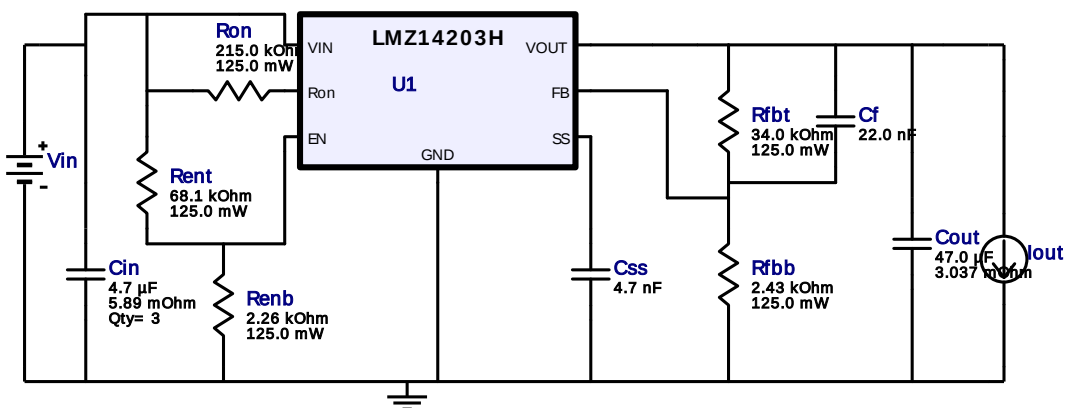


WEBENCH® Design Report

Design : 4738396/8 LMZ14203HTZ/NOPB
LMZ14203HTZ/NOPB 37.0V-42.0V to 12.00V @ 1.0A

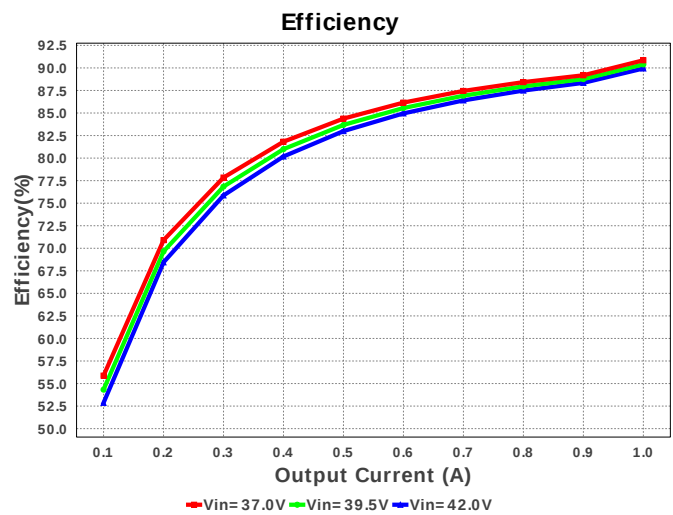
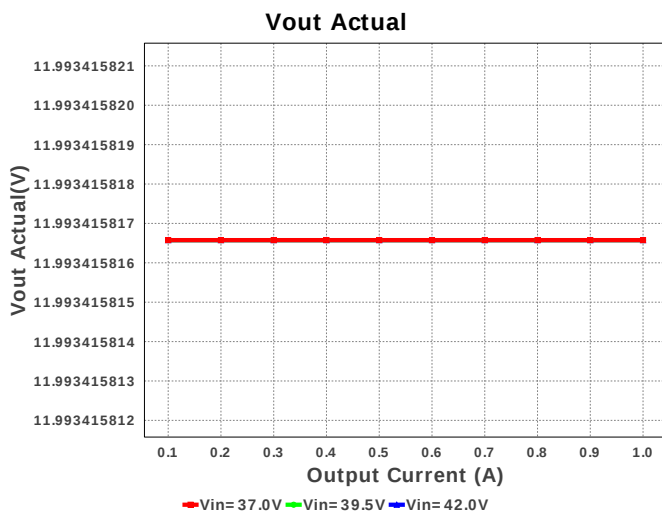
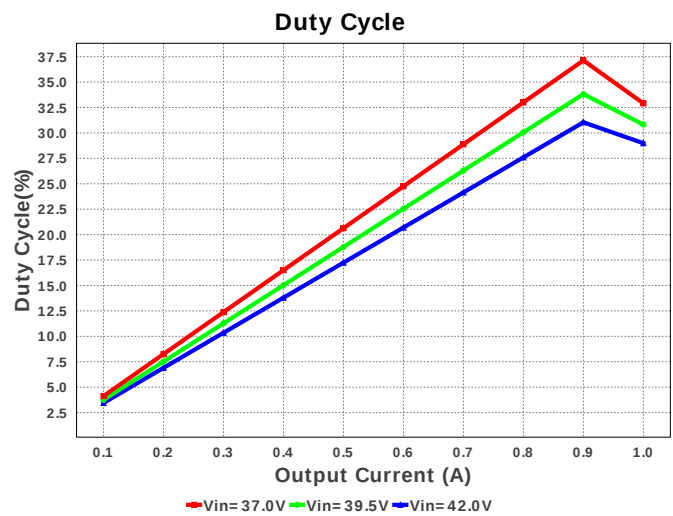
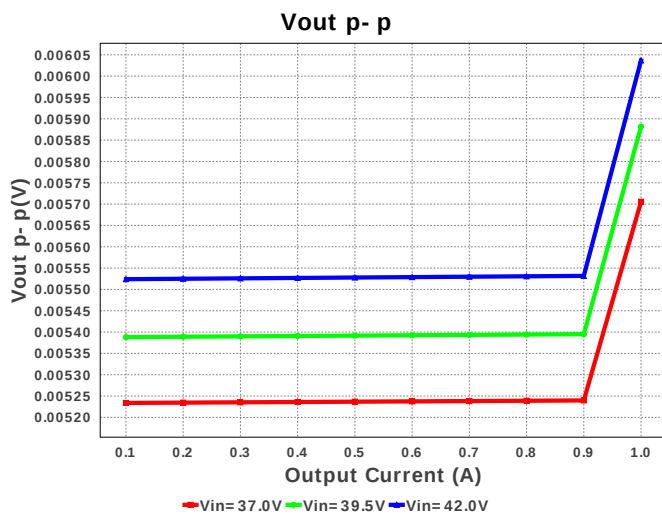
Vout = 12.0V
Iout = 1.0A

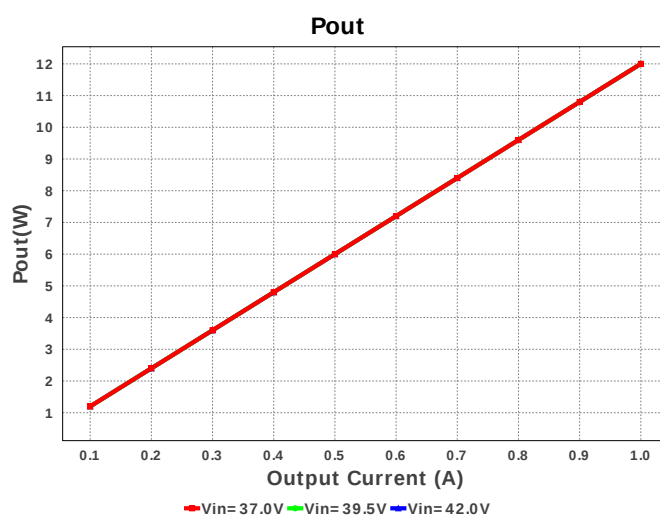
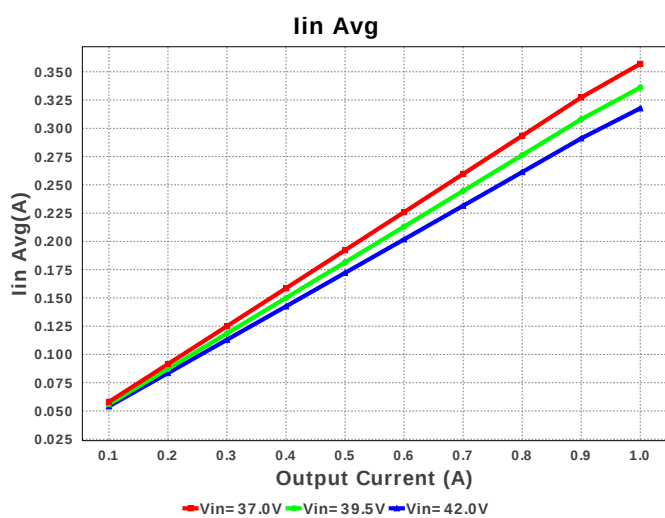
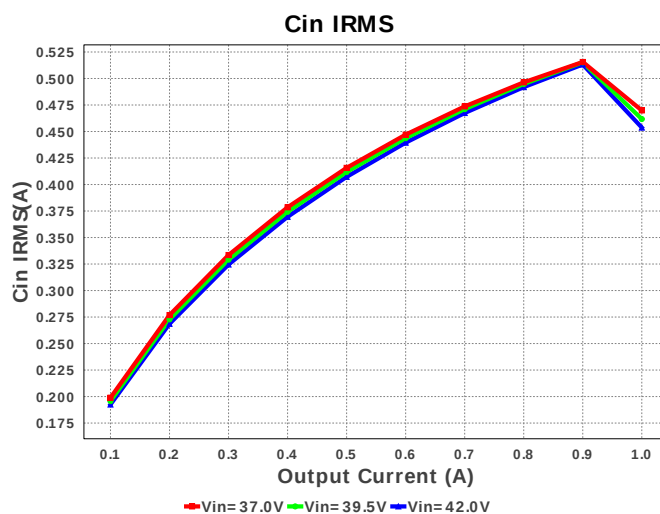
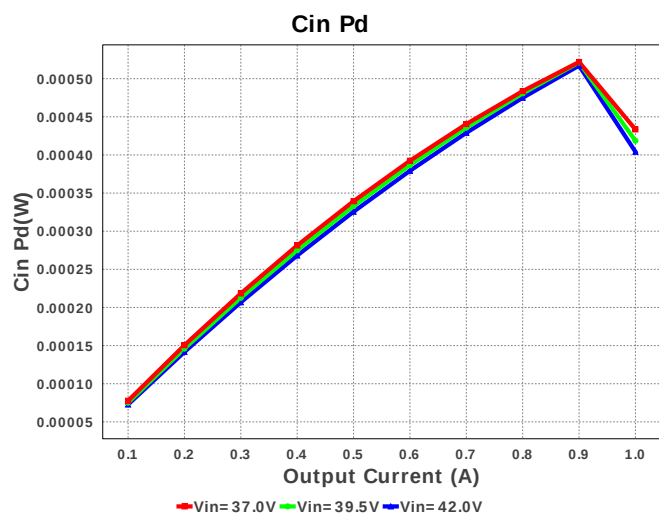
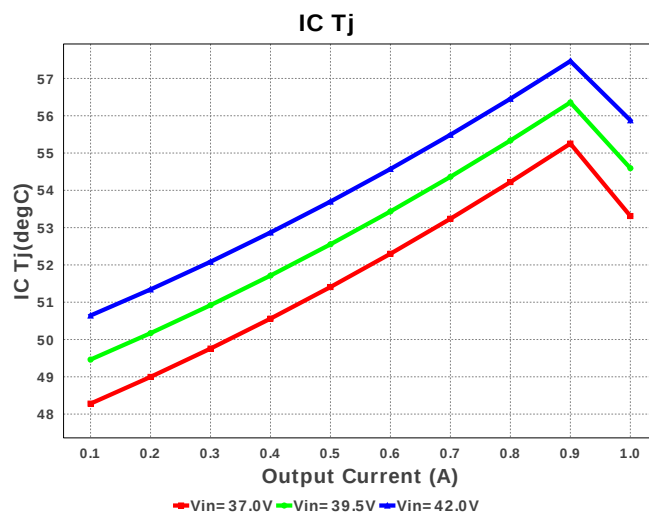
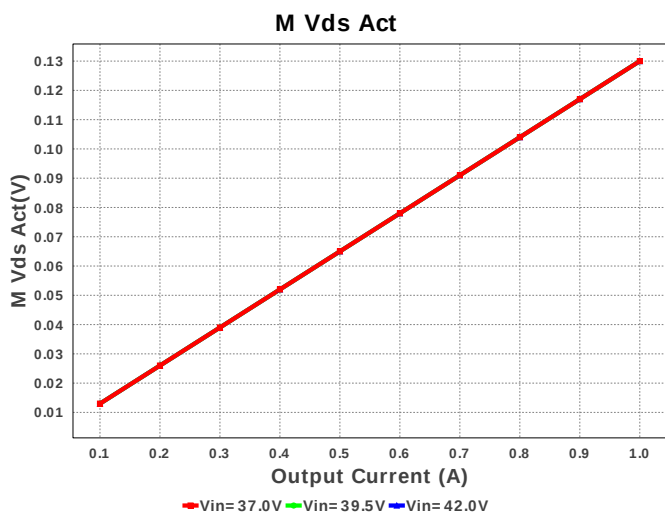


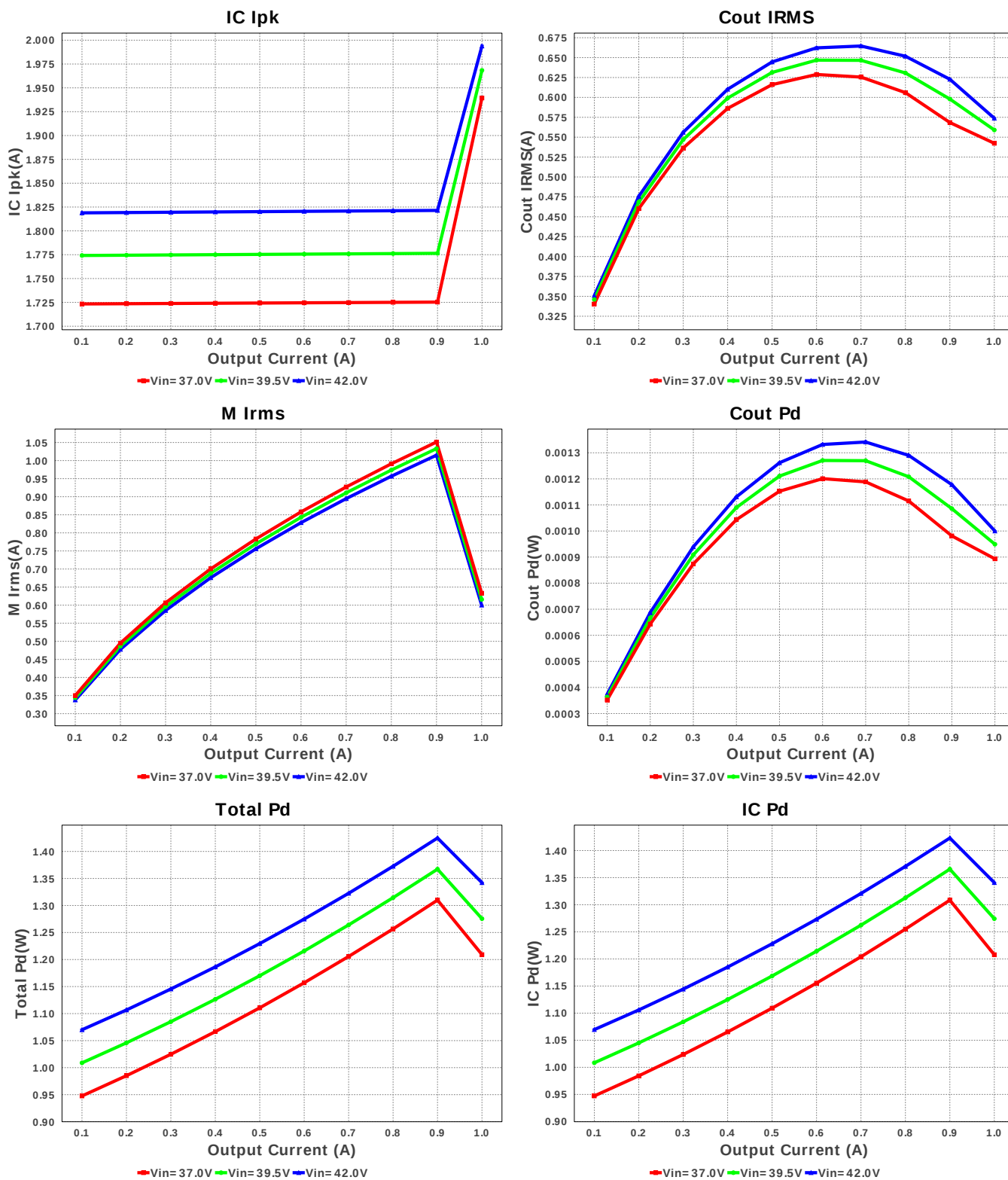
Electrical BOM

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cf	Yageo America	CC0805KRX7R9BB223 Series= X7R	Cap= 22.0 nF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	0805 7 mm ²
2.	Cin	TDK	C3225X7S2A475M200AB Series= X7S	Cap= 4.7 uF ESR= 5.89 mOhm VDC= 100.0 V IRMS= 6.7739 A	3	\$0.42	1210 15 mm ²
3.	Cout	MuRata	GRM32ER61C476ME15L Series= X5R	Cap= 47.0 uF ESR= 3.037 mOhm VDC= 16.0 V IRMS= 4.59346 A	1	\$0.24	1210_280 15 mm ²
4.	Css	Yageo America	CC0805KRX7R9BB472 Series= X7R	Cap= 4.7 nF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	0805 7 mm ²
5.	Renb	Panasonic	ERJ-6ENF2261V Series= ERJ-6E	Res= 2.26 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	0805 7 mm ²
6.	Rent	Panasonic	ERJ-6ENF6812V Series= ERJ-6E	Res= 68.1 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	0805 7 mm ²
7.	Rfbb	Panasonic	ERJ-6ENF2431V Series= ERJ-6E	Res= 2.43 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	0805 7 mm ²
8.	Rfbb	Panasonic	ERJ-6ENF3402V Series= ERJ-6E	Res= 34.0 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	0805 7 mm ²
9.	Ron	Panasonic	ERJ-6ENF2153V Series= ERJ-6E	Res= 215.0 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	0805 7 mm ²

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
10. U1		Texas Instruments	LMZ14203HTZ/NOPB	Switcher	1	\$9.78	 TZA07A 199 mm ²







Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	453.717 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	573.822 mA	Current	Output capacitor RMS ripple current
3.	IC IpK	1.994 A	Current	Peak switch current in IC
4.	Iin Avg	315.95 mA	Current	Average input current
5.	M1 Irms	596.958 mA	Current	Q1 avg
6.	BOM Count	12	General	Total Design BOM count
7.	FootPrint	305.0 mm ²	General	Total Foot Print Area of BOM components
8.	Frequency	429.338 kHz	General	Switching frequency
9.	IC Tolerance	20.0 mV	General	IC Feedback Tolerance
10.	M Vds Act	130.0 mV	General	Voltage drop across the MosFET
11.	Pout	12.0 W	General	Total output power

#	Name	Value	Category	Description
12.	Total BOM	\$11.35	General	Total BOM Cost
13.	Vout Actual	11.993 V	Op_Point	Vout Actual calculated based on selected voltage divider resistors
14.	Vout OP	12.0 V	Op_Point	Operational Output Voltage
15.	Duty Cycle	28.99 %	Op_point	Duty cycle
16.	Efficiency	90.43 %	Op_point	Steady state efficiency
17.	IC Tj	54.483 degC	Op_point	IC junction temperature
18.	ICThetaJA	19.3 degC/W	Op_point	IC junction-to-ambient thermal resistance
19.	IOUT_OP	1.0 A	Op_point	Iout operating point
20.	VIN_OP	42.0 V	Op_point	Vin operating point
21.	Vout p-p	6.037 mV	Op_point	Peak-to-peak output ripple voltage
22.	Cin Pd	404.171 μ W	Power	Input capacitor power dissipation
23.	Cout Pd	999.998 μ W	Power	Output capacitor power dissipation
24.	IC Pd	1.269 W	Power	IC power dissipation
25.	Total Pd	1.27 W	Power	Total Power Dissipation
26.	Vout Tolerance	4.433 %		Vout Tolerance based on IC Tolerance (no load) and voltage divider resistors if applicable

Design Inputs

#	Name	Value	Description
1.	Iout	1.0	Maximum Output Current
2.	VinMax	42.0	Maximum input voltage
3.	VinMin	37.0	Minimum input voltage
4.	Vout	12.0	Output Voltage
5.	base_pn	LMZ14203H	Base Product Number
6.	source	DC	Input Source Type
7.	Ta	30.0	Ambient temperature

Design Assistance

1. **LMZ14203H** Product Folder : <http://www.ti.com/product/LMZ14203H> : contains the data sheet and other resources.

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