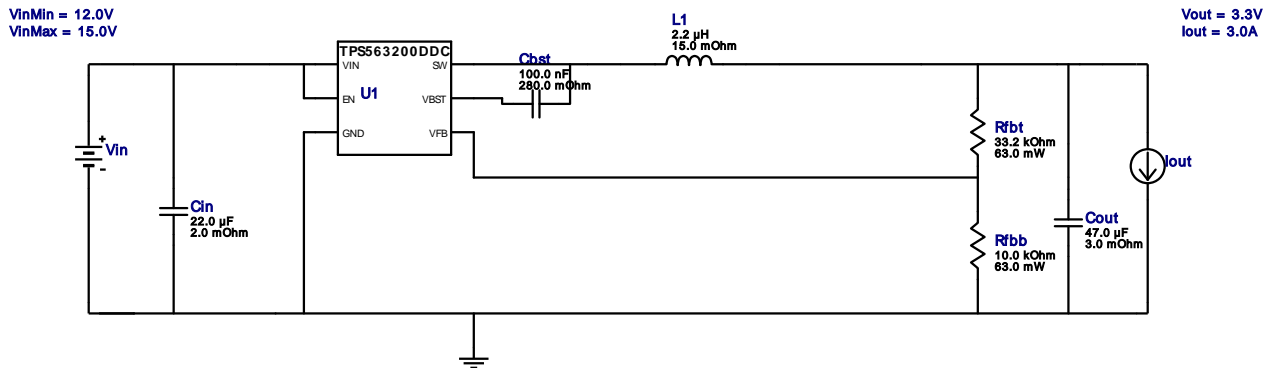







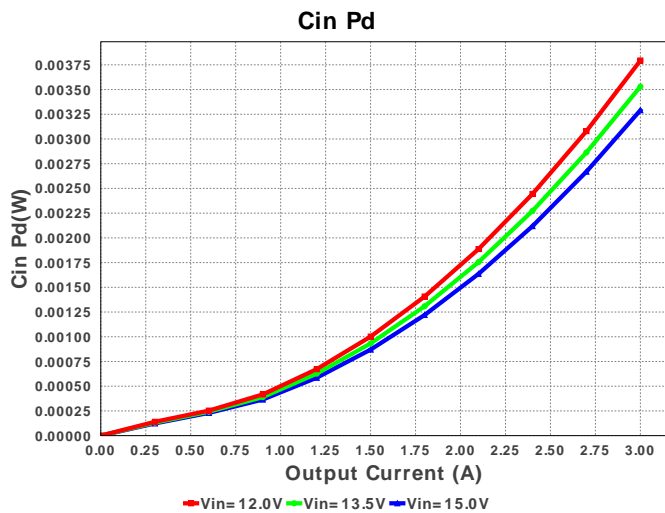
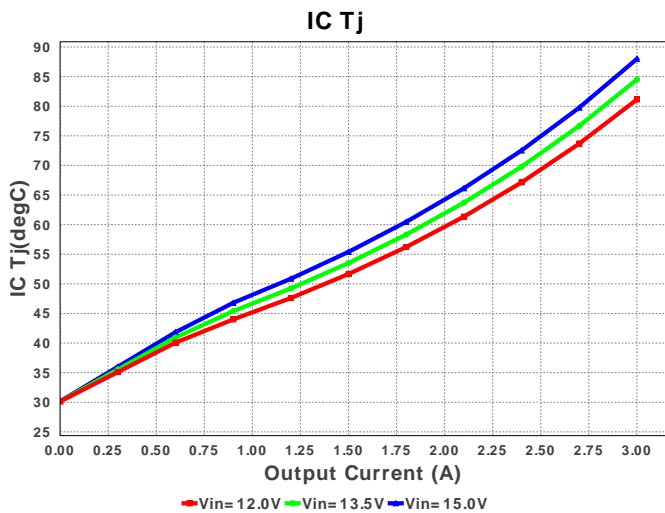
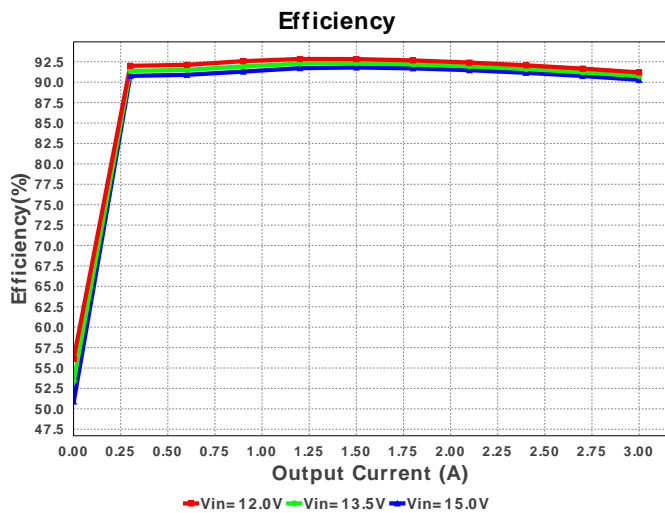
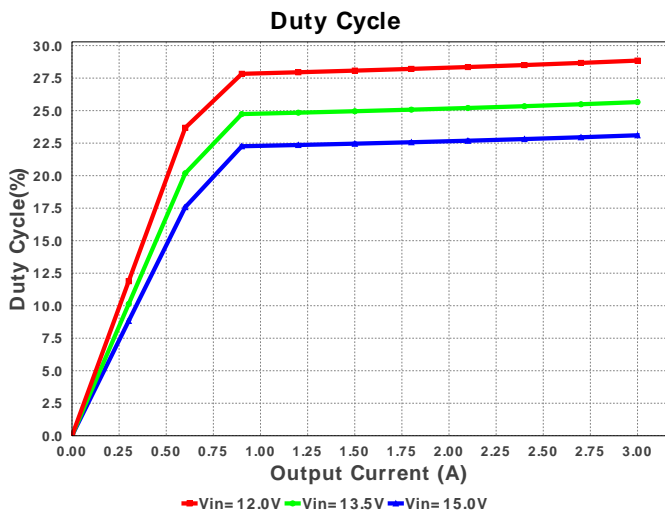
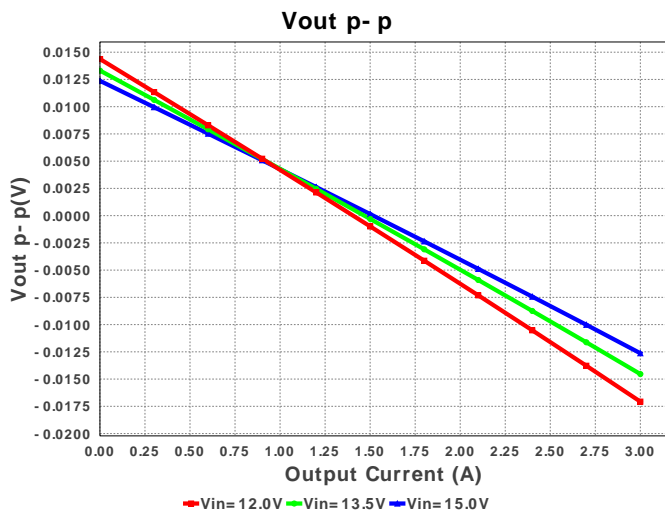
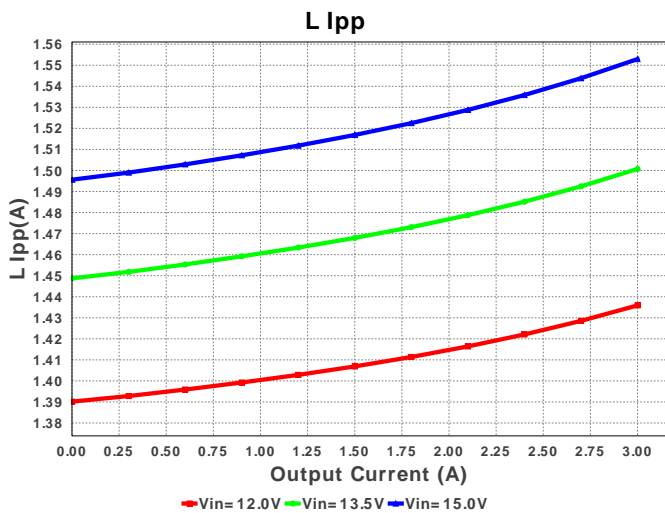
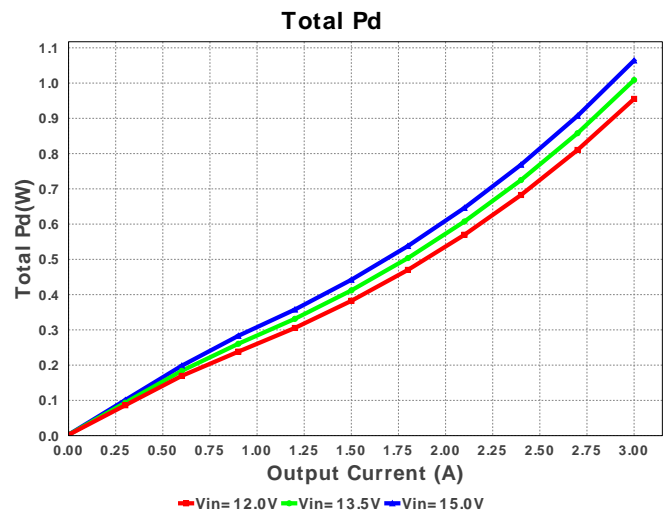
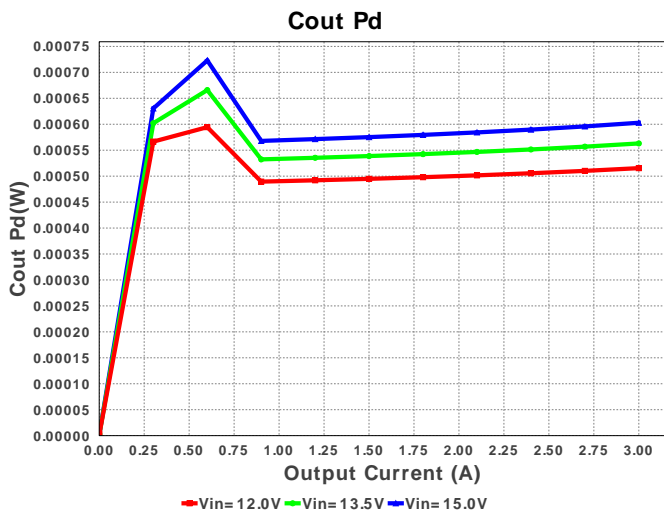
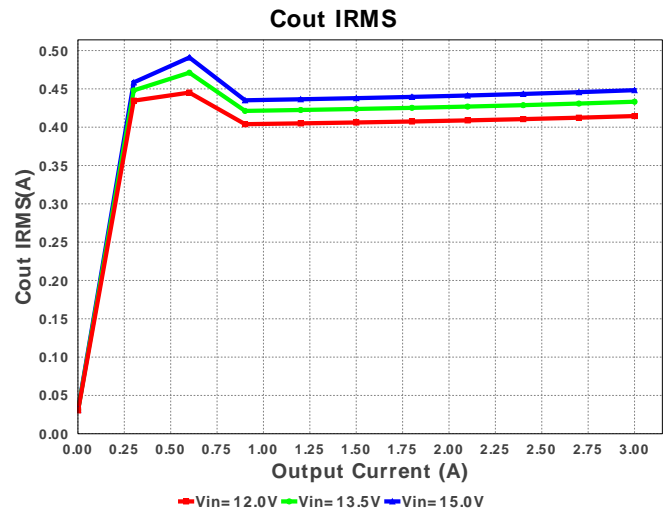
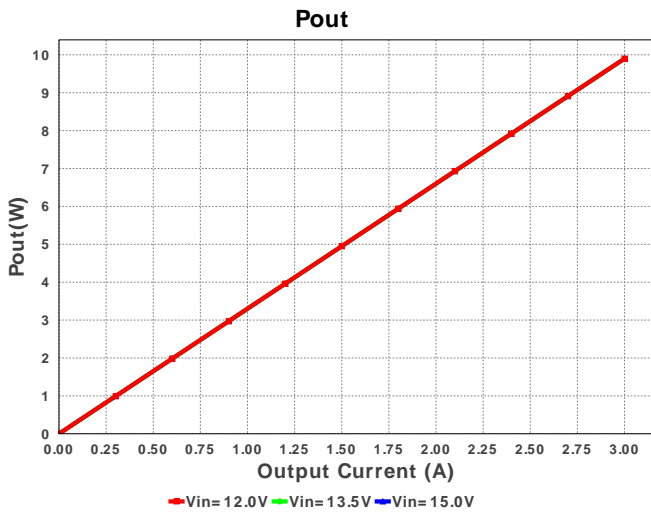
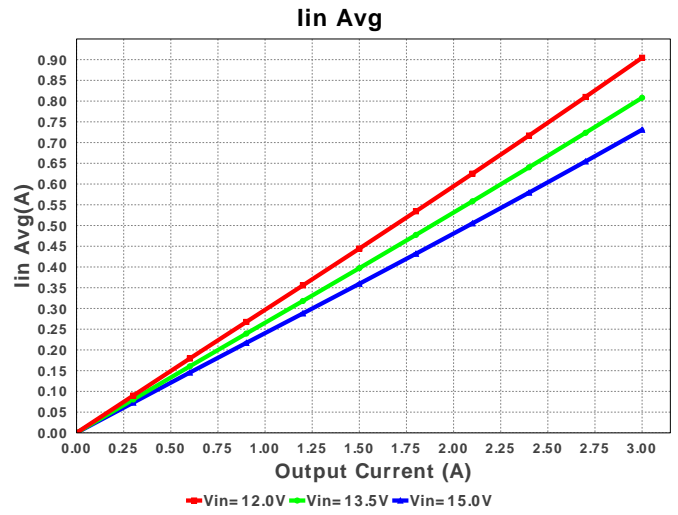
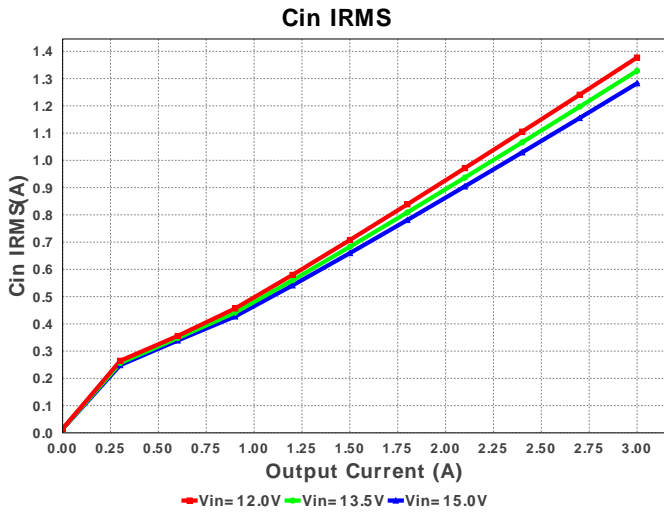


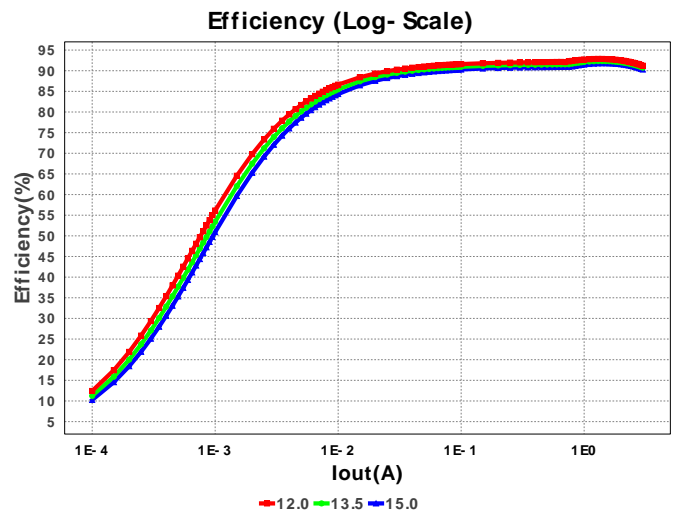
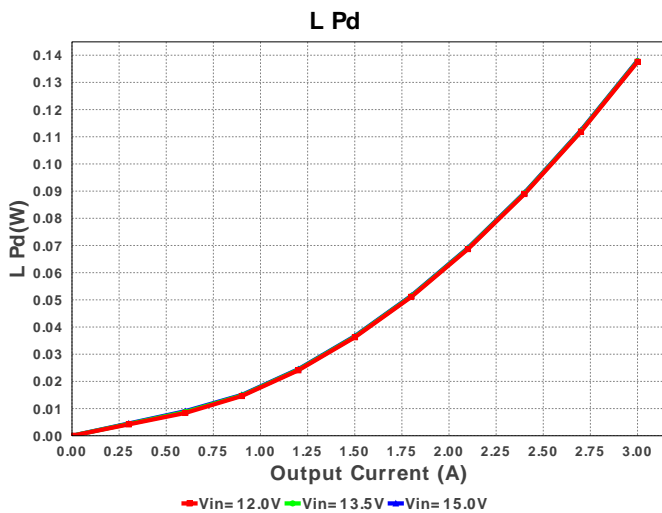
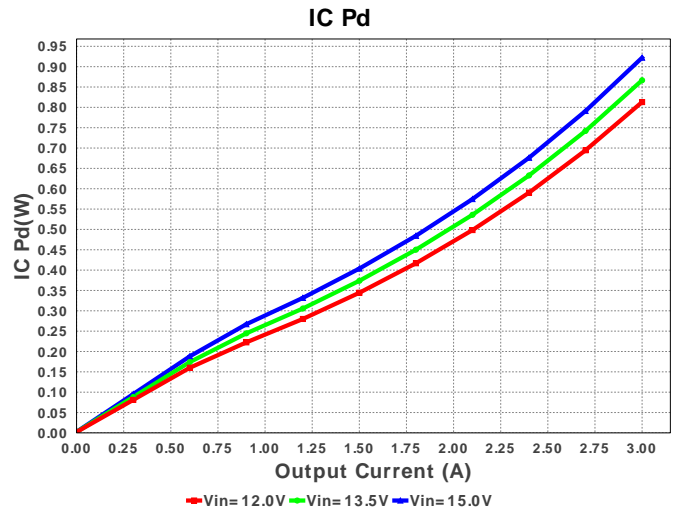
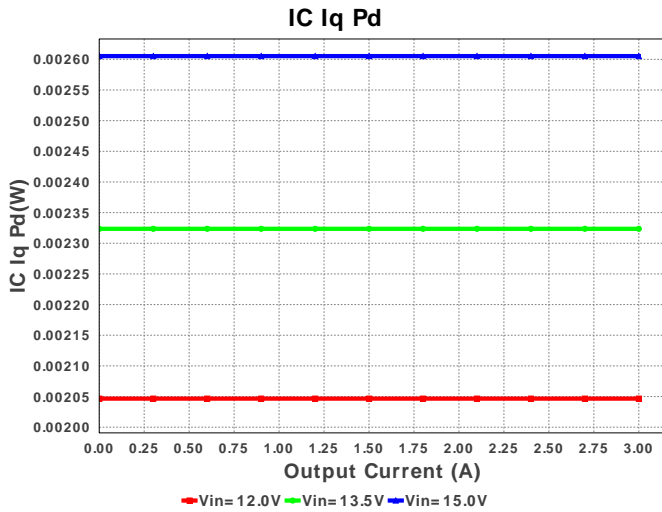
**WEBENCH<sup>®</sup> Design Report**

 Design : 4320088/13 TPS563200DDCR  
 TPS563200DDCR 12.0V-15.0V to 3.30V @ 3.0A

**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 <sup>2</sup>
2.	Cin	MuRata	GRM32ER61E226KE15L Series= X5R	Cap= 22.0 uF ESR= 2.0 mOhm VDC= 25.0 V IRMS= 3.67 A	1	\$0.16	 1210 15 mm <sup>2</sup>
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 <sup>2</sup>
4.	L1	TDK	VLP8040T-2R2N	L= 2.2 uH DCR= 15.0 mOhm	1	\$0.22	 VLP8040 113 mm <sup>2</sup>
5.	Rfbb	Vishay-Dale	CRCW040210K0FKED Series= CRCW..e3	Res= 10.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm <sup>2</sup>
6.	Rf1	Vishay-Dale	CRCW040233K2FKED Series= CRCW..e3	Res= 33.2 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm <sup>2</sup>
7.	U1	Texas Instruments	TPS563200DDCR	Switcher	1	\$0.52	 DDC0006A 10 mm <sup>2</sup>







## Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	1.283 A	Current	Input capacitor RMS ripple current
2.	Cout IRMS	448.289 mA	Current	Output capacitor RMS ripple current
3.	Iin Avg	730.95 mA	Current	Average input current
4.	L Ipp	1.553 A	Current	Peak-to-peak inductor ripple current
5.	BOM Count	7	General	Total Design BOM count
6.	FootPrint	162.0 mm <sup>2</sup>	General	Total Foot Print Area of BOM components
7.	Frequency	778.736 kHz	General	Switching frequency
8.	Pout	9.9 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	23.104 %	Op_point	Duty cycle
12.	Efficiency	90.294 %	Op_point	Steady state efficiency
13.	IC Tj	87.998 degC	Op_point	IC junction temperature
14.	ICThetaJA	62.9 degC/W	Op_point	IC junction-to-ambient thermal resistance
15.	IOUT_OP	3.0 A	Op_point	Iout operating point
16.	VIN_OP	15.0 V	Op_point	Vin operating point
17.	Vout p-p	8.374 mV	Op_point	Peak-to-peak output ripple voltage
18.	Cin Pd	3.291 mW	Power	Input capacitor power dissipation
19.	Cout Pd	602.89 μW	Power	Output capacitor power dissipation
20.	IC Iq Pd	2.605 mW	Power	IC Iq Pd
21.	IC Pd	922.069 mW	Power	IC power dissipation
22.	L Pd	138.014 mW	Power	Inductor power dissipation
23.	Total Pd	1.064 W	Power	Total Power Dissipation

## Design Inputs

#	Name	Value	Description
1.	Iout	3.0	Maximum Output Current
2.	Iout1	3.0	Output Current #1
3.	VinMax	15.0	Maximum input voltage
4.	VinMin	12.0	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.

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