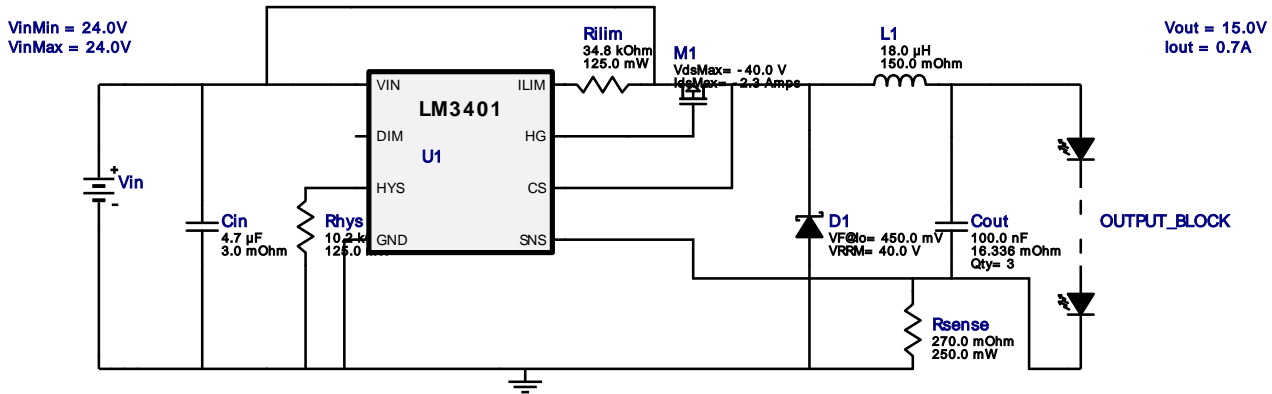
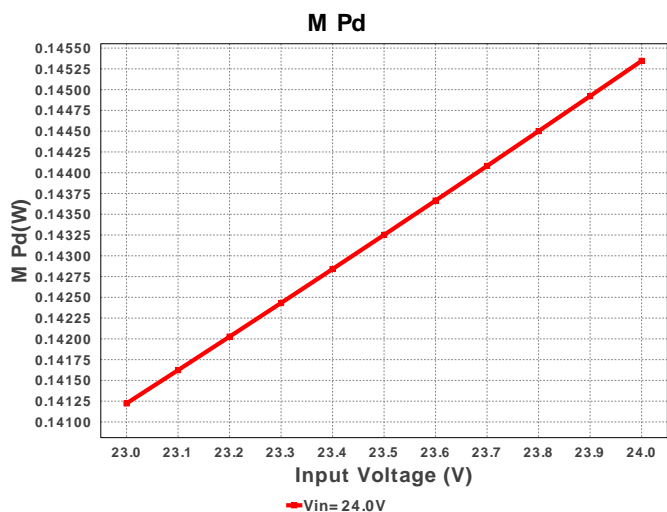
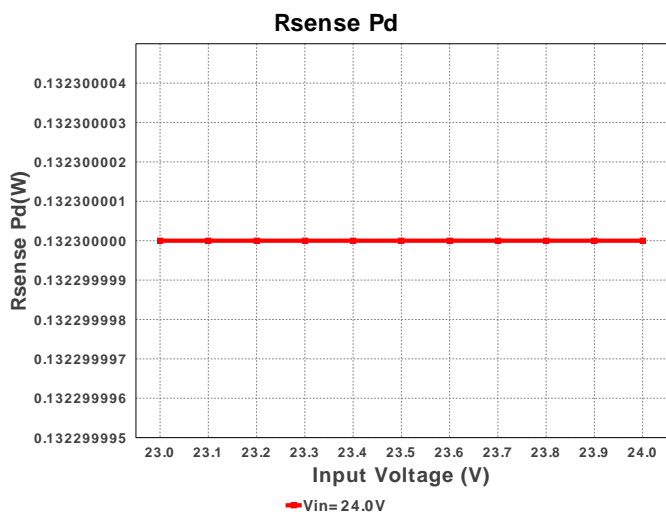
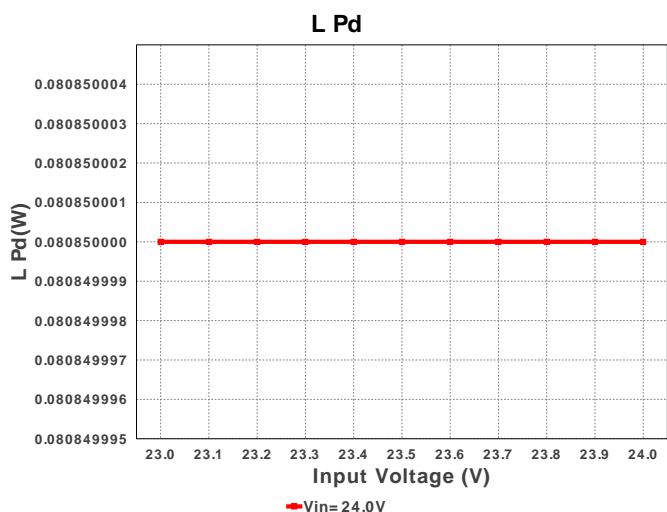
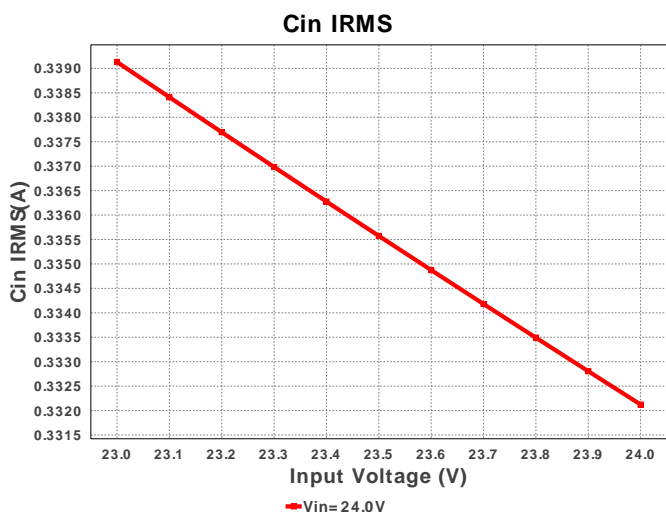
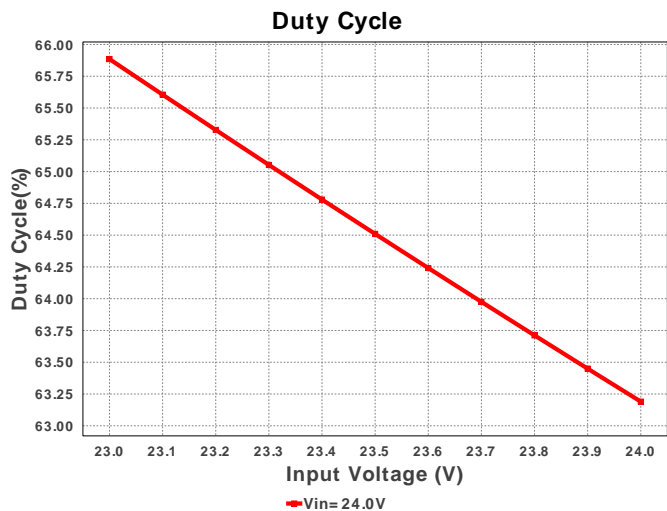
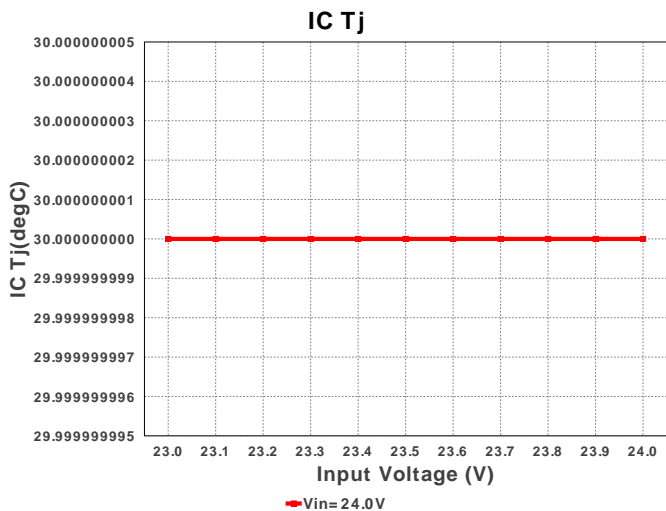
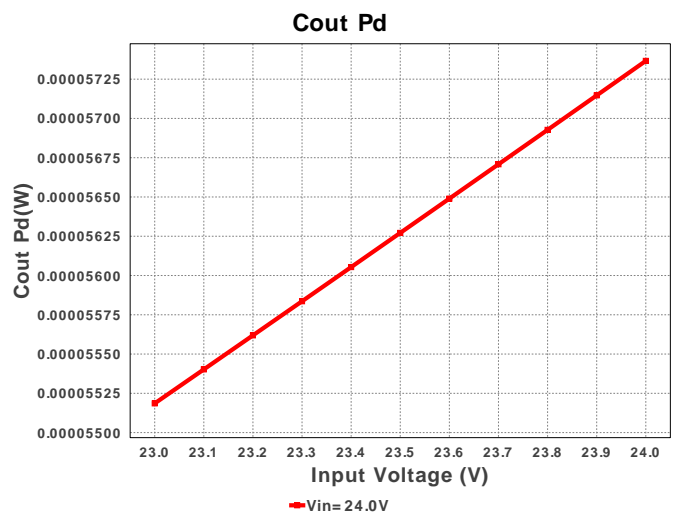
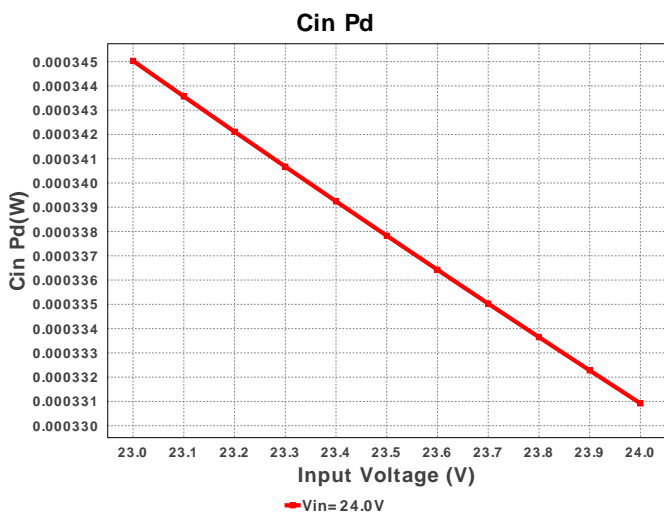
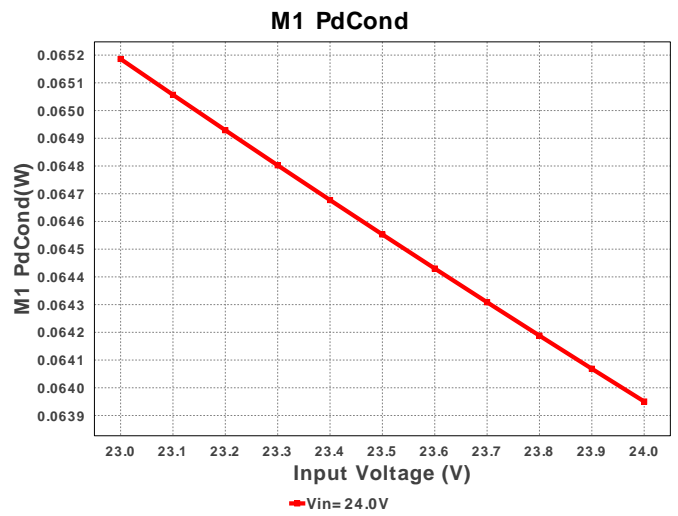
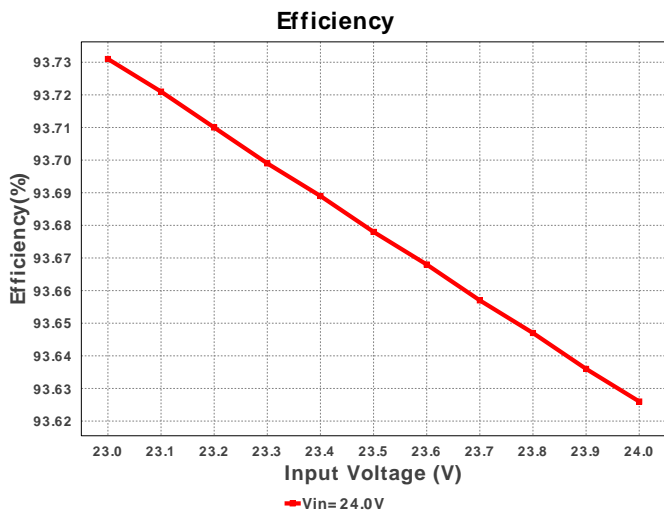
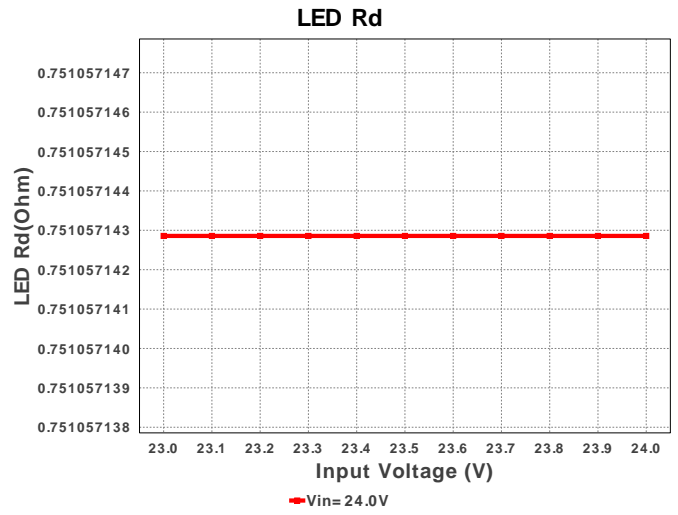
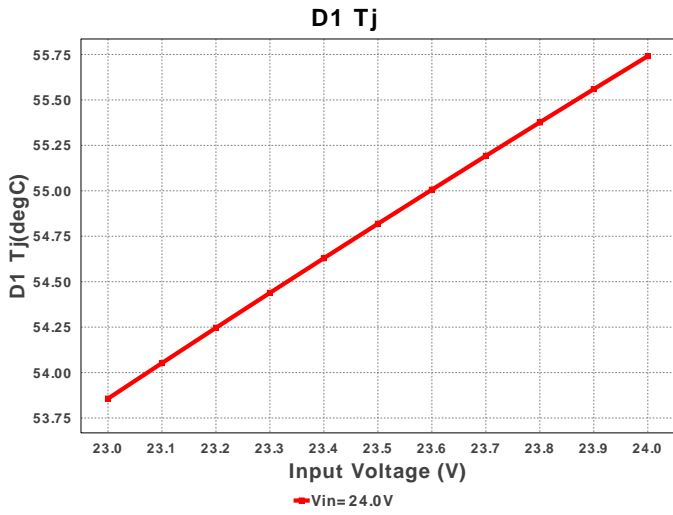


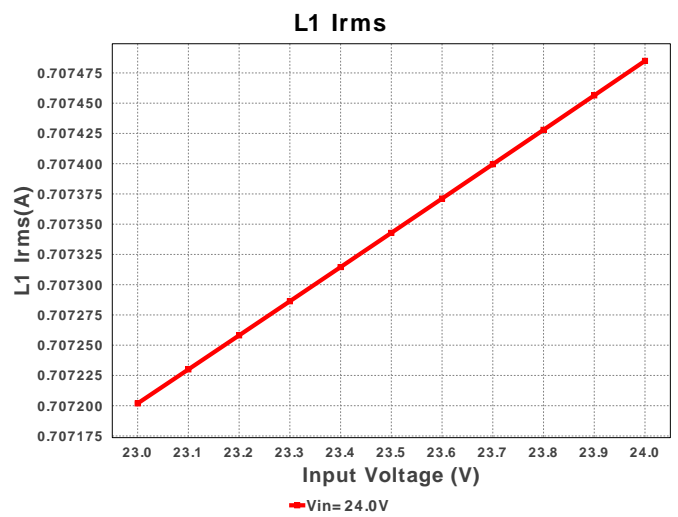
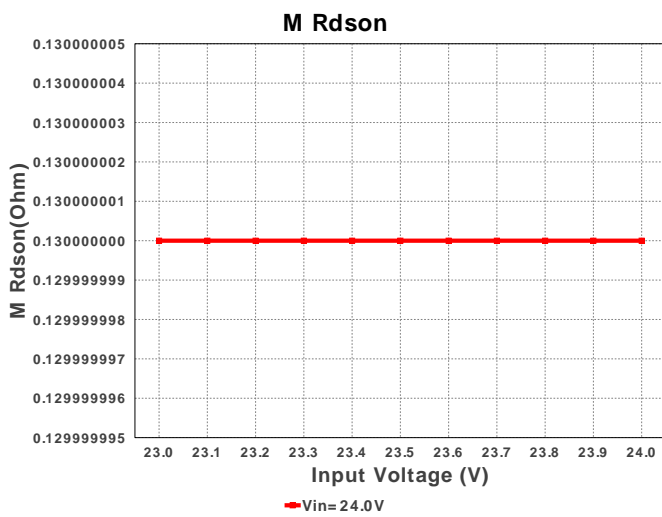
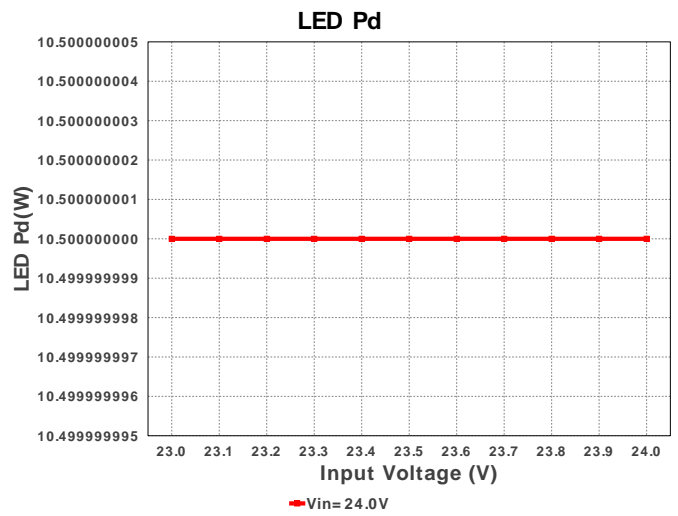
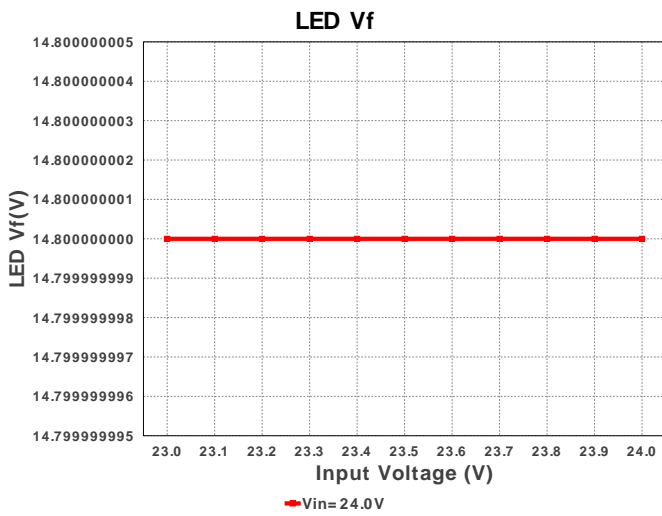
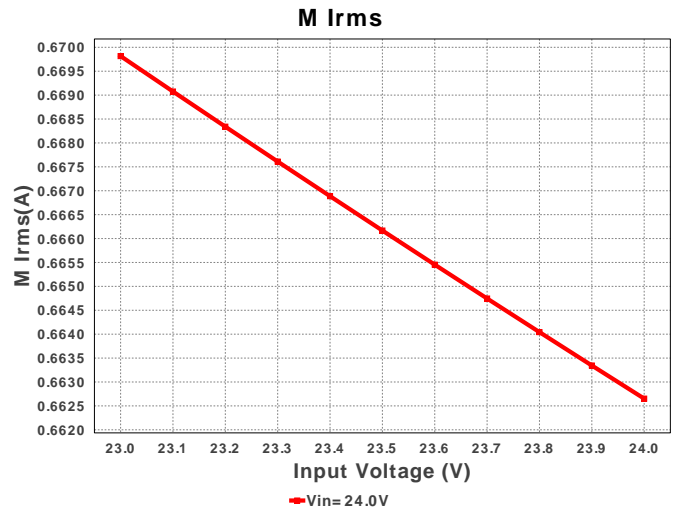
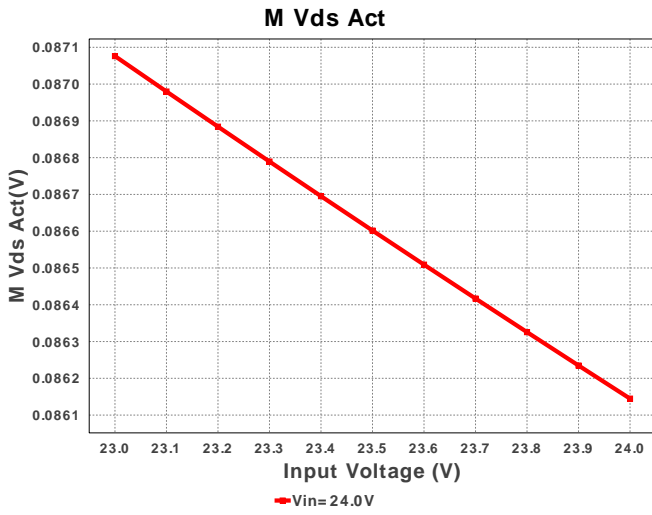
**WEBENCH® Design Report**

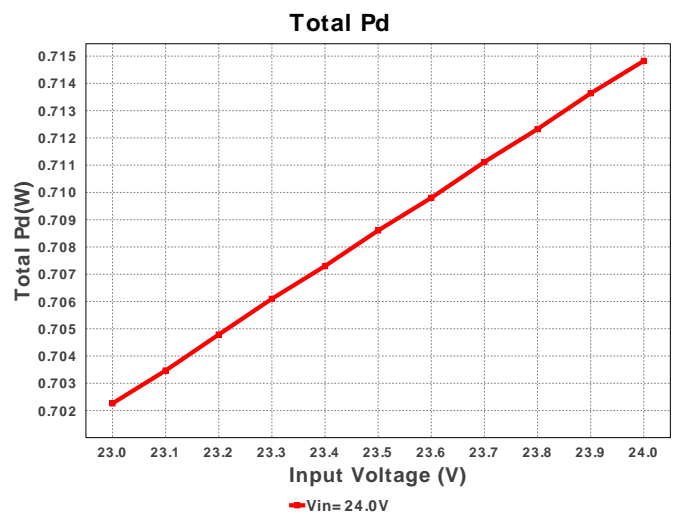
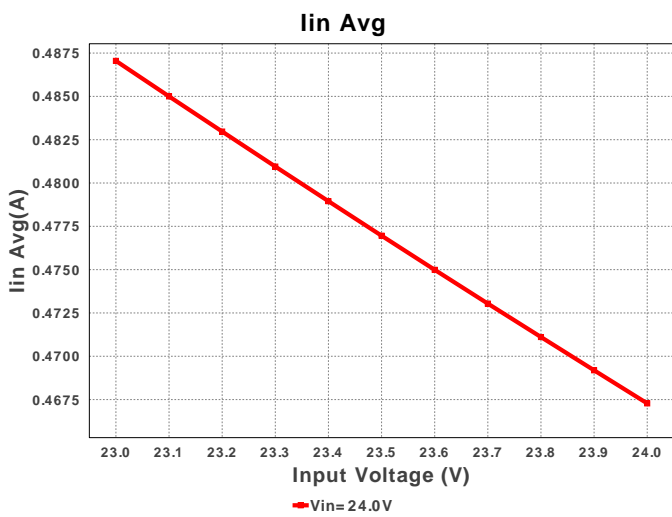
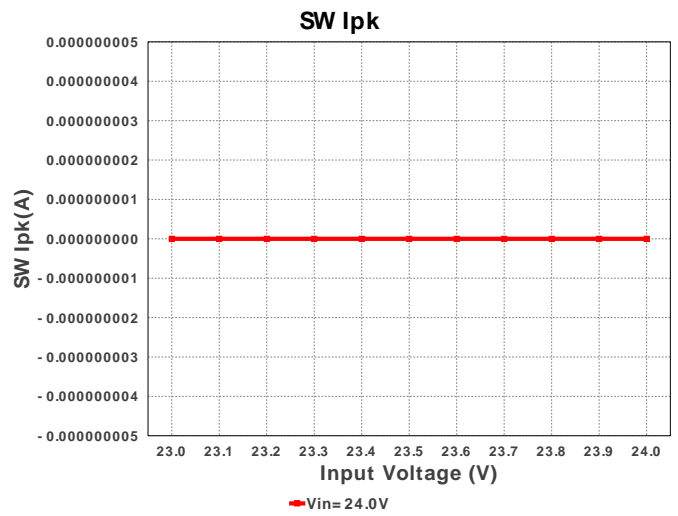
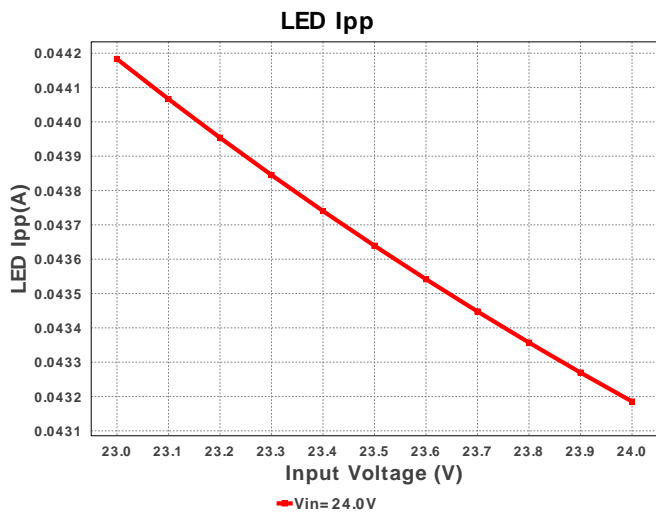
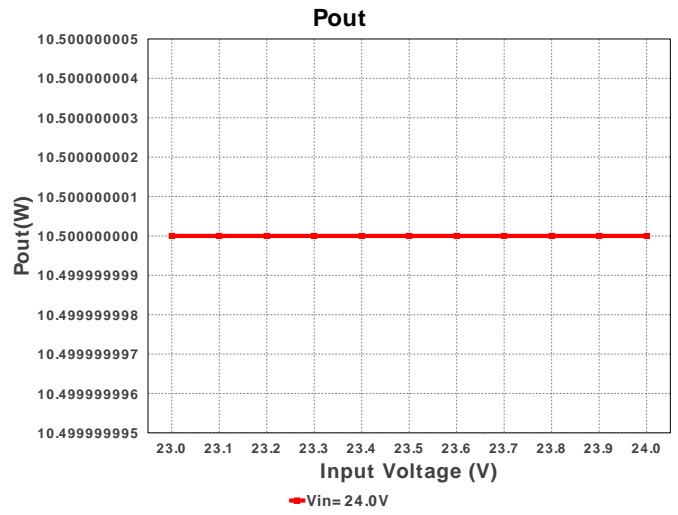
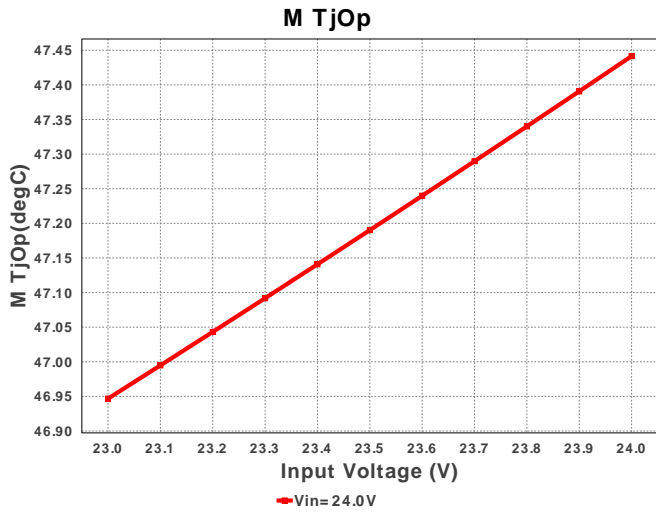
 Design : 3456113/673 LM3401MM/NOPB  
 LM3401MM/NOPB 24.0V-24.0V to 15.00V @ 0.7A

**Electrical BOM**

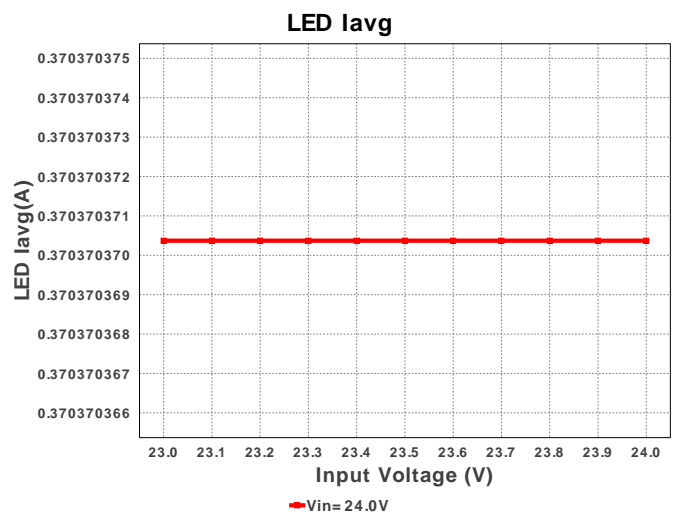
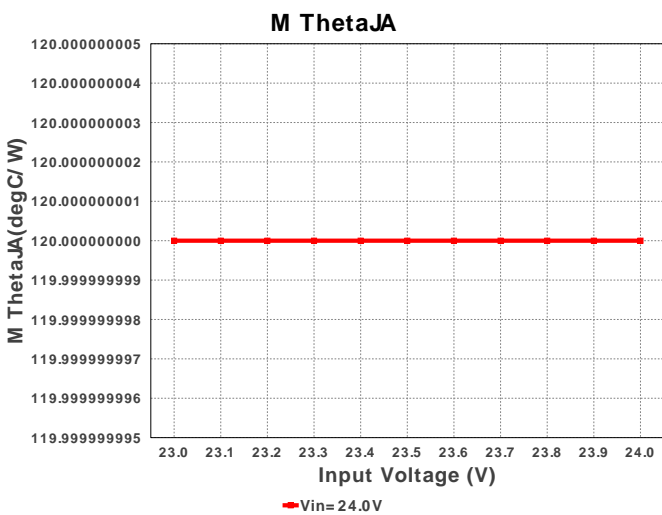
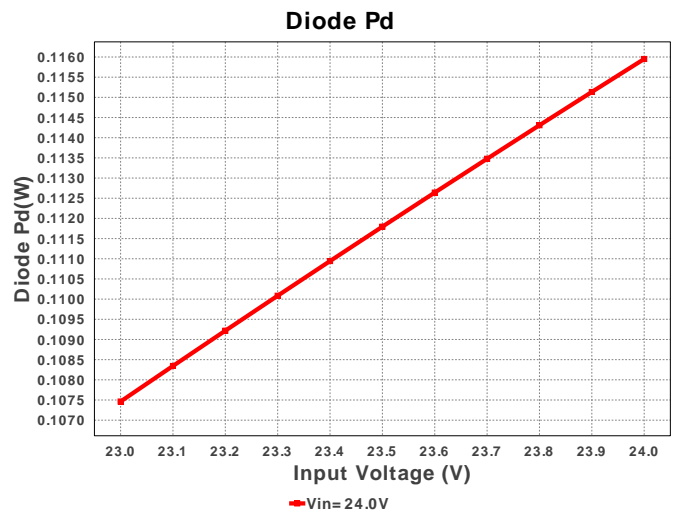
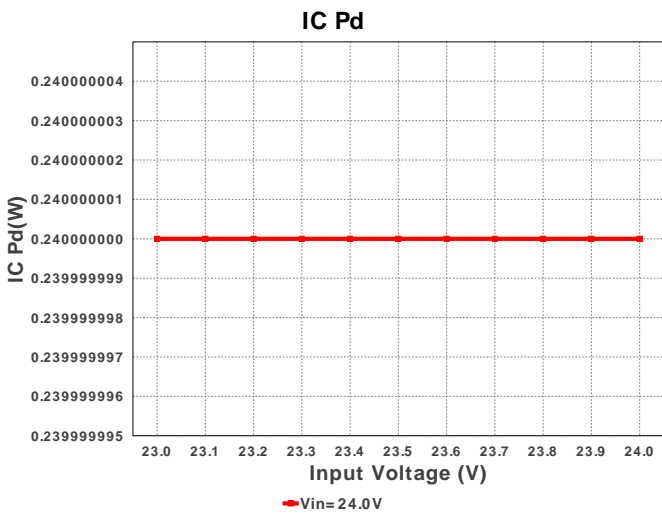
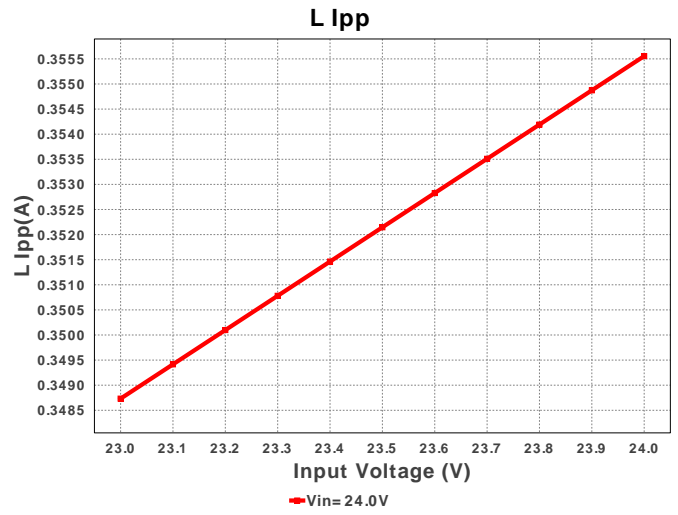
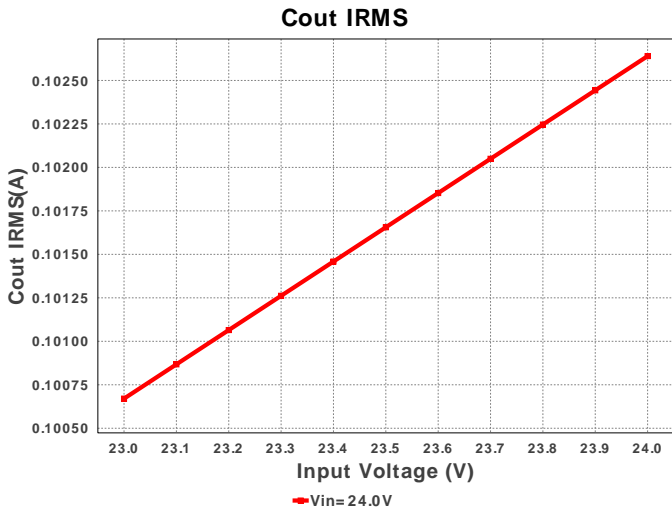
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cin	MuRata	GRM31CR71H475KA12L Series= X7R	Cap= 4.7 uF ESR= 3.0 mOhm VDC= 50.0 V IRMS= 4.98 A	1	\$0.07	 1206 11 mm <sup>2</sup>
2.	Cout	TDK	C1608X7R1H104K Series= X7R	Cap= 100.0 nF ESR= 16.336 mOhm VDC= 50.0 V IRMS= 0.0 A	3	\$0.01	 0603 5 mm <sup>2</sup>
3.	D1	Diodes Inc.	1N5819HW-7-F	VF@Io= 450.0 mV VRRM= 40.0 V	1	\$0.08	 SOD-123 13 mm <sup>2</sup>
4.	D_LED	Cree	XPGWHT-L1-0000-00F51	LED	10	\$1.59	 xlampxpg 20 mm <sup>2</sup>
5.	L1	Bourns	SDR0604-180YL	L= 18.0 uH DCR= 150.0 mOhm	1	\$0.18	 SDR0604 61 mm <sup>2</sup>
6.	M1	Vishay-Siliconix	SI2319DS-T1-E3	VdsMax= -40.0 V IdsMax= -2.3 A	1	\$0.28	 SOT-23 14 mm <sup>2</sup>
7.	Rhys	Panasonic	ERJ-6ENF1022V Series= 225	Res= 10.2 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7 mm <sup>2</sup>
8.	Rilim	Panasonic	ERJ-6ENF3482V Series= 225	Res= 34.8 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7 mm <sup>2</sup>
9.	Rsense	Panasonic	ERJ-8RQFR27V Series= 229	Res= 270.0 mOhm Power= 250.0 mW Tolerance= 1.0%	1	\$0.04	 1206 11 mm <sup>2</sup>
10.	U1	Texas Instruments	LM3401MM/NOPB	Switcher	1	\$0.60	 MUA08A 24 mm <sup>2</sup>

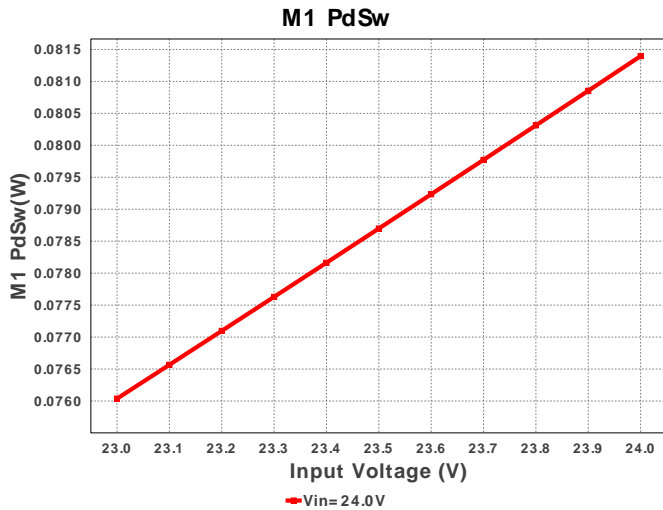












## Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	330.334 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	103.24 mA	Current	Output capacitor RMS ripple current
3.	Iin Avg	473.05 mA	Current	Average input current
4.	L Ipp	357.63 mA	Current	Peak-to-peak inductor ripple current
5.	L1 Irms	707.572 mA	Current	Inductor ripple current
6.	LED Iavg	370.37 mA	Current	LED Average Current
7.	LED Ipp	43.943 mA	Current	LED Ripple Current
8.	M Irms	667.055 mA	Current	MOSFET RMS ripple current
9.	SW Ipk	0.0 A	Current	Peak switch current
10.	BOM Count	21	General	Total Design BOM count
11.	FootPrint	359.0 mm <sup>2</sup>	General	Total Foot Print Area of BOM components
12.	Frequency	875.0 kHz	General	Switching frequency
13.	IC Tolerance	12.0 mV	General	IC Feedback Tolerance
14.	M Rdsn	130.0 mOhm	General	Drain-Source On-resistance
15.	M Vds Act	86.717 mV	General	M Vds
16.	Pout	10.64 W	General	Total output power
17.	Total BOM	\$17.2	General	Total BOM Cost
18.	D1 Tj	55.169 degC	Op_Point	D1 junction temperature
19.	Vout OP	15.2 V	Op_Point	Operational Output Voltage
20.	Duty Cycle	64.008 %	Op_point	Duty cycle
21.	Efficiency	93.719 %	Op_point	Steady state efficiency
22.	IC Tj	30.0 degC	Op_point	IC junction temperature
23.	ICThetaJA	151.0 degC/W	Op_point	IC junction-to-ambient thermal resistance
24.	IOUT_OP	700.0 mA	Op_point	Iout operating point
25.	LED Rd	751.057 mOhm	Op_point	LED DynamicResistance
26.	LED Vf	15.0 V	Op_point	Total LED Forward Calculated Voltage
27.	M ThetaJA	120.0 degC/W	Op_point	MOSFET junction-to-ambient thermal resistance
28.	M TjOp	47.548 degC	Op_point	MOSFET junction temperature
29.	VIN_OP	24.0 V	Op_point	Vin operating point
30.	Cin Pd	327.362 μW	Power	Input capacitor power dissipation
31.	Cout Pd	58.039 μW	Power	Output capacitor power dissipation
32.	Diode Pd	113.374 mW	Power	Diode power dissipation
33.	IC Pd	240.0 mW	Power	IC power dissipation
34.	L Pd	80.85 mW	Power	Inductor power dissipation
35.	LED Pd	10.5 W	Power	LED Power Dissipation
36.	M Pd	146.232 mW	Power	MOSFET power dissipation
37.	M1 PdCond	64.836 mW	Power	M1 MOSFET conduction losses
38.	M1 PdSw	81.396 mW	Power	M1 MOSFET switching losses
39.	Rsense Pd	132.3 mW	Power	LED Current Rsns Power Dissipation
40.	Total Pd	713.094 mW	Power	Total Power Dissipation

## Design Inputs

#	Name	Value	Description
1.	Iout	700.0 m	Maximum Output Current
2.	Iout1	700.0 m	Output Current #1
3.	VinMax	24.0	Maximum input voltage
4.	VinMin	24.0	Minimum input voltage
5.	Vout	15.0	Output Voltage
6.	Vout1	15.0	Output Voltage #1
7.	application	LED_DRIVER	LED Application
8.	base_pn	LM3401	Texas Instruments Base Part Number

#	Name	Value	Description
9.	isLEDArchitect	N	LED Architect Project
10.	ledparallel	2.0	Number of LED in parallel
11.	ledpartnumber	XPGWHT- L1-0000-00F51	LED Part number
12.	ledseries	5.0	Number of LED in series
13.	line_fsw	60.0	AC Line Frequency
14.	source	DC	Input Source Type
15.	ta	30.0	Ambient temperature

## Design Assistance

1. LM3401 Product Folder : <http://www.ti.com/product/LM3401> : contains the data sheet and other resources.

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**You should completely validate and test your design implementation to confirm the system functionality for your application prior to production.**

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