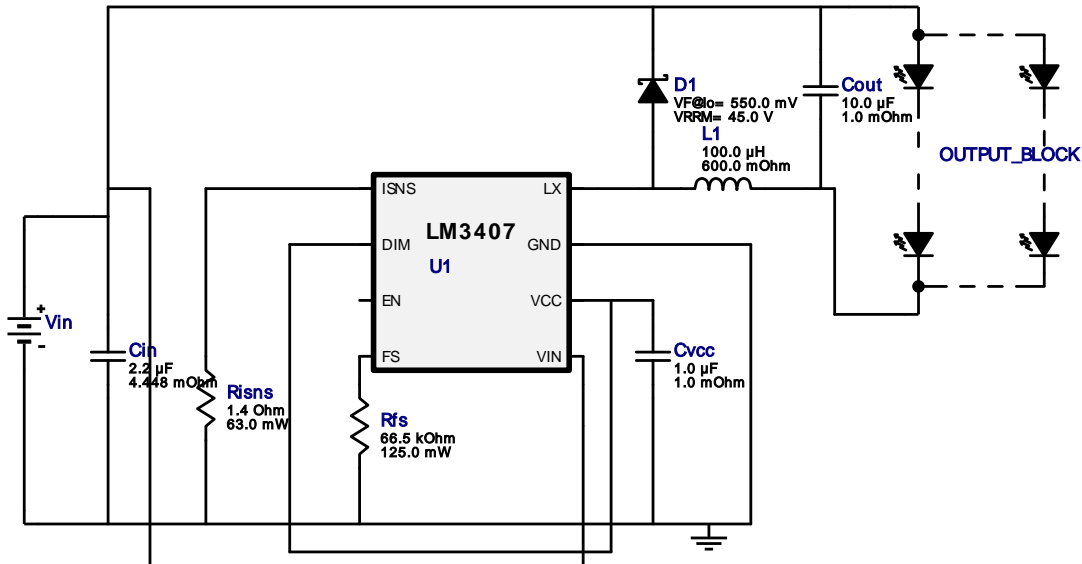

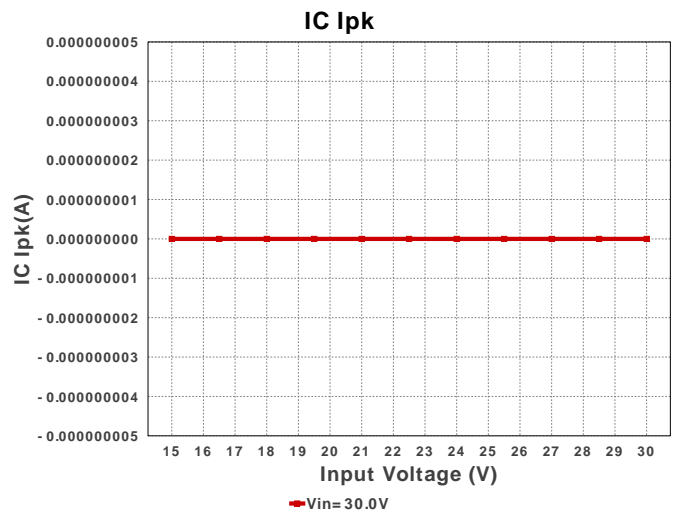
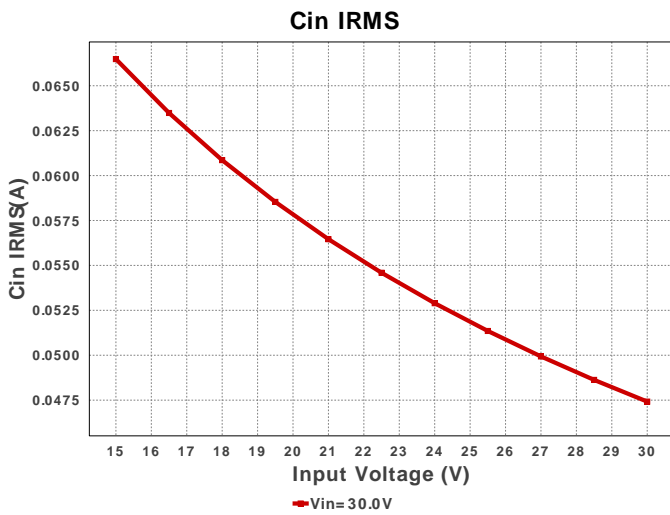
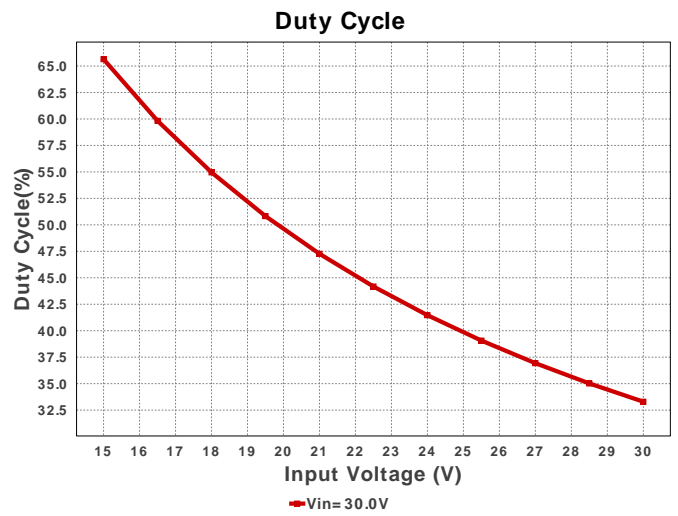
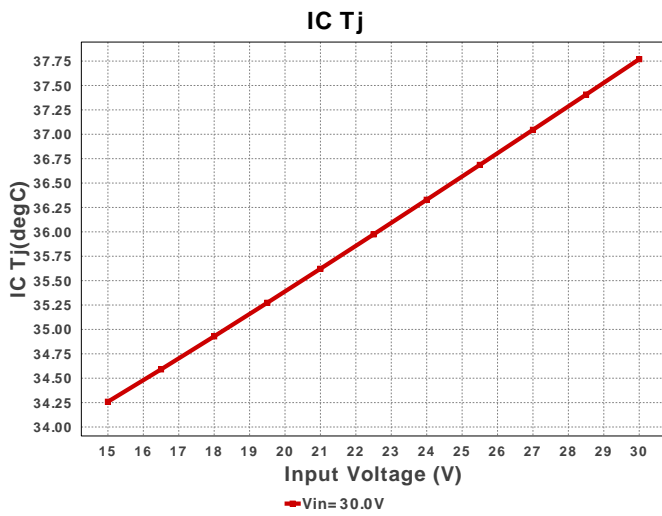


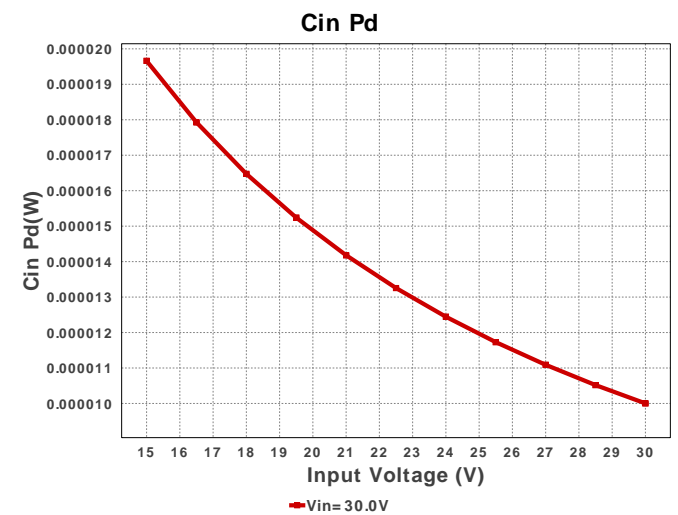
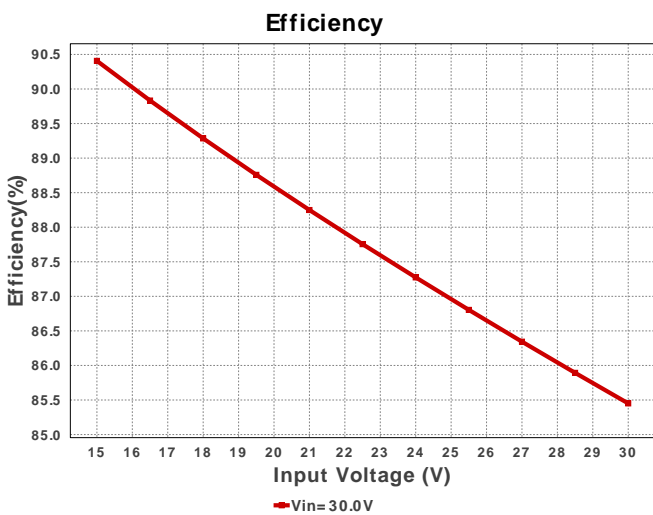
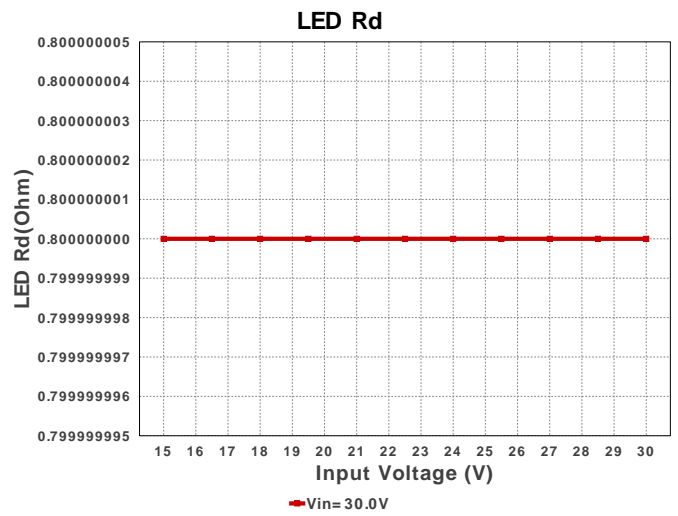
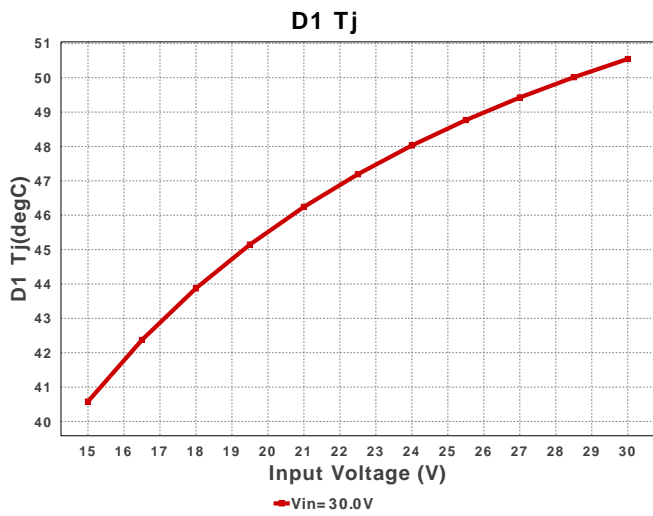
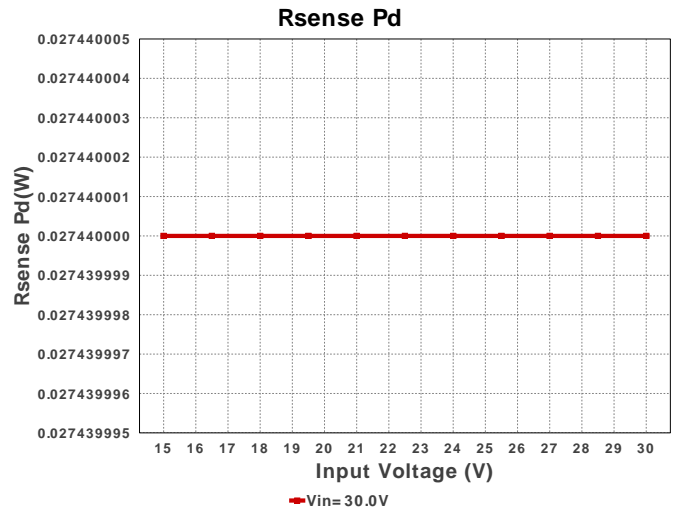
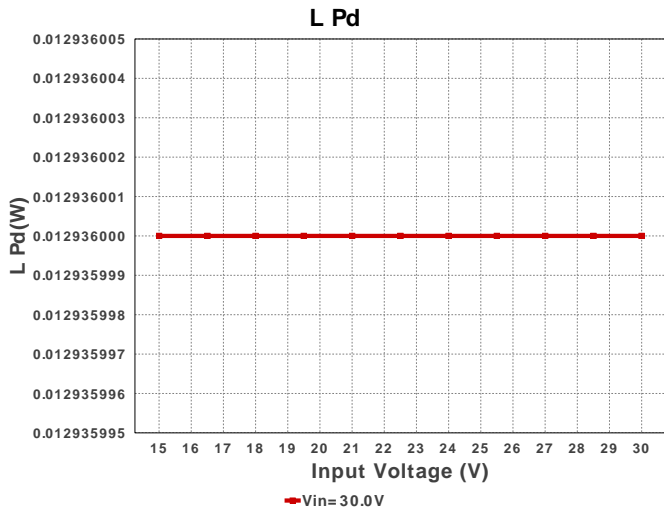
**WEBENCH® Design Report**

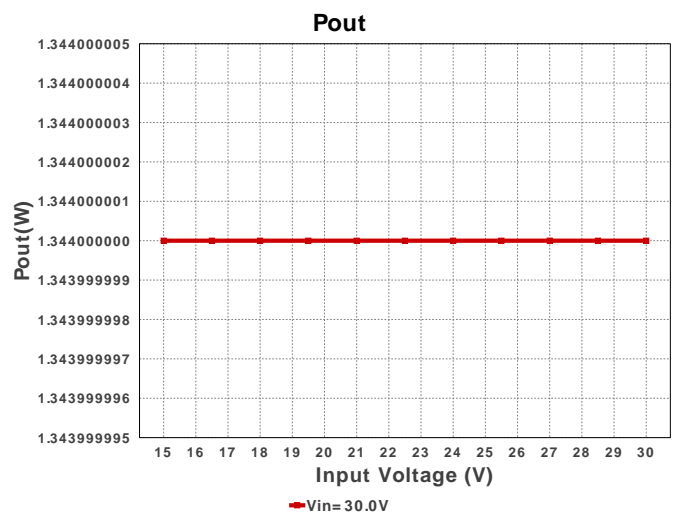
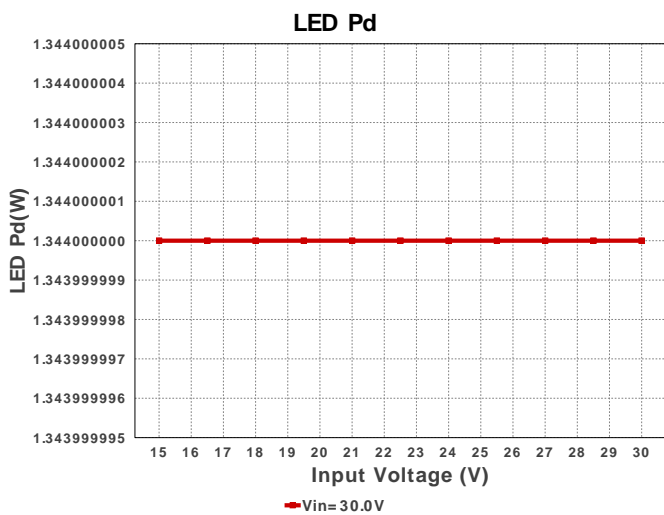
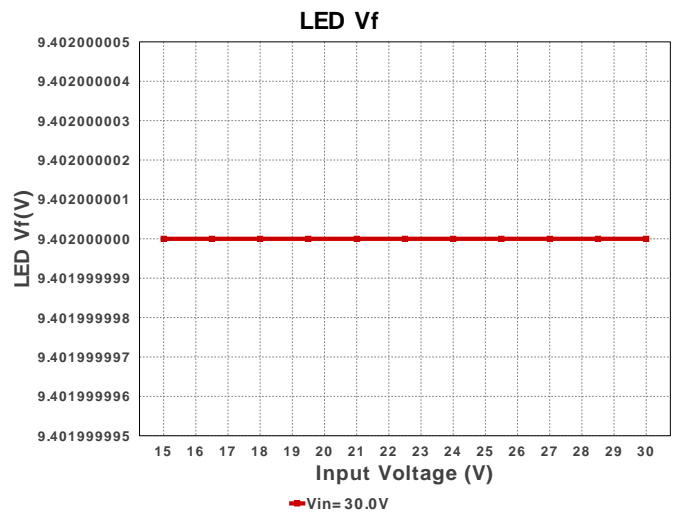
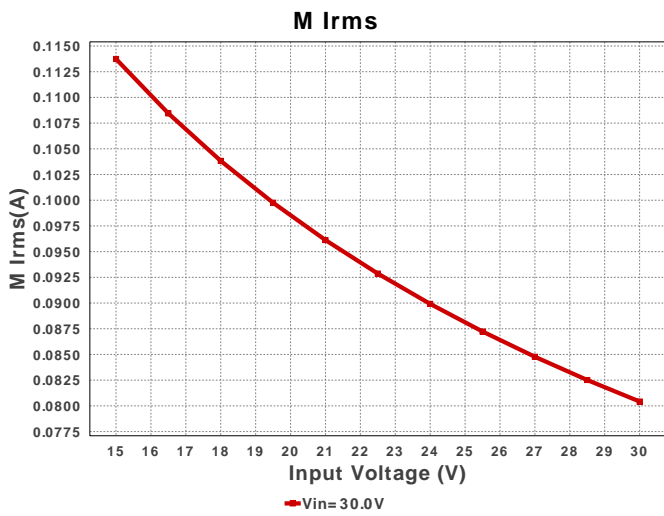
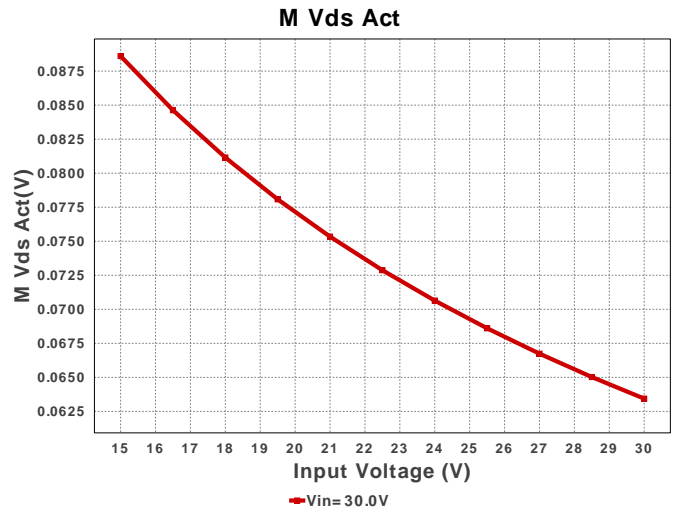
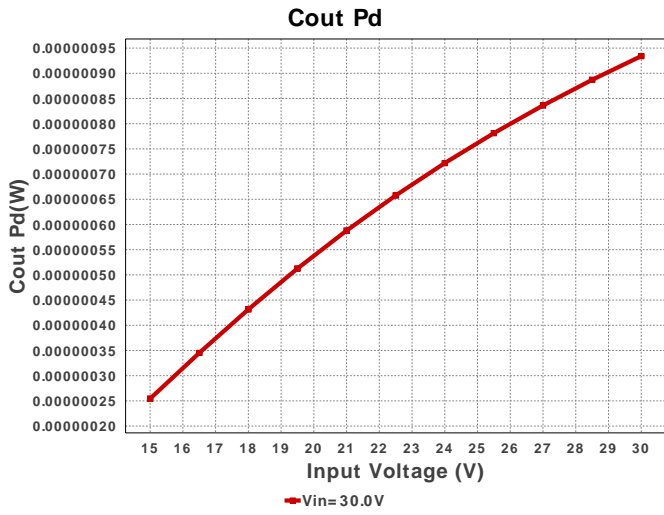
 Design : LM3407MY/NOPB  
 LM3407MY/NOPB 15V-30V to 9.60V @ 0.14A

**Electrical BOM**

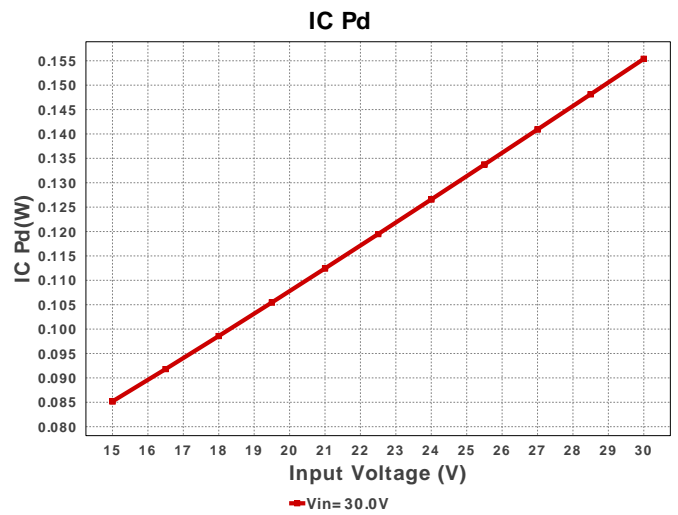
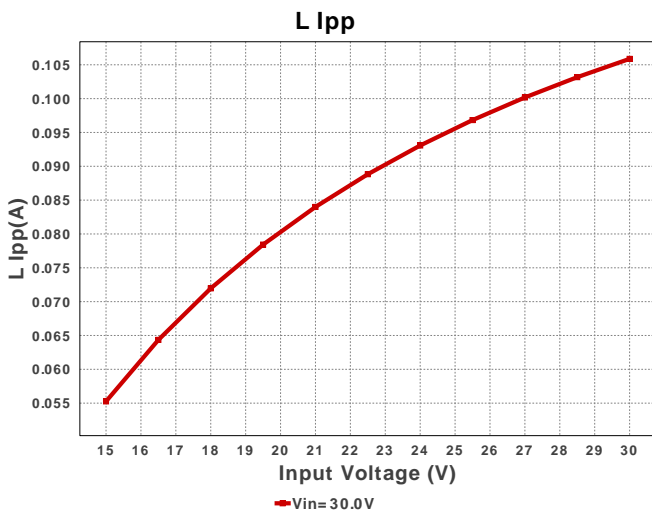
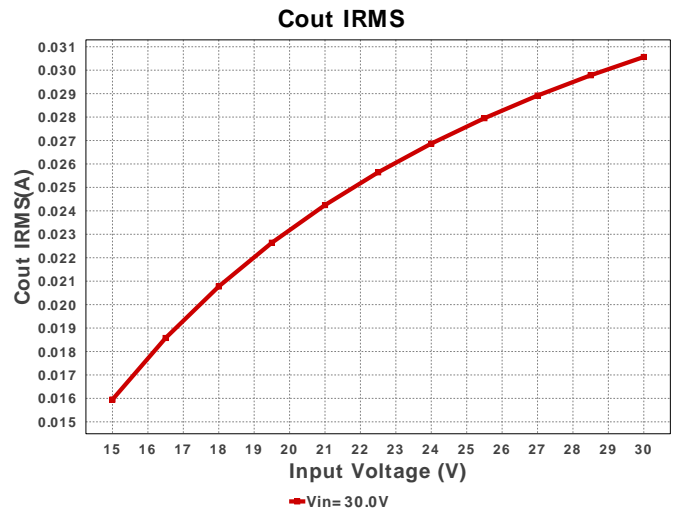
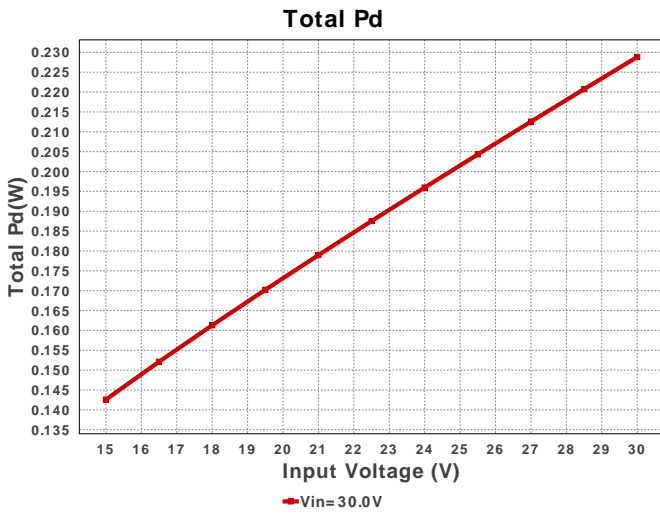
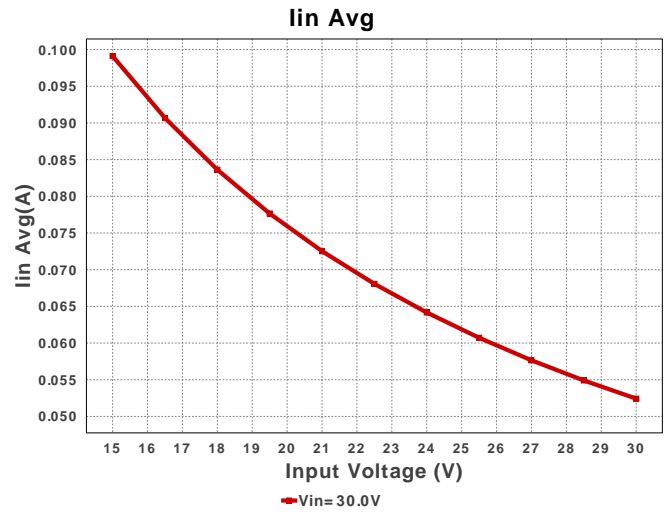
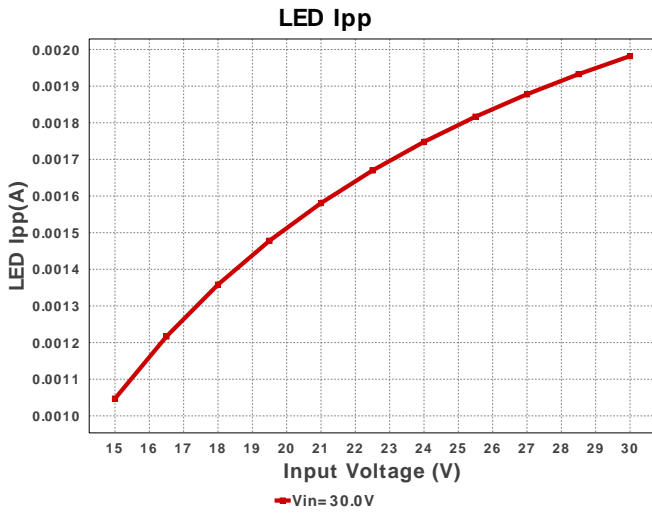
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cin	MuRata	GRM31CR61H225KA88L Series= X5R	Cap= 2.2 uF ESR= 4.448 mOhm VDC= 50.0 V IRMS= 2.2252 A	1	\$0.10	 1206_190 11 mm <sup>2</sup>
2.	Cout	MuRata	GRT31CR61H106KE01L Series= X5R	Cap= 10.0 uF ESR= 1.0 mOhm VDC= 50.0 V IRMS= 0.0 A	1	\$0.23	 1206_180 11 mm <sup>2</sup>
3.	Cvcc	Taiyo Yuden	GMK212B7105KG-T Series= X7R	Cap= 1.0 uF ESR= 1.0 mOhm VDC= 35.0 V IRMS= 0.0 A	1	\$0.04	 0805 7 mm <sup>2</sup>
4.	D1	Bourns	CD0603-B0240	VF@Io= 550.0 mV VRRM= 45.0 V	1	\$0.09	 Diode_0603 5 mm <sup>2</sup>
5.	D_LED	CUSTOM	CUSTOM	LED	21	NA	CUSTOM 0 mm <sup>2</sup>
6.	L1	Würth Elektronik	74406043101	L= 100.0 uH DCR= 600.0 mOhm	1	\$0.52	 WE-LQFS_4828 34 mm <sup>2</sup>
7.	Rfs	Vishay-Dale	CRCW080566K5FKEA Series= CRCW..e3	Res= 66500.0Ohm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7 mm <sup>2</sup>
8.	Risns	Vishay-Dale	CRCW04021R40FKED Series= CRCW..e3	Res= 1.4Ohm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm <sup>2</sup>

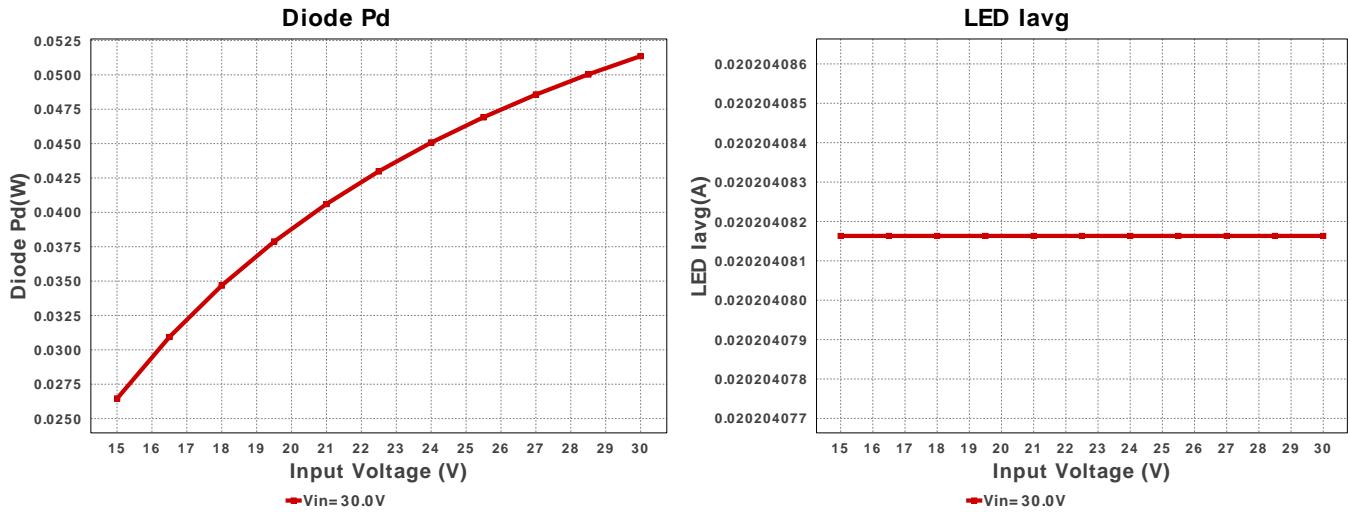
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
9.	U1	Texas Instruments	LM3407MY/NOPB	Switcher	1	\$0.39	 MUY08A 24 mm <sup>2</sup>











## Operating Values

#	Name	Value	Category	Description
1.	BOM Count	29		Total Design BOM count
2.	Total BOM	NA		Total BOM Cost
3.	Cin IRMS	47.42 mA	Capacitor	Input capacitor RMS ripple current
4.	Cin Pd	10.002 $\mu$ W	Capacitor	Input capacitor power dissipation
5.	Cout IRMS	30.563 mA	Capacitor	Output capacitor RMS ripple current
6.	Cout Pd	934.11 nW	Capacitor	Output capacitor power dissipation
7.	D1 Tj	50.546 degC	Diode	D1 junction temperature
8.	Diode Pd	51.364 mW	Diode	Diode power dissipation
9.	IC Ipk	0.0 A	IC	Peak switch current in IC
10.	IC Pd	155.39 mW	IC	IC power dissipation
11.	IC Tj	37.769 degC	IC	IC junction temperature
12.	IC Tolerance	0.0 V	IC	IC Feedback Tolerance
13.	ICThetaJA	50.0 degC/W	IC	IC junction-to-ambient thermal resistance
14.	Iin Avg	52.428 mA	IC	Average input current
15.	L Ipp	105.874 mA	Inductor	Peak-to-peak inductor ripple current
16.	L Pd	12.936 mW	Inductor	Inductor power dissipation
17.	LED Iavg	20.204 mA	LED	LED Average Current
18.	LED Ipp	1.982 mA	LED	LED Ripple Current
19.	LED Pd	1.344 W	LED	LED Power Dissipation
20.	LED Rd	800.0 mOhm	LED	LED DynamicResistance
21.	LED Vf	9.402 V	LED	Total LED Forward Calculated Voltage
22.	M Irms	80.424 mA	Mosfet	MOSFET RMS ripple current
23.	M Vds Act	63.439 mV	Mosfet	Voltage drop across the MosFET
24.	Cin Pd	10.002 $\mu$ W	Power	Input capacitor power dissipation
25.	Cout Pd	934.11 nW	Power	Output capacitor power dissipation
26.	Diode Pd	51.364 mW	Power	Diode power dissipation
27.	IC Pd	155.39 mW	Power	IC power dissipation
28.	L Pd	12.936 mW	Power	Inductor power dissipation
29.	LED Pd	1.344 W	Power	LED Power Dissipation
30.	Rsense Pd	27.44 mW	Power	LED Power Dissipation
31.	Total Pd	228.832 mW	Power	Total Power Dissipation
32.	Rsense Pd	27.44 mW	Resistor	LED Power Dissipation
33.	Duty Cycle	33.293 %	System	Duty cycle
34.	Efficiency	85.451 %	System	Steady state efficiency
35.	FootPrint	101.0 mm <sup>2</sup>	System	Total Foot Print Area of BOM components
36.	Frequency	667.432 kHz	System	Switching frequency
37.	Iout	140.0 mA	System	Iout operating point
38.	Mode	CCM	System	Conduction Mode
39.	Pout	1.344 W	System	Total output power
40.	Vin	30.0 V	System	Vin operating point
41.	Vout	9.6 V	System	Operational Output Voltage

## Design Inputs

#	Name	Value	Description
1.	Iout	140.0 m	Maximum Output Current
2.	VinMax	30.0	Maximum input voltage
3.	VinMin	15.0	Minimum input voltage
4.	Vout	9.6	Output Voltage
5.	acFrequency	60.0	AC Frequency
6.	application	LED_DRIVER	LED Application
7.	base_pn	LM3407	Base Product Number
8.	LED_Architect	N	LED Architect Project
9.	ledparallel	7.0	Number of LED in parallel
10.	ledpartnumber	Custom	LED Part number
11.	ledseries	3.0	Number of LED in series
12.	line_fsw	60.0	AC Line Frequency
13.	source	DC	Input Source Type
14.	Ta	30.0	Ambient temperature

## Design Assistance

1. The LM3407 uses a floating buck configuration to supply a constant output current of 350mA to a series of LEDs. This device features: an integrated power N-MOSFET switch, allowing for a simple compact power solution, adjustable switching frequency, via an external resistor, PWM dimming ability to control the LED brightness, and Input Under Voltage Lock Out (UVLO). An integrated power N-MOSFET switch allows for a simple compact solution. The switching frequency can be adjusted, via an external resistor. PWM dimming allows the LED brightness to be controlled. Input Under Voltage Lock Out (UVLO) will keep the device disabled when the input voltage falls below the Low-Out Low threshold, typically 3.4V.

2. **LM3407** Product Folder : <http://www.ti.com/product/LM3407> : contains the data sheet and other resources.

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