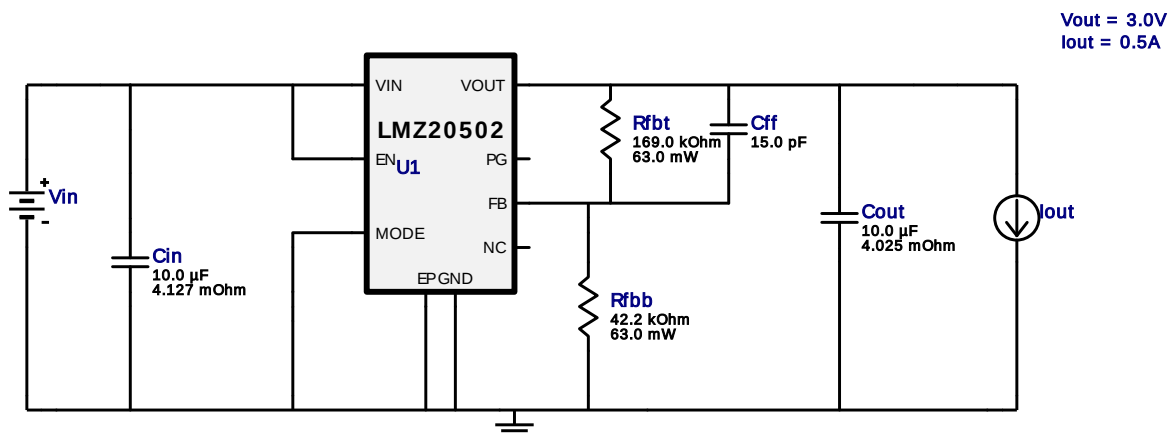


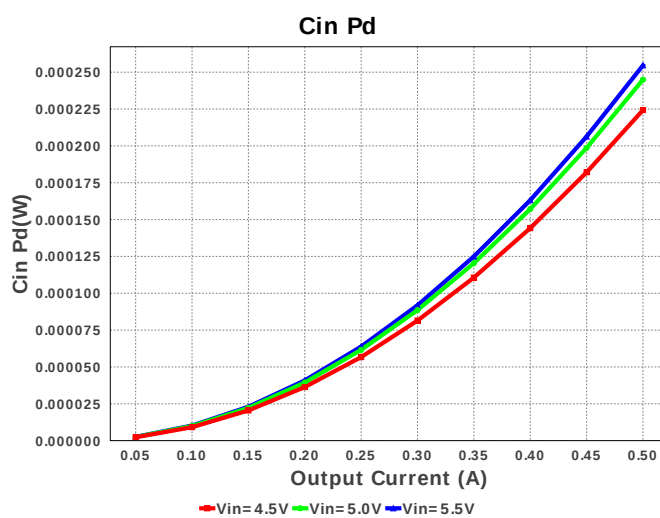
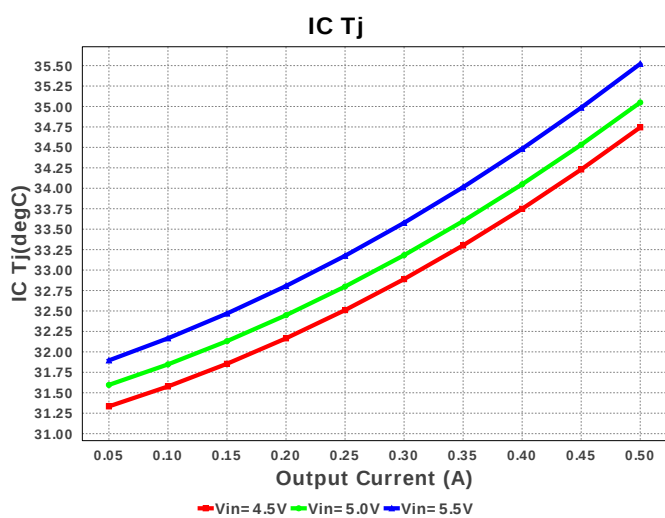
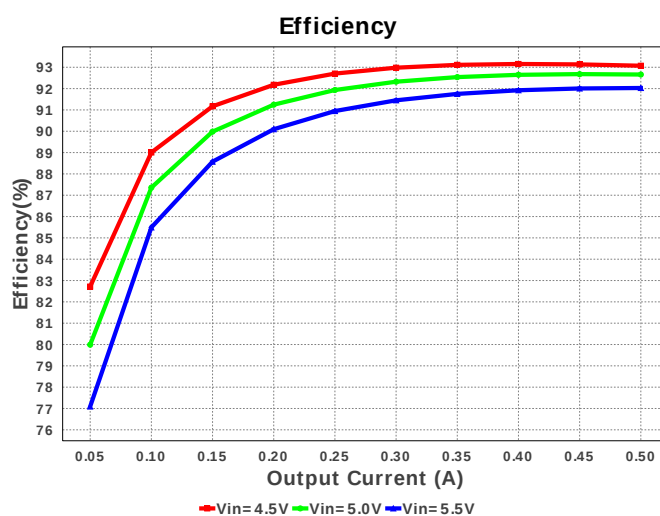
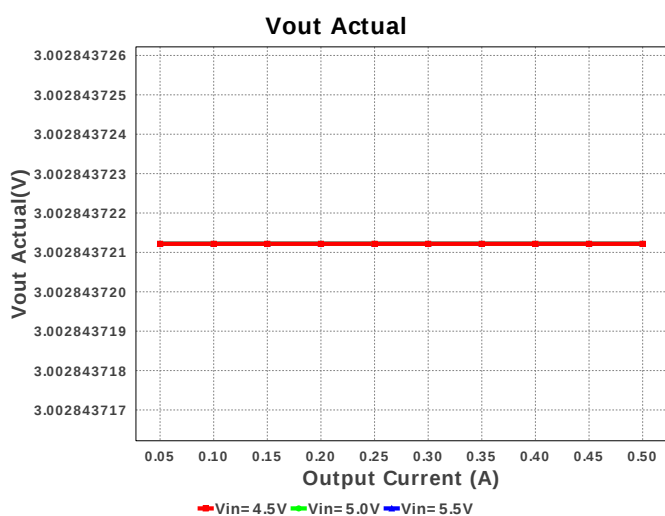
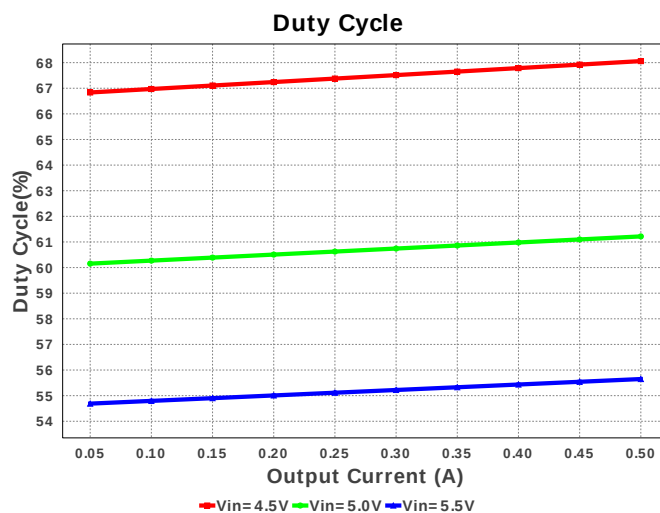
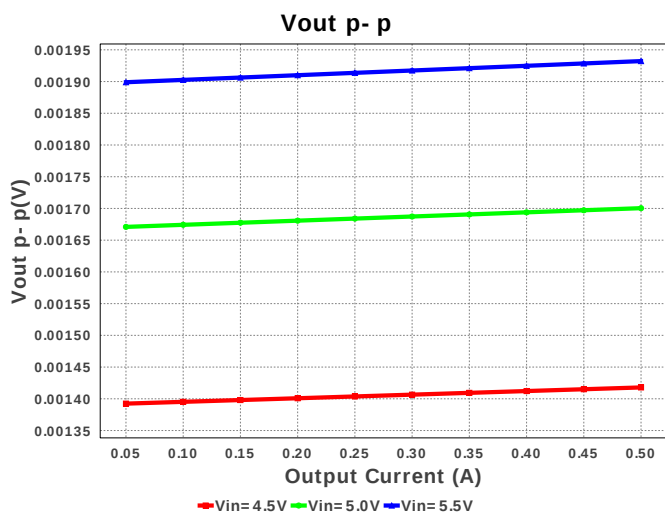
WEBENCH® Design Report

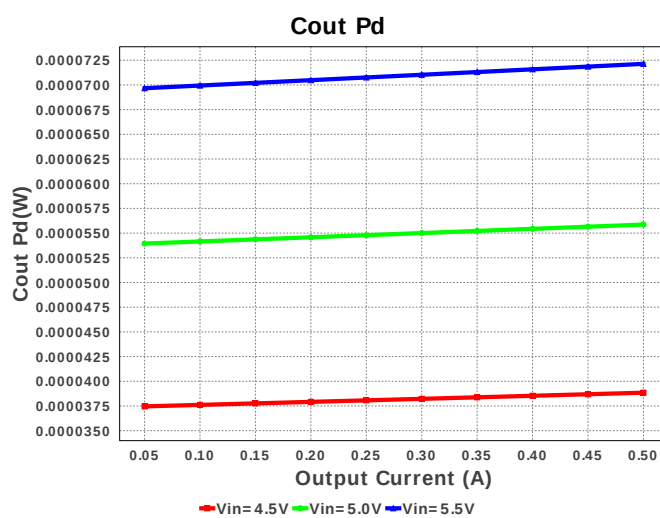
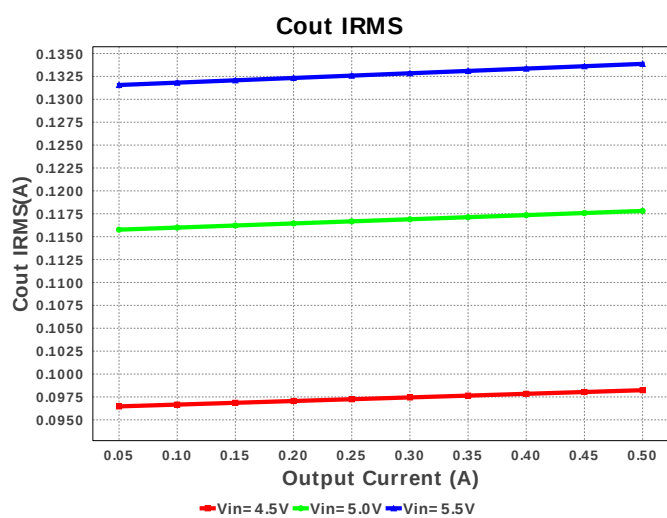
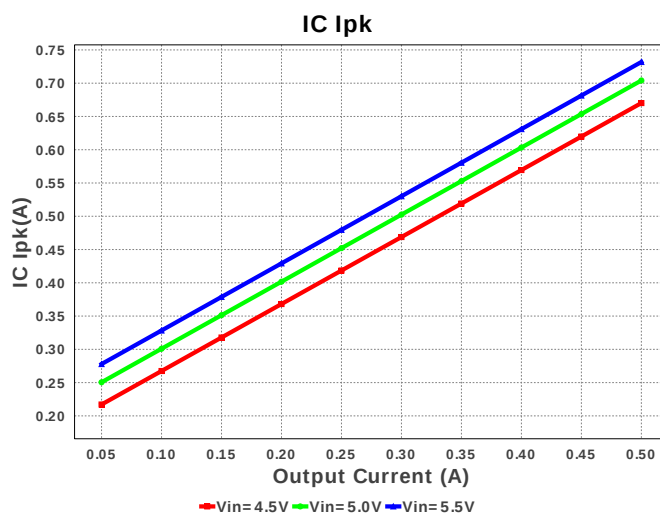
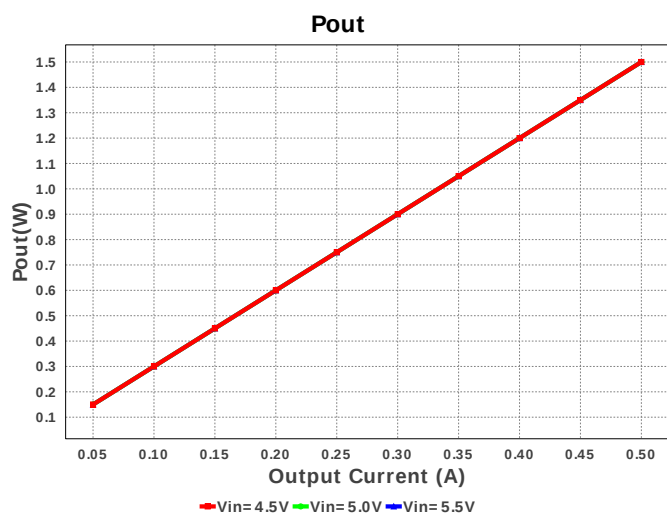
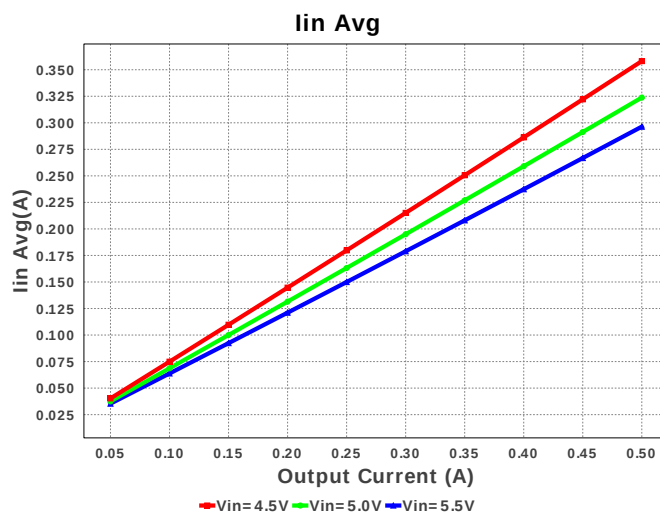
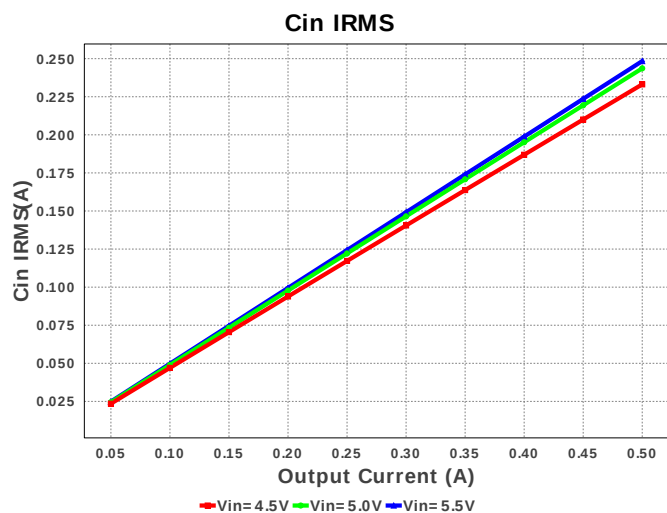
Design : 4742013/158 LMZ20502SILR
LMZ20502SILR 4.5V-5.5V to 3.00V @ 0.5A

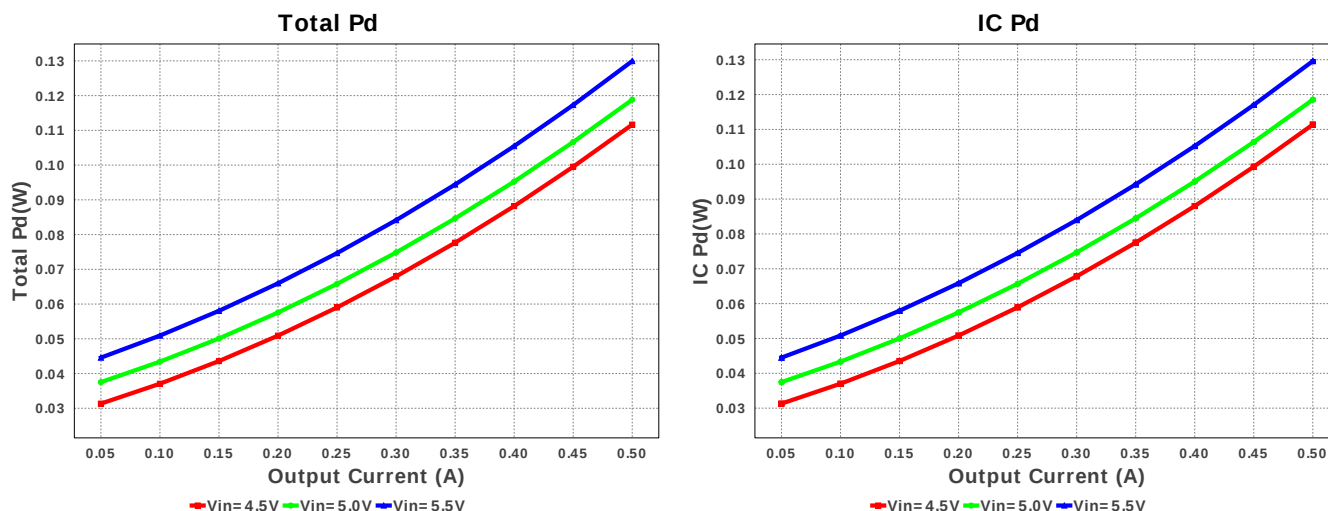


Electrical BOM

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cff	Yageo America	CC0201JRNPO8BN150 Series= C0G/NP0	Cap= 15.0 pF VDC= 5.0 V IRMS= 0.0 A	1	\$0.01	0201 2 mm ²
2.	Cin	MuRata	GRM21BR61C106KE15L Series= X5R	Cap= 10.0 uF ESR= 4.127 mOhm VDC= 16.0 V IRMS= 2.46634 A	1	\$0.03	0805 7 mm ²
3.	Cout	MuRata	GRM21BR60J106ME19L Series= X5R	Cap= 10.0 uF ESR= 4.025 mOhm VDC= 6.3 V IRMS= 2.6173 A	1	\$0.02	0805 7 mm ²
4.	Rfbb	Vishay-Dale	CRCW040242K2FKED Series= CRCW..e3	Res= 42.2 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
5.	Rfbb	Vishay-Dale	CRCW0402169KFKED Series= CRCW..e3	Res= 169.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
6.	U1	Texas Instruments	LMZ20502SILR	Switcher	1	\$1.90	SIL0008B 14 mm ²







Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	248.4 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	133.869 mA	Current	Output capacitor RMS ripple current
3.	IC Ipk	731.867 mA	Current	Peak switch current in IC
4.	Iin Avg	296.35 mA	Current	Average input current
5.	BOM Count	6	General	Total Design BOM count
6.	FootPrint	36.0 mm ²	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	1.5 W	General	Total output power
10.	Total BOM	\$1.98	General	Total BOM Cost
11.	Vout Actual	3.003 V	Op_Point	Vout Actual calculated based on selected voltage divider resistors
12.	Vout OP	3.0 V	Op_Point	Operational Output Voltage
13.	Duty Cycle	55.648 %	Op_point	Duty cycle
14.	Efficiency	92.028 %	Op_point	Steady state efficiency
15.	IC Tj	35.521 degC	Op_point	IC junction temperature
16.	ICThetaJA	42.6 degC/W	Op_point	IC junction-to-ambient thermal resistance
17.	IOUT_OP	500.0 mA	Op_point	Iout operating point
18.	VIN_OP	5.5 V	Op_point	Vin operating point
19.	Vout p-p	1.932 mV	Op_point	Peak-to-peak output ripple voltage
20.	Cin Pd	254.646 μW	Power	Input capacitor power dissipation
21.	Cout Pd	72.131 μW	Power	Output capacitor power dissipation
22.	IC Pd	129.604 mW	Power	IC power dissipation
23.	IC Pd	129.604 mW	Power	IC power dissipation
24.	Total Pd	129.938 mW	Power	Total Power Dissipation
25.	Vout Tolerance	2.633 %		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	5.5	Maximum input voltage
3.	VinMin	4.5	Minimum input voltage
4.	Vout	3.0	Output Voltage
5.	base_pn	LMZ20502	Base Product Number
6.	source	DC	Input Source Type
7.	Ta	30.0	Ambient temperature

Design Assistance

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

Texas Instruments' WEBENCH simulation tools attempt to recreate the performance of a substantially equivalent physical implementation of the design. Simulations are created using Texas Instruments' published specifications as well as the published specifications of other device manufacturers. While Texas Instruments does update this information periodically, this information may not be current at the time the simulation is built. Texas Instruments does not warrant the accuracy or completeness of the specifications or any information contained therein. Texas Instruments does not warrant that any designs or recommended parts will meet the specifications you entered, will be suitable for your application or fit for any particular purpose, or will operate as shown in the simulation in a physical implementation. Texas Instruments does not warrant that the designs are production worthy.

You should completely validate and test your design implementation to confirm the system functionality for your application prior to production.

Use of Texas Instruments' WEBENCH simulation tools is subject to [Texas Instruments' Site Terms and Conditions of Use](#). Prototype boards based on WEBENCH created designs are provided AS IS without warranty of any kind for evaluation and testing purposes and are subject to the terms of the [Evaluation License Agreement](#).