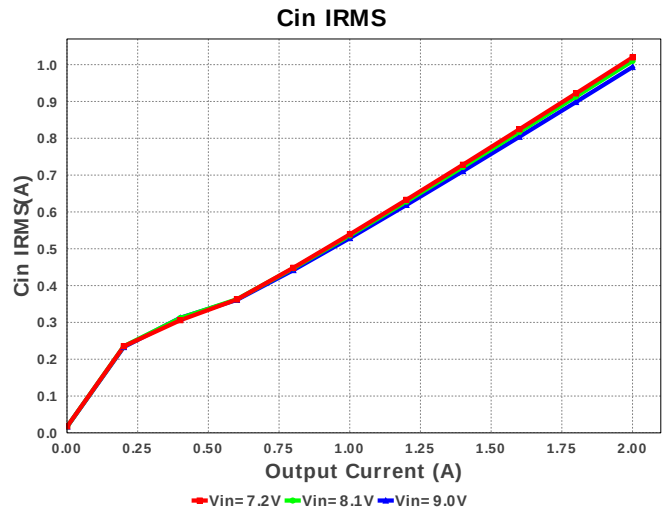


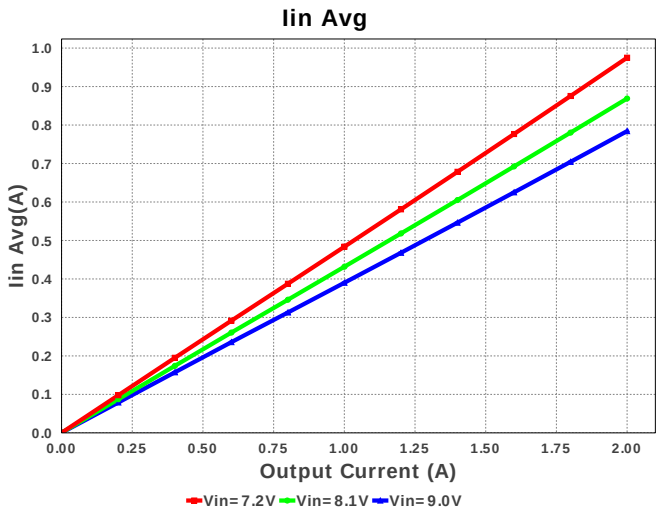


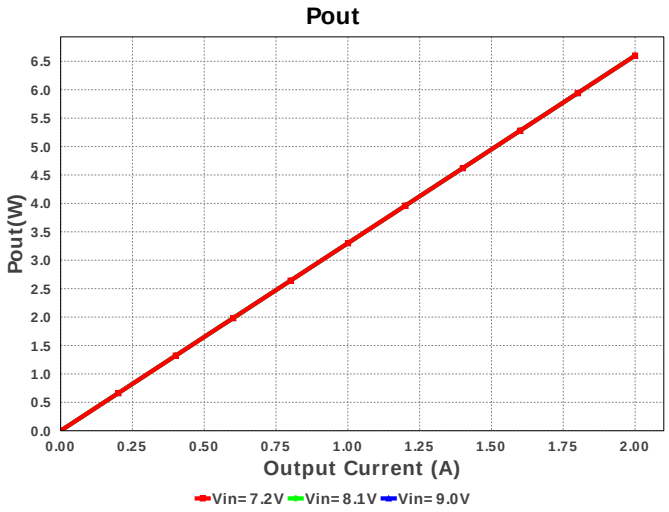


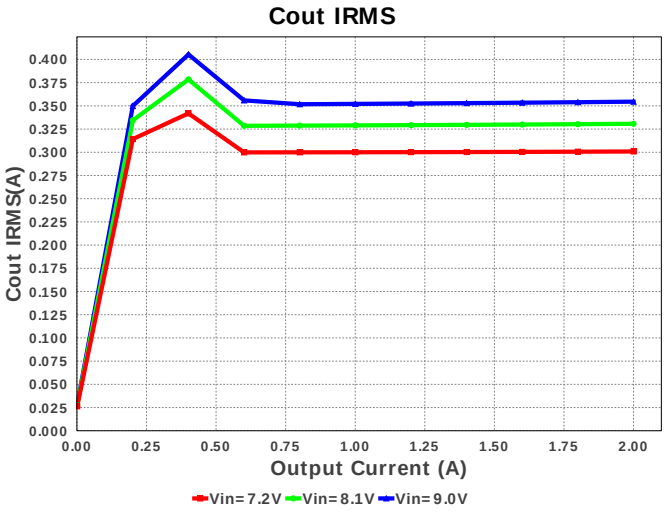


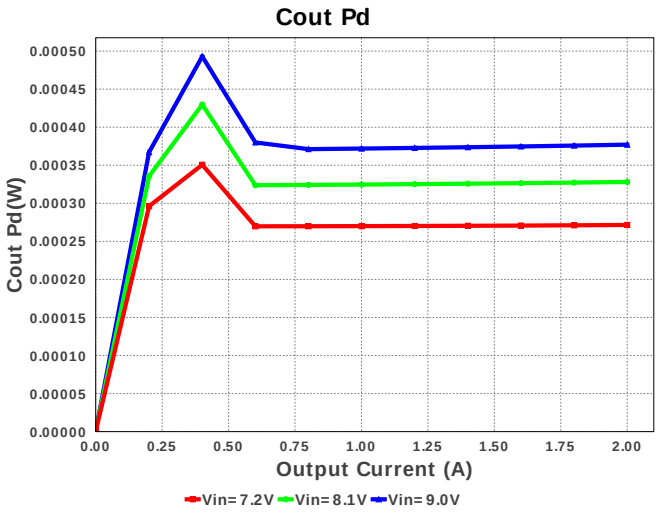


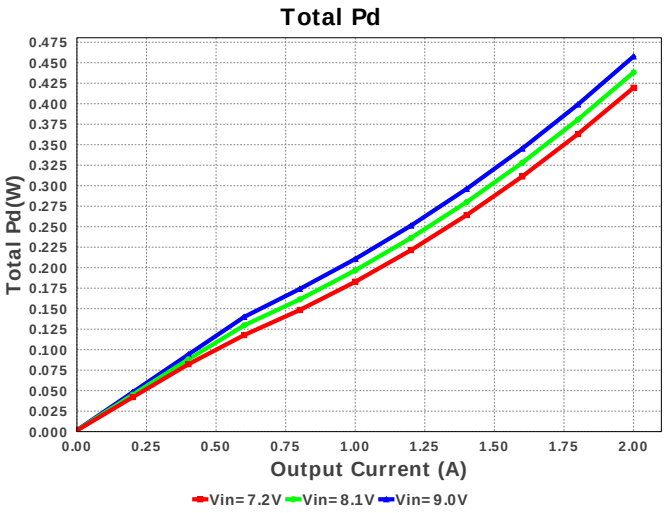


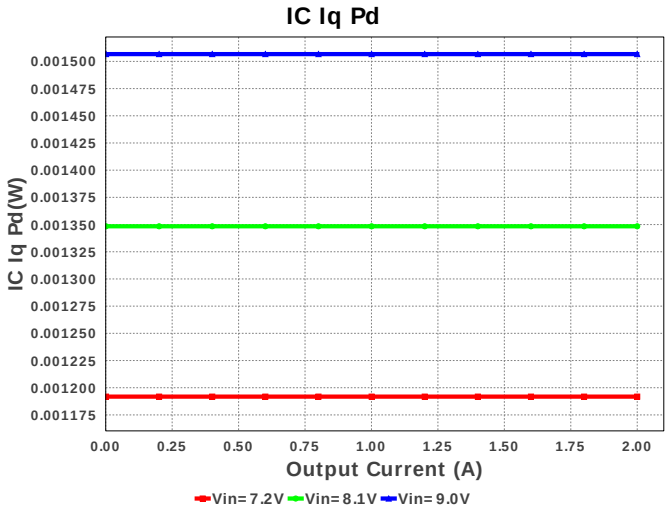


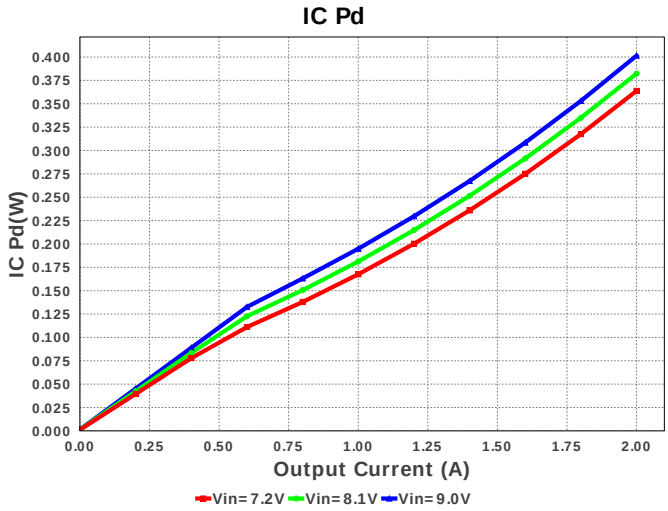


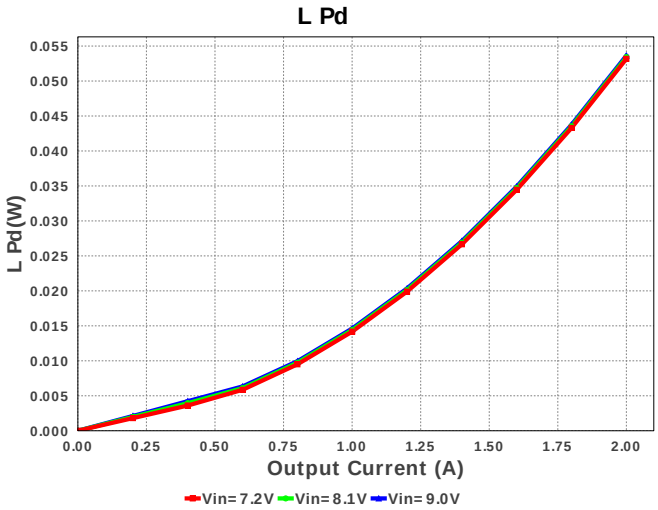


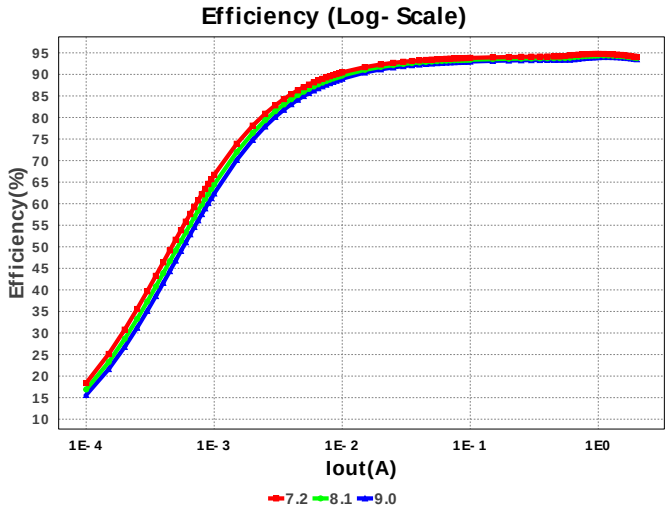












Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	993.463 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	354.526 mA	Current	Output capacitor RMS ripple current
3.	Iin Avg	784.19 mA	Current	Average input current
4.	L Ipp	1.228 A	Current	Peak-to-peak inductor ripple current
5.	BOM Count	7	General	Total Design BOM count
6.	FootPrint	156.0 mm^2	General	Total Foot Print Area of BOM components
7.	Frequency	778.929 kHz	General	Switching frequency
8.	Pout	6.6 W	General	Total output power
9.	Total BOM	$1.05	General	Total BOM Cost
10.	Vout OP	3.3 V	Op_Point	Operational Output Voltage
11.	Duty Cycle	37.709 %	Op_point	Duty cycle
12.	Efficiency	93.515 %	Op_point	Steady state efficiency
13.	IC Tj	55.251 degC	Op_point	IC junction temperature
14.	ICThetaJA	62.9 degC/W	Op_point	IC junction-to-ambient thermal resistance
15.	IOUT_OP	2.0 A	Op_point	Iout operating point
16.	VIN_OP	9.0 V	Op_point	Vin operating point
17.	Vout p-p	6.421 mV	Op_point	Peak-to-peak output ripple voltage
18.	Cin Pd	1.974 mW	Power	Input capacitor power dissipation
19.	Cout Pd	377.067 µW	Power	Output capacitor power dissipation
20.	IC Iq Pd	1.507 mW	Power	IC Iq Pd
21.	IC Pd	401.444 mW	Power	IC power dissipation
22.	L Pd	53.634 mW	Power	Inductor power dissipation
23.	Total Pd	457.692 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.	VinMax	9.0	Maximum input voltage
4.	VinMin	7.2	Minimum input voltage

#	Name	Value	Description
5.	Vout	3.3	Output Voltage
6.	Vout1	3.3	Output Voltage #1
7.	base_pn	TPS563200	Texas Instruments Base Part Number
8.	source	DC	Input Source Type
9.	ta	30.0	Ambient temperature

Design Assistance

1. TPS563200 Product Folder : http://www.ti.com/product/TPS563200 : contains the data sheet and other resources.