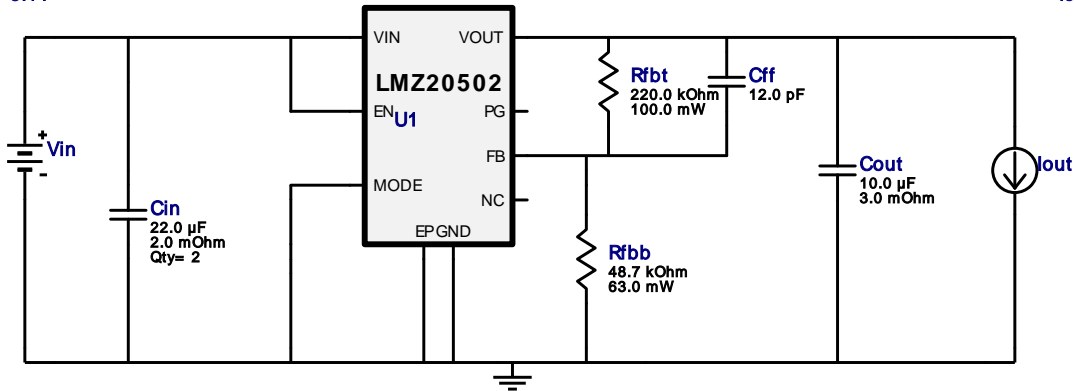


## WEBENCH<sup>®</sup> Design Report

Design : 4384655/4 LMZ20502SILR  
 LMZ20502SILR 4.8V-5.1V to 3.30V @ 2.0A

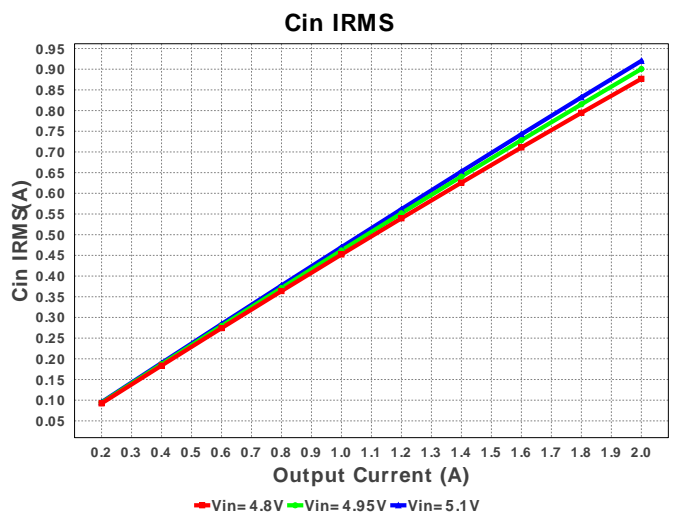
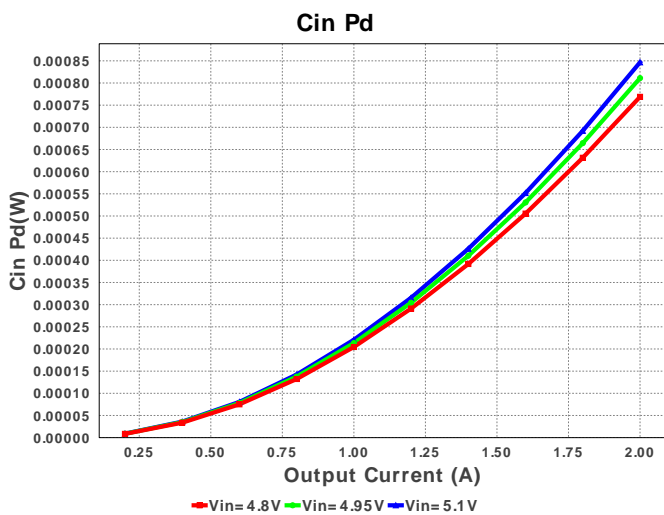
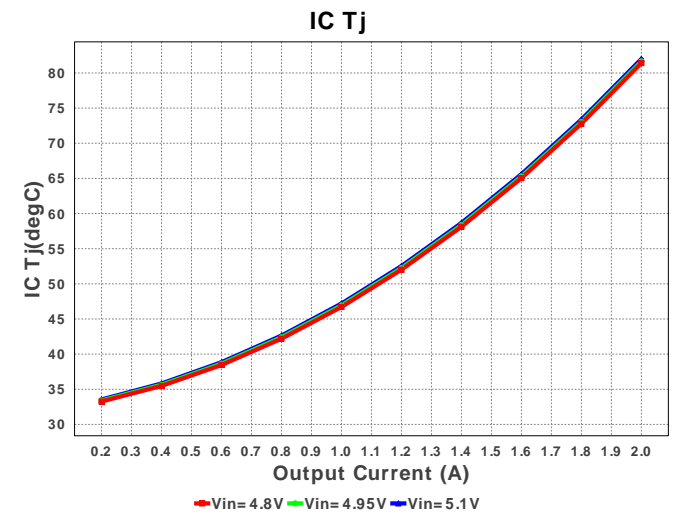
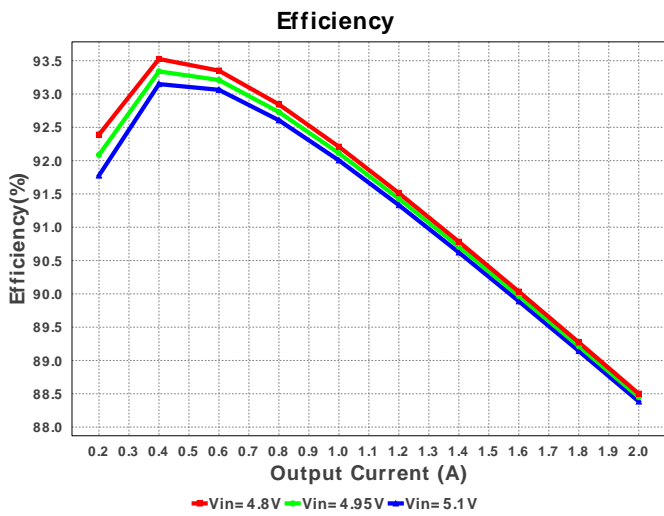
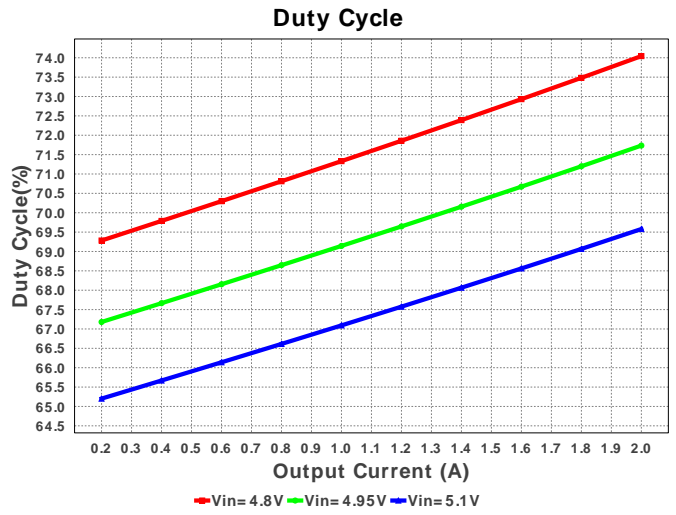
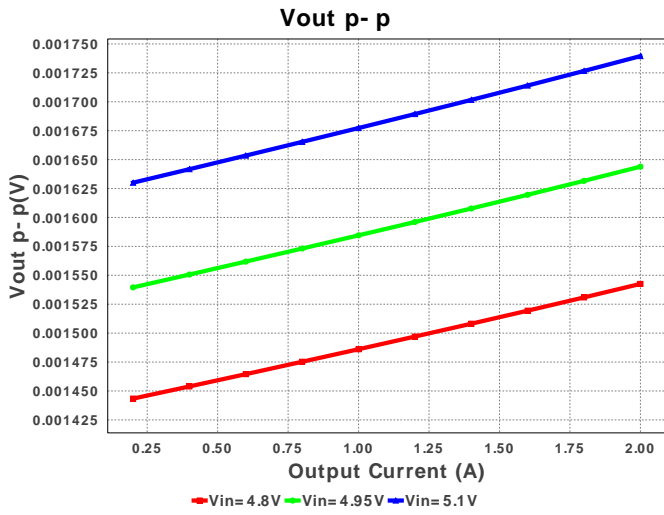
VinMin = 4.8V  
 VinMax = 5.1V

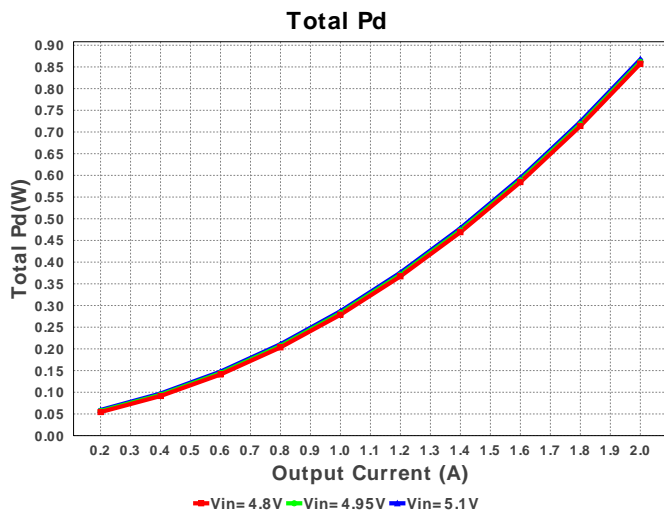
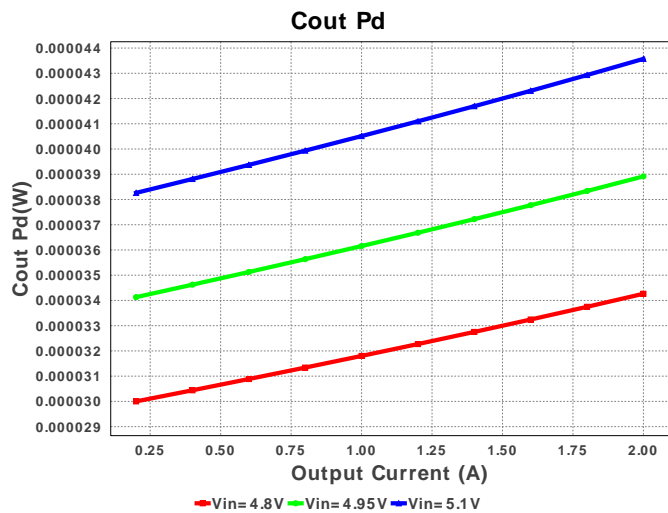
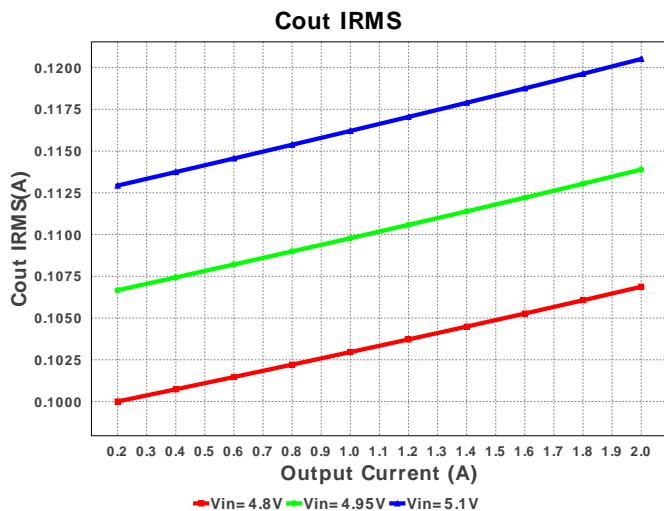
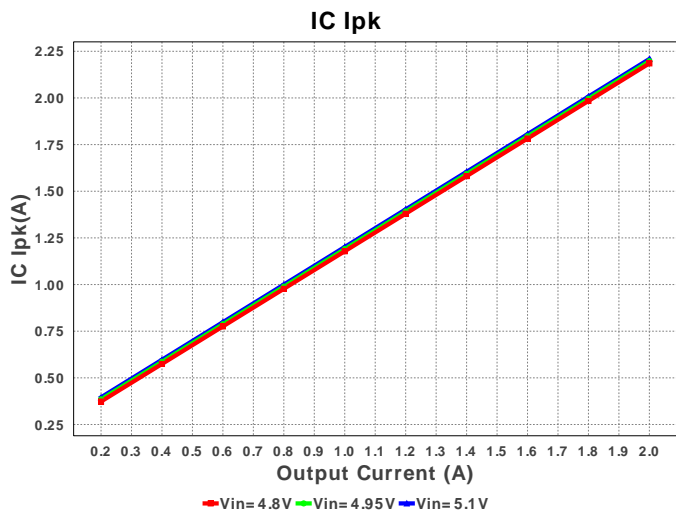
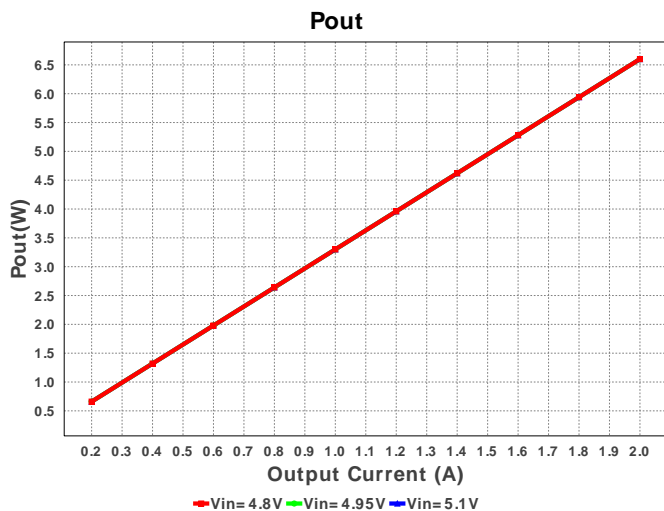
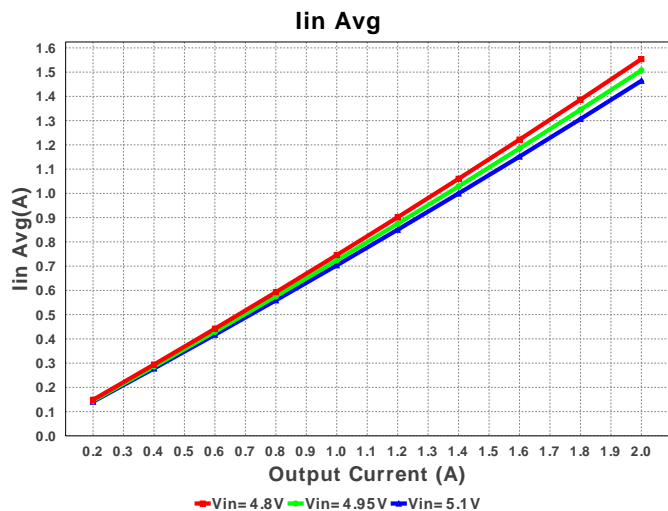
Vout = 3.3V  
 Iout = 2.0A

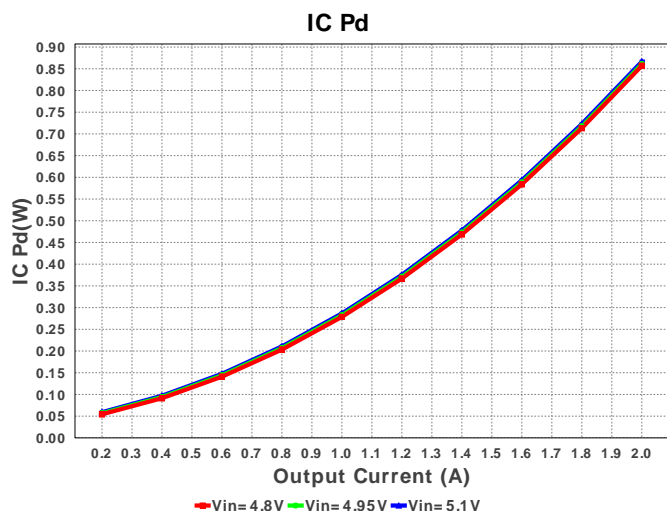


### Electrical BOM

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cff	Yageo America	CC0201JRNPO8BN120 Series= C0G/NP0	Cap= 12.0 pF VDC= 5.0 V IRMS= 0.0 A	1	\$0.01	0201 2 mm <sup>2</sup>
2.	Cin	MuRata	GRM32ER61C226KE20L Series= X5R	Cap= 22.0 uF ESR= 2.0 mOhm VDC= 16.0 V IRMS= 3.68 A	2	\$0.16	1210 15 mm <sup>2</sup>
3.	Cout	Kemet	C0805C106K8PACTU Series= X5R	Cap= 10.0 uF ESR= 3.0 mOhm VDC= 10.0 V IRMS= 11.43 A	1	\$0.04	0805 7 mm <sup>2</sup>
4.	Rfbb	Vishay-Dale	CRCW040248K7FKED Series= CRCW..e3	Res= 48.7 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm <sup>2</sup>
5.	Rfbt	Susumu Co Ltd	RR1220P-224-D Series= 264	Res= 220.0 kOhm Power= 100.0 mW Tolerance= 0.5%	1	\$0.01	0805 7 mm <sup>2</sup>
6.	U1	Texas Instruments	LMZ20502SILR	Switcher	1	\$1.90	SIL0008B 14 mm <sup>2</sup>







## Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	920.14 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	120.515 mA	Current	Output capacitor RMS ripple current
3.	IC Ipk	2.209 A	Current	Peak switch current in IC
4.	Iin Avg	1.464 A	Current	Average input current
5.	BOM Count	7	General	Total Design BOM count
6.	FootPrint	62.0 mm <sup>2</sup>	General	Total Foot Print Area of BOM components
7.	Frequency	3.0 MHz	General	Switching frequency
8.	IC Tolerance	6.0 mV	General	IC Feedback Tolerance
9.	Pout	6.6 W	General	Total output power
10.	Total BOM	\$2.29	General	Total BOM Cost
11.	Vout OP	3.3 V	Op_point	Operational Output Voltage
12.	Duty Cycle	69.579 %	Op_point	Duty cycle
13.	Efficiency	88.384 %	Op_point	Steady state efficiency
14.	IC Tj	81.989 degC	Op_point	IC junction temperature
15.	ICThetaJA	60.0 degC/W	Op_point	IC junction-to-ambient thermal resistance
16.	IOUT_OP	2.0 A	Op_point	Iout operating point
17.	VIN_OP	5.1 V	Op_point	Vin operating point
18.	Vout p-p	1.739 mV	Op_point	Peak-to-peak output ripple voltage
19.	Cin Pd	846.658 μW	Power	Input capacitor power dissipation
20.	Cout Pd	43.572 μW	Power	Output capacitor power dissipation
21.	IC Pd	866.49 mW	Power	IC power dissipation
22.	IC Pd	866.49 mW	Power	IC power dissipation
23.	Total Pd	867.416 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	5.1	Maximum input voltage
4.	VinMin	4.8	Minimum input voltage
5.	Vout	3.3	Output Voltage
6.	Vout1	3.3	Output Voltage #1
7.	base_pn	LMZ20502	Texas Instruments Base Part Number
8.	source	DC	Input Source Type
9.	ta	30.0	Ambient temperature

## Design Assistance

1. LMZ20502 Product Folder : <http://www.ti.com/product/LMZ20502> : contains the data sheet and other resources.

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