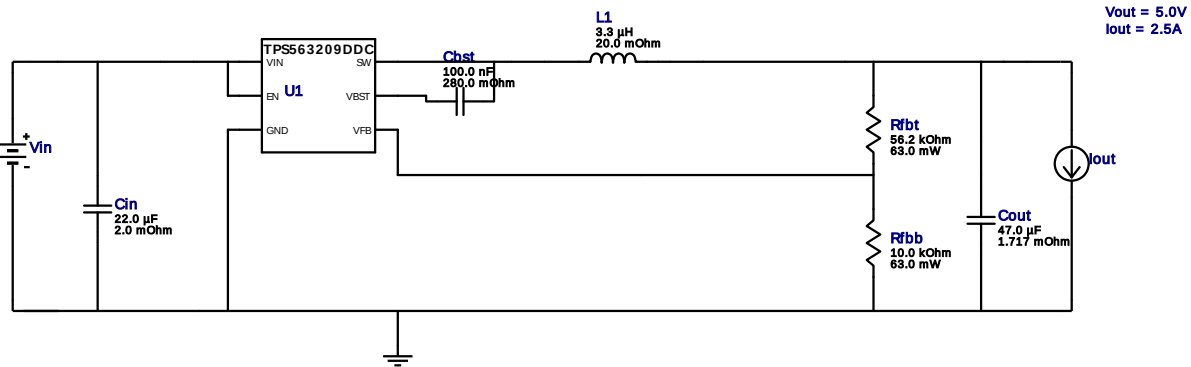


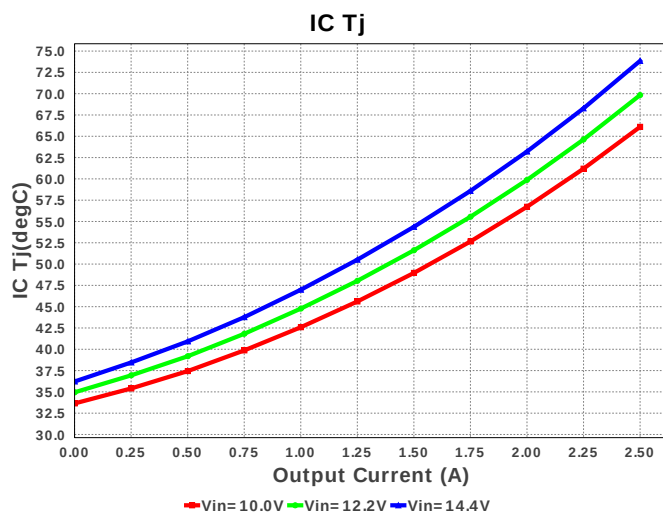
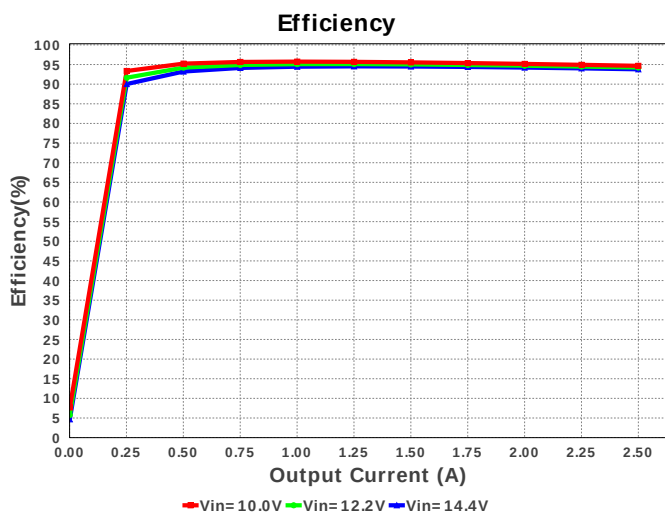
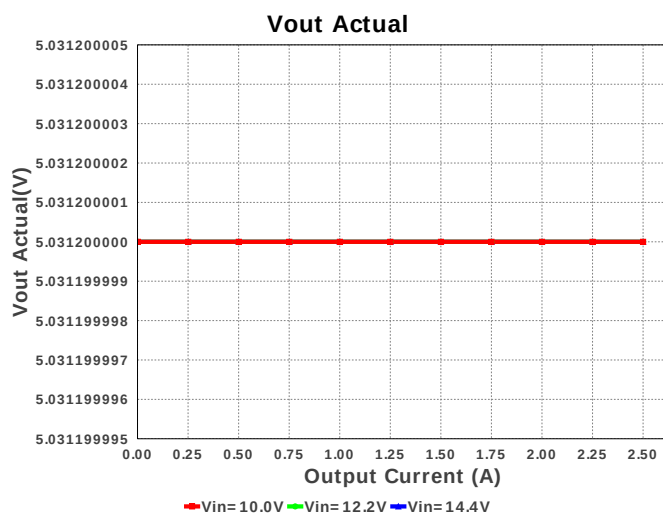
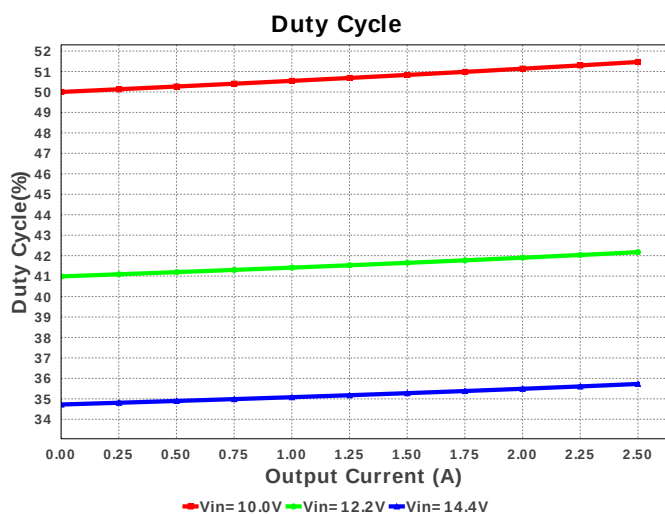
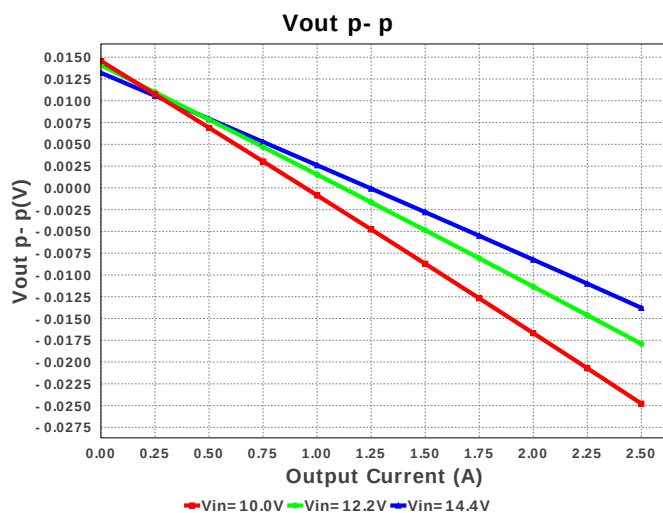
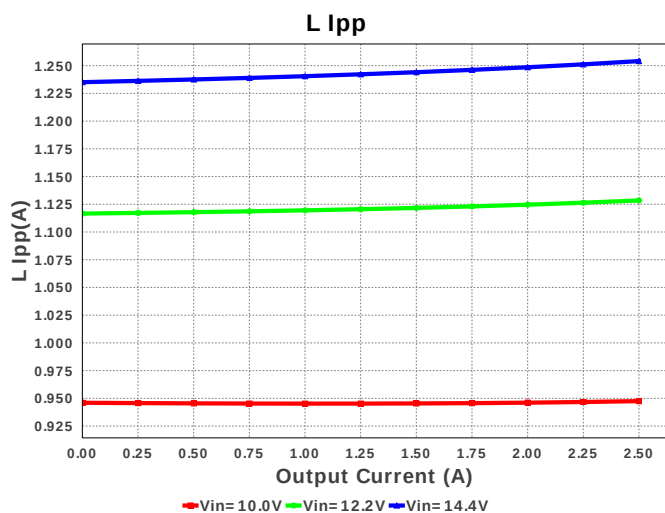
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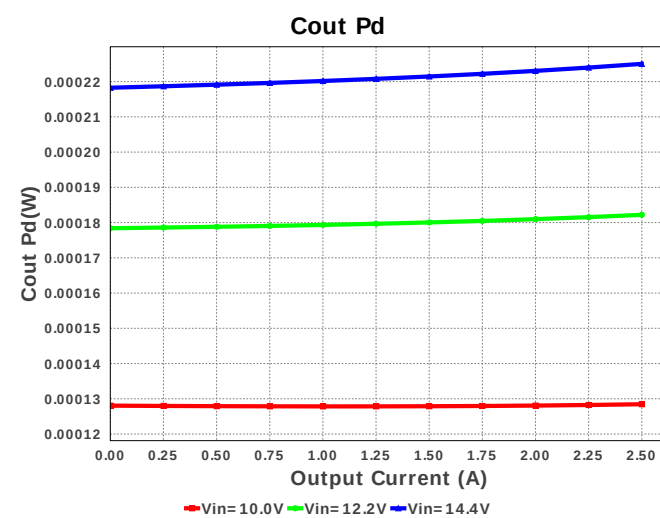
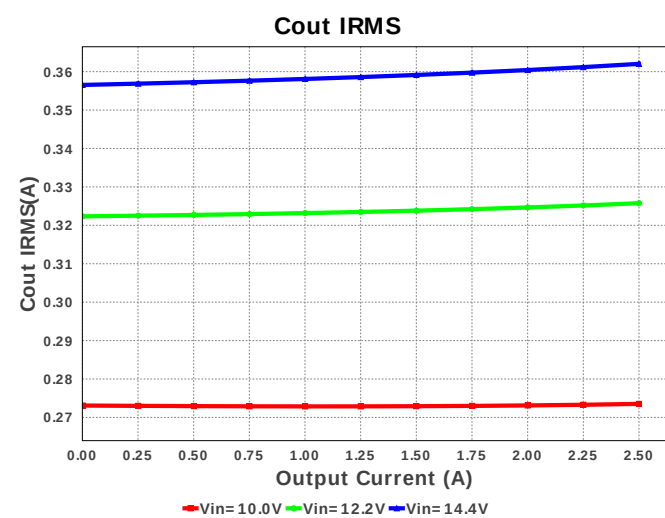
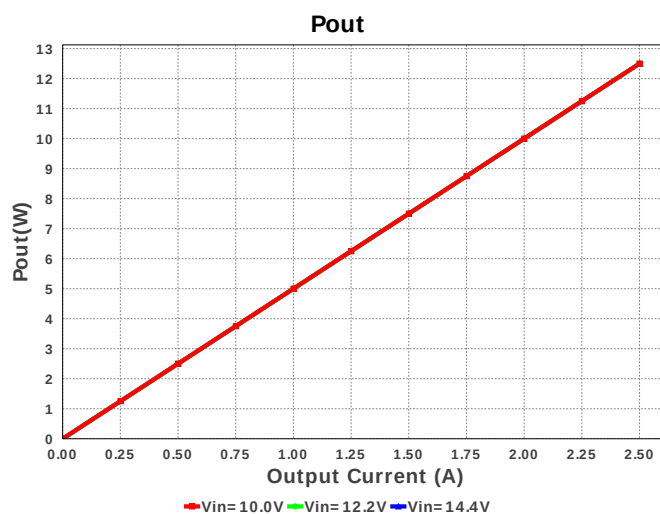
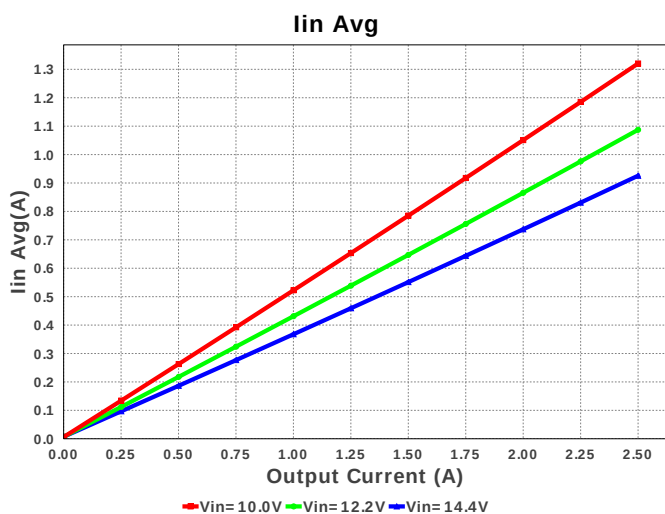
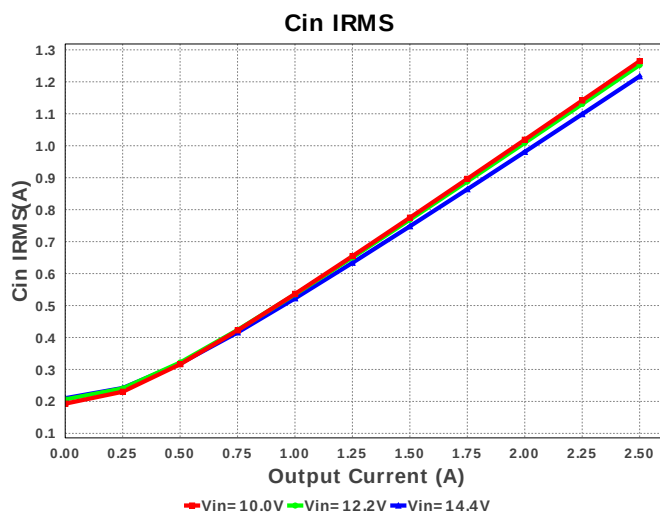
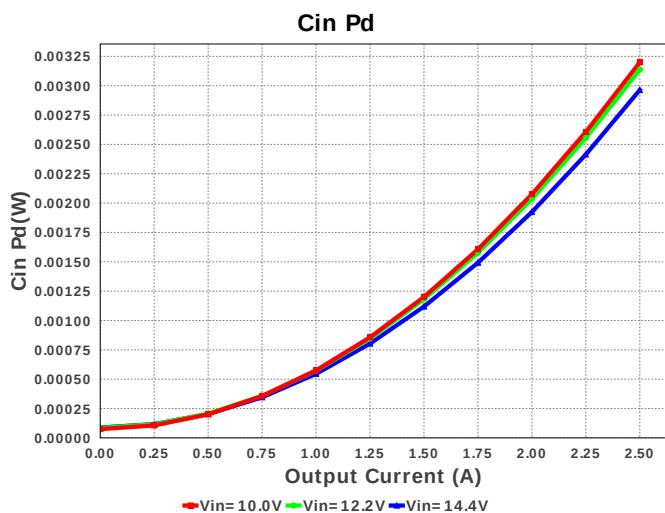
Design : 4502117/167 TPS563209DDCR
TPS563209DDCR 10.0V-14.4V to 5.00V @ 2.5A

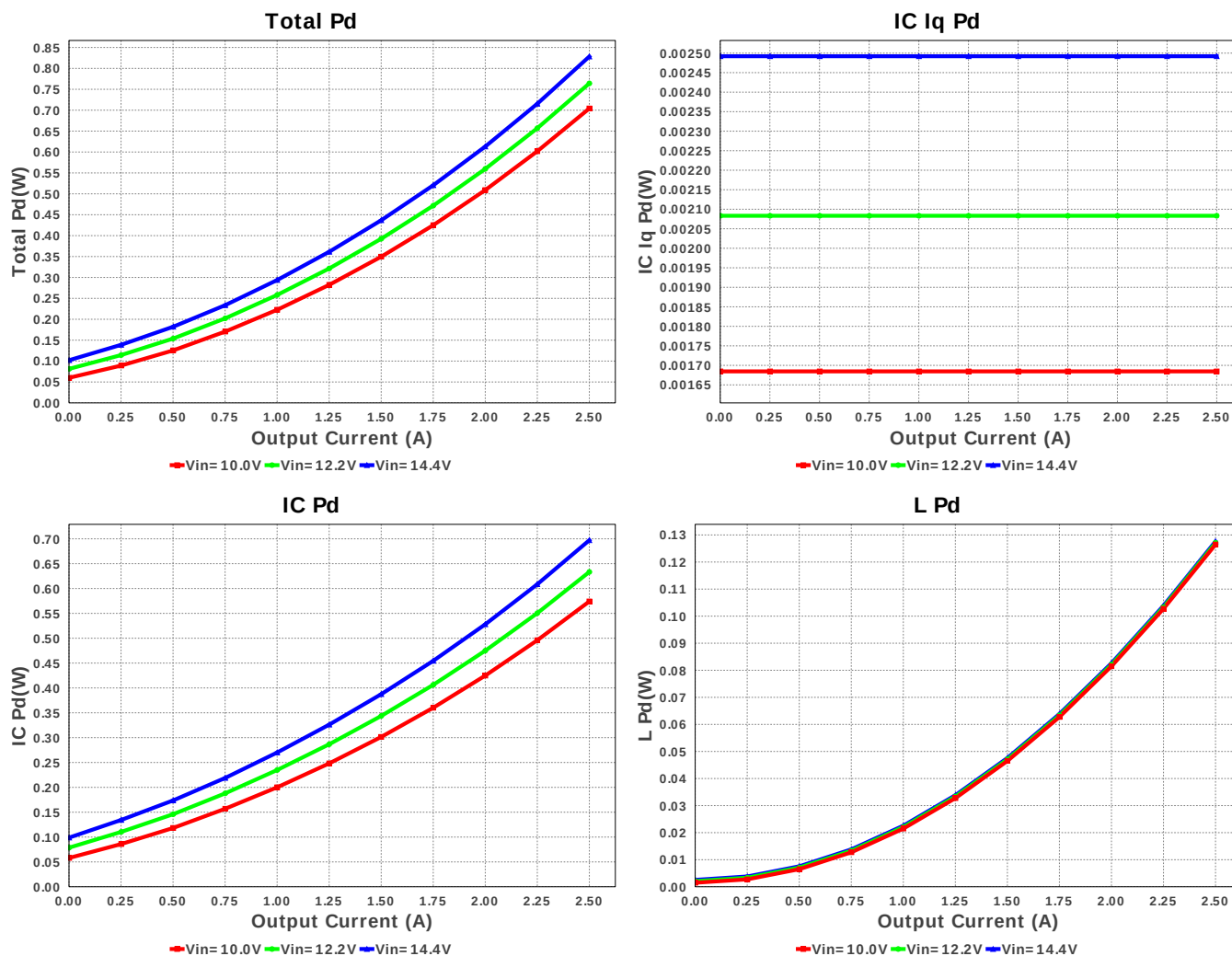


Electrical BOM

#	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 mm²
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 mm²
3.	Cout	TDK	C3216JB1A476M Series= JB	Cap= 47.0 uF ESR= 1.717 mOhm VDC= 10.0 V IRMS= 0.0 A	1	\$0.34	 1206 11 mm²
4.	L1	Bourns	SDR0805-3R3ML	L= 3.3 uH DCR= 20.0 mOhm	1	\$0.22	 SDR0805 96 mm²
5.	Rfbb	Vishay-Dale	CRCW040210K0FKED Series= CRCW..e3	Res= 10.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm²
6.	Rfht	Vishay-Dale	CRCW040256K2FKED Series= CRCW..e3	Res= 56.2 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm²
7.	U1	Texas Instruments	TPS563209DDCR	Switcher	1	\$0.52	 DDC0006A 10 mm²







Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	1.217 A	Current	Input capacitor RMS ripple current
2.	Cout IRMS	362.023 mA	Current	Output capacitor RMS ripple current
3.	Iin Avg	925.58 mA	Current	Average input current
4.	L Ipp	1.254 A	Current	Peak-to-peak inductor ripple current
5.	BOM Count	7	General	Total Design BOM count
6.	FootPrint	145.0 mm ²	General	Total Foot Print Area of BOM components
7.	Frequency	797.144 kHz	General	Switching frequency
8.	Pout	12.5 W	General	Total output power
9.	Total BOM	\$1.27	General	Total BOM Cost
10.	Vout Actual	5.031 V	Op_Point	Vout Actual calculated based on selected voltage divider resistors
11.	Vout OP	5.0 V	Op_Point	Operational Output Voltage
12.	Duty Cycle	35.727 %	Op_point	Duty cycle
13.	Efficiency	93.785 %	Op_point	Steady state efficiency
14.	IC Tj	73.851 degC	Op_point	IC junction temperature
15.	ICThetaJA	62.9 degC/W	Op_point	IC junction-to-ambient thermal resistance
16.	IOUT_OP	2.5 A	Op_point	Iout operating point
17.	VIN_OP	14.4 V	Op_point	Vin operating point
18.	Vout p-p	5.111 mV	Op_point	Peak-to-peak output ripple voltage
19.	Cin Pd	2.964 mW	Power	Input capacitor power dissipation
20.	Cout Pd	225.032 μW	Power	Output capacitor power dissipation
21.	IC Iq Pd	2.492 mW	Power	IC Iq Pd
22.	IC Pd	697.161 mW	Power	IC power dissipation
23.	L Pd	127.621 mW	Power	Inductor power dissipation
24.	Total Pd	828.357 mW	Power	Total Power Dissipation
25.	Vout Tolerance	3.053 %		Vout Tolerance based on IC Tolerance (no load) and voltage divider resistors if applicable

Design Inputs

#	Name	Value	Description
1.	Iout	2.5	Maximum Output Current

#	Name	Value	Description
2.	VinMax	14.4	Maximum input voltage
3.	VinMin	10.0	Minimum input voltage
4.	Vout	5.0	Output Voltage
5.	base_pn	TPS563209	Base Product Number
6.	source	DC	Input Source Type
7.	Ta	30.0	Ambient temperature

Design Assistance

1. **TPS563209** Product Folder : <http://www.ti.com/product/TPS563209> : contains the data sheet and other resources.

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