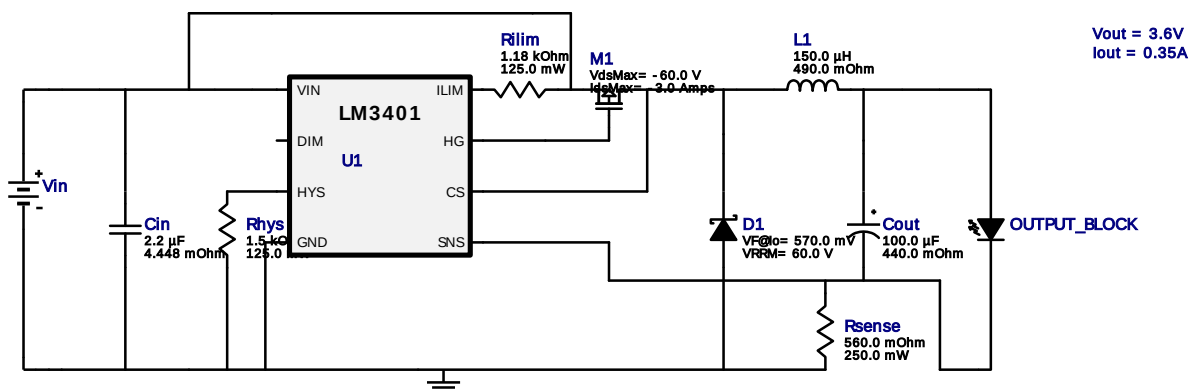
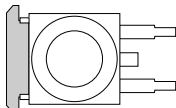


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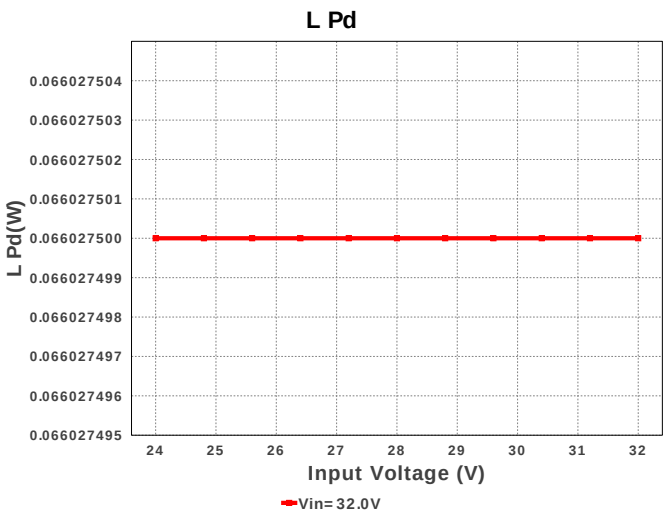
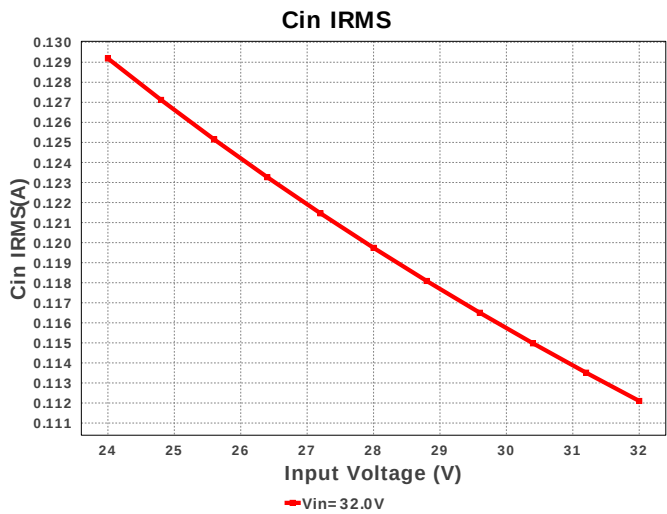
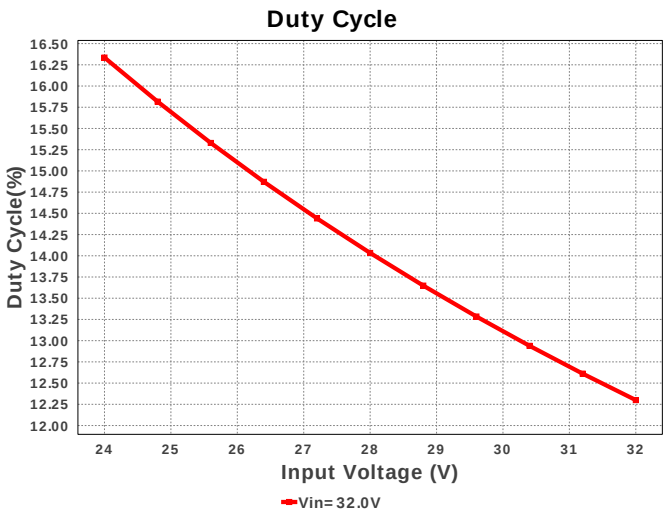
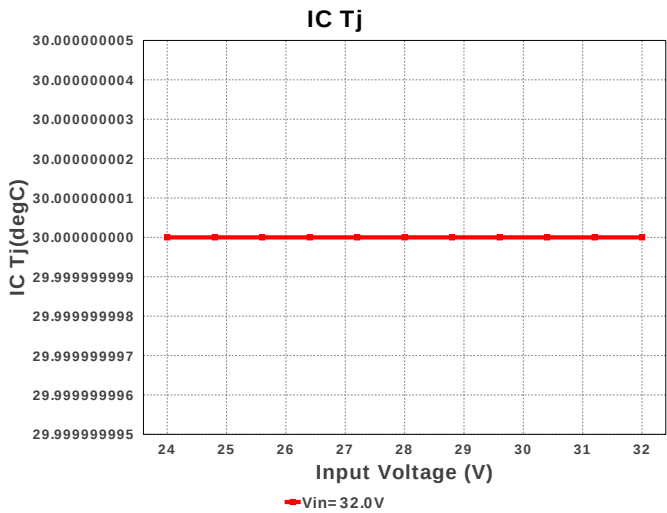
Design : 3876120/15 LM3401MMX/NOPB
LM3401MMX/NOPB 24.0V-32.0V to 3.60V @ 0.35A



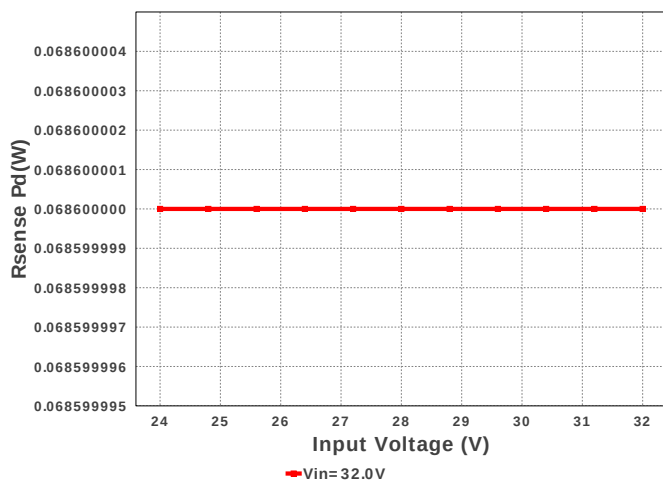
Electrical BOM

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cin	MuRata	GRM31CR71H225KA88L Series= X7R	Cap= 2.2 uF ESR= 4.448 mOhm VDC= 50.0 V IRMS= 2.2252 A	1	\$0.05	 1206_190 11 mm ²
2.	Cout	Nichicon	UUD1A101MCL1GS Series= uD	Cap= 100.0 uF ESR= 440.0 mOhm VDC= 10.0 V IRMS= 230.0 mA	1	\$0.10	 SM_RADIAL_6.3AMM 80 mm ²
3.	D1	NXP Semiconductor	PMEG6010CEH,115	VF@Io= 570.0 mV VRRM= 60.0 V	1	\$0.04	 SOD-123F 12 mm ²
4.	D_LED	Avago	ASMT-MY06-NKL00	LED	1	\$2.39	 asmt_m 216 mm ²
5.	L1	TDK	VLP8040T-151M	L= 150.0 uH DCR= 490.0 mOhm	1	\$0.22	 VLP8040 113 mm ²
6.	M1	Fairchild Semiconductor	FDC5614P	VdsMax= -60.0 V IdsMax= -3.0 Amps	1	\$0.23	 SOT-23-6 15 mm ²
7.	Rhys	Panasonic	ERJ-6ENF1501V Series= ERJ-6E	Res= 1.5 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7 mm ²
8.	Rilim	Panasonic	ERJ-6ENF1181V Series= ERJ-6E	Res= 1.18 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7 mm ²
9.	Rsense	Panasonic	ERJ-8RQFR56V Series= ERJ-8R	Res= 560.0 mOhm Power= 250.0 mW Tolerance= 1.0%	1	\$0.04	 1206 11 mm ²

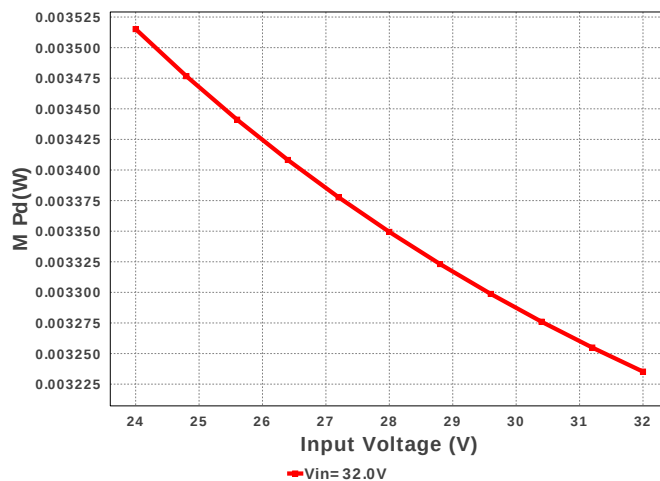
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
10.	U1	Texas Instruments	LM3401MMX/NOPB	Switcher	1	\$0.60	 MUA08A 24 mm²



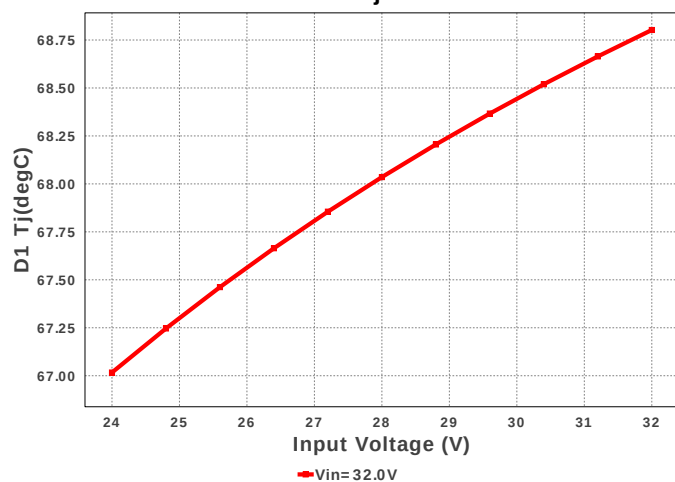
Rsense Pd



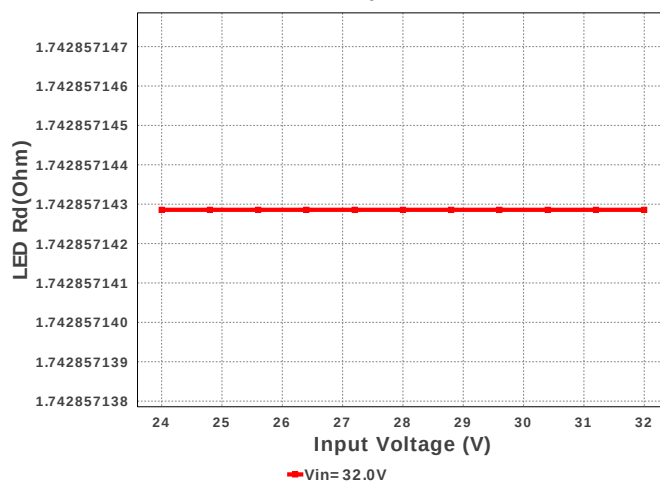
M Pd



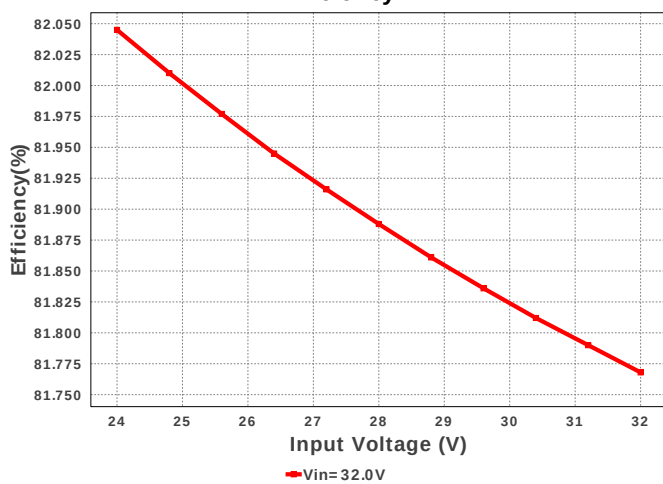
D1 Tj



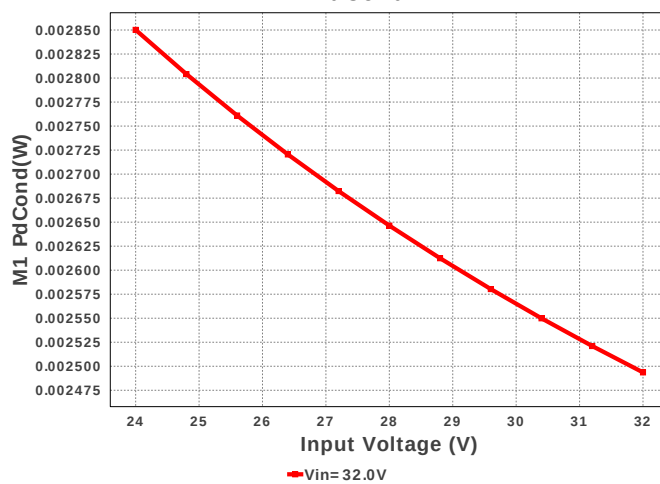
LED Rd

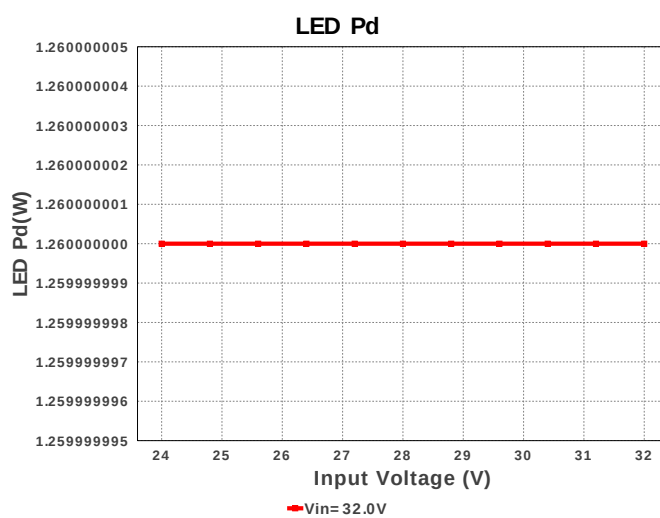
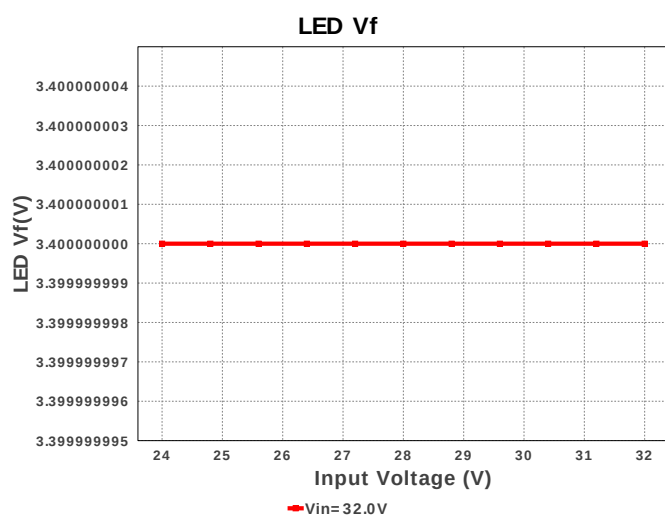
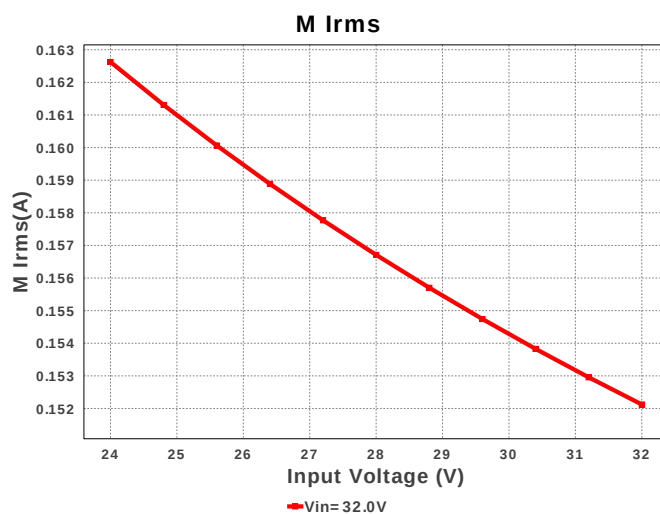
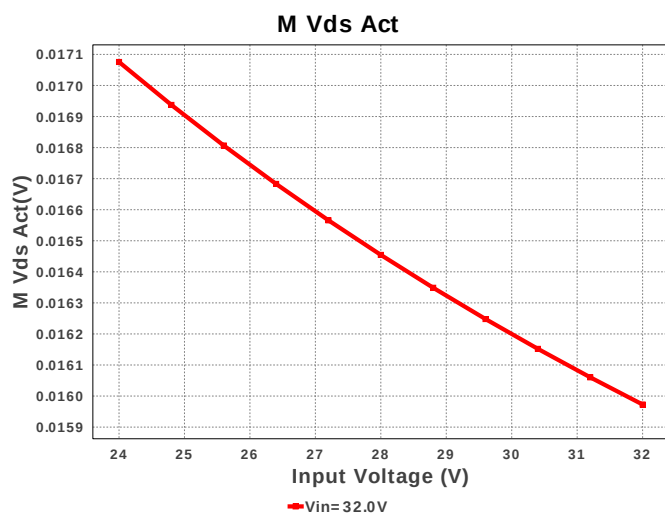
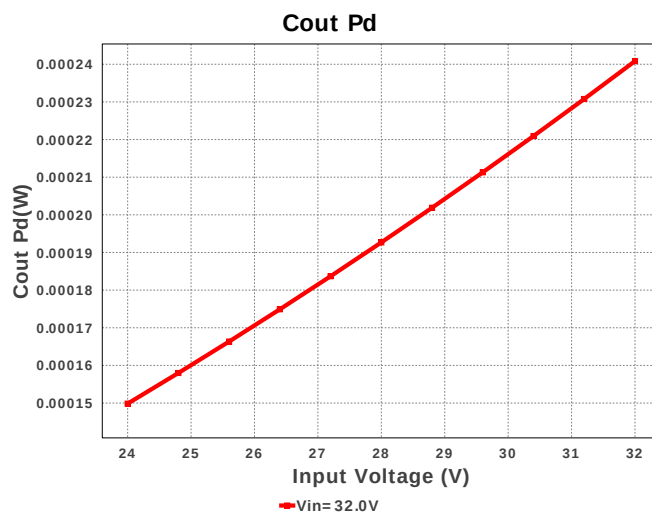
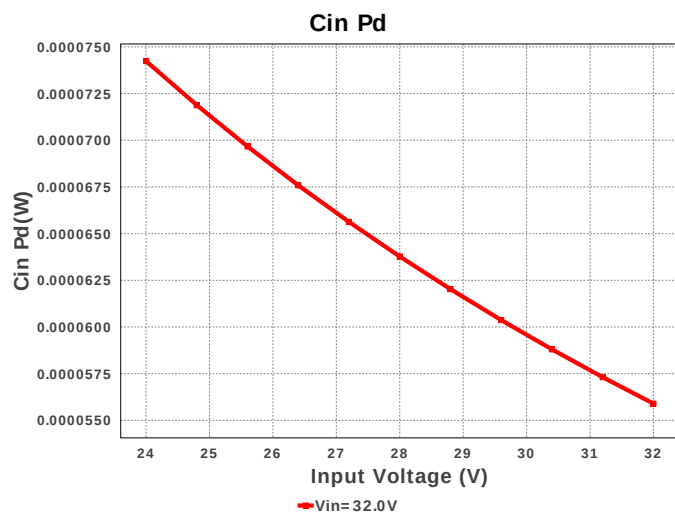


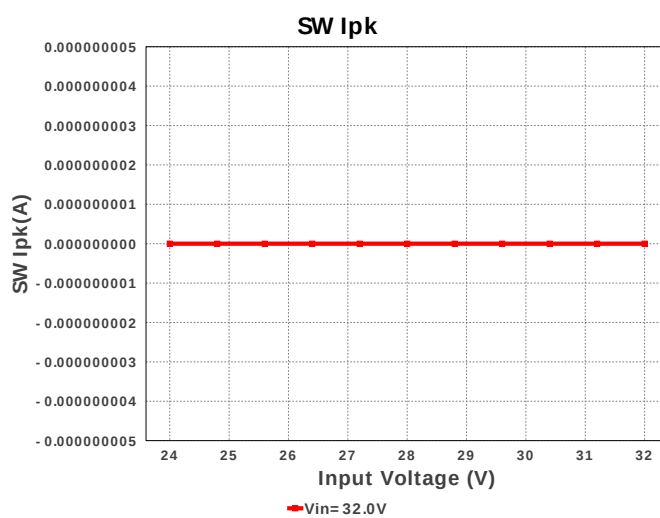
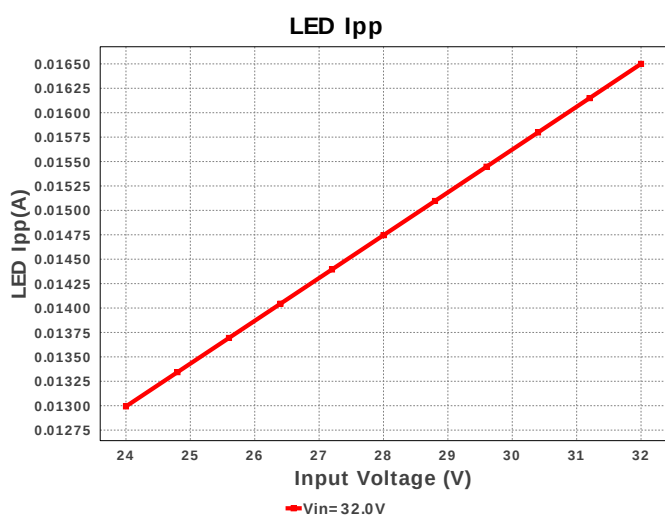
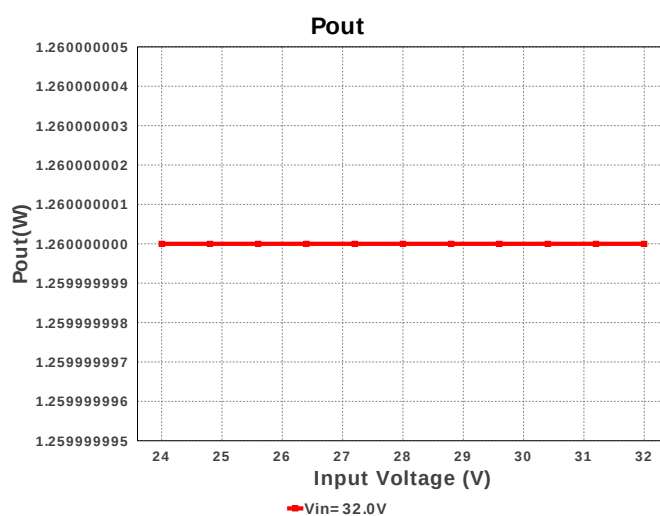
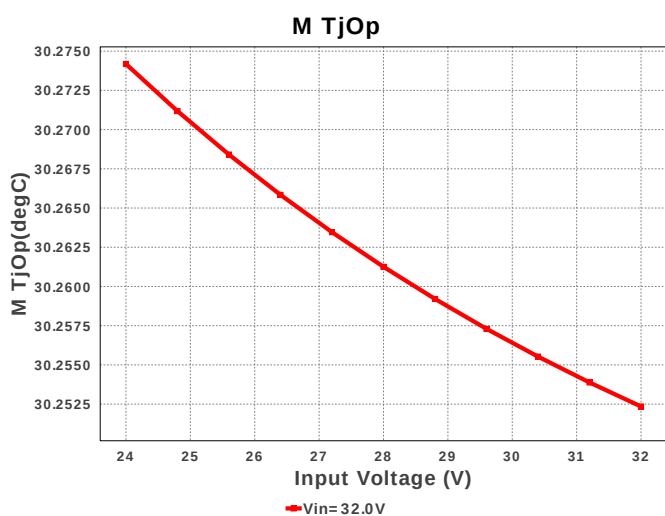
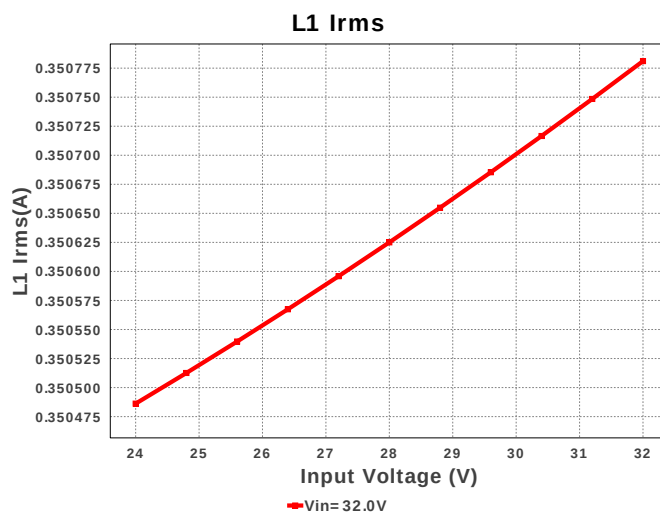
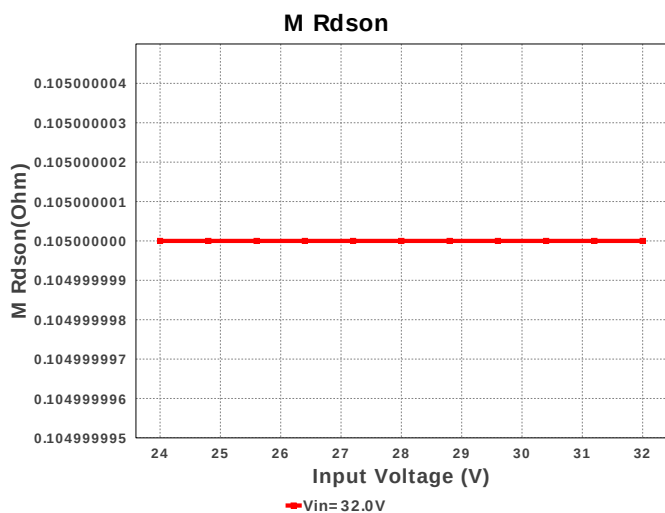
Efficiency

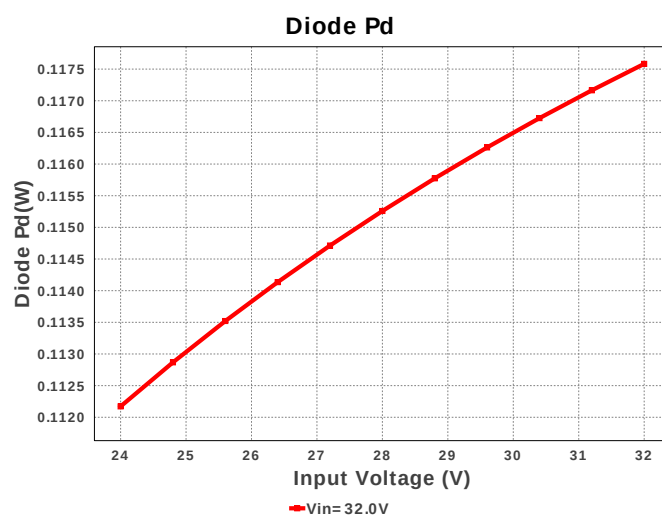
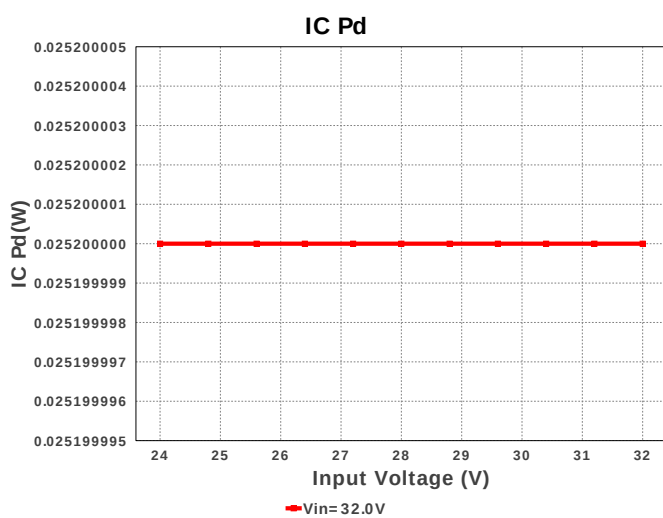
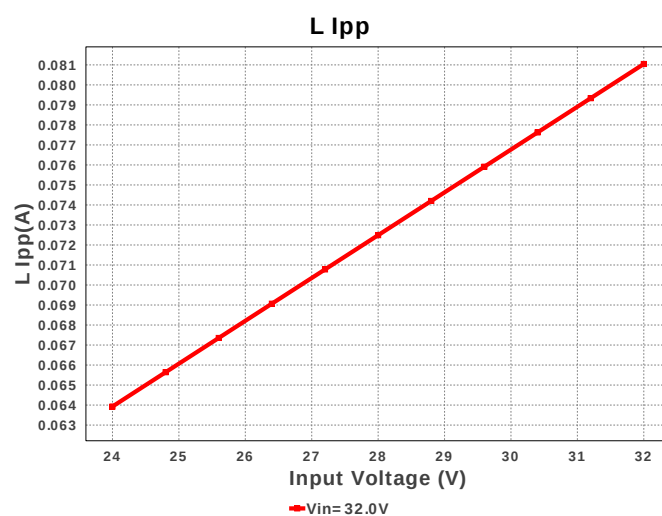
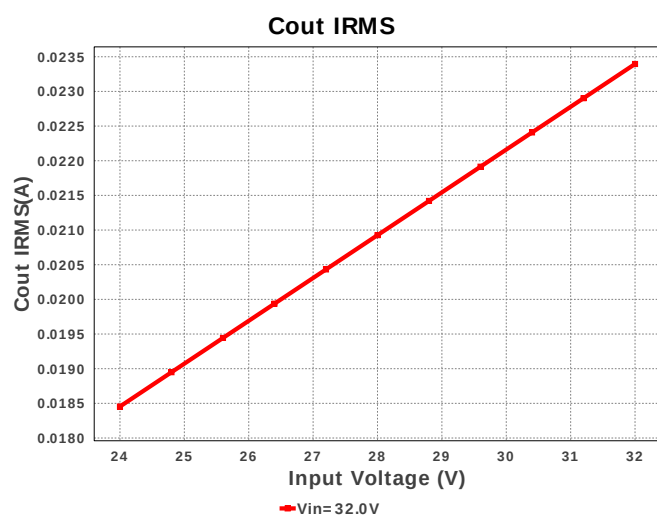
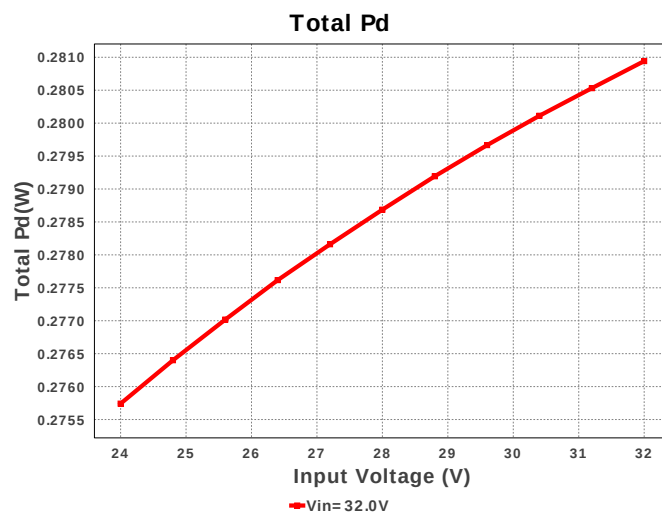
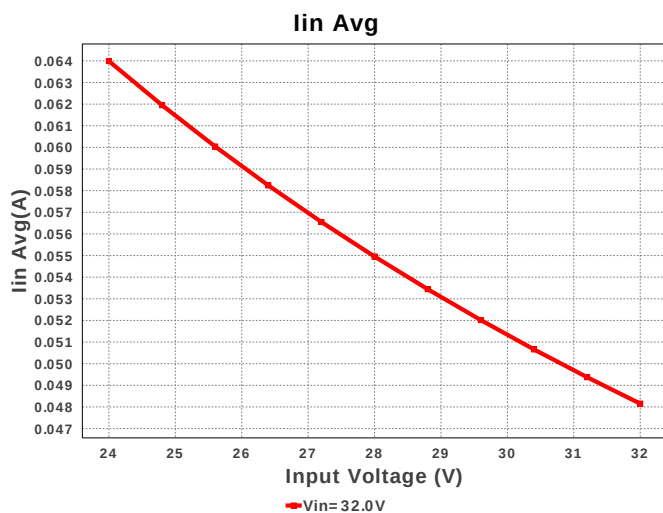


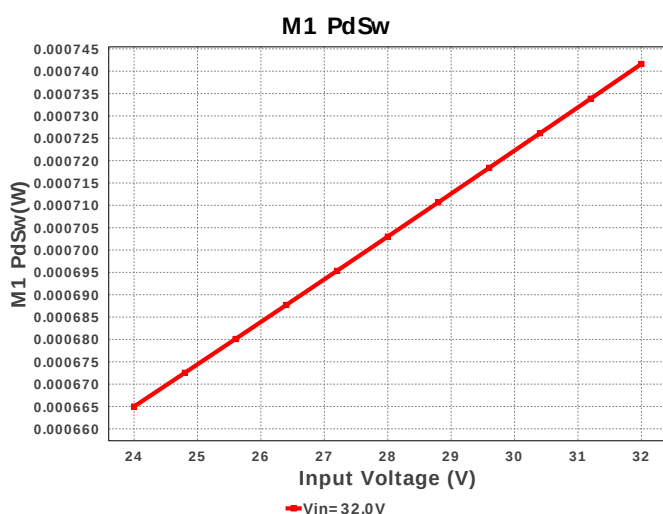
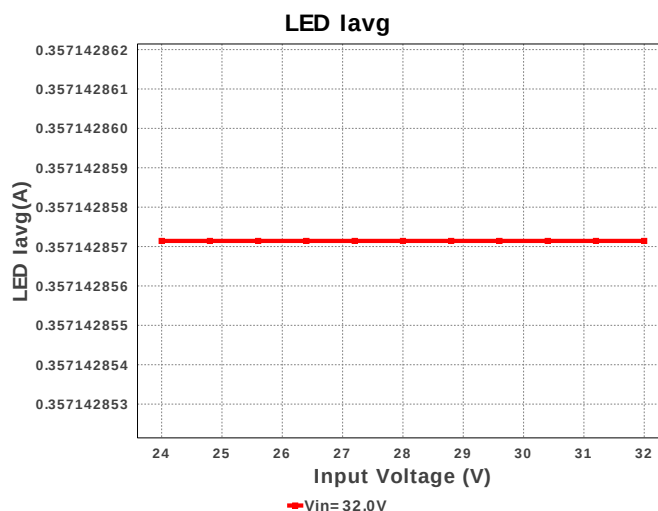
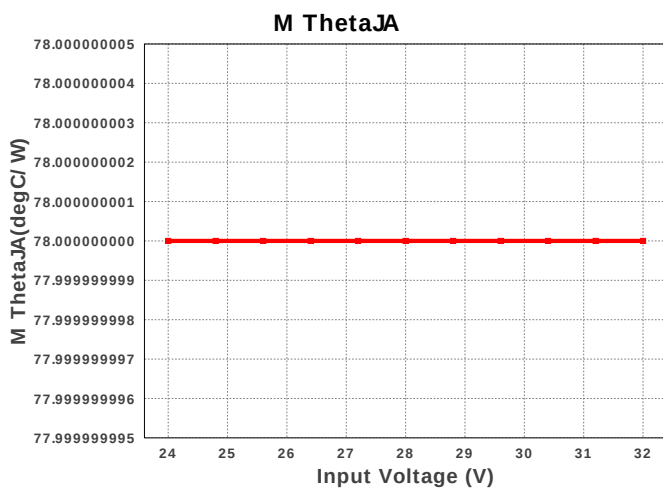
M1 PdCond











Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	114.306 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	23.368 mA	Current	Output capacitor RMS ripple current
3.	Iin Avg	50.446 mA	Current	Average input current
4.	L Ipp	80.949 mA	Current	Peak-to-peak inductor ripple current
5.	L1 Irms	350.779 mA	Current	Inductor ripple current
6.	LED Iavg	357.143 mA	Current	LED Average Current
7.	LED Ipp	16.474 mA	Current	LED Ripple Current
8.	M Irms	156.29 mA	Current	MOSFET RMS ripple current
9.	SW Ipk	496.152 mA	Current	Peak switch current
10.	BOM Count	10	General	Total Design BOM count
11.	FootPrint	279.0 mm ²	General	Total Foot Print Area of BOM components
12.	Frequency	300.0 kHz	General	Switching frequency
13.	IC Tolerance	12.0 mV	General	IC Feedback Tolerance
14.	M Rdson	105.0 mOhm	General	Drain-Source On-resistance
15.	M Vds Act	16.41 mV	General	M Vds
16.	Mode	CCM	General	Conduction Mode
17.	Pout	1.33 W	General	Total output power
18.	Total BOM	\$1.3	General	Total BOM Cost
19.	D1 Tj	68.529 degC	Op_Point	D1 junction temperature
20.	Vout OP	3.8 V	Op_Point	Operational Output Voltage
21.	Duty Cycle	12.917 %	Op_point	Duty cycle
22.	Efficiency	82.389 %	Op_point	Steady state efficiency
23.	IC Tj	56.818 degC	Op_point	IC junction temperature
24.	IC ThetaJA	151.0 degC/W	Op_point	IC junction-to-ambient thermal resistance
25.	IOUT_OP	350.0 mA	Op_point	Iout operating point
26.	LED Rd	1.743 Ohm	Op_point	LED DynamicResistance
27.	LED Vf	3.6 V	Op_point	Total LED Forward Calculated Voltage
28.	M ThetaJA	78.0 degC/W	Op_point	MOSFET junction-to-ambient thermal resistance
29.	M TjOp	30.577 degC	Op_point	MOSFET junction temperature
30.	VIN_OP	32.0 V	Op_point	Vin operating point
31.	Cin Pd	58.117 μW	Power	Input capacitor power dissipation

#	Name	Value	Category	Description
32.	Cout Pd	240.269 μ W	Power	Output capacitor power dissipation
33.	Diode Pd	116.755 mW	Power	Diode power dissipation
34.	IC Pd	177.6 mW	Power	IC power dissipation
35.	L Pd	66.027 mW	Power	Inductor power dissipation
36.	LED Pd	1.26 W	Power	LED Power Dissipation
37.	M Pd	7.404 mW	Power	MOSFET power dissipation
38.	M1 PdCond	2.636 mW	Power	M1 MOSFET conduction losses
39.	M1 PdSw	4.767 mW	Power	M1 MOSFET switching losses
40.	Rsense Pd	68.6 mW	Power	LED Current Rsns Power Dissipation
41.	Total Pd	284.289 mW	Power	Total Power Dissipation
42.	Vout Tolerance	333.33 m%		Vout Tolerance based on IC Tolerance (no load) and voltage divider resistors if applicable

Design Inputs

#	Name	Value	Description
1.	Iout	350.0 m	Maximum Output Current
2.	VinMax	32.0	Maximum input voltage
3.	VinMin	24.0	Minimum input voltage
4.	Vout	3.6	Output Voltage
5.	application	LED_DRIVER	LED Application
6.	base_pn	LM3401	Base Product Number
7.	LED_Architect	N	LED Architect Project
8.	ledparallel	1.0	Number of LED in parallel
9.	ledpartnumber	ASMT-MY06-NKL00	LED Part number
10.	ledseries	1.0	Number of LED in series
11.	line_fsw	60.0	AC Line Frequency
12.	source	DC	Input Source Type
13.	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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