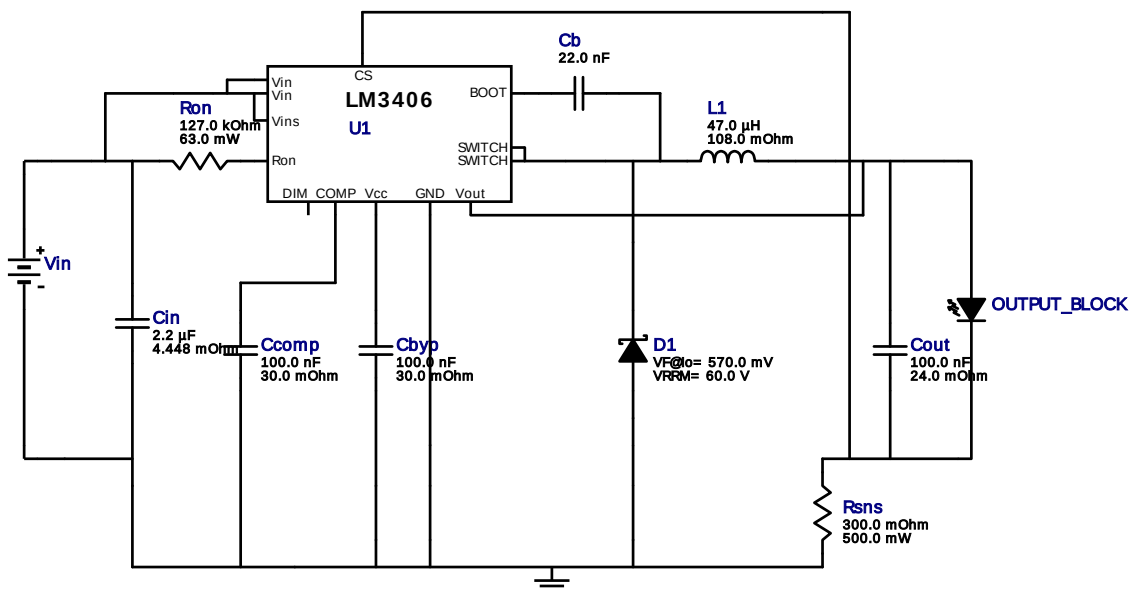


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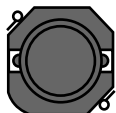
Design : 3876120/5 LM3406MHX/NOPB
LM3406MHX/NOPB 24.0V-32.0V to 11.70V @ 0.7A

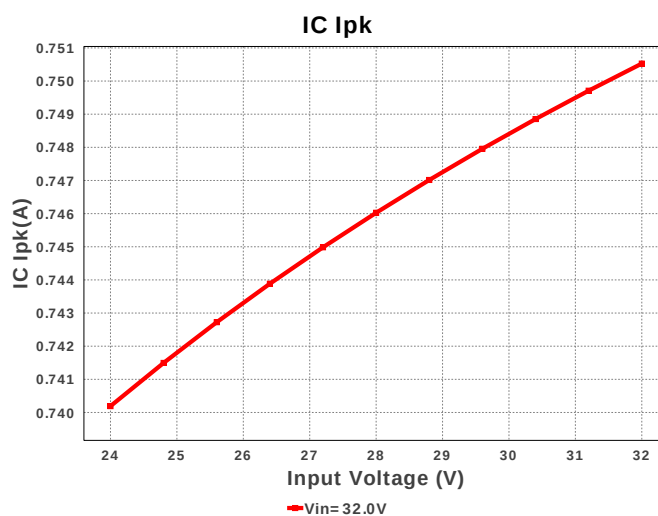
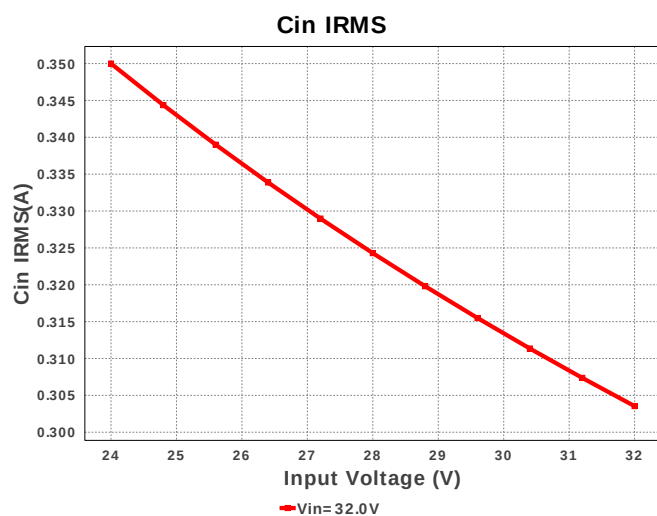
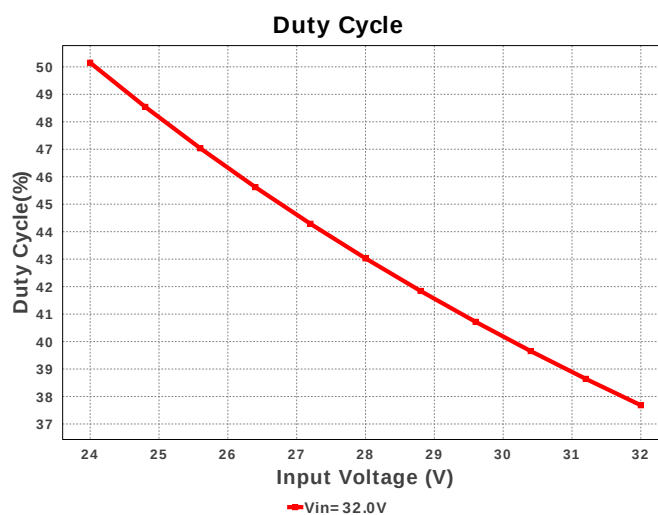
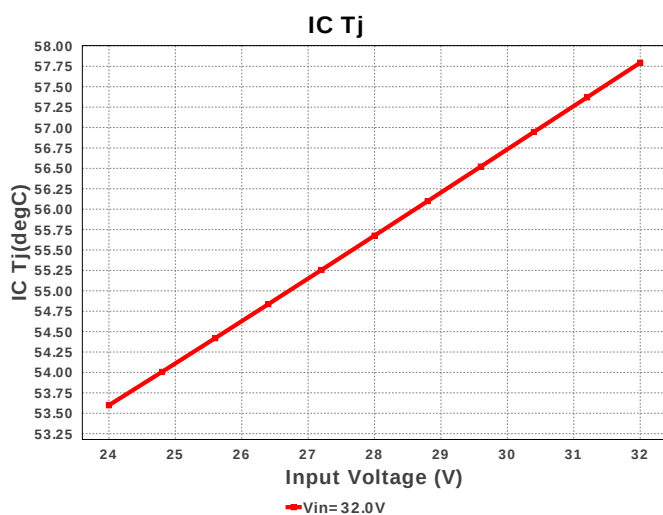
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Iout = 0.7A

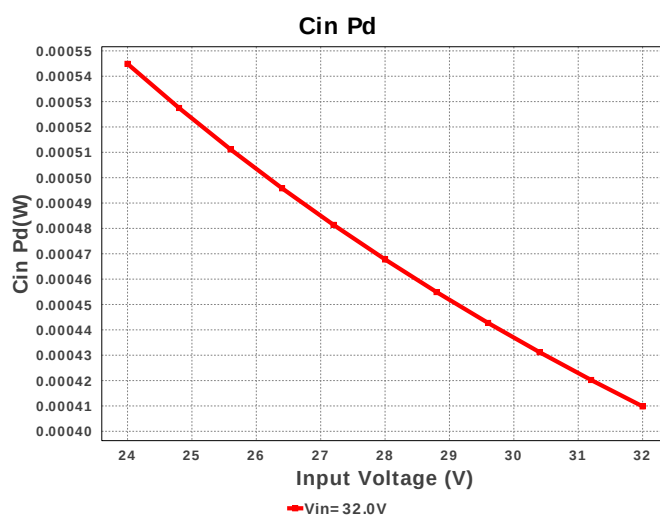
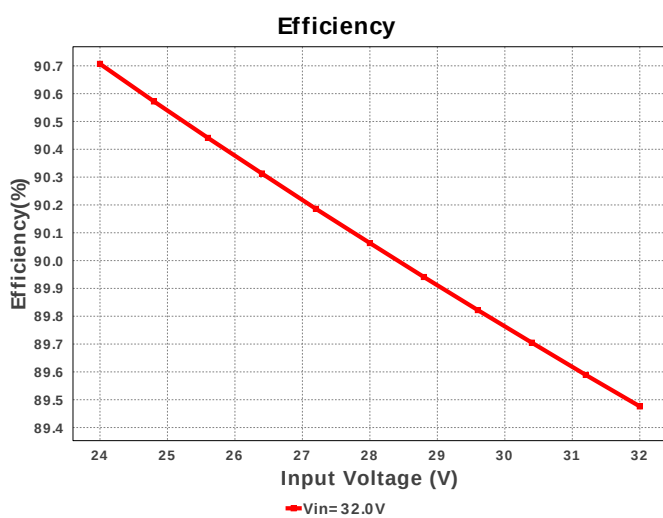
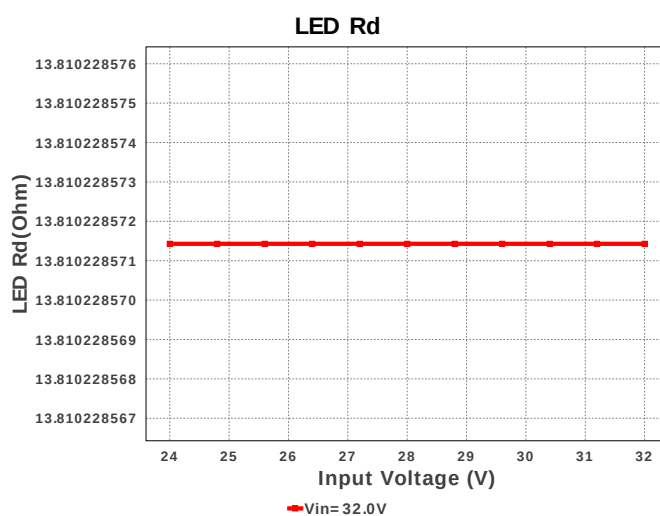
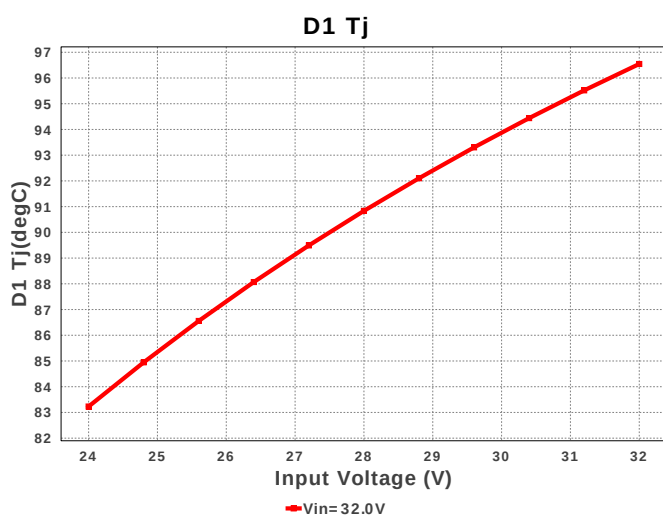
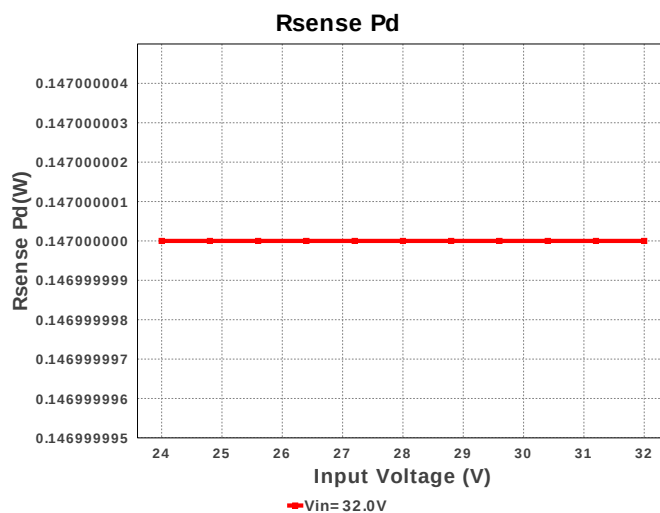
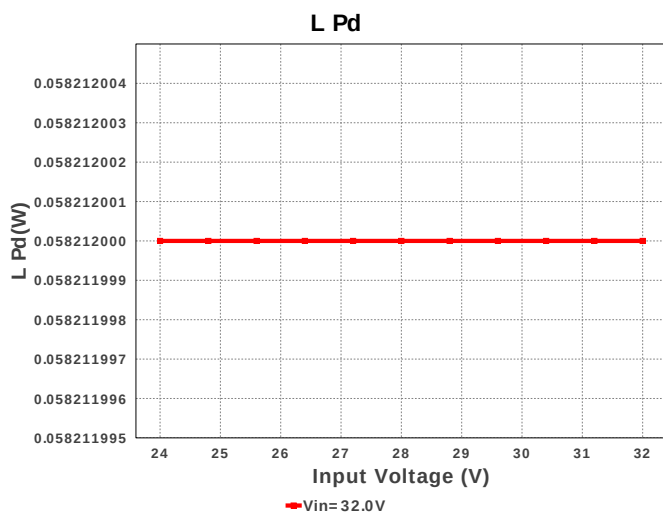


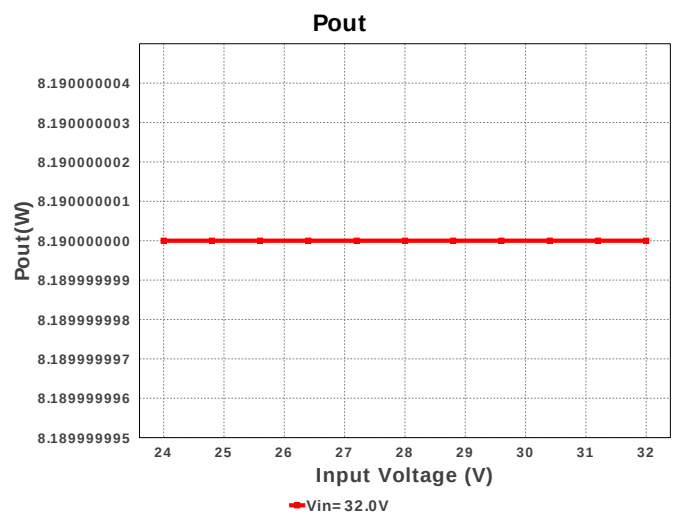
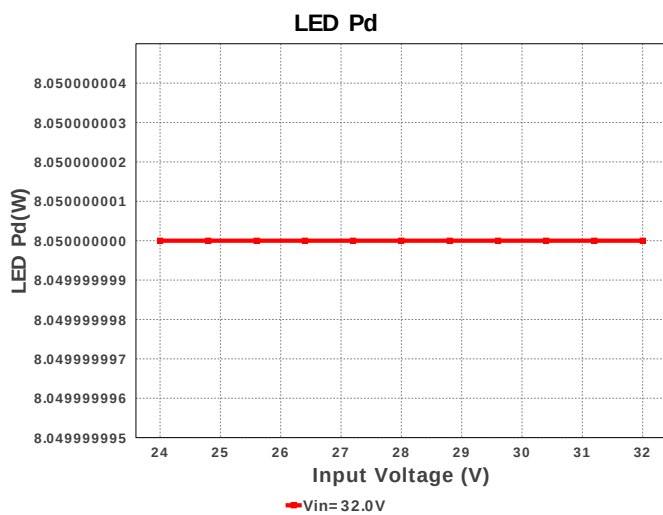
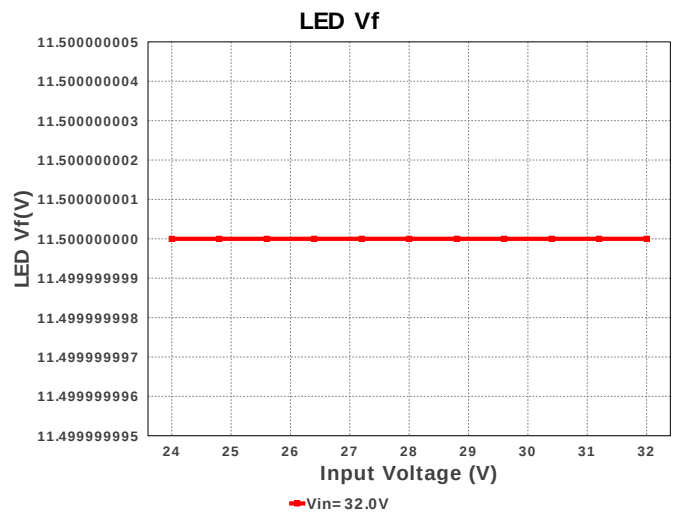
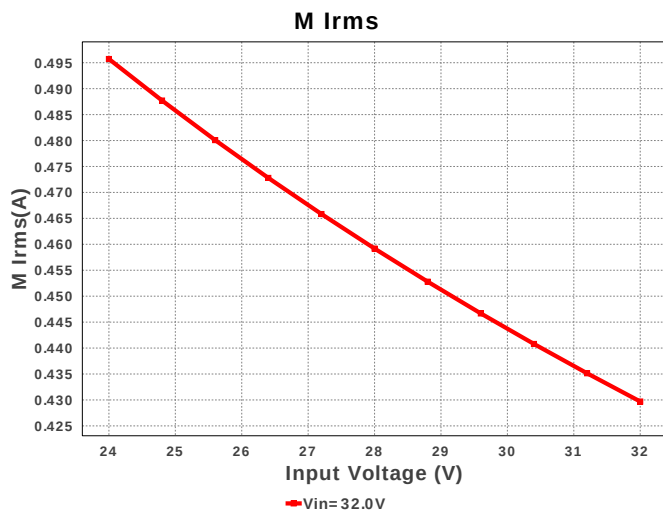
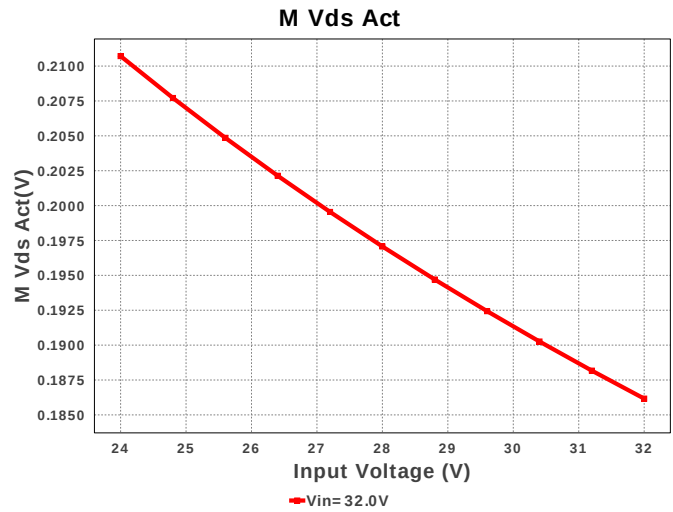
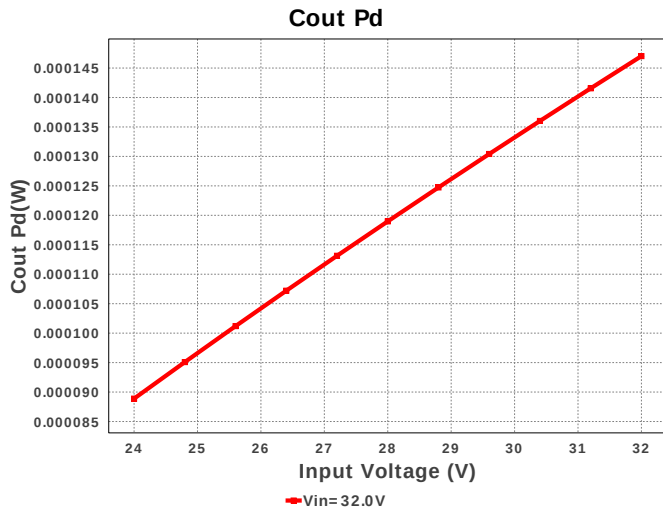
Electrical BOM

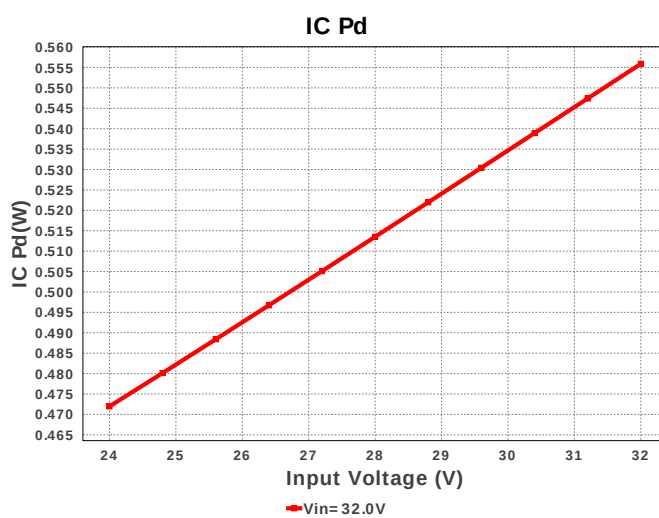
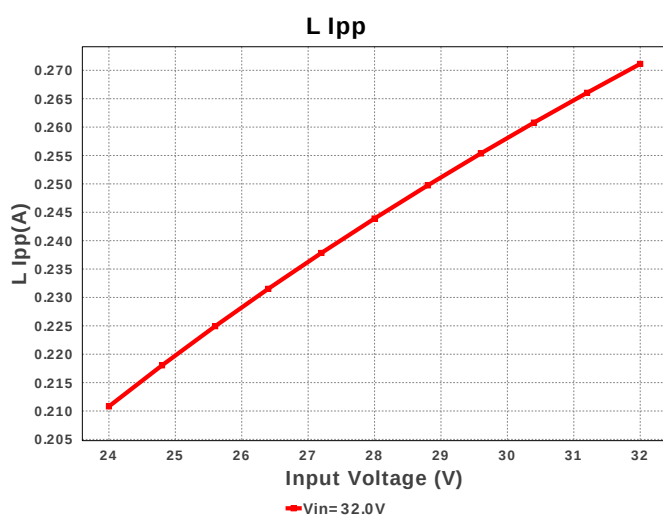
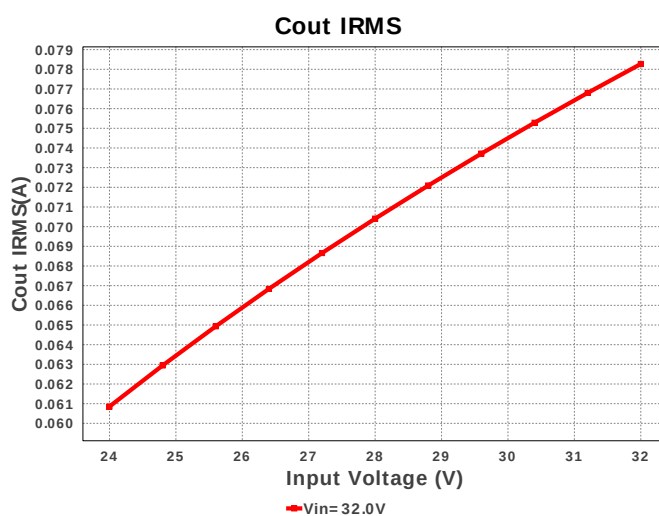
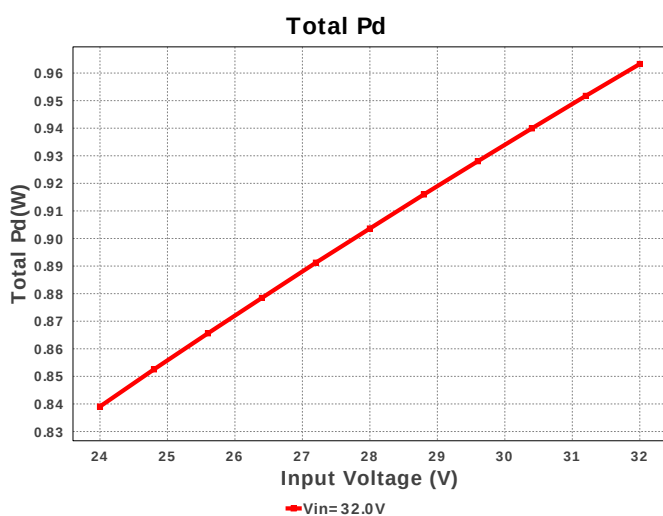
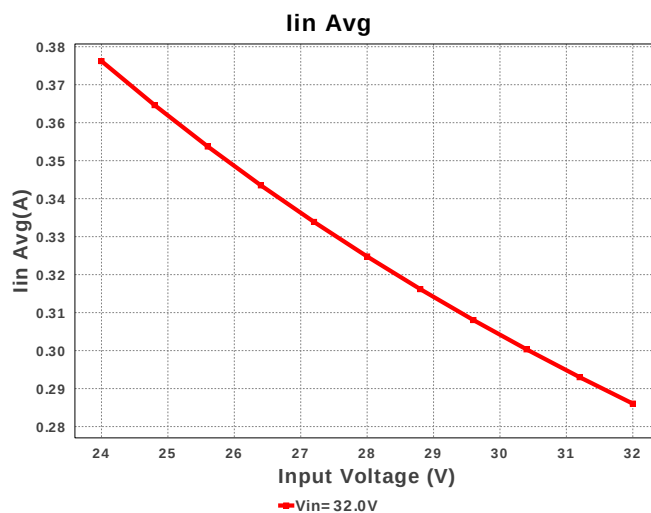
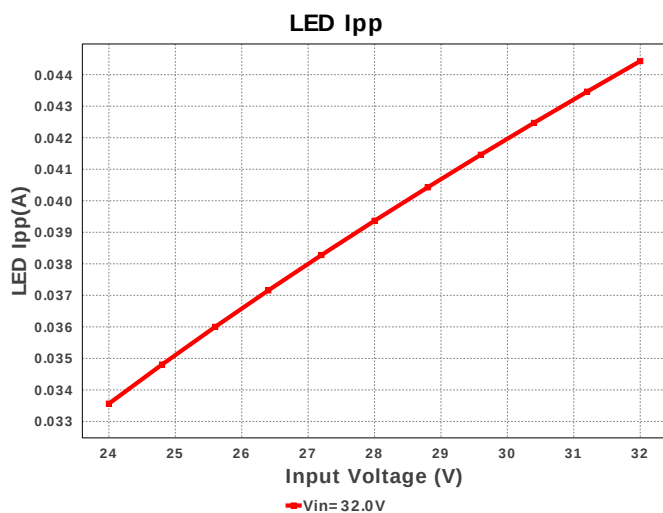
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cb	MuRata	GRM155R71E223KA61D Series= X7R	Cap= 22.0 nF VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	 0402 3 mm ²
2.	Cbyp	MuRata	GRM188R71E104KA01D Series= X7R	Cap= 100.0 nF ESR= 30.0 mOhm VDC= 25.0 V IRMS= 1.51 A	1	\$0.01	 0603 5 mm ²
3.	Ccomp	MuRata	GRM188R71E104KA01D Series= X7R	Cap= 100.0 nF ESR= 30.0 mOhm VDC= 25.0 V IRMS= 1.51 A	1	\$0.01	 0603 5 mm ²
4.	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
5.	Cout	AVX	08055C104JAT2A Series= X7R	Cap= 100.0 nF ESR= 24.0 mOhm VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	 0805 7 mm ²
6.	D1	NXP Semiconductor	PMEG6010CEH,115	Vf@Io= 570.0 mV VRRM= 60.0 V	1	\$0.04	 SOD-123F 12 mm ²
7.	D_LED	Cree	XHP50A-00-0000-0D00J40CB	LED	1	\$5.02	 xlampxhp 0 mm ²

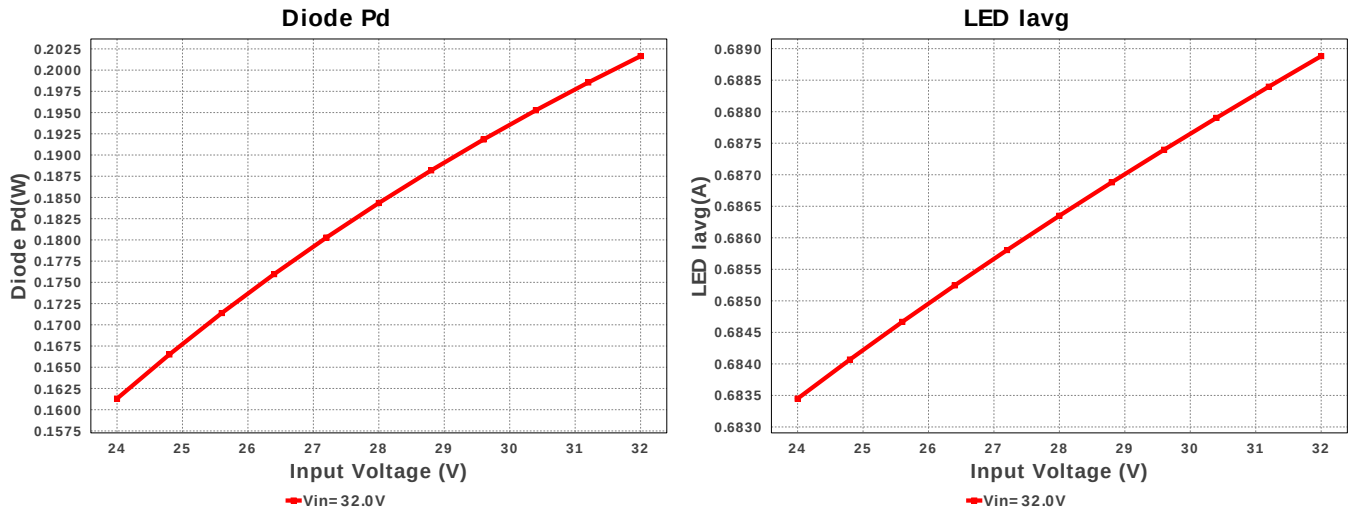
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
8.	L1	Coilcraft	MSS1048-473MLB	L= 47.0 μ H DCR= 108.0 mOhm	1	\$0.56	 MSS1048 146 mm ²
9.	Ron	Vishay-Dale	CRCW0402127KFKED Series= CRCW..e3	Res= 127.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
10.	Rsns	Rohm	MCR25JZHFLR300 Series= MCR25	Res= 300.0 mOhm Power= 500.0 mW Tolerance= 1.0%	1	\$0.03	 1210 15 mm ²
11.	U1	Texas Instruments	LM3406MHX/NOPB	Switcher	1	\$0.95	 MXA14A 59 mm ²











Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	303.54 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	78.27 mA	Current	Output capacitor RMS ripple current
3.	IC Ipk	851.512 mA	Current	Peak switch current in IC
4.	Iin Avg	286.04 mA	Current	Average input current
5.	L Ipp	271.14 mA	Current	Peak-to-peak inductor ripple current
6.	LED Iavg	688.667 mA	Current	LED Average Current
7.	LED Ipp	44.002 mA	Current	LED Ripple Current
8.	M1 Irms	429.699 mA	Current	Q Iavg
9.	BOM Count	11	General	Total Design BOM count
10.	FootPrint	265.0 mm ²	General	Total Foot Print Area of BOM components
11.	Frequency	600.269 kHz	General	Switching frequency
12.	IC Tolerance	10.0 mV	General	IC Feedback Tolerance
13.	M Vds Act	186.166 mV	General	Voltage drop across the MosFET
14.	Mode	CCM	General	Conduction Mode
15.	Pout	8.19 W	General	Total output power
16.	Total BOM	\$1.68	General	Total BOM Cost
17.	D1 Tj	96.545 degC	Op_Point	D1 junction temperature
18.	Vout OP	11.7 V	Op_Point	Operational Output Voltage
19.	Duty Cycle	37.682 %	Op_point	Duty cycle
20.	Efficiency	89.476 %	Op_point	Steady state efficiency
21.	IC Tj	57.794 degC	Op_point	IC junction temperature
22.	ICThetaJA	50.0 degC/W	Op_point	IC junction-to-ambient thermal resistance
23.	IOUT_OP	700.0 mA	Op_point	Iout operating point
24.	LED Rd	13.81 Ohm	Op_point	LED DynamicResistance
25.	LED Vf	11.5 V	Op_point	Total LED Forward Calculated Voltage
26.	VIN_OP	32.0 V	Op_point	Vin operating point
27.	Cin Pd	409.824 μW	Power	Input capacitor power dissipation
28.	Cout Pd	147.028 μW	Power	Output capacitor power dissipation
29.	Diode Pd	201.651 mW	Power	Diode power dissipation
30.	IC Pd	555.88 mW	Power	IC power dissipation
31.	L Pd	58.212 mW	Power	Inductor power dissipation
32.	LED Pd	8.05 W	Power	LED Power Dissipation
33.	Rsense Pd	147.0 mW	Power	LED Power Dissipation
34.	Total Pd	963.291 mW	Power	Total Power Dissipation
35.	Vout Tolerance	85.47 m%		Vout Tolerance based on IC Tolerance (no load) and voltage divider resistors if applicable

Design Inputs

#	Name	Value	Description
1.	Iout	700.0 m	Maximum Output Current
2.	VinMax	32.0	Maximum input voltage
3.	VinMin	24.0	Minimum input voltage
4.	Vout	11.5	Output Voltage
5.	application	LED_DRIVER	LED Application
6.	base_pn	LM3406	Base Product Number
7.	LED_Architect	N	LED Architect Project
8.	ledparallel	1.0	Number of LED in parallel
9.	ledpartnumber	XHP50A-00-0000-0D00140C	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

#	Name	Value	Description
13.	Ta	30.0	Ambient temperature

Design Assistance

1. **LM3406** Product Folder : <http://www.ti.com/product/LM3406> : contains the data sheet and other resources.

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