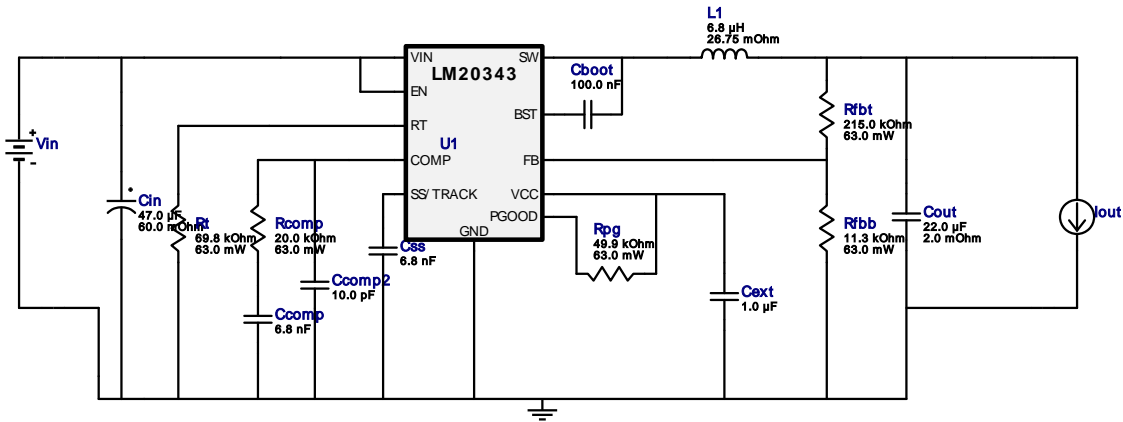

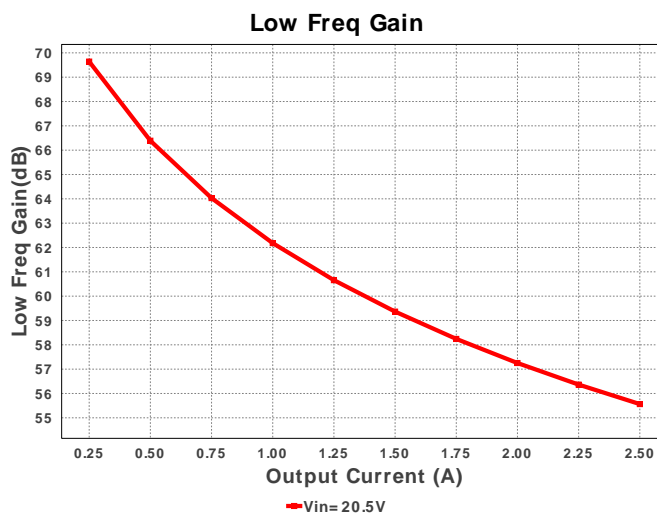
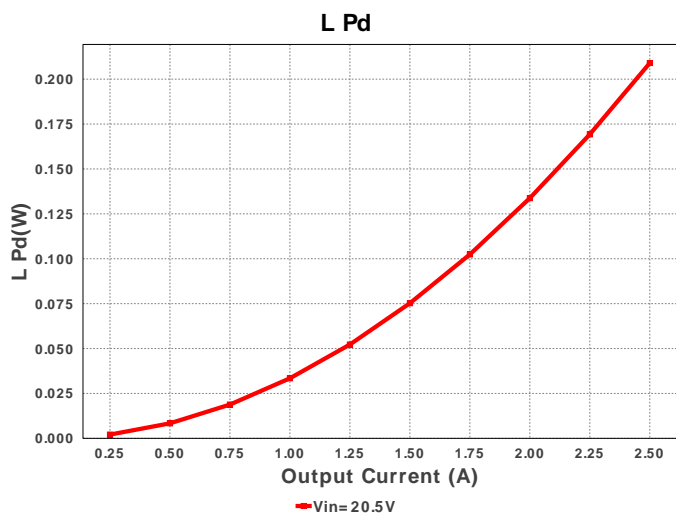
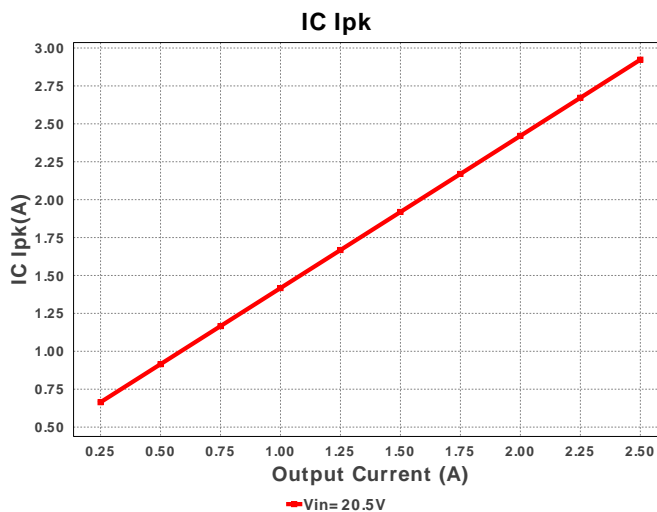
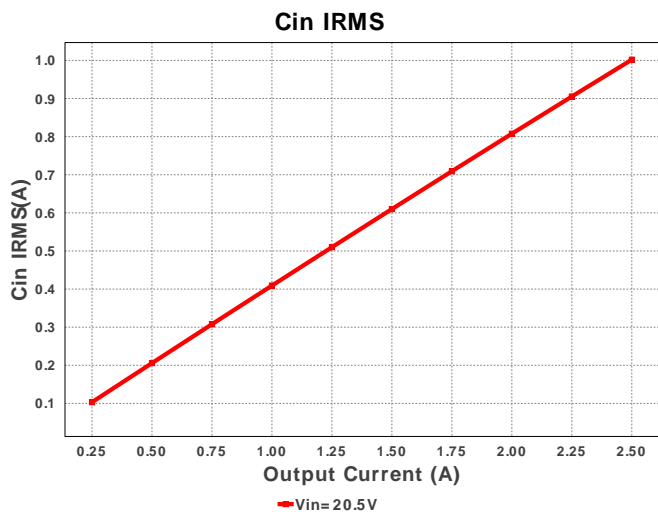
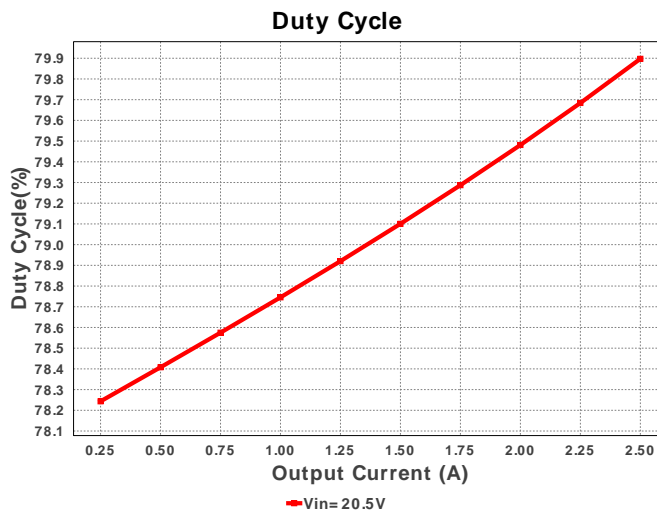
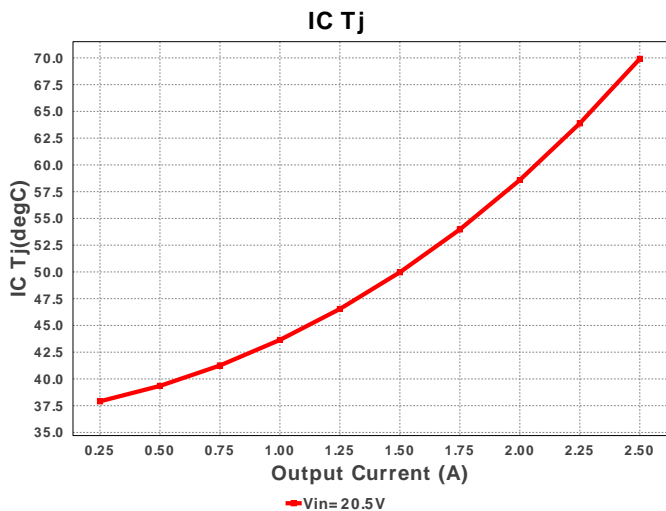


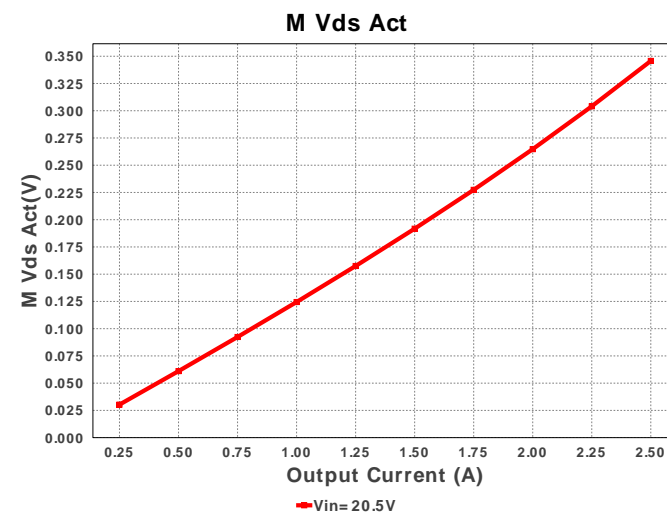
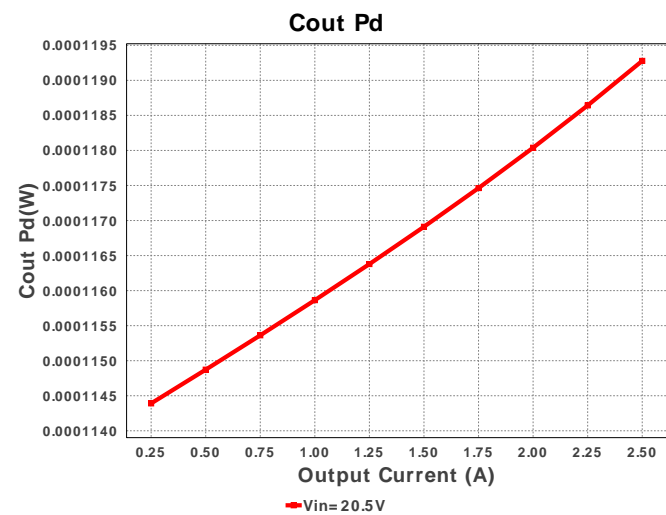
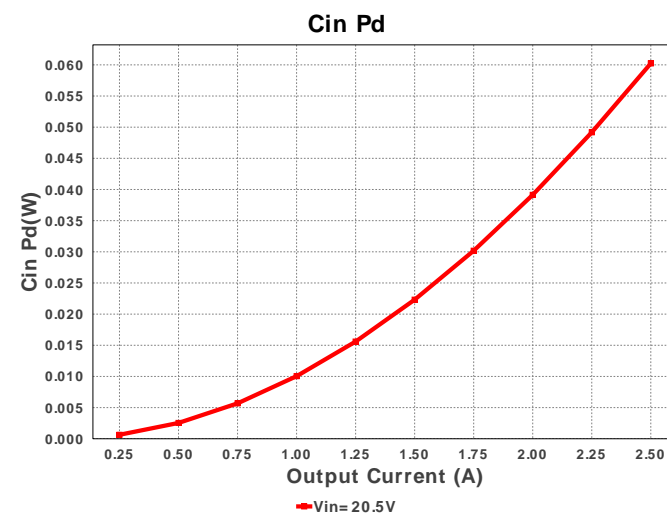
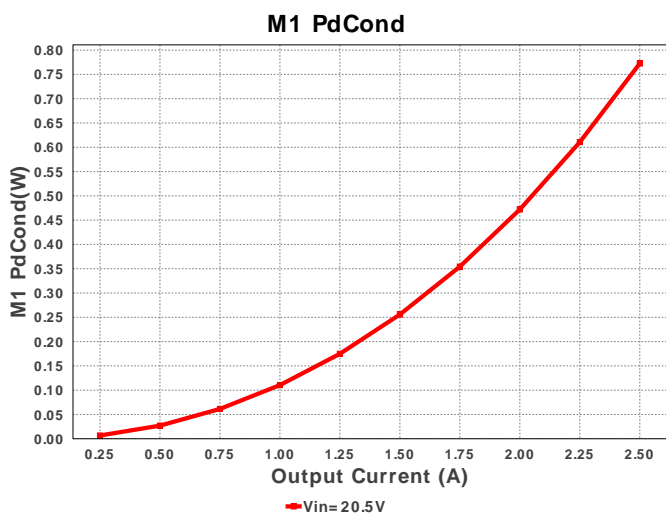
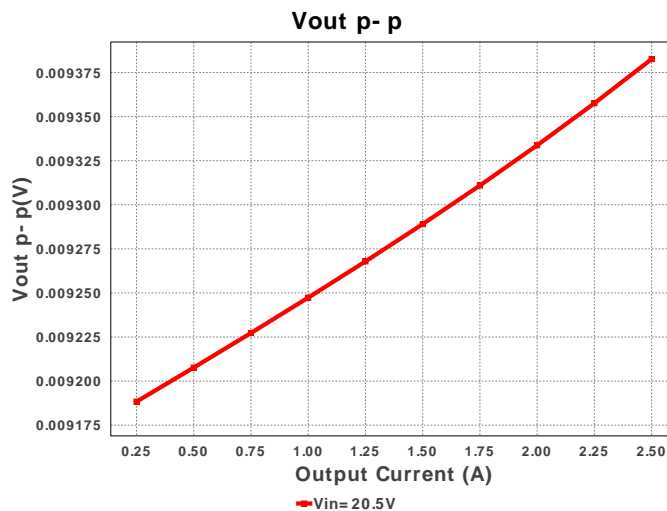
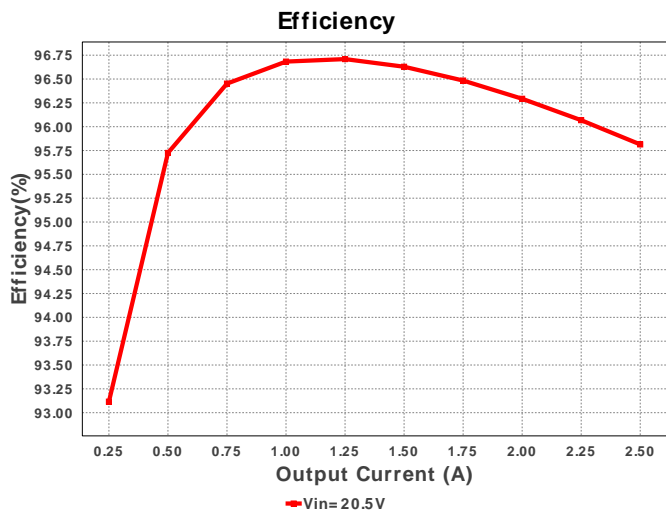
**WEBENCH<sup>®</sup> Design Report**

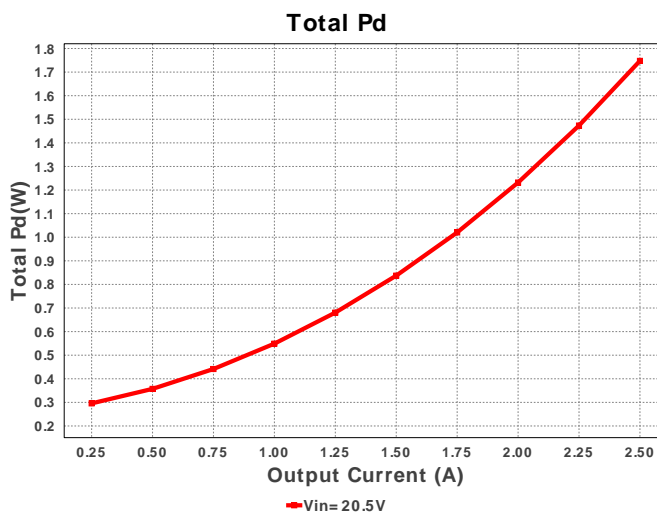
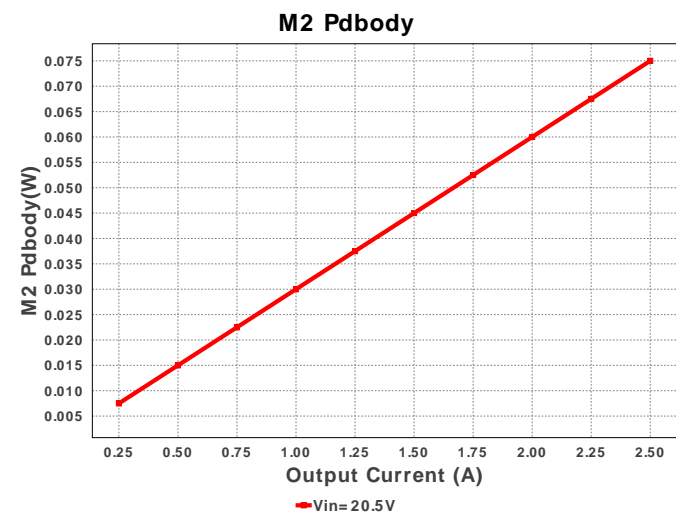
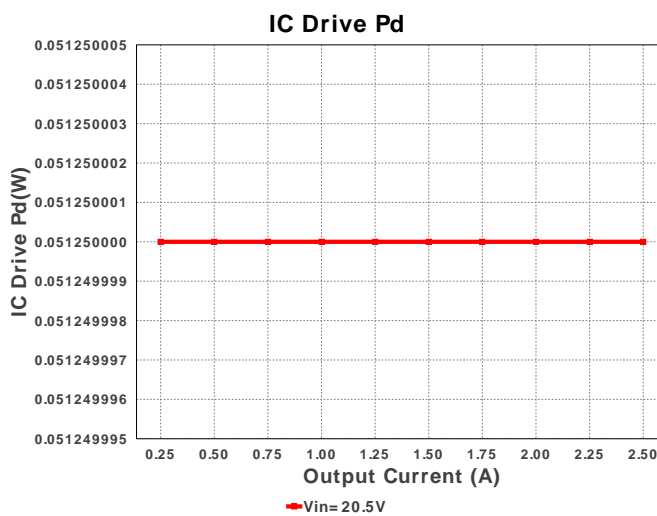
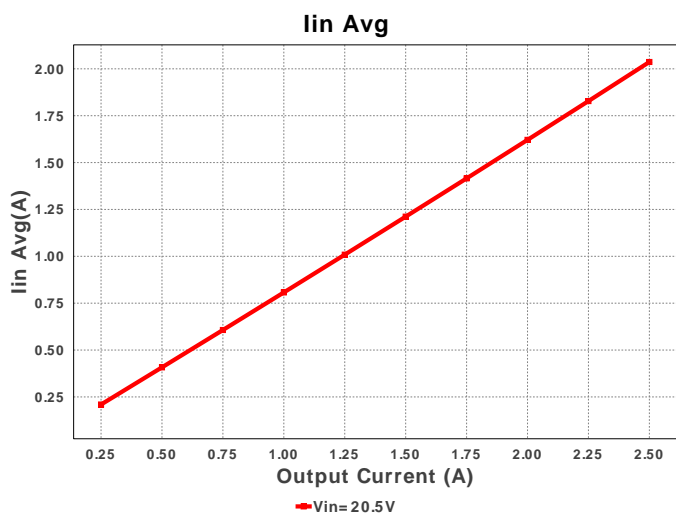
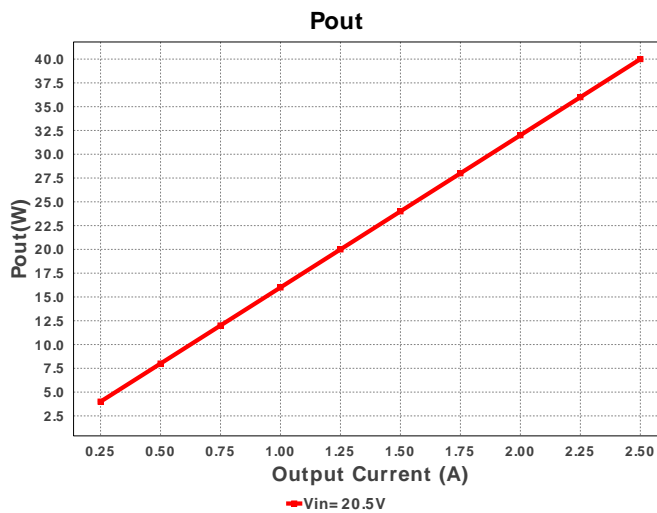
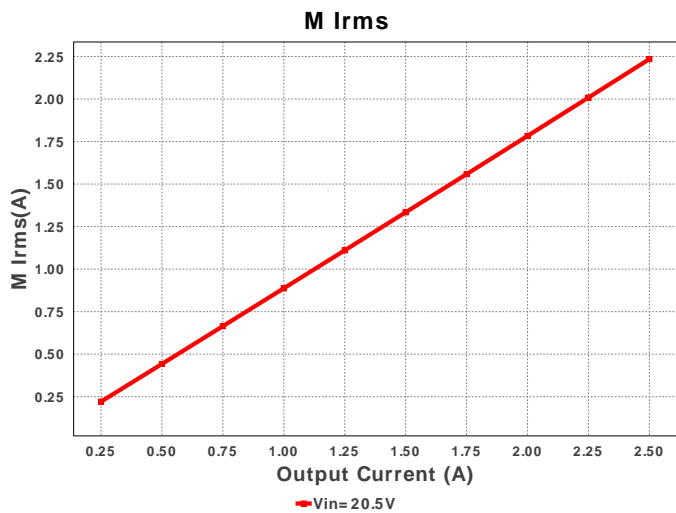
 Design : 3456224/910 LM20343MHX/NOPB  
 LM20343MHX/NOPB 20.5V-20.5V to 16.00V @ 2.5A

**Electrical BOM**

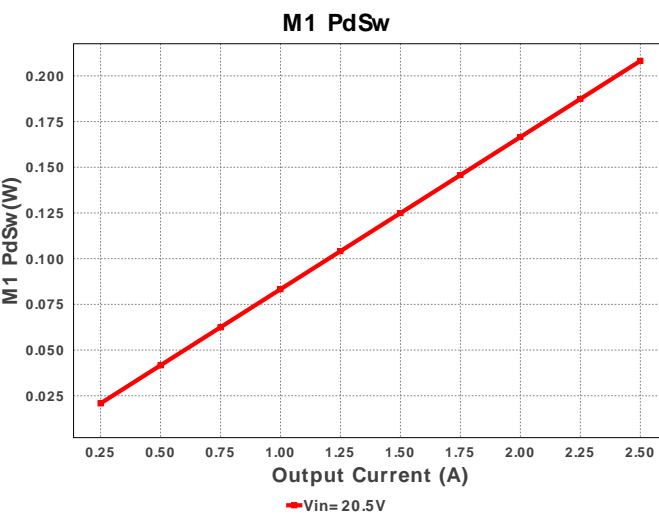
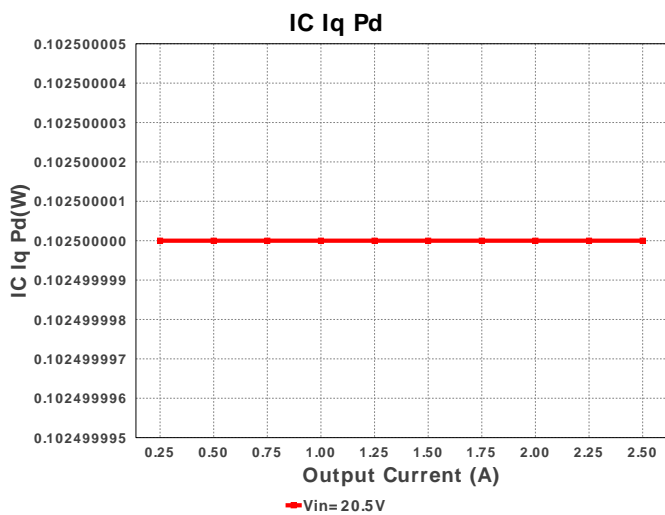
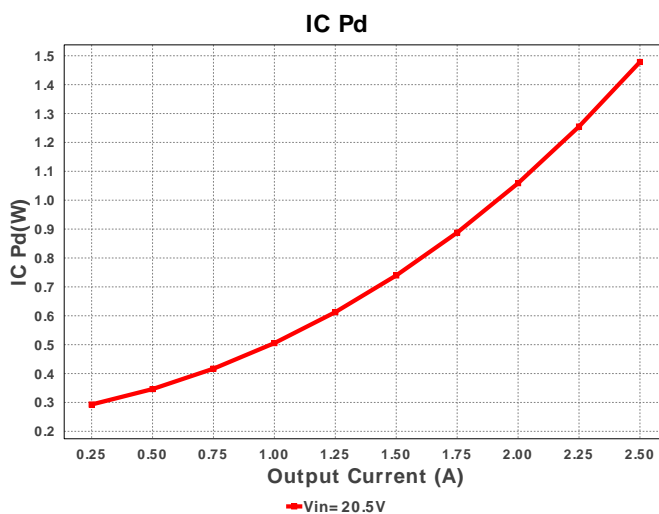
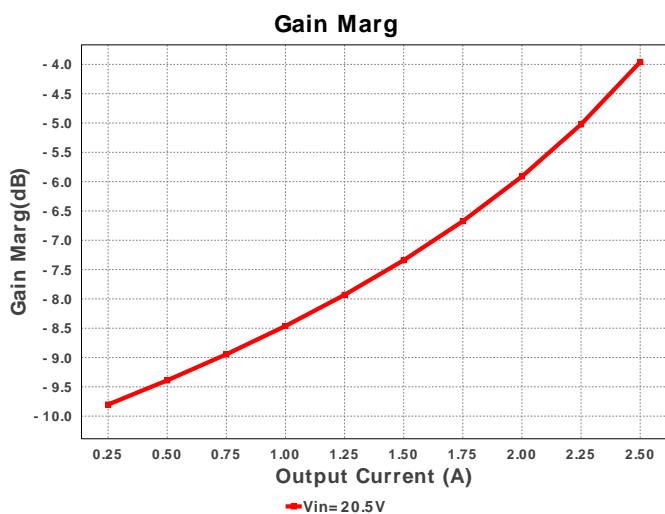
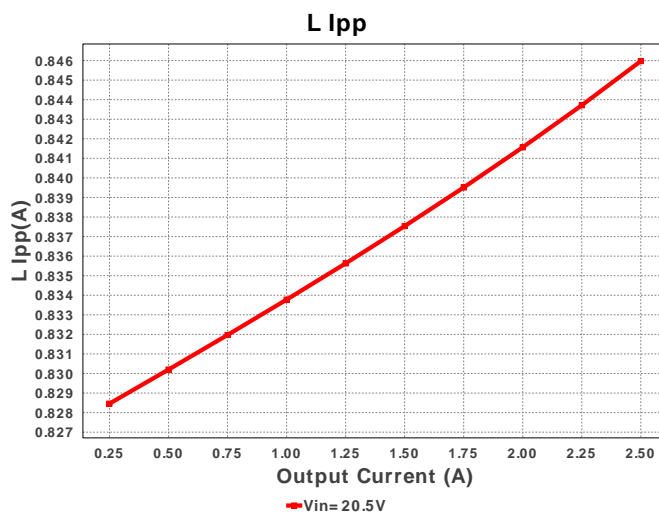
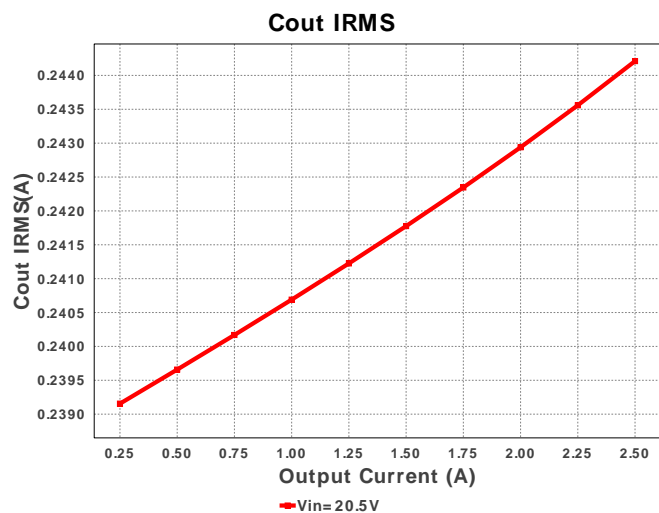
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cboot	MuRata	GRM21BR71E104KA01L Series= X7R	Cap= 100.0 nF VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	 0805 7 mm <sup>2</sup>
2.	Ccomp	Yageo America	CC0805KRX7R9BB682 Series= X7R	Cap= 6.8 nF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	 0805 7 mm <sup>2</sup>
3.	Ccomp2	Yageo America	CC0805JRNPO9BN100 Series= COG/NPO	Cap= 10.0 pF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	 0805 7 mm <sup>2</sup>
4.	Cext	MuRata	GRM155R61A105KE15D Series= X5R	Cap= 1.0 uF VDC= 10.0 V IRMS= 0.0 A	1	\$0.01	 0402 3 mm <sup>2</sup>
5.	Cin	Panasonic	EEHZA1V470P Series= ?	Cap= 47.0 uF ESR= 60.0 mOhm VDC= 35.0 V IRMS= 1.3 A	1	\$0.56	 SM_RADIAL_6.3AMM 80 mm <sup>2</sup>
6.	Cout	MuRata	GRM32ER61E226KE15L Series= X5R	Cap= 22.0 uF ESR= 2.0 mOhm VDC= 25.0 V IRMS= 3.67 A	1	\$0.28	 1210 15 mm <sup>2</sup>
7.	Css	Yageo America	CC0805KRX7R9BB682 Series= X7R	Cap= 6.8 nF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	 0805 7 mm <sup>2</sup>
8.	L1	Coilcraft	XAL5050-682MEB	L= 6.8 uH DCR= 26.75 mOhm	1	\$0.92	 XAL5050 54 mm <sup>2</sup>
9.	Rcomp	Vishay-Dale	CRCW040220K0FKED Series= CRCW..e3	Res= 20.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm <sup>2</sup>
10.	Rfbb	Vishay-Dale	CRCW040211K3FKED Series= CRCW..e3	Res= 11.3 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm <sup>2</sup>
11.	Rfbt	Vishay-Dale	CRCW0402215KFKED Series= CRCW..e3	Res= 215.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm <sup>2</sup>

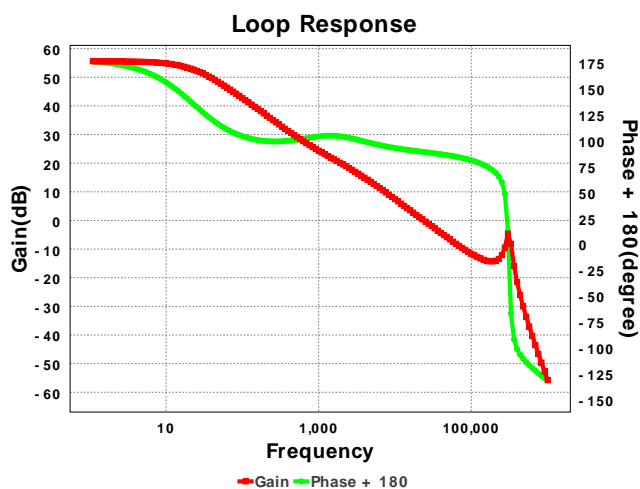
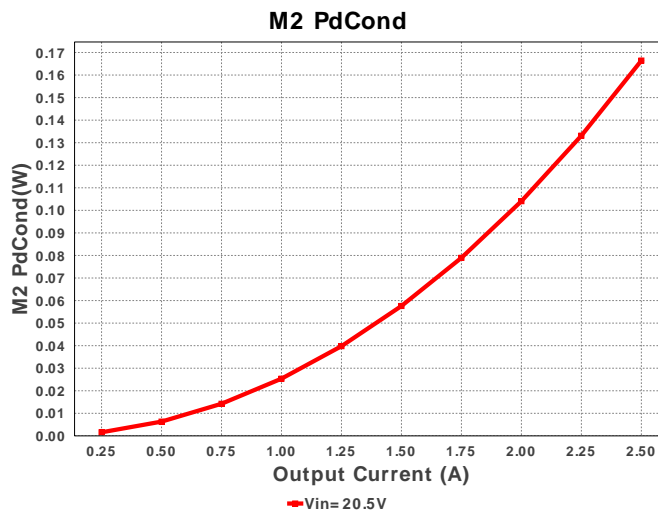
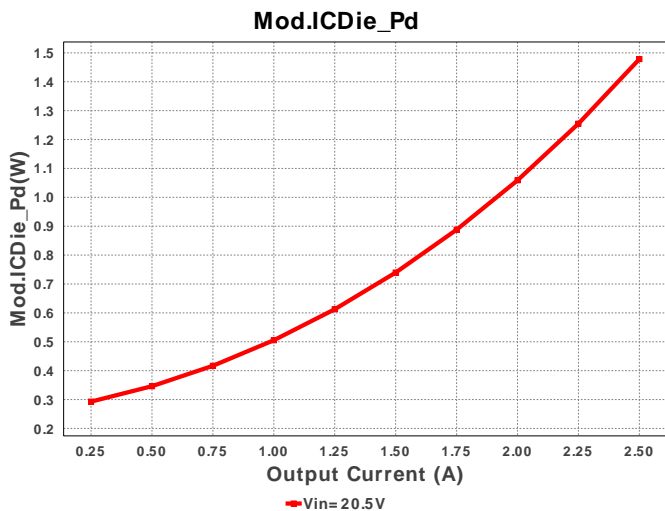
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
12.	Rpg	Vishay-Dale	CRCW040249K9FKED Series= CRCW...e3	Res= 49.9 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm <sup>2</sup>
13.	Rt	Vishay-Dale	CRCW040269K8FKED Series= CRCW...e3	Res= 69.8 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm <sup>2</sup>
14.	UI	Texas Instruments	LM20343MHX/NOPB	Switcher	1	\$1.85	 MXA20A 71 mm <sup>2</sup>











### Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	1.002 A	Current	Input capacitor RMS ripple current
2.	Cout IRMS	244.211 mA	Current	Output capacitor RMS ripple current
3.	IC Ipk	2.923 A	Current	Peak switch current in IC
4.	Iin Avg	2.036 A	Current	Average input current
5.	L Ipp	845.972 mA	Current	Peak-to-peak inductor ripple current
6.	M Irms	2.235 A	Current	MOSFET RMS current
7.	BOM Count	14	General	Total Design BOM count
8.	FootPrint	266.0 mm <sup>2</sup>	General	Total Foot Print Area of BOM components
9.	Frequency	625.0 kHz	General	Switching frequency
10.	IC Tolerance	12.0 mV	General	IC Feedback Tolerance
11.	M Vds Act	345.707 mV	General	Voltage drop across the MosFET
12.	Pout	40.0 W	General	Total output power
13.	Total BOM	\$3.71	General	Total BOM Cost
14.	Vout OP	16.0 V	Op_Point	Operational Output Voltage
15.	Cross Freq	23.94 kHz	Op_point	Bode plot crossover frequency
16.	Duty Cycle	79.897 %	Op_point	Duty cycle
17.	Efficiency	95.814 %	Op_point	Steady state efficiency
18.	Gain Marg	-3.959 dB	Op_point	Bode Plot Gain Margin
19.	IC Tj	69.917 degC	Op_point	IC junction temperature
20.	ICThetaJA	27.0 degC/W	Op_point	IC junction-to-ambient thermal resistance
21.	IOUT_OP	2.5 A	Op_point	Iout operating point
22.	Phase Marg	90.01 deg	Op_point	Bode Plot Phase Margin
23.	VIN_OP	20.5 V	Op_point	Vin operating point
24.	Vout p-p	9.383 mV	Op_point	Peak-to-peak output ripple voltage
25.	Cin Pd	60.23 mW	Power	Input capacitor power dissipation
26.	Cout Pd	119.278 μW	Power	Output capacitor power dissipation
27.	IC Drive Pd	51.25 mW	Power	Driver power dissipation
28.	IC Iq Pd	102.5 mW	Power	IC Iq Pd
29.	IC Pd	1.478 W	Power	IC power dissipation
30.	L Pd	208.984 mW	Power	Inductor power dissipation
31.	M1 PdCond	772.528 mW	Power	M1 MOSFET switching losses

#	Name	Value	Category	Description
32.	M1 PdSw	208.203 mW	Power	M1 MOSFET switching losses
33.	M2 PdCond	166.423 mW	Power	M2 MOSFET switching losses
34.	M2 Pdbody	75.0 mW	Power	Power dissipation through lower FET
35.	Total Pd	1.748 W	Power	Total Power Dissipation
36.	Low Freq Gain	55.564 dB	Unknown	Gain at 10Hz

## Design Inputs

#	Name	Value	Description
1.	Iout	2.5 A	Maximum Output Current
2.	Iout1	2.5 Amps	Output Current #1
3.	VinMax	20.5 V	Maximum input voltage
4.	VinMin	20.5 V	Minimum input voltage
5.	Vout	16.0 V	Output Voltage
6.	Vout1	16.0 Volt	Output Voltage #1
7.	base_pn	LM20343	Texas Instruments Base Part Number
8.	source	DC	Input Source Type
9.	ta	30.0 degC	Ambient temperature

## Design Assistance

1. LM20343 Product Folder : <http://www.ti.com/product/lm20343> : contains the data sheet and other resources.

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