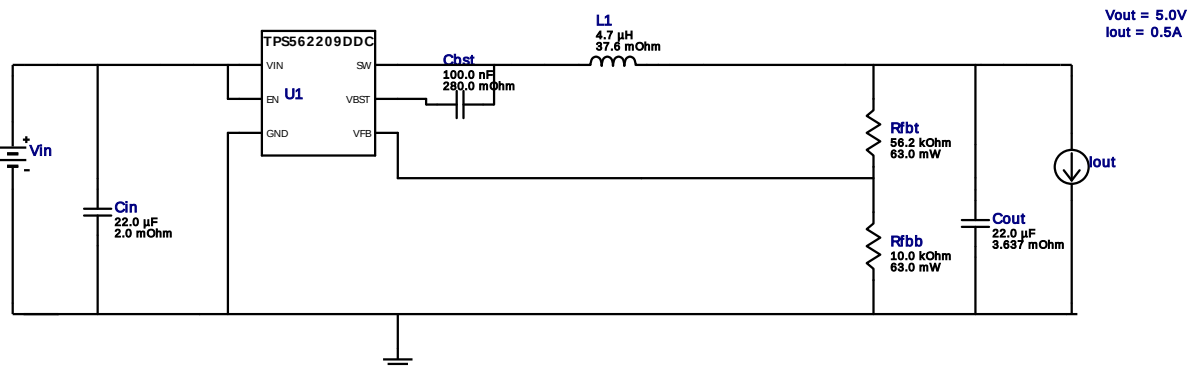


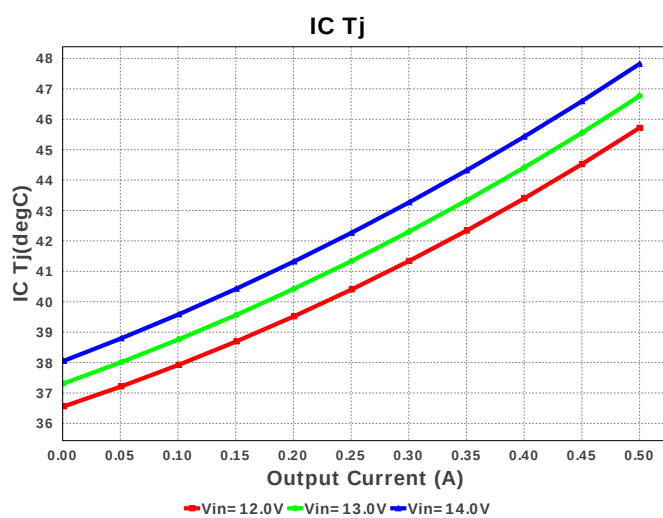
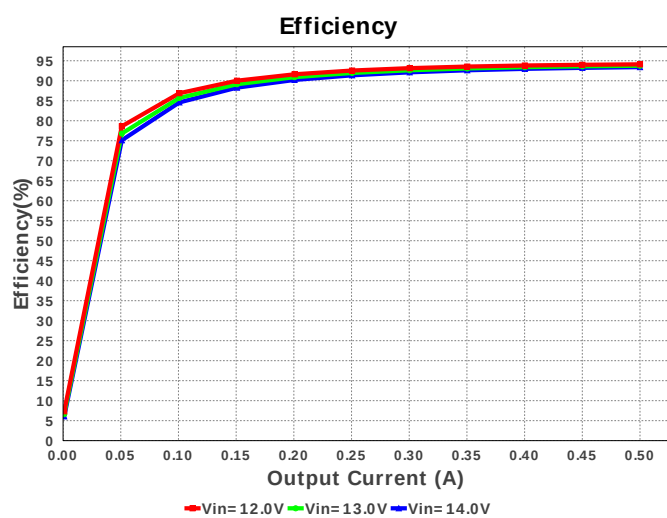
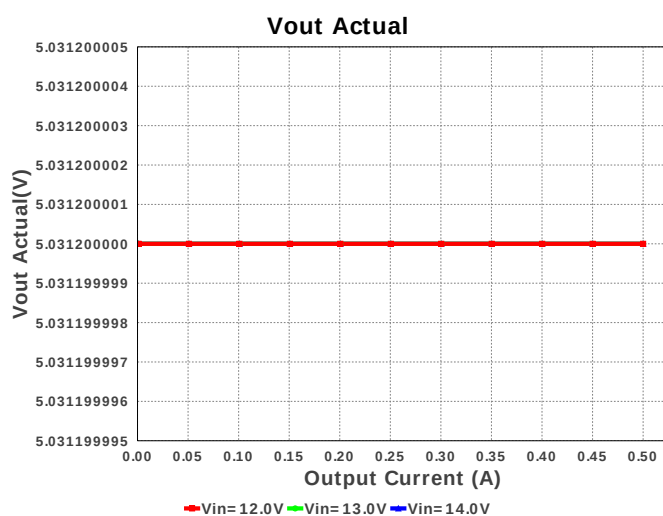
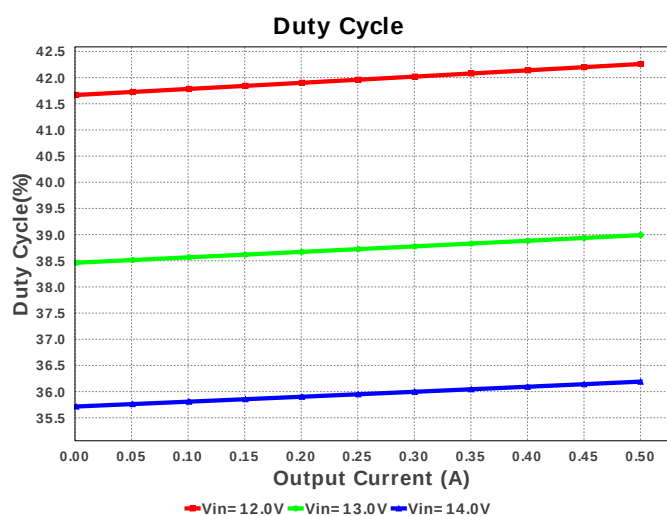
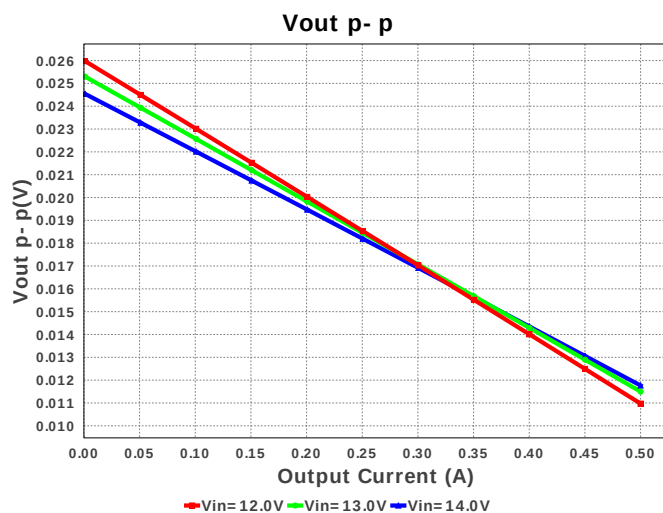
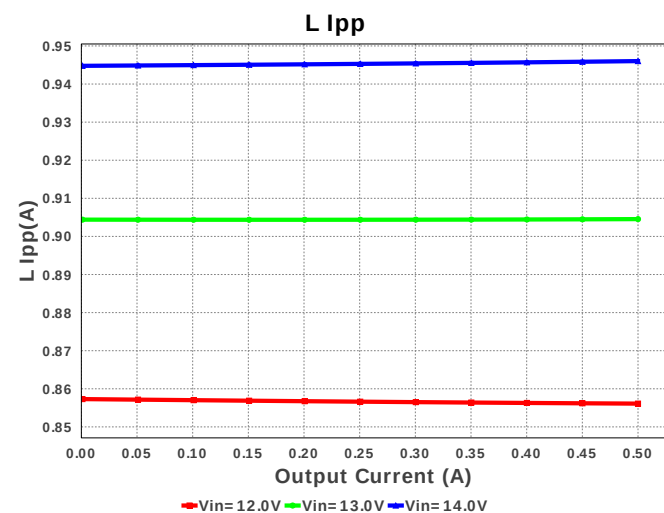
WEBENCH® Design Report

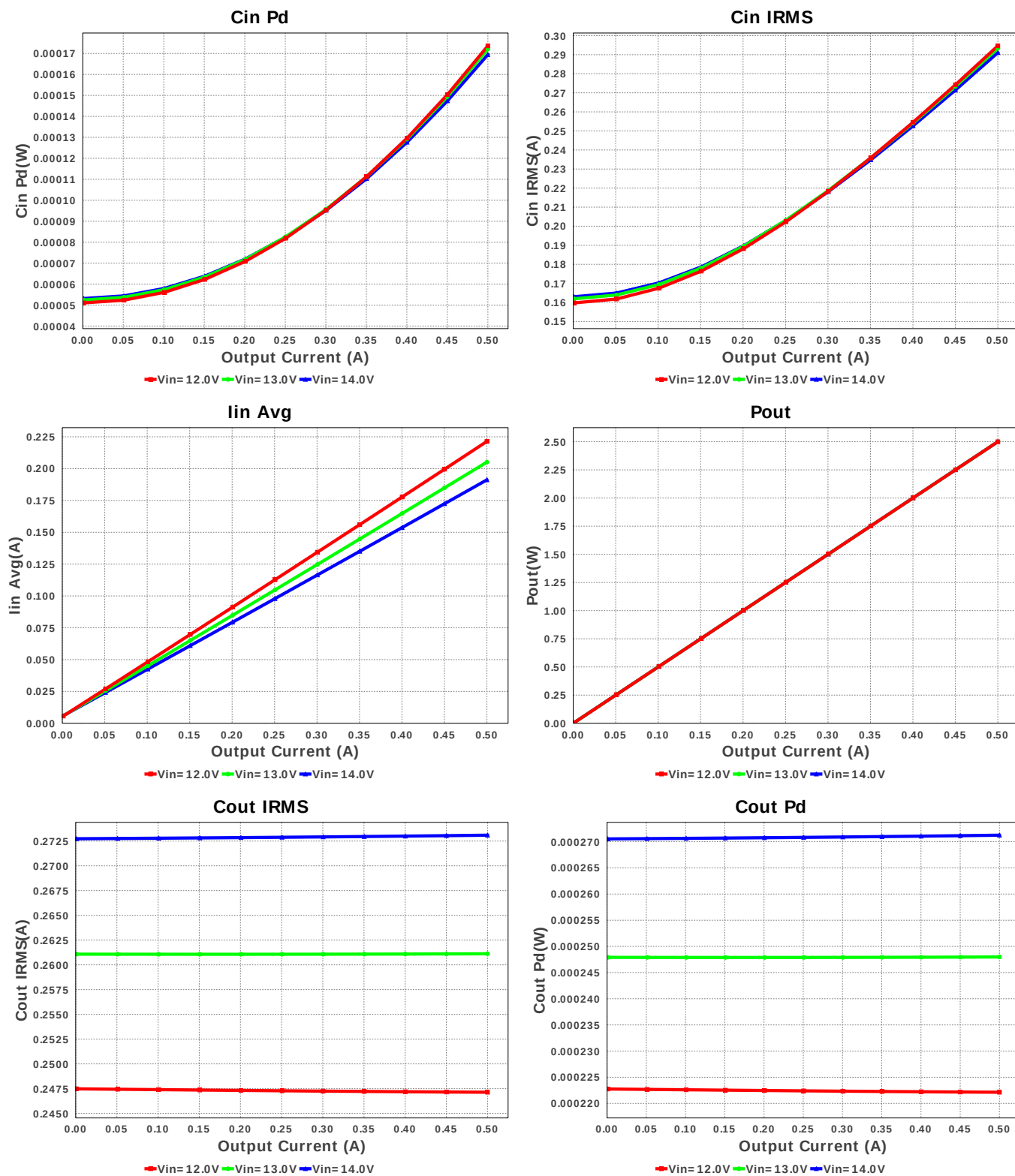
Design : 4769495/1 TPS562209DDCR
TPS562209DDCR 12.0V-14.0V to 5.00V @ 0.5A

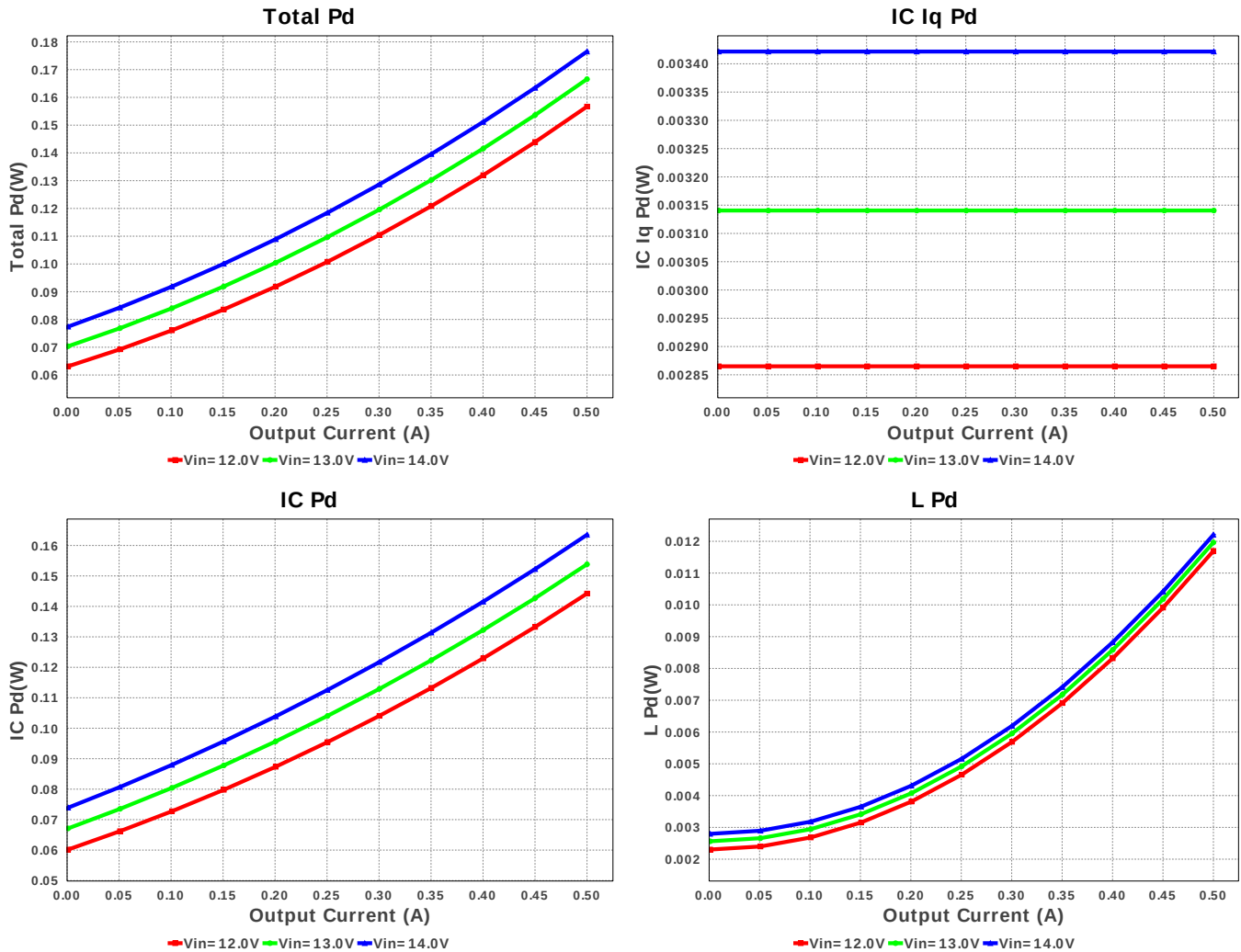


Electrical BOM

#	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 mm ²
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 ²
3.	Cout	MuRata	GRM31CR61A226KE19L Series= X5R	Cap= 22.0 uF ESR= 3.637 mOhm VDC= 10.0 V IRMS= 3.56456 A	1	\$0.07	 1206_190 11 mm ²
4.	L1	Bourns	SRN6045-4R7Y	L= 4.7 uH DCR= 37.6 mOhm	1	\$0.16	 SRN6045 64 mm ²
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 ²
6.	Rfht	Vishay-Dale	CRCW040256K2FKED Series= CRCW..e3	Res= 56.2 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
7.	U1	Texas Instruments	TPS562209DDCR	Switcher	1	\$0.47	 DDC0006A 10 mm ²







Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	291.073 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	273.093 mA	Current	Output capacitor RMS ripple current
3.	Iin Avg	191.18 mA	Current	Average input current
4.	L Ipp	946.02 mA	Current	Peak-to-peak inductor ripple current
5.	BOM Count	7	General	Total Design BOM count
6.	FootPrint	113.0 mm ²	General	Total Foot Print Area of BOM components
7.	Frequency	722.991 kHz	General	Switching frequency
8.	Mode	CCM	General	Conduction Mode
9.	Pout	2.5 W	General	Total output power
10.	Total BOM	\$0.89	General	Total BOM Cost
11.	Vout Actual	5.031 V	Op_Point	Vout Actual calculated based on selected voltage divider resistors
12.	Vout OP	5.0 V	Op_Point	Operational Output Voltage
13.	Duty Cycle	36.191 %	Op_point	Duty cycle
14.	Efficiency	93.405 %	Op_point	Steady state efficiency
15.	IC Tj	47.822 degC	Op_point	IC junction temperature
16.	ICThetaJA	109.0 degC/W	Op_point	IC junction-to-ambient thermal resistance
17.	IOUT_OP	500.0 mA	Op_point	Iout operating point
18.	VIN_OP	14.0 V	Op_point	Vin operating point
19.	Vout p-p	8.991 mV	Op_point	Peak-to-peak output ripple voltage
20.	Cin Pd	169.447 μW	Power	Input capacitor power dissipation
21.	Cout Pd	271.247 μW	Power	Output capacitor power dissipation
22.	IC Iq Pd	3.422 mW	Power	IC Iq Pd
23.	IC Pd	163.501 mW	Power	IC power dissipation
24.	L Pd	12.204 mW	Power	Inductor power dissipation
25.	Total Pd	176.516 mW	Power	Total Power Dissipation
26.	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	500.0 m	Maximum Output Current
2.	VinMax	14.0	Maximum input voltage
3.	VinMin	12.0	Minimum input voltage
4.	Vout	5.0	Output Voltage
5.	base_pn	TPS562209	Texas Instruments Base Part Number
6.	source	DC	Input Source Type
7.	ta	30.0	Ambient temperature

Design Assistance

1. TPS562209 Product Folder : <http://www.ti.com/product/TPS562209> : contains the data sheet and other resources.

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