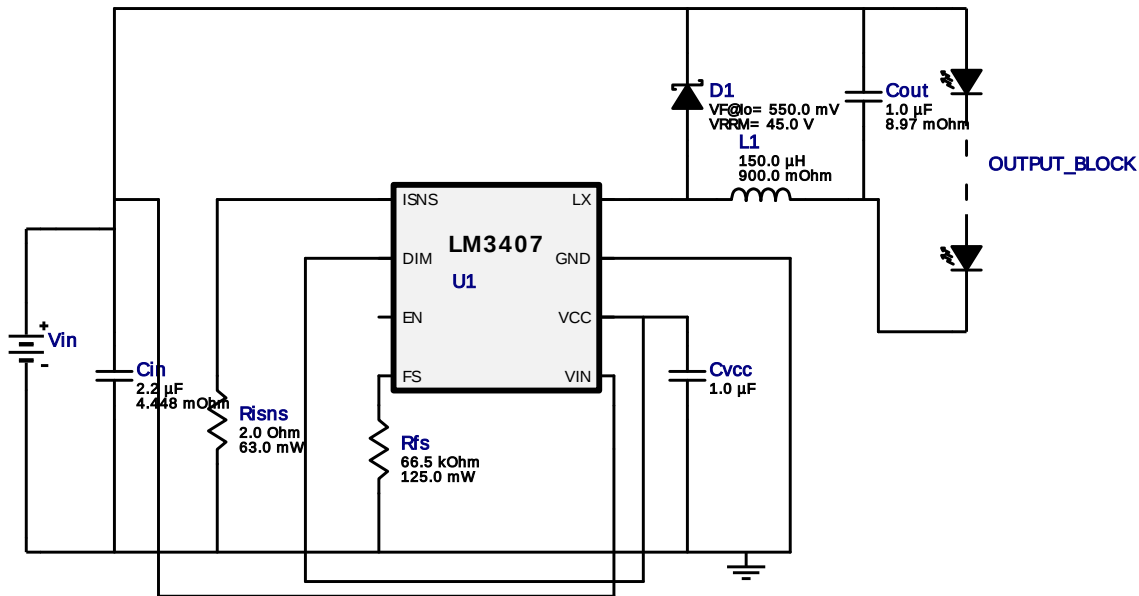


WEBENCH® Design Report

Design : 4765128/3 LM3407MY/NOPB
LM3407MY/NOPB 15.0V-30.0V to 14.00V @ 0.1A

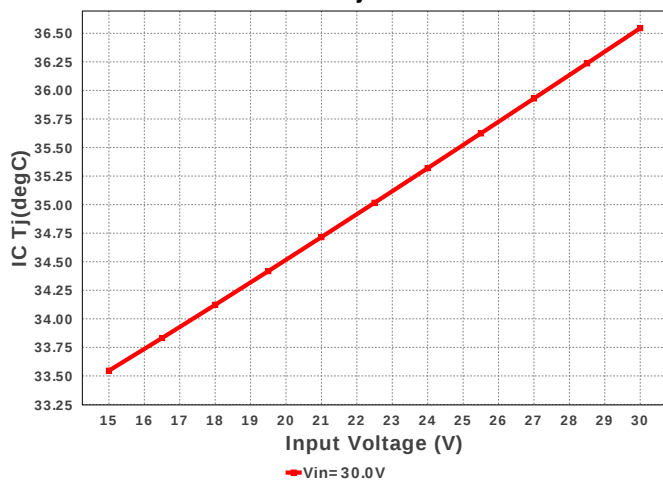


Electrical BOM

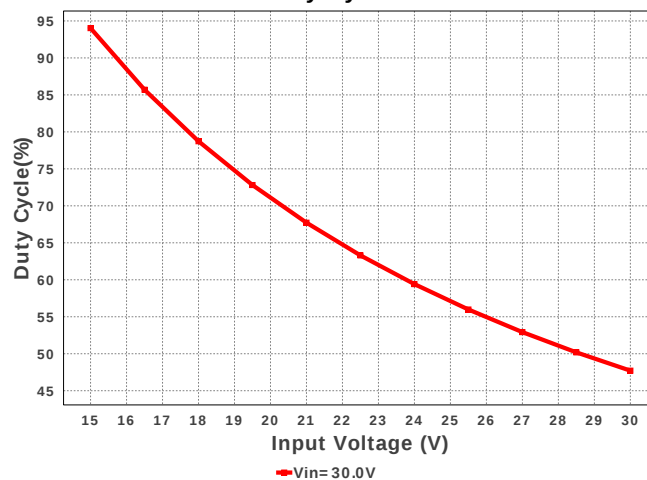
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cin	MuRata	GRM31CR71H225KA88L Series= X7R	Cap= 2.2 µF ESR= 4.448 mOhm VDC= 50.0 V IRMS= 2.2252 A	1	\$0.05	 1206_190 11 mm ²
2.	Cout	TDK	C3216X5R1H105K Series= X5R	Cap= 1.0 µF ESR= 8.97 mOhm VDC= 50.0 V IRMS= 0.0 A	1	\$0.02	 1206 11 mm ²
3.	Cvcc	AVX	08055C105KAT2A Series= X7R	Cap= 1.0 µF VDC= 50.0 V IRMS= 0.0 A	1	\$0.45	 0805 7 mm ²
4.	D1	Bourns	CD0603-B0240	Vf@Io= 550.0 mV VRRM= 45.0 V	1	\$0.10	 Diode_0603 5 mm ²
5.	D_LED	CUSTOM	CUSTOM	LED	4	NA	CUSTOM 0 mm ²
6.	L1	NIC Components	NPI54C151KTRF	L= 150.0 µH DCR= 900.0 mOhm	1	\$0.09	 IND_NPI54C 61 mm ²
7.	Rfs	Panasonic	ERJ-6ENF6652V Series= ERJ-6E	Res= 66.5 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7 mm ²
8.	Risns	Vishay-Dale	CRCW04022R00FKED Series= CRCW..e3	Res= 2.0 Ohm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
9.	U1	Texas Instruments	LM3407MY/NOPB	Switcher	1	\$0.55	 MUY08A 24 mm ²

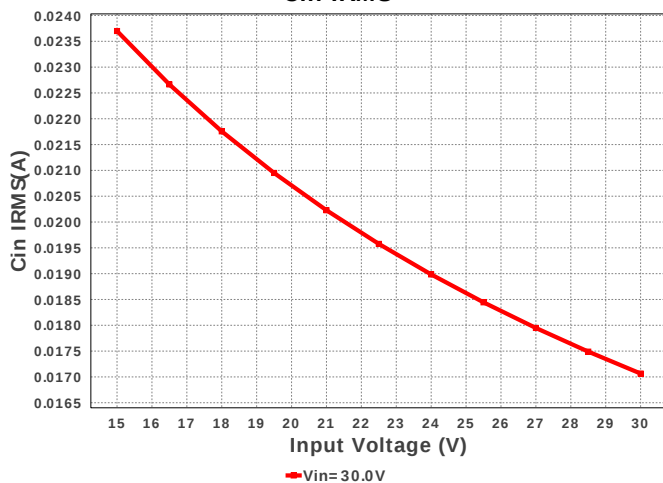
IC Tj



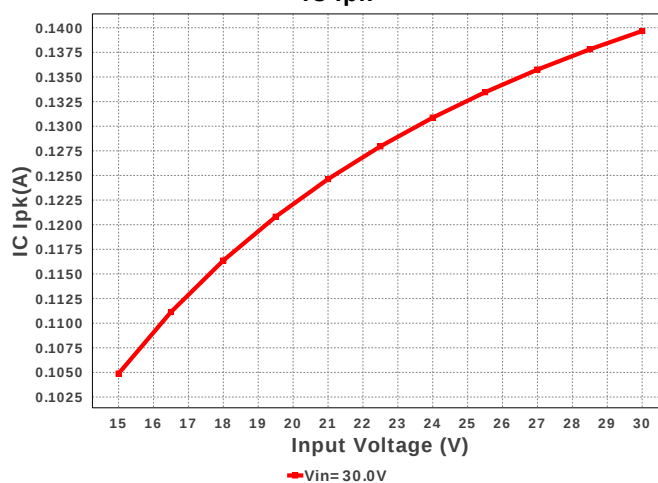
Duty Cycle

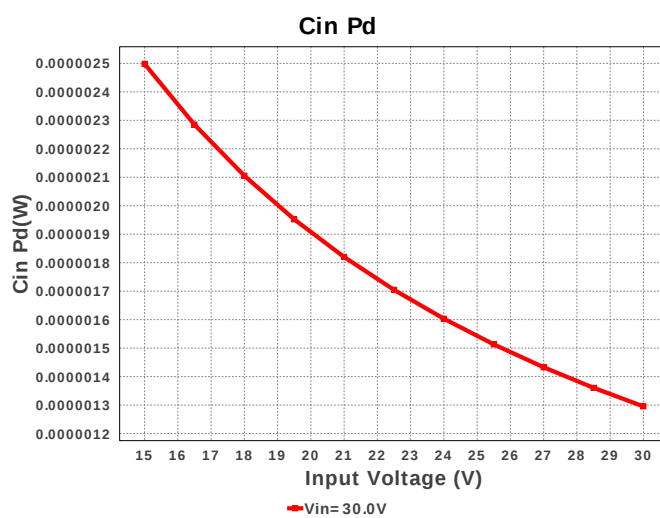
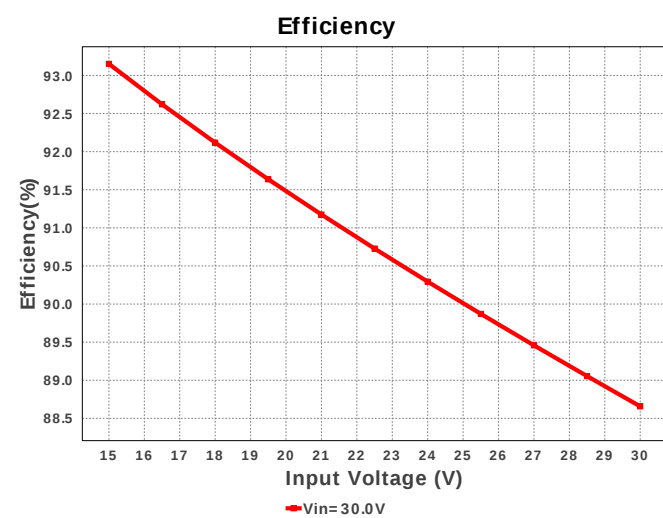
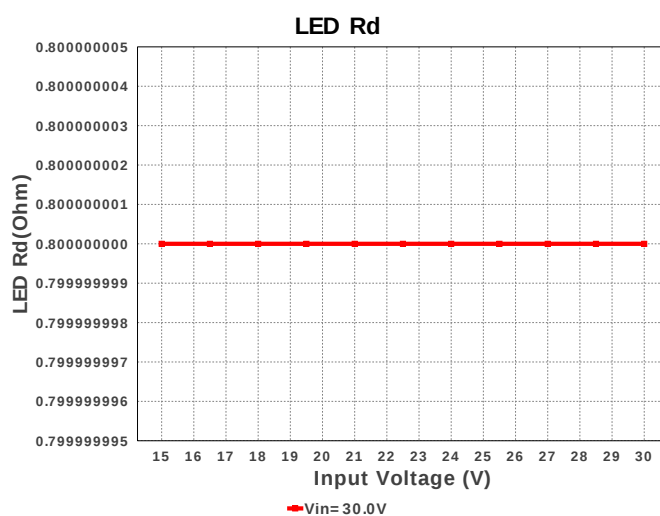
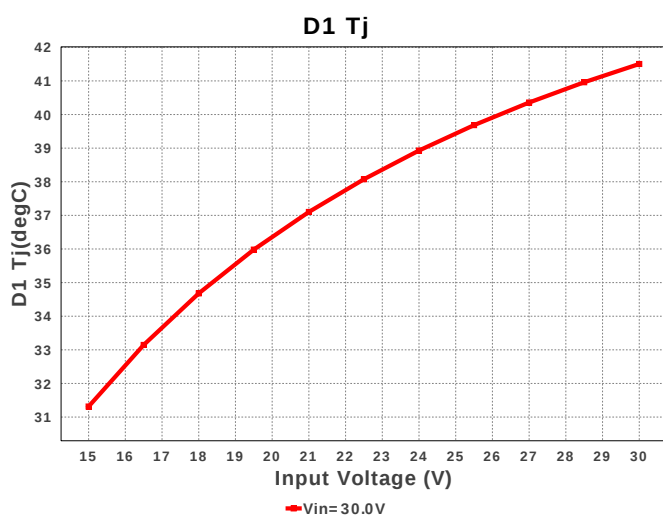
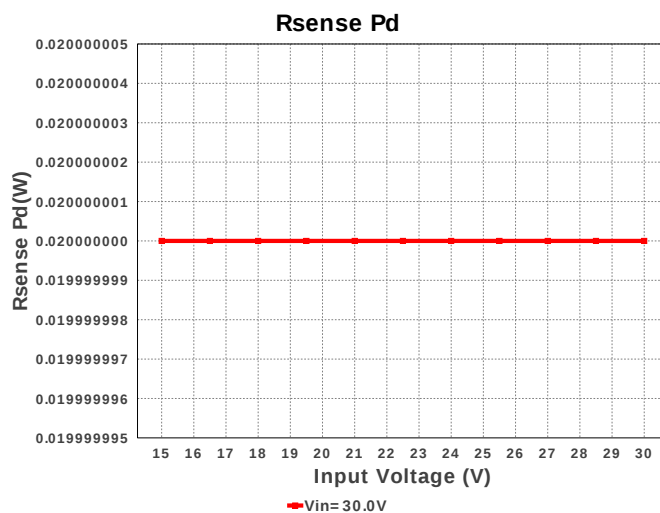
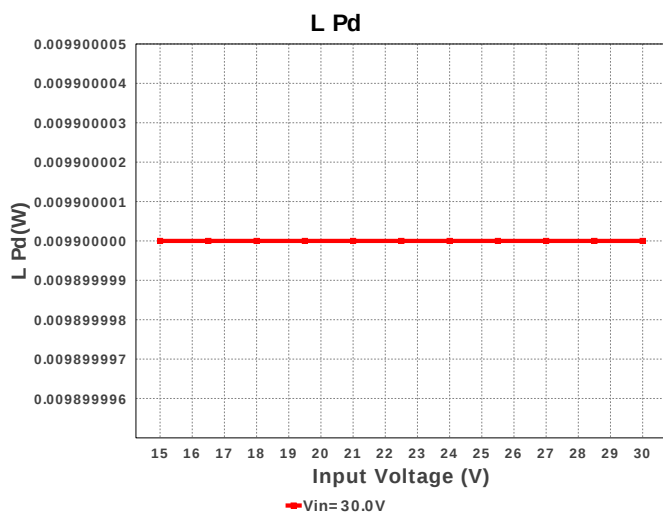


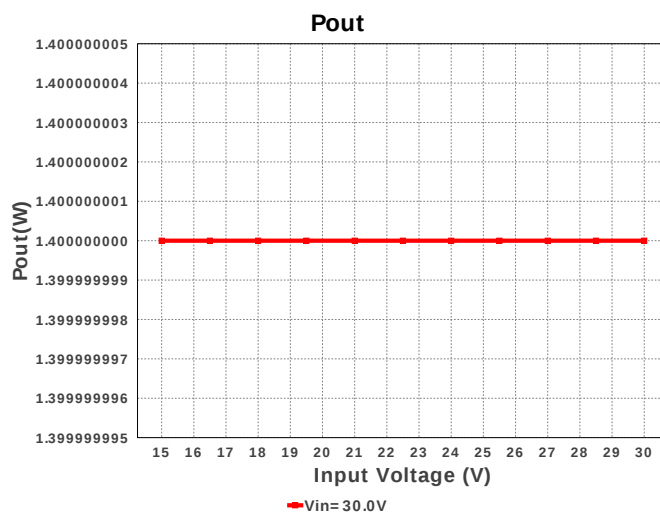
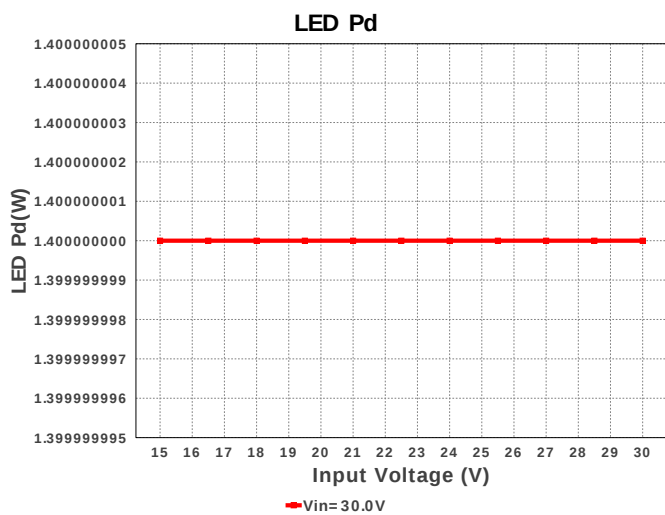
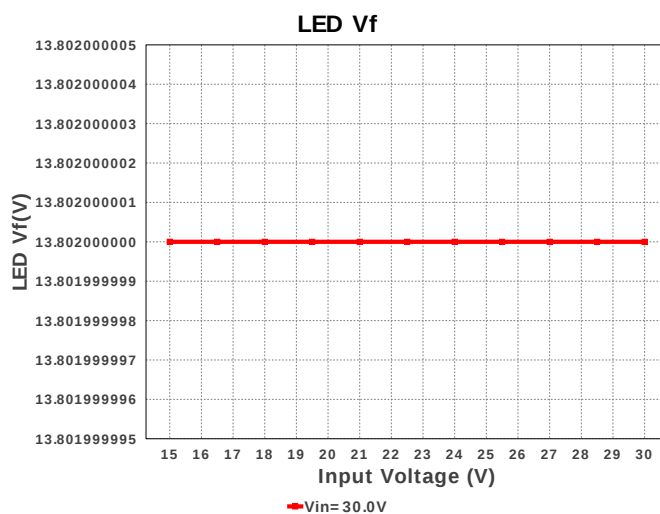
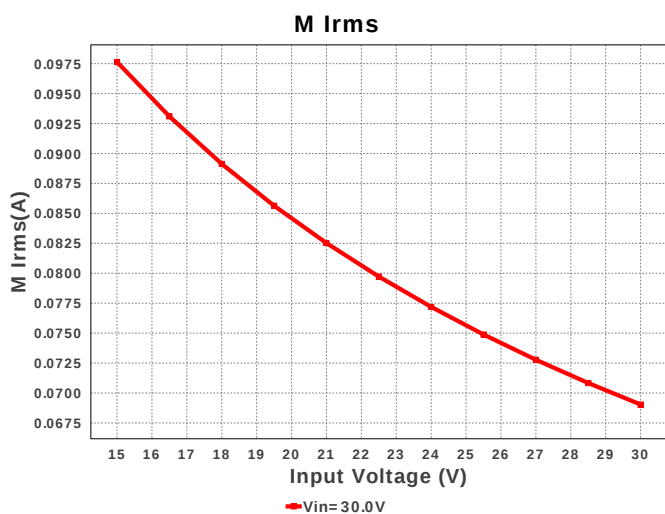
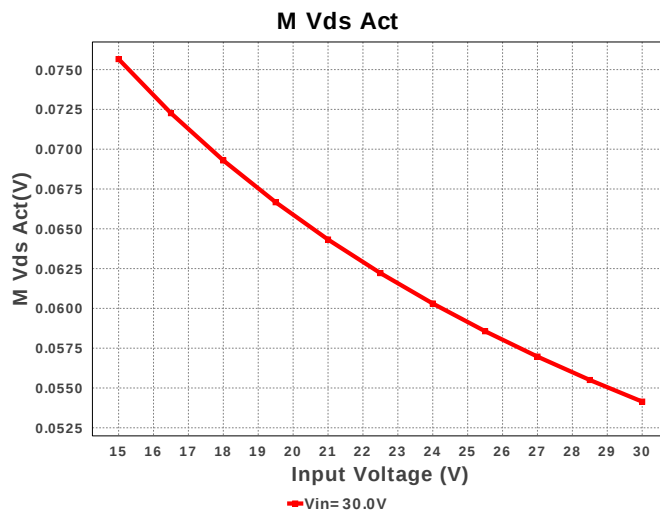
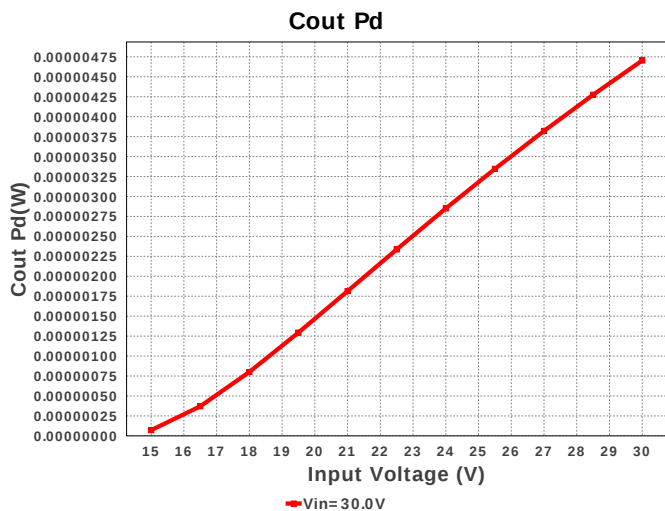
Cin IRMS

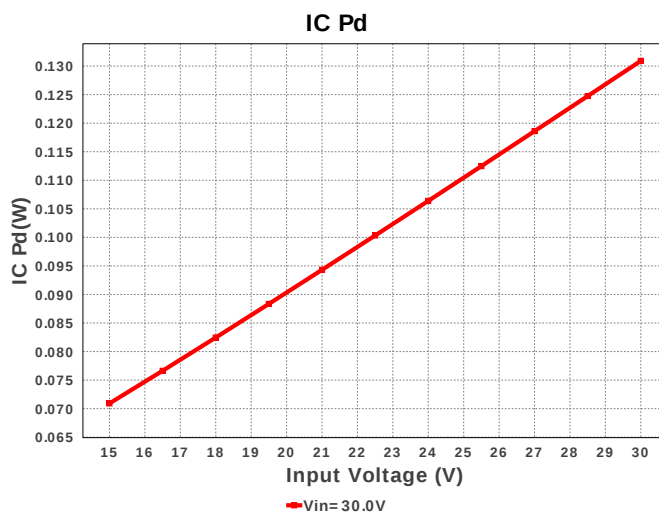
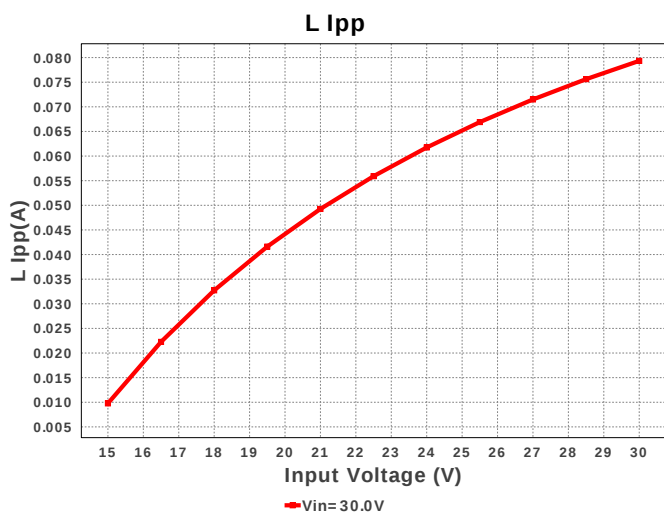
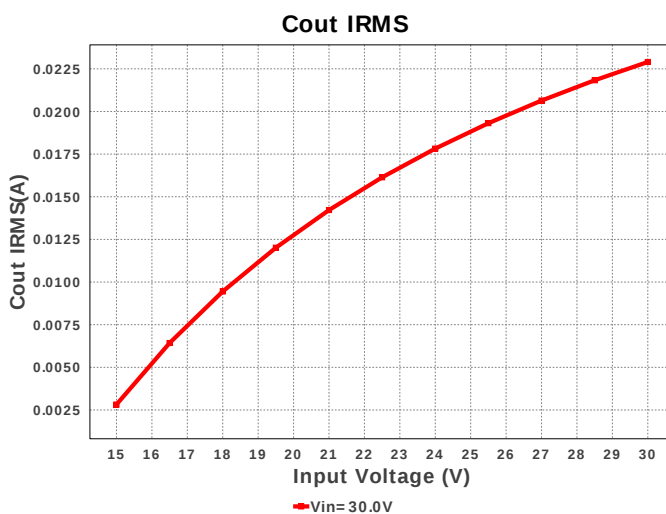
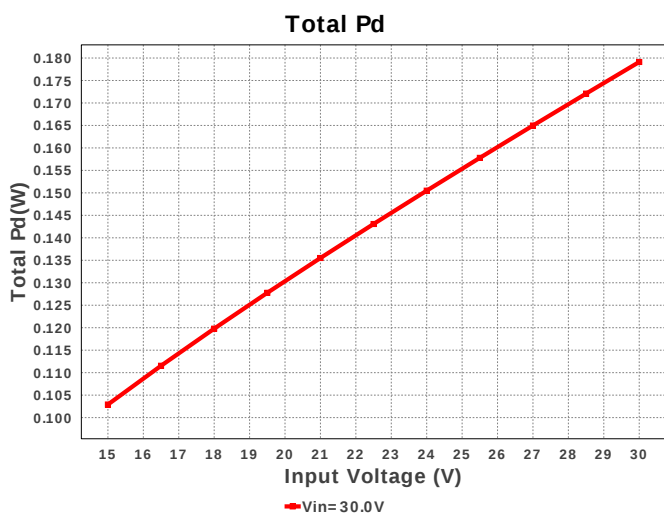
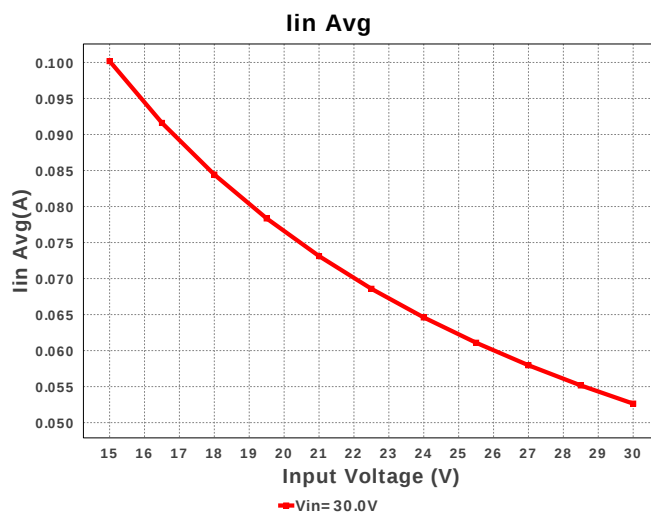
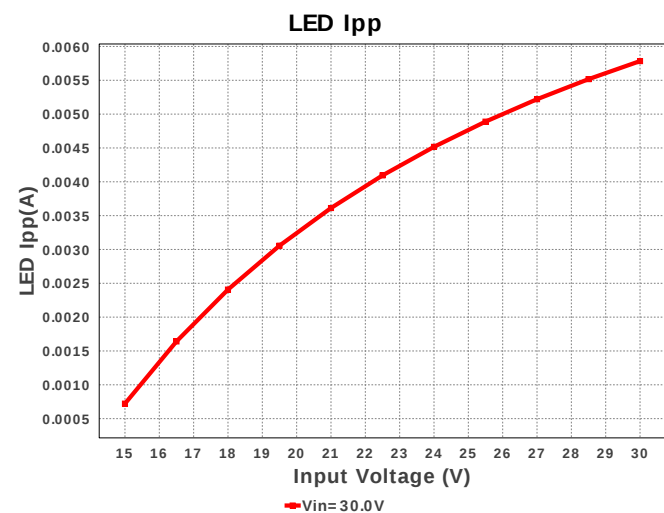


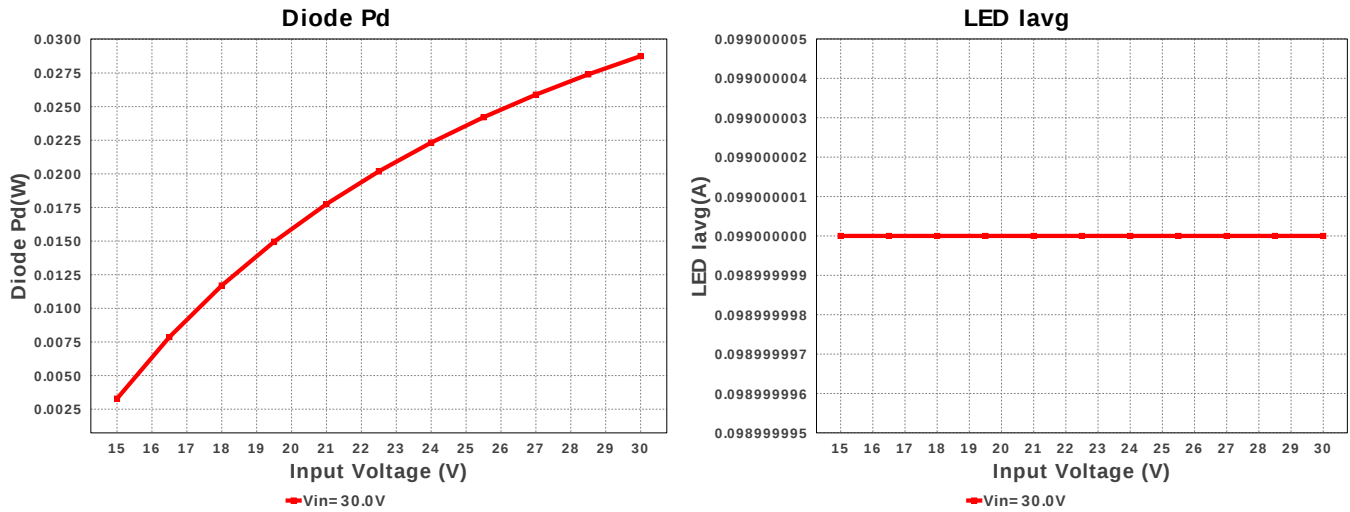
IC Ipk











Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	17.065 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	22.901 mA	Current	Output capacitor RMS ripple current
3.	IC Ipk	139.666 mA	Current	Peak switch current in IC
4.	Iin Avg	52.986 mA	Current	Average input current
5.	L Ipp	79.333 mA	Current	Peak-to-peak inductor ripple current
6.	LED Iavg	99.0 mA	Current	LED Average Current
7.	LED Ipp	5.899 mA	Current	LED Ripple Current
8.	M Irms	69.073 mA	Current	MOSFET RMS current
9.	BOM Count	12	General	Total Design BOM count
10.	FootPrint	128.0 mm ²	General	Total Foot Print Area of BOM components
11.	Frequency	641.504 kHz	General	Switching frequency
12.	IC Tolerance	0.0 V	General	IC Feedback Tolerance
13.	M Vds Act	54.191 mV	General	Voltage drop across the MosFET
14.	Mode	CCM	General	Conduction Mode
15.	Pout	1.4 W	General	Total output power
16.	Total BOM	\$0.0	General	Total BOM Cost
17.	D1 Tj	41.503 degC	Op_Point	D1 junction temperature
18.	Vout OP	14.0 V	Op_Point	Operational Output Voltage
19.	Duty Cycle	47.711 %	Op_point	Duty cycle
20.	Efficiency	88.074 %	Op_point	Steady state efficiency
21.	IC Tj	36.546 degC	Op_point	IC junction temperature
22.	ICThetaJA	50.0 degC/W	Op_point	IC junction-to-ambient thermal resistance
23.	IOUT_OP	100.0 mA	Op_point	Iout operating point
24.	LED Rd	800.0 mOhm	Op_point	LED DynamicResistance
25.	LED Vf	13.802 V	Op_point	Total LED Forward Calculated Voltage
26.	VIN_OP	30.0 V	Op_point	Vin operating point
27.	Cin Pd	1.295 μ W	Power	Input capacitor power dissipation
28.	Cout Pd	4.705 μ W	Power	Output capacitor power dissipation
29.	Diode Pd	28.759 mW	Power	Diode power dissipation
30.	IC Pd	130.914 mW	Power	IC power dissipation
31.	L Pd	9.9 mW	Power	Inductor power dissipation
32.	LED Pd	1.4 W	Power	LED Power Dissipation
33.	Rsense Pd	20.0 mW	Power	LED Power Dissipation
34.	Total Pd	189.573 mW	Power	Total Power Dissipation

Design Inputs

#	Name	Value	Description
1.	Iout	100.0 m	Maximum Output Current
2.	VinMax	30.0	Maximum input voltage
3.	VinMin	15.0	Minimum input voltage
4.	Vout	14.0	Output Voltage
5.	application	LED_DRIVER	LED Application
6.	base_pn	LM3407	Texas Instruments Base Part Number
7.	isLEDArchitect	N	LED Architect Project
8.	ledparallel	1.0	Number of LED in parallel
9.	ledpartnumber	??	LED Part number
10.	ledseries	4.0	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. 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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You should completely validate and test your design implementation to confirm the system functionality for your application prior to production.

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