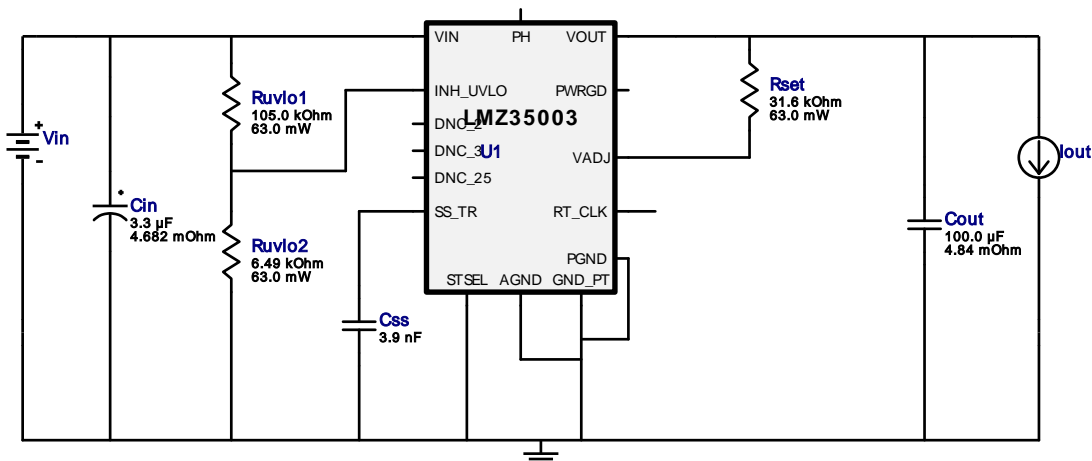


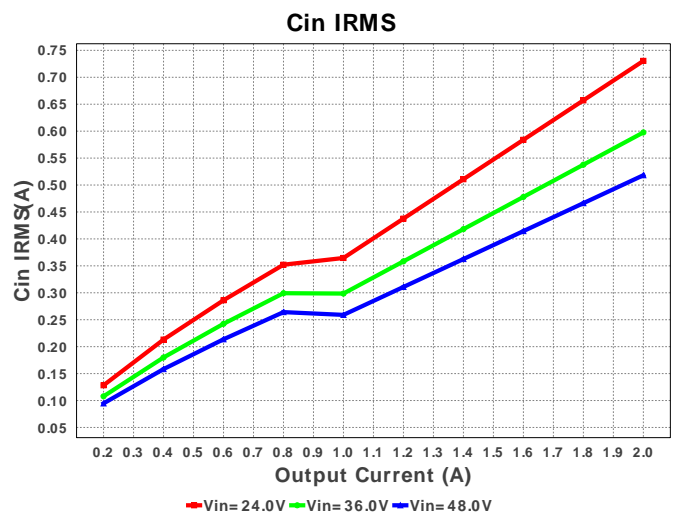
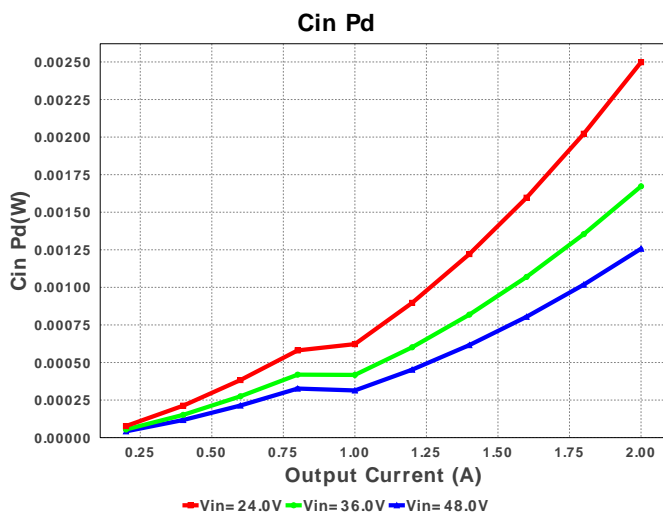
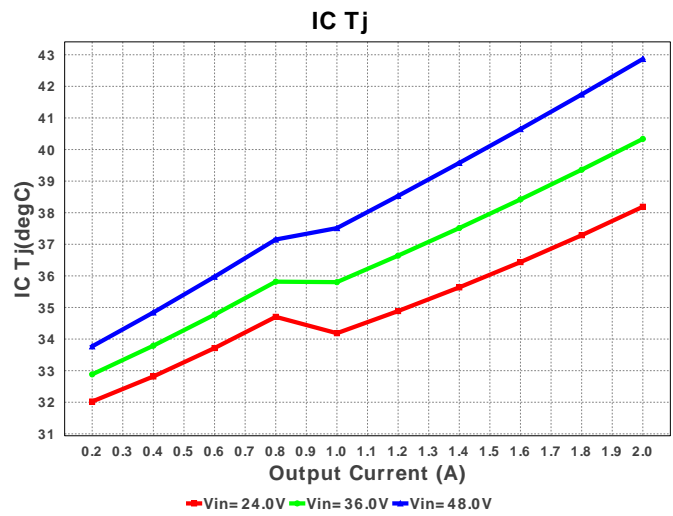
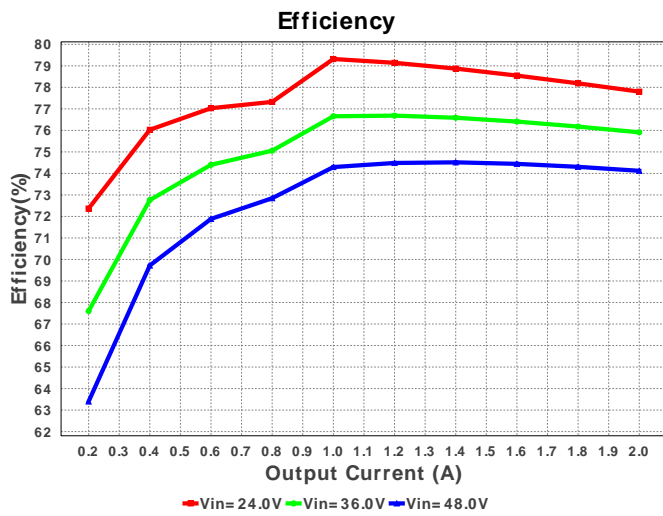
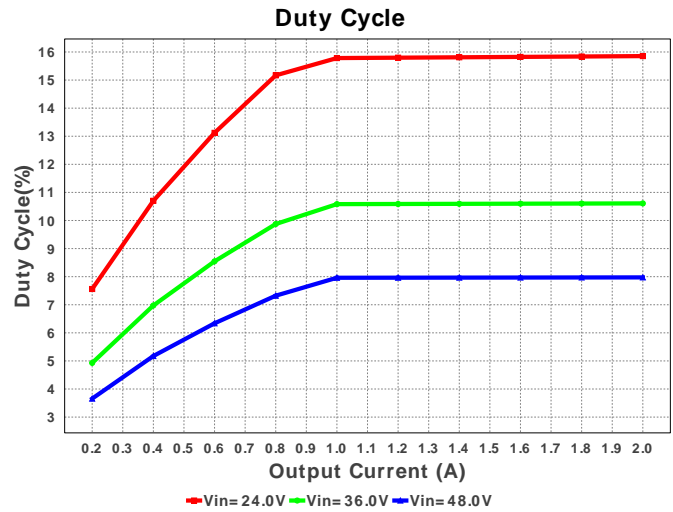
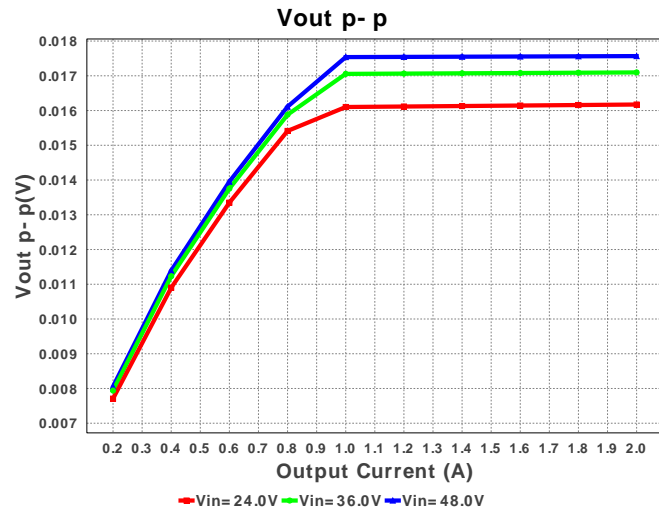
WEBENCH® Design Report

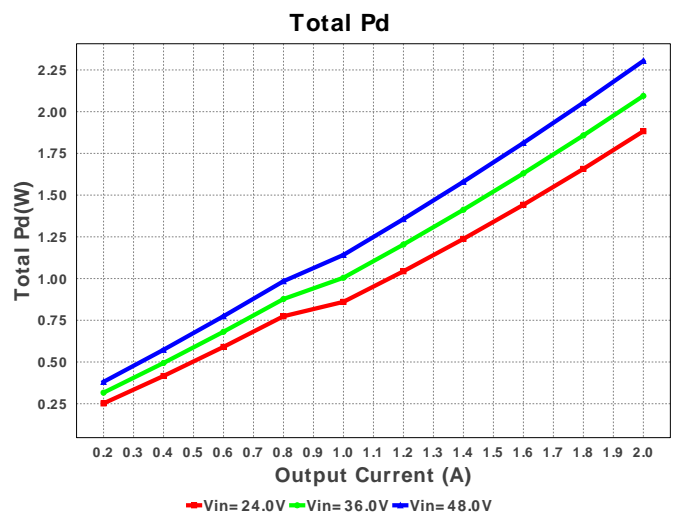
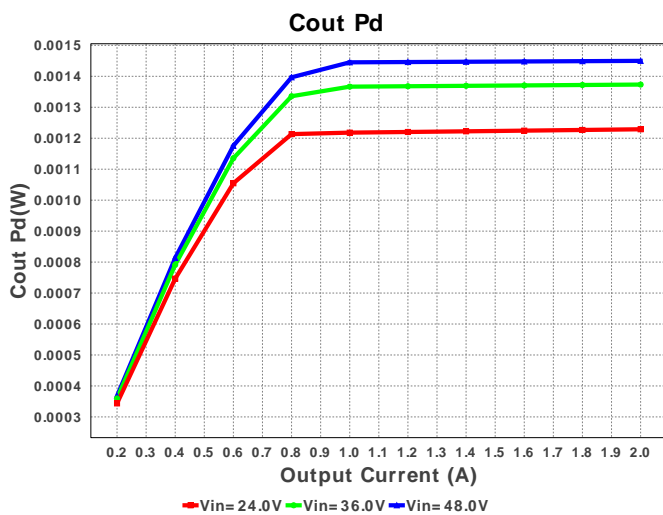
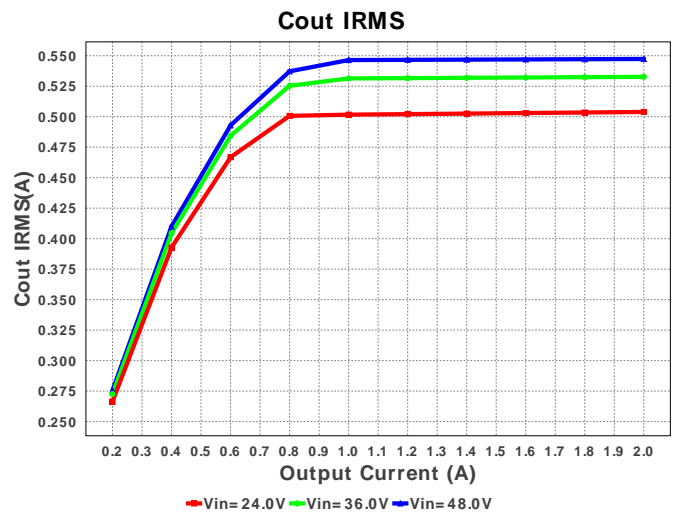
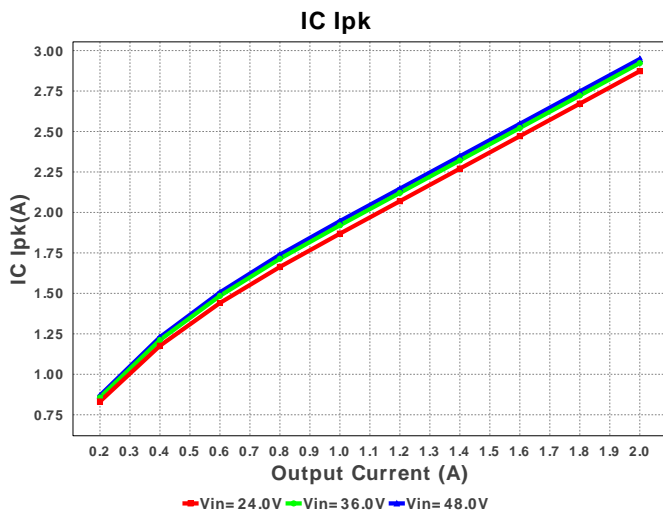
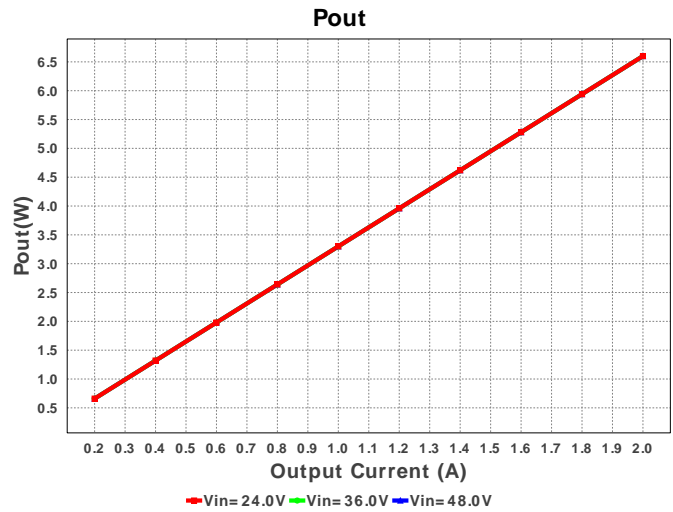
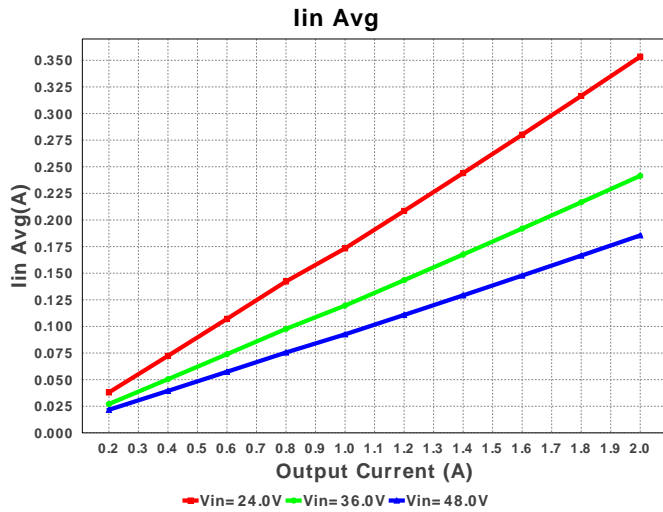
Design : 4466246/41 LMZ35003RKGR
LMZ35003RKGR 24.0V-48.0V to 3.30V @ 2.0A

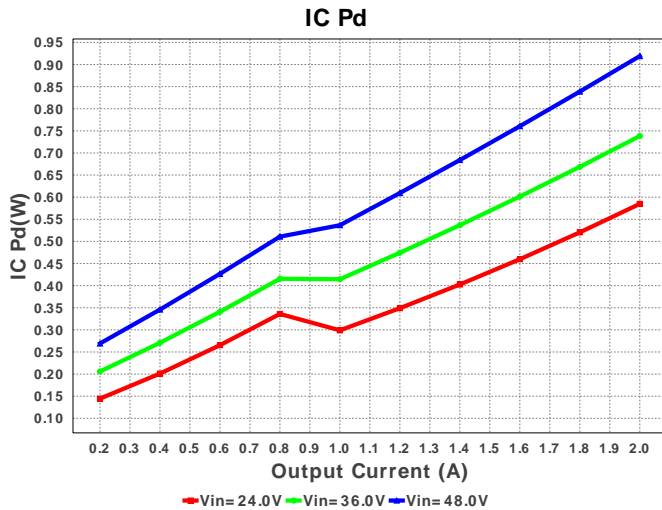


Electrical BOM

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cin	TDK	C3225X7S2A335K200AB Series= X7S	Cap= 3.3 uF ESR= 4.682 mOhm VDC= 100.0 V IRMS= 3.39944 A	1	\$0.24	 1210 15 mm ²
2.	Cout	MuRata	GRM31CD80G107ME39L Series= X6T	Cap= 100.0 uF ESR= 4.84 mOhm VDC= 4.0 V IRMS= 4.3381 A	1	\$0.14	 1206_190 11 mm ²
3.	Css	MuRata	GRM033R71A392KA01D Series= X7R	Cap= 3.9 nF VDC= 10.0 V IRMS= 0.0 A	1	\$0.01	 0201 2 mm ²
4.	Rset	Vishay-Dale	CRCW040231K6FKED Series= CRCW..e3	Res= 31.6 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
5.	Ruvlo1	Vishay-Dale	CRCW0402105KFKED Series= CRCW..e3	Res= 105.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
6.	Ruvlo2	Vishay-Dale	CRCW04026K49FKED Series= CRCW..e3	Res= 6.49 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
7.	U1	Texas Instruments	LMZ35003RKGR	Switcher	1	\$7.95	 RKG0041A 143 mm ²







Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	518.189 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	547.324 mA	Current	Output capacitor RMS ripple current
3.	IC Ipk	2.0 A	Current	Peak switch current in IC
4.	Iin Avg	185.51 mA	Current	Average input current
5.	BOM Count	7	General	Total Design BOM count
6.	FootPrint	180.0 mm ²	General	Total Foot Print Area of BOM components
7.	Frequency	400.0 kHz	General	Switching frequency
8.	Pout	6.6 W	General	Total output power
9.	Total BOM	\$8.37	General	Total BOM Cost
10.	Vout OP	3.3 V	Op_Point	Operational Output Voltage
11.	Cross Freq	46.908 kHz	Op_point	Bode plot crossover frequency
12.	Duty Cycle	7.974 %	Op_point	Duty cycle
13.	Efficiency	74.121 %	Op_point	Steady state efficiency
14.	IC Tj	42.866 degC	Op_point	IC junction temperature
15.	ICThetaJA	14.0 degC/W	Op_point	IC junction-to-ambient thermal resistance
16.	IOUT_OP	2.0 A	Op_point	Iout operating point
17.	Phase Marg	52.662 deg	Op_point	Bode Plot Phase Margin
18.	VIN_OP	48.0 V	Op_point	Vin operating point
19.	Vout p-p	12.434 mV	Op_point	Peak-to-peak output ripple voltage
20.	Cin Pd	1.257 mW	Power	Input capacitor power dissipation
21.	Cout Pd	1.45 mW	Power	Output capacitor power dissipation
22.	IC Pd	2.761 W	Power	IC power dissipation
23.	Total Pd	2.304 W	Power	Total Power Dissipation
24.	Vout Tolerance	2.273 %		Vout Tolerance based on IC Tolerance (no load) and voltage divider resistors if applicable

Design Inputs

#	Name	Value	Description
1.	Iout	2.0	Maximum Output Current
2.	VinMax	48.0	Maximum input voltage
3.	VinMin	24.0	Minimum input voltage
4.	Vout	3.3	Output Voltage
5.	base_pn	LMZ35003	Base Product Number
6.	source	DC	Input Source Type
7.	Ta	30.0	Ambient temperature

Design Assistance

1. **LMZ35003** Product Folder : <http://www.ti.com/product/LMZ35003> : 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](#).