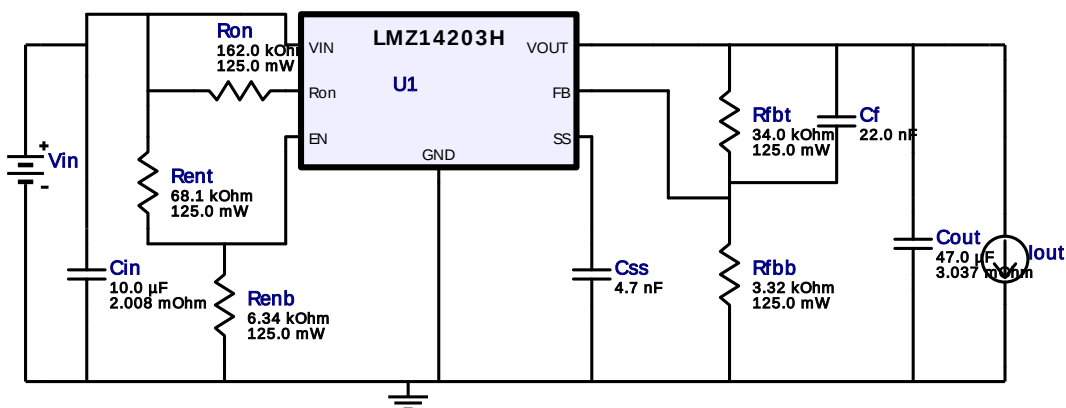


WEBENCH® Design Report

Design : 4742013/14 LMZ14203HTZ/NOPB
LMZ14203HTZ/NOPB 14.0V-25.0V to 9.00V @ 2.0A

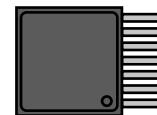
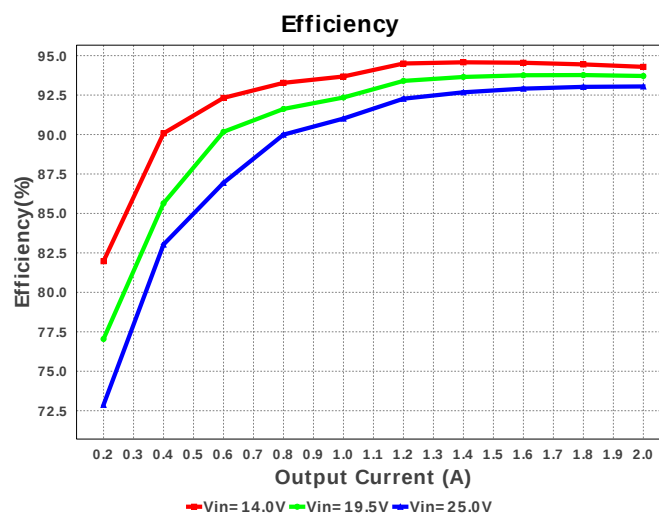
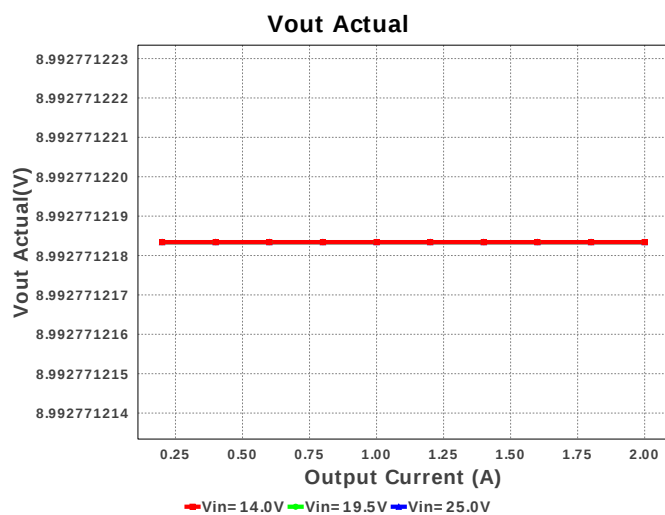
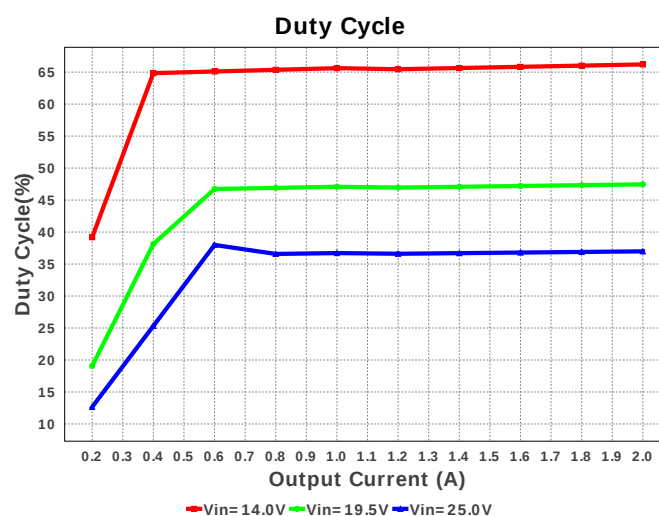
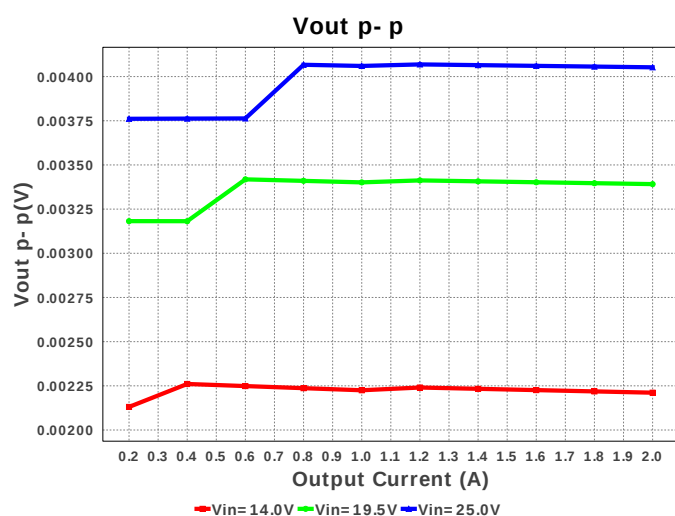
Vout = 9.0V
Iout = 2.0A

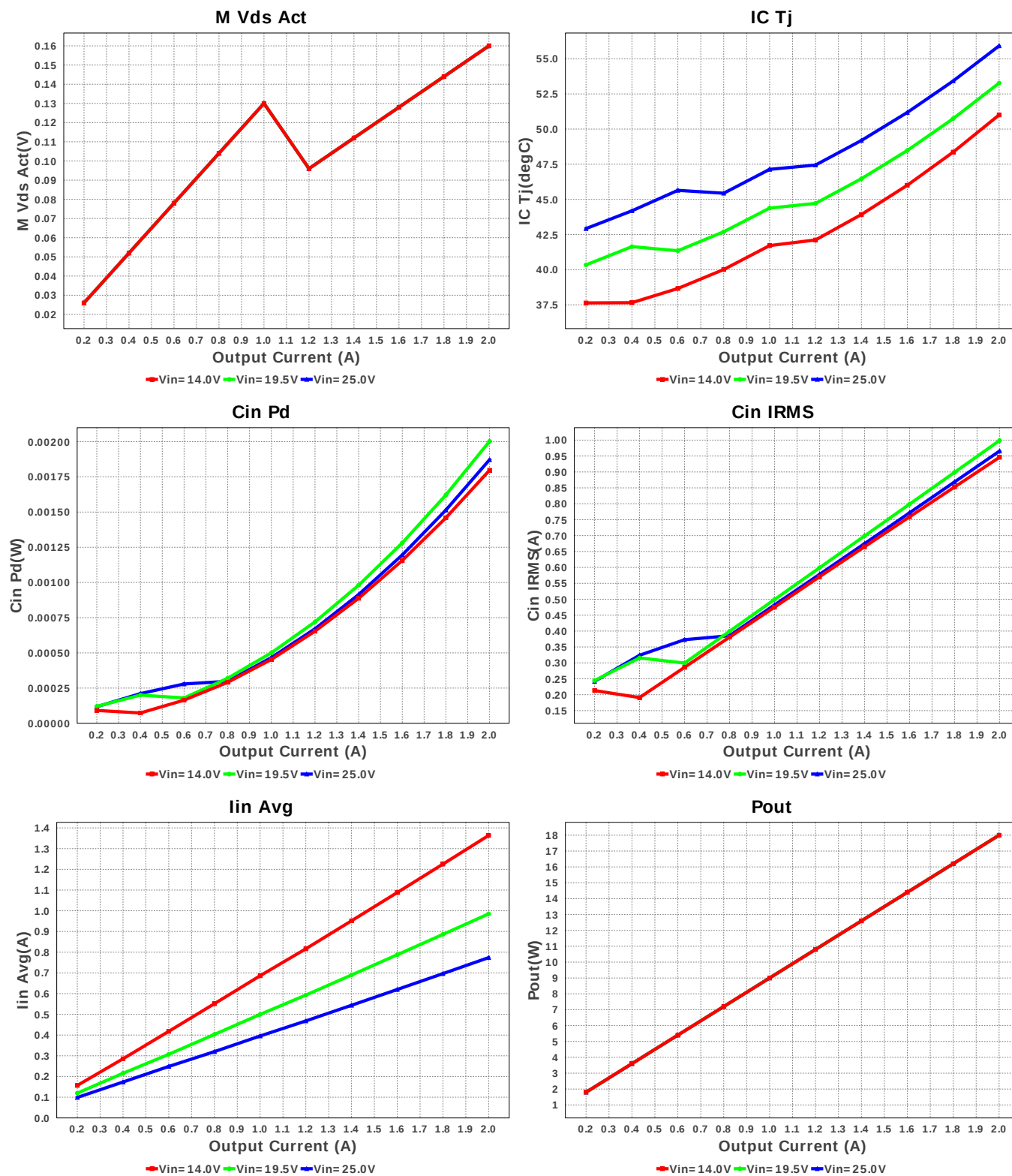


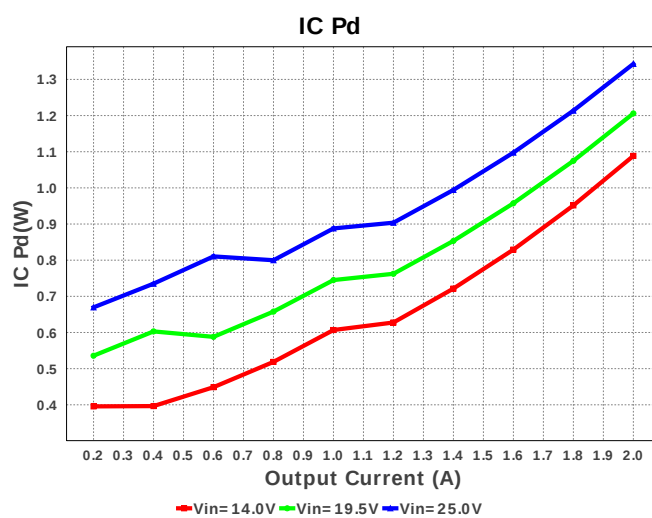
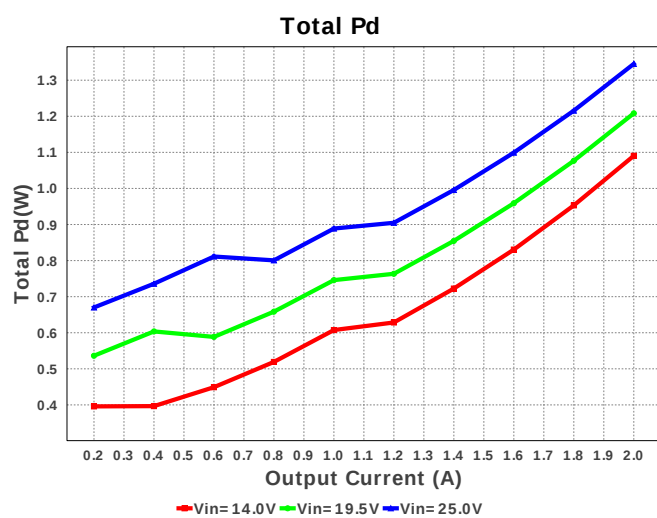
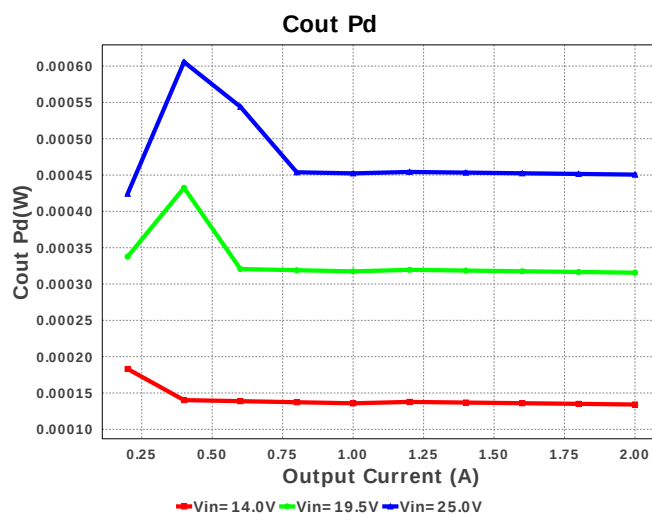
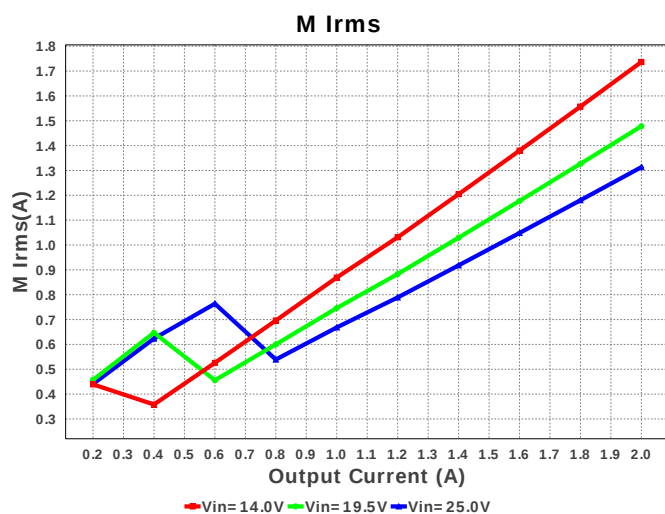
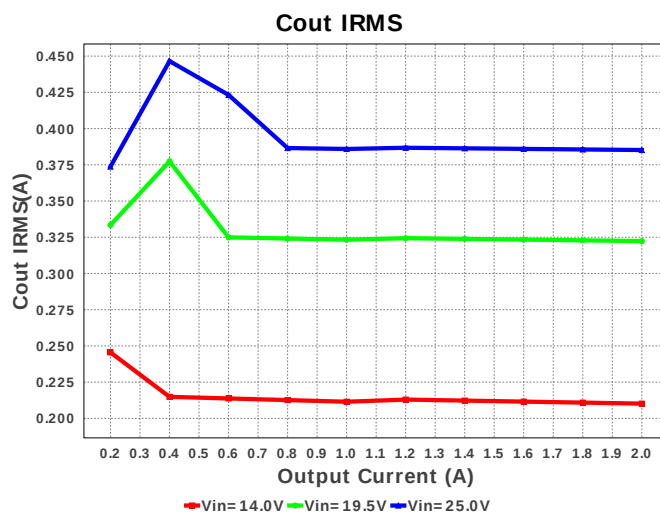
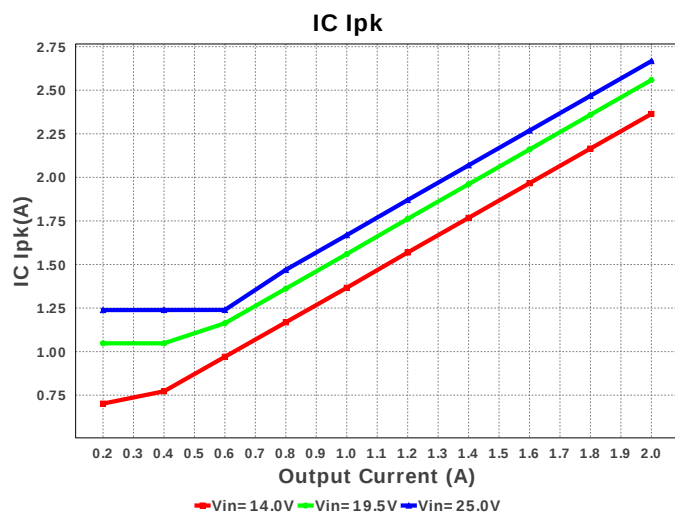
Electrical BOM

#	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	MuRata	GRM32ER7YA106KA12L Series= X7R	Cap= 10.0 uF ESR= 2.008 mOhm VDC= 35.0 V IRMS= 4.6772 A	1	\$0.22	1210_280 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-6ENF6341V Series= ERJ-6E	Res= 6.34 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-6ENF3321V Series= ERJ-6E	Res= 3.32 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-6ENF1623V Series= ERJ-6E	Res= 162.0 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 mm²





Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	965.522 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	385.197 mA	Current	Output capacitor RMS ripple current
3.	IC Ip _{pk}	2.667 A	Current	Peak switch current in IC
4.	I _{in} Avg	770.29 mA	Current	Average input current
5.	M1 Irms	1.307 A	Current	Q ₁ I _{avg}
6.	BOM Count	10	General	Total Design BOM count
7.	FootPrint	275.0 mm ²	General	Total Foot Print Area of BOM components
8.	Frequency	427.35 kHz	General	Switching frequency
9.	IC Tolerance	20.0 mV	General	IC Feedback Tolerance
10.	M V _{ds} Act	160.0 mV	General	Voltage drop across the MosFET
11.	P _{out}	18.0 W	General	Total output power

#	Name	Value	Category	Description
12.	Total BOM	\$10.31	General	Total BOM Cost
13.	Vout Actual	8.993 V	Op_Point	Vout Actual calculated based on selected voltage divider resistors
14.	Vout OP	9.0 V	Op_Point	Operational Output Voltage
15.	Duty Cycle	36.984 %	Op_point	Duty cycle
16.	Efficiency	93.472 %	Op_point	Steady state efficiency
17.	IC Tj	54.218 degC	Op_point	IC junction temperature
18.	ICThetaJA	19.3 degC/W	Op_point	IC junction-to-ambient thermal resistance
19.	IOUT_OP	2.0 A	Op_point	Iout operating point
20.	VIN_OP	25.0 V	Op_point	Vin operating point
21.	Vout p-p	4.052 mV	Op_point	Peak-to-peak output ripple voltage
22.	Cin Pd	1.872 mW	Power	Input capacitor power dissipation
23.	Cout Pd	450.62 μ W	Power	Output capacitor power dissipation
24.	IC Pd	1.255 W	Power	IC power dissipation
25.	Total Pd	1.257 W	Power	Total Power Dissipation
26.	Vout Tolerance	4.386 %		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	25.0	Maximum input voltage
3.	VinMin	14.0	Minimum input voltage
4.	Vout	9.0	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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