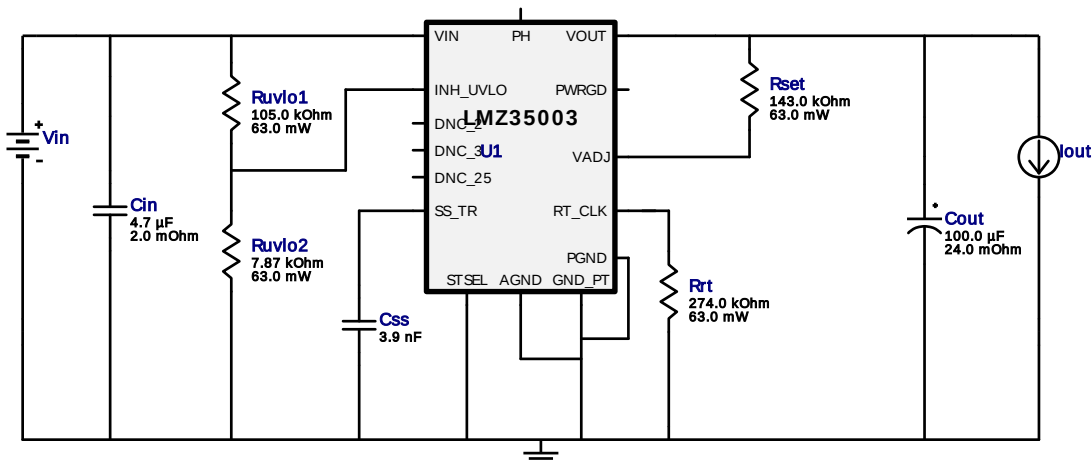


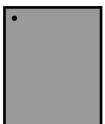
WEBENCH® Design Report

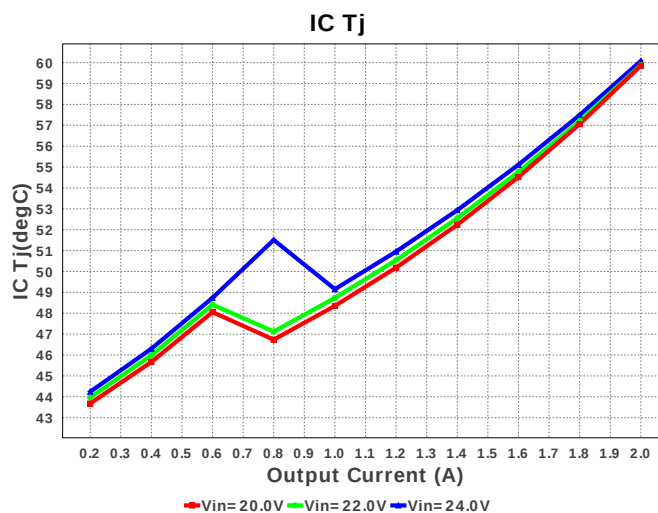
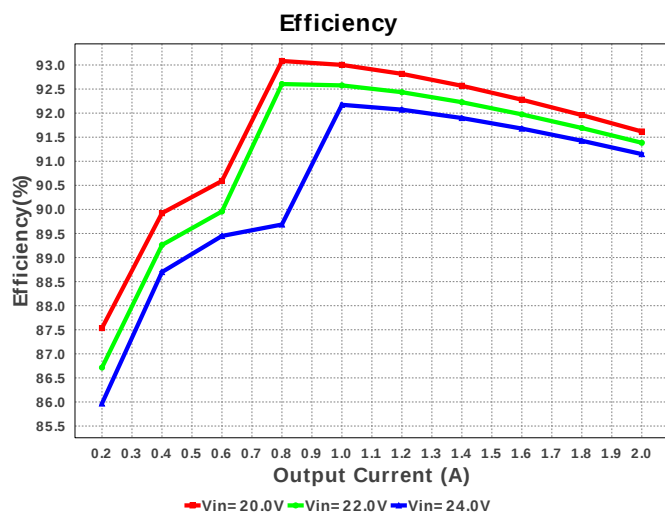
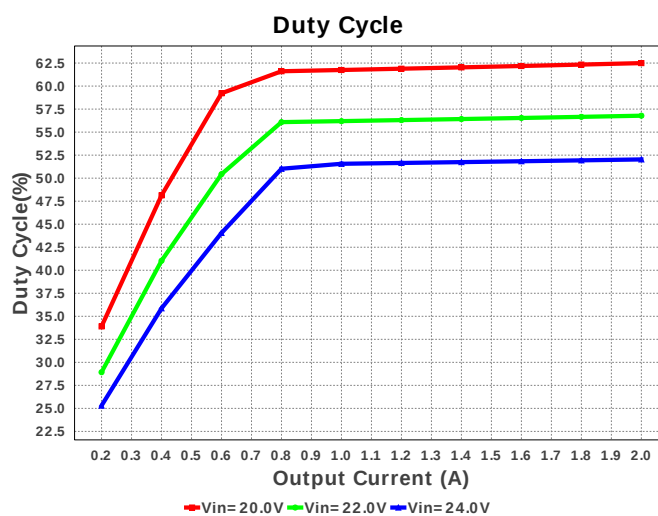
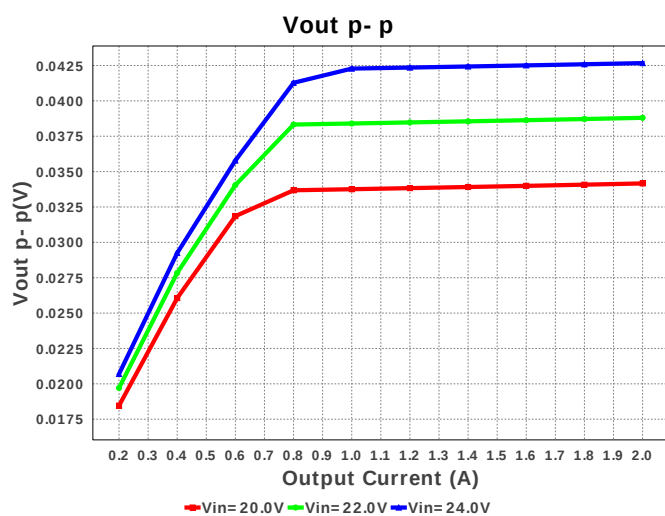
Design : 4108001/11 LMZ35003RKGR
LMZ35003RKGR 20.0V-24.0V to 12.00V @ 2.0A

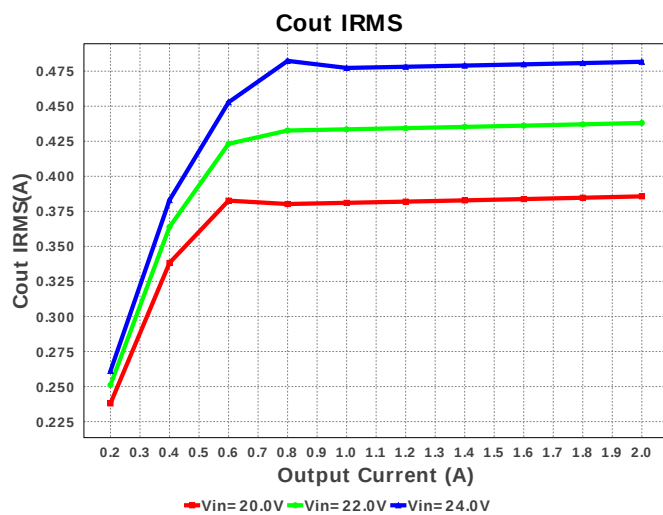
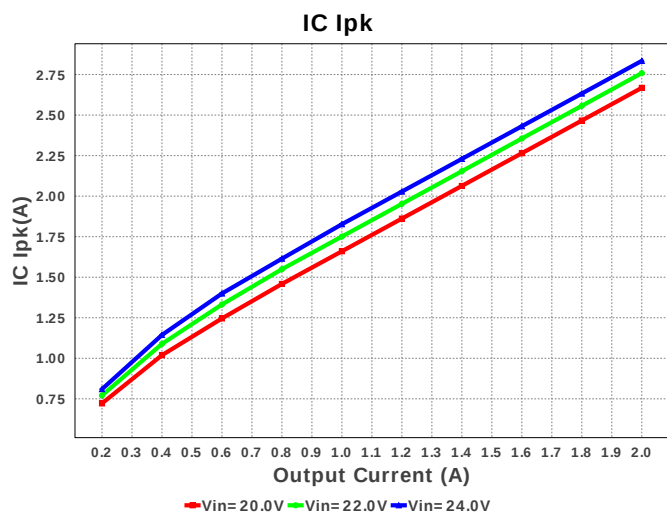
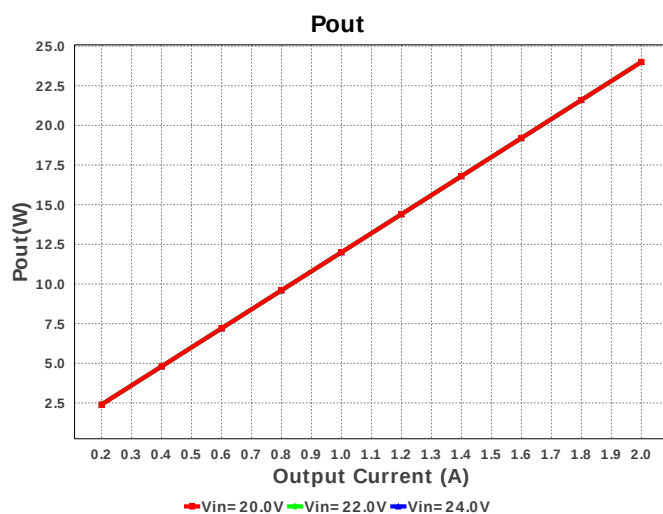
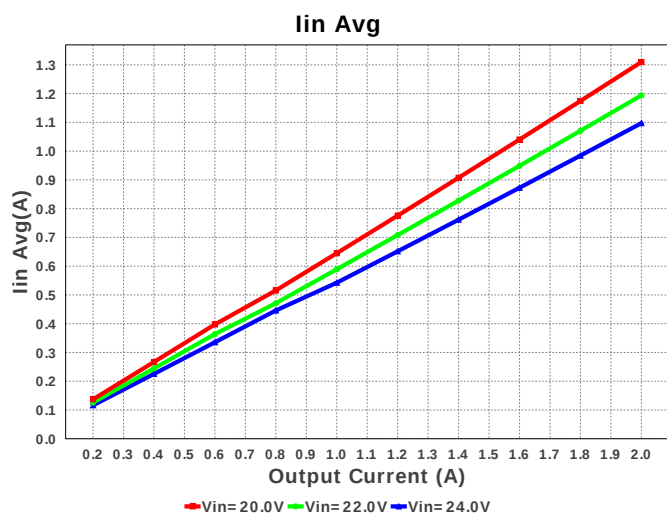
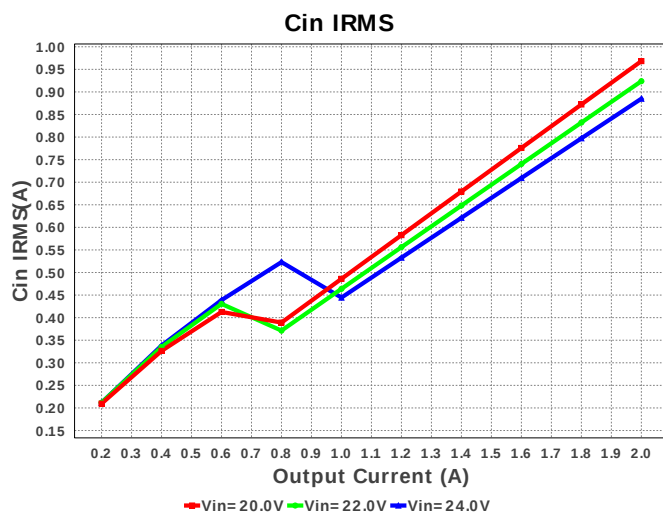
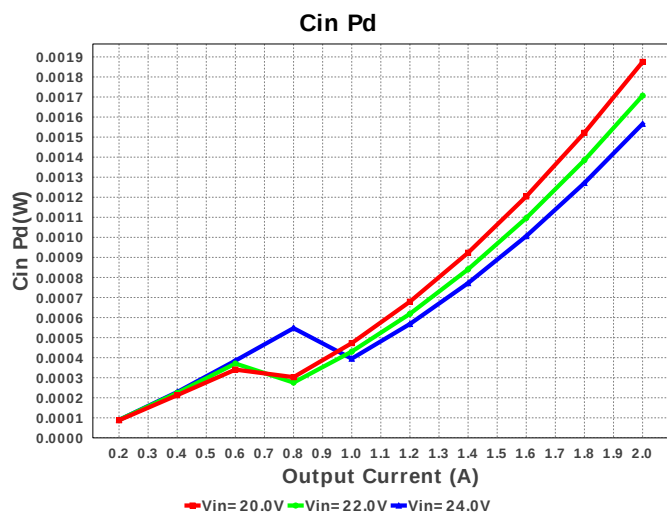


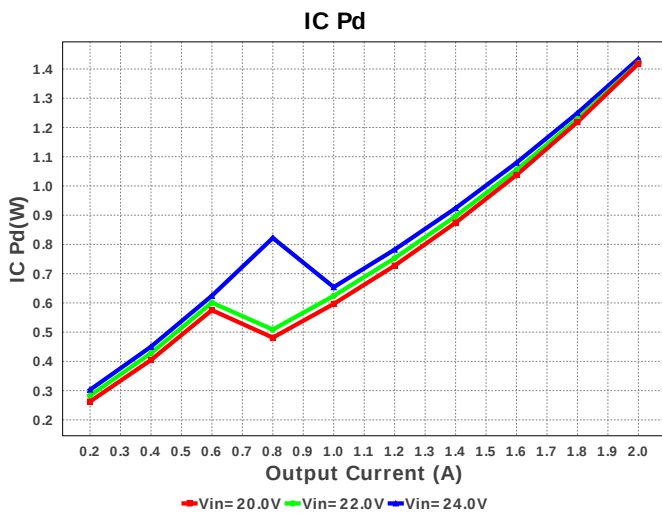
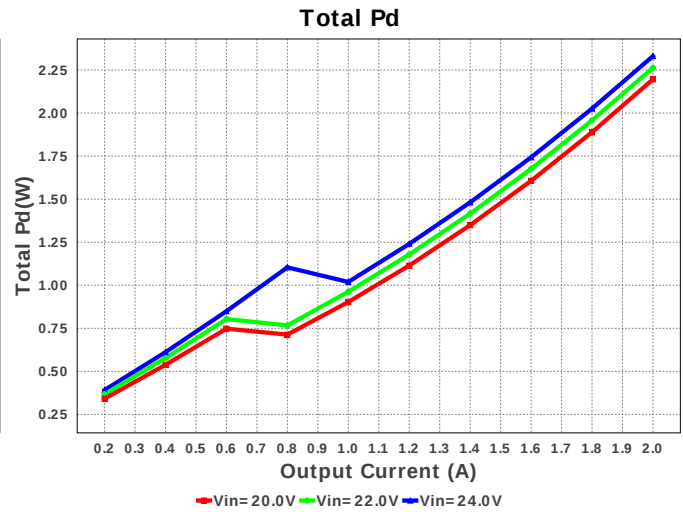
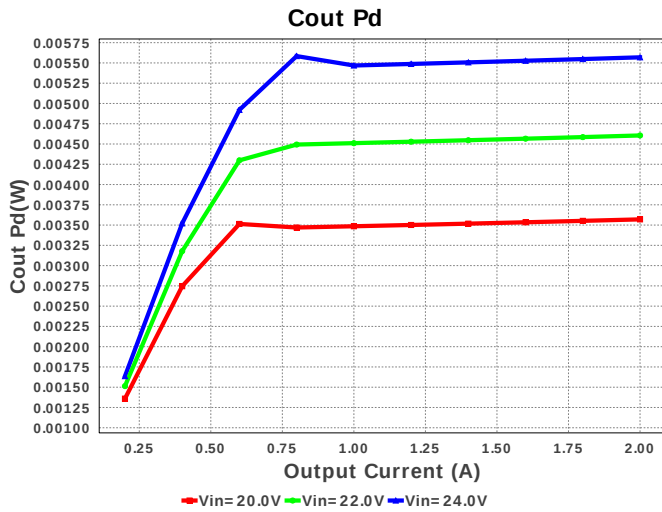
Electrical BOM

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cin	MuRata	GRM32ER71H475KA88L Series= X7R	Cap= 4.7 uF ESR= 2.0 mOhm VDC= 50.0 V IRMS= 5.35 A	1	\$0.19	 1210 15 mm ²
2.	Cout	Panasonic	16SVPC100M Series= SVPC	Cap= 100.0 uF ESR= 24.0 mOhm VDC= 16.0 V IRMS= 2.49 A	1	\$0.29	 SM_RADIAL_6.3AMM 80 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.	Rrt	Vishay-Dale	CRCW0402274KFKED Series= CRCW..e3	Res= 274.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
5.	Rset	Vishay-Dale	CRCW0402143KFKED Series= CRCW..e3	Res= 143.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
6.	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
7.	Ruvlo2	Vishay-Dale	CRCW04027K87FKED Series= CRCW..e3	Res= 7.87 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
8.	U1	Texas Instruments	LMZ35003RKGR	Switcher	1	\$7.95	 RKG0041A 143 mm ²







Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	884.992 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	479.401 mA	Current	Output capacitor RMS ripple current
3.	IC Ipk	2.0 A	Current	Peak switch current in IC
4.	Iin Avg	1.097 A	Current	Average input current
5.	BOM Count	8	General	Total Design BOM count
6.	FootPrint	252.0 mm ²	General	Total Foot Print Area of BOM components
7.	Frequency	800.0 kHz	General	Switching frequency
8.	Mode	CCM	General	Conduction Mode
9.	Pout	24.0 W	General	Total output power
10.	Total BOM	\$8.48	General	Total BOM Cost
11.	Vout OP	12.0 V	Op_Point	Operational Output Voltage
12.	Cross Freq	10.153 kHz	Op_point	Bode plot crossover frequency
13.	Duty Cycle	52.035 %	Op_point	Duty cycle
14.	Efficiency	91.135 %	Op_point	Steady state efficiency
15.	IC Tj	60.137 degC	Op_point	IC junction temperature
16.	ICThetaJA	14.0 degC/W	Op_point	IC junction-to-ambient thermal resistance
17.	IOUT_OP	2.0 A	Op_point	Iout operating point
18.	Phase Marg	89.001 deg	Op_point	Bode Plot Phase Margin
19.	VIN_OP	24.0 V	Op_point	Vin operating point
20.	Vout p-p	39.941 mV	Op_point	Peak-to-peak output ripple voltage
21.	Cin Pd	1.566 mW	Power	Input capacitor power dissipation
22.	Cout Pd	5.516 mW	Power	Output capacitor power dissipation
23.	IC Pd	3.047 W	Power	IC power dissipation
24.	Total Pd	2.335 W	Power	Total Power Dissipation
25.	Vout Tolerance	625.0 m%		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

#	Name	Value	Description
2.	VinMax	24.0	Maximum input voltage
3.	VinMin	20.0	Minimum input voltage
4.	Vout	12.0	Output Voltage
5.	base_pn	LMZ35003	Texas Instruments Base Part Number
6.	source	DC	Input Source Type
7.	ta	40.0	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](#).