

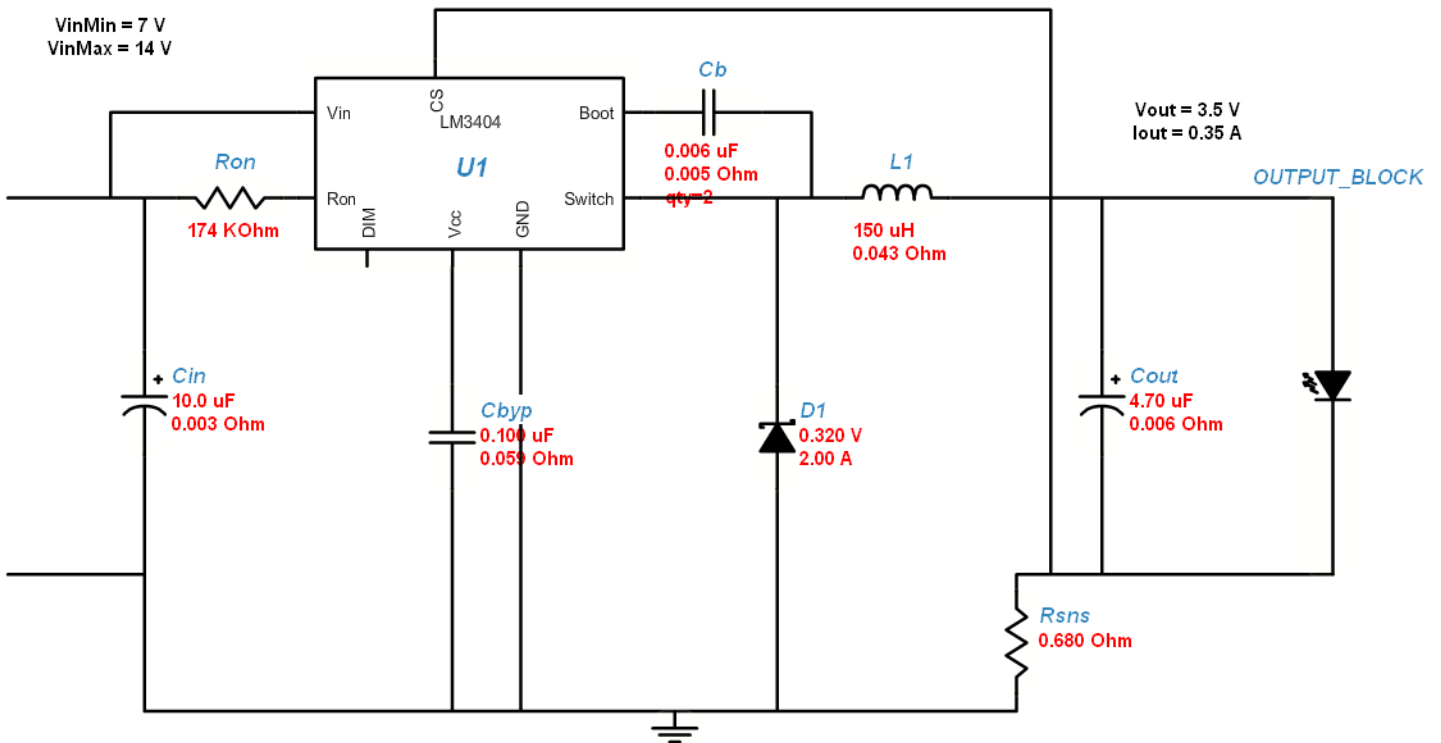
Design 2 - LM3404MA

Introduction

Design Specifications

IC	LM3404	Optimization Factor	5	SoftStart Time	0 milli second
VinMin	7 V	application	LED_DRIVER	userfsw	160 KHertz
VinMax	14 V	ledpartnumber	Custom	usecustomfsw	Y
Vout	3.5 V	ledseries	1	fsw	160 K
Iout	0.35 A	ledparallel	1	NoOutputCap_Confi	N
ta	30	ledrd	0.8	lpp	0

Schematic



Bill of Materials

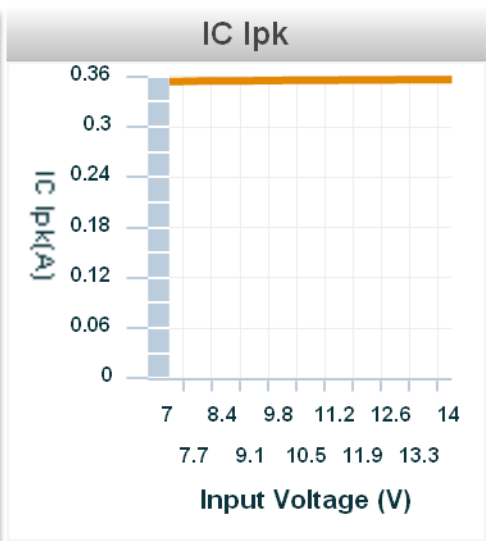
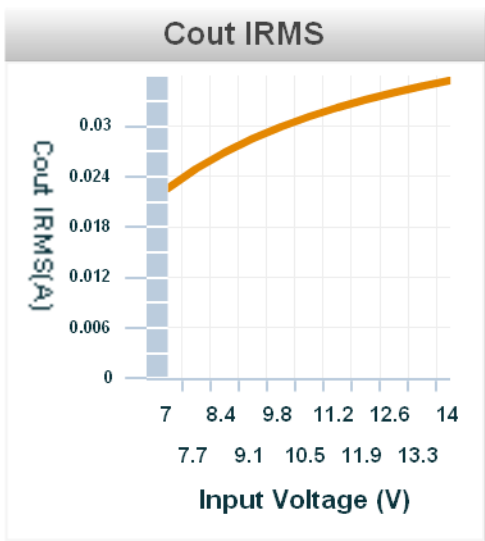
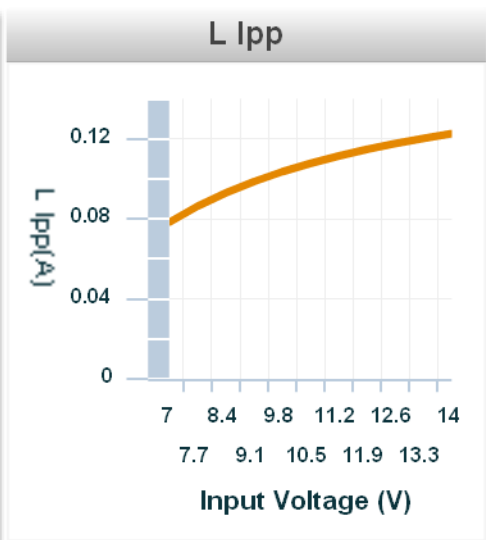
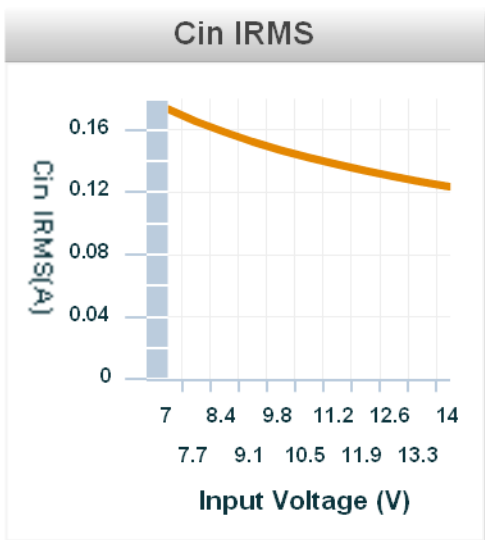
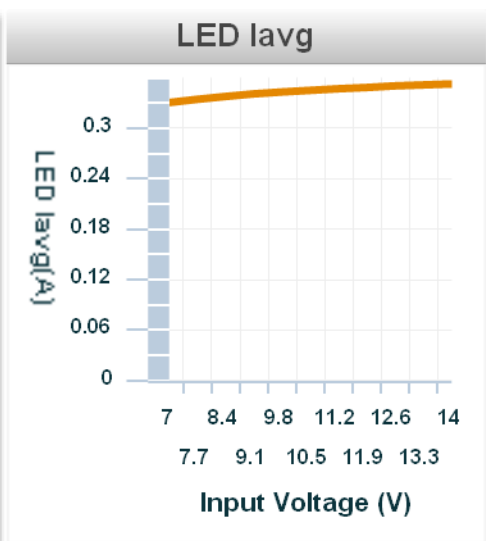
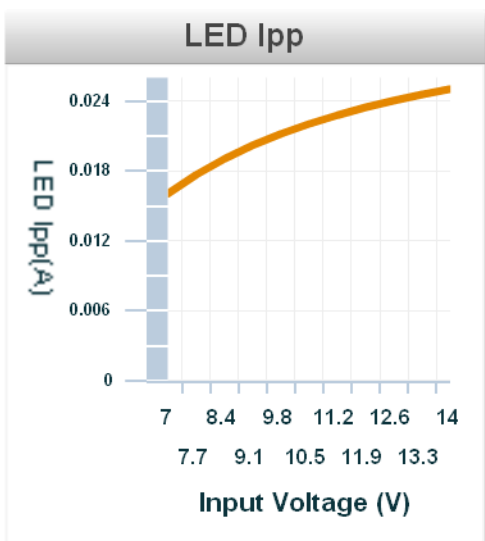
Part	Manufacturer	Part Number	Quantity	Price	Attributes	Top View
Cb	MuRata	GRM3195C2A562JA01D	2	0.17	Cap=5.6nF, ESR=5mOhm, VDC=100V	
Cbyp	Kemet	C1206C104K5RACTU	1	0.02	Cap=100nF, ESR=0.059Ohm, VDC=50V	
Cin	TDK	C3225X7R1E106M	1	0.41	Cap=10uF, ESR=2.7mOhm, VDC=25V	
Cout	TDK	C3216X7R1E475K	1	0.11	Cap=4.7uF, ESR=6.3mOhm, VDC=25V	
D1	Toshiba	CMS06	1	0.19	V _{FatIo} =0.32V, I _o =2A, VRRM=30V	
L1	JW Miller	PM2120-151K-RC	1	1.2	L=150uH, DCR=0.043Ohm, IDC=1.58A	
Ron	Panasonic	ERJ-6ENF1743V	1	0.02	Resistance=174KOhm, Tolerance=1%, Power=0.125W	
Rsns	Panasonic	ERJ-6RQFR68V	1	0.1	Resistance=0.68Ohm,	

Operating Values

Name	Value	Category	Description
LED Ipp	0.02A	Current	LED Ripple Current
LED Iavg	0.35A	Current	LED Average Current
Cin IRMS	0.12A	Current	Input capacitor RMS ripple current
L Ipp	0.12A	Current	Peak-to-peak inductor ripple current
Cout IRMS	0.03A	Current	Output capacitor RMS ripple current
IC Ipk	0.42A	Current	Peak switch current in IC
Iin Avg	0.10A	Current	Average input current
Pout	1.30W	General	Total output power
Frequency	159KHz	General	Switching frequency
Mode	CCM	General	Conduction Mode
FootPrint	849mm ²	General	Total Foot Print Area of BOM components
Total BOM	0\$	General	Total BOM price
ICThetaJA	155degC/W	Op_point	IC junction-to-ambient thermal resistance
Efficiency	85.5%	Op_point	Steady state efficiency
M_Vds_Act	0.14V	Op_point	
VIN_OP	14V	Op_point	Vin operating point
Duty Cycle	28.4%	Op_point	Duty cycle
IOUT_OP	0.35A	Op_point	Iout operating point
M_Irms_Act	0.18A	Op_point	Q Iavg
IC Tj	37.8degC	Op_point	IC junction temperature
LED Vf	3.5V	Op_point	Total LED Forward Calculated Voltage
LED Rd	0.8Ohm	Op_point	LED DynamicResistance
Cin Pd	41.3uW	Power	Input capacitor power dissipation
Cout Pd	7.91uW	Power	Output capacitor power dissipation
Diode Pd	0.08W	Power	Diode power dissipation
Rsense Pd	0.08W	Power	LED Power Dissipation
IC Pd	0.05W	Power	IC power dissipation
LED Pd	1.23W	Power	LED Power Dissipation
L Pd	5.79mW	Power	Inductor power dissipation
Total Pd	0.22W	Power	Total Power Dissipation

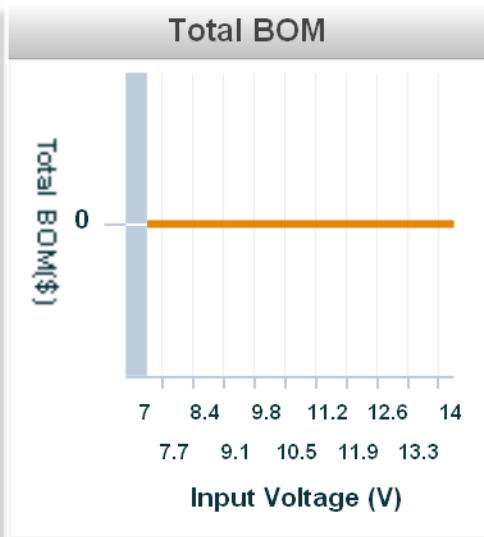
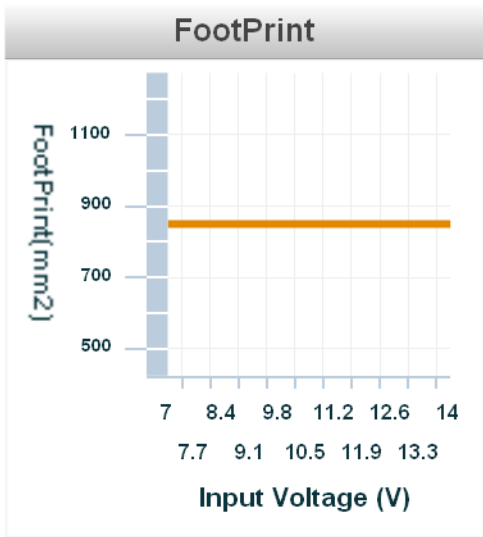
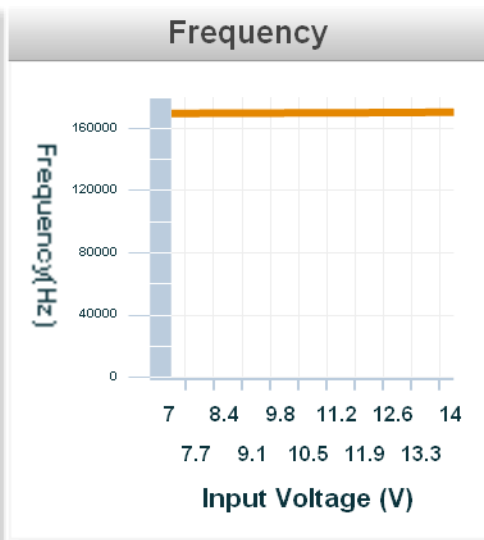
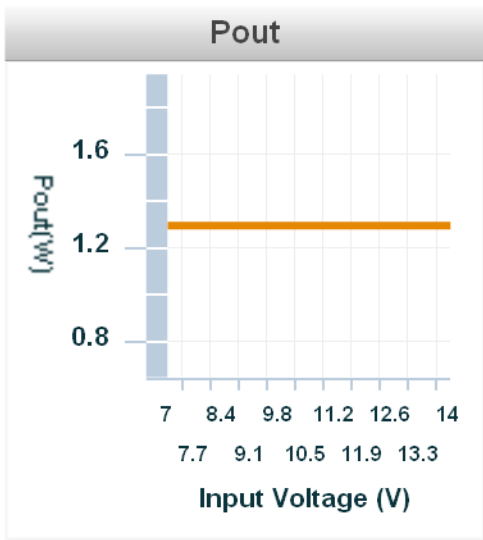
Charts

Current



Charts (Continued)

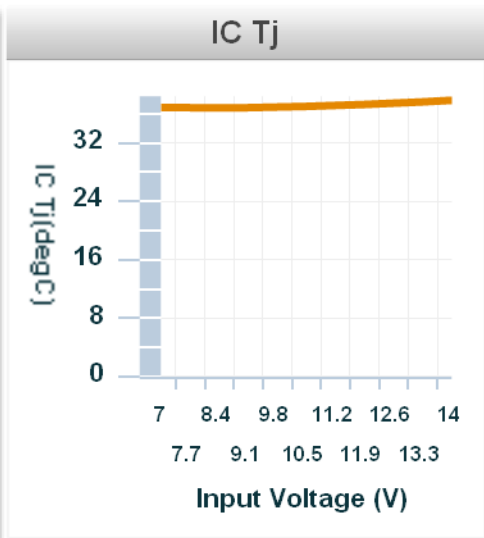
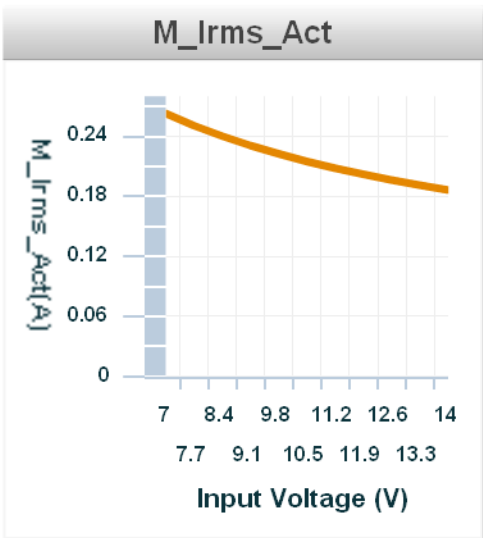
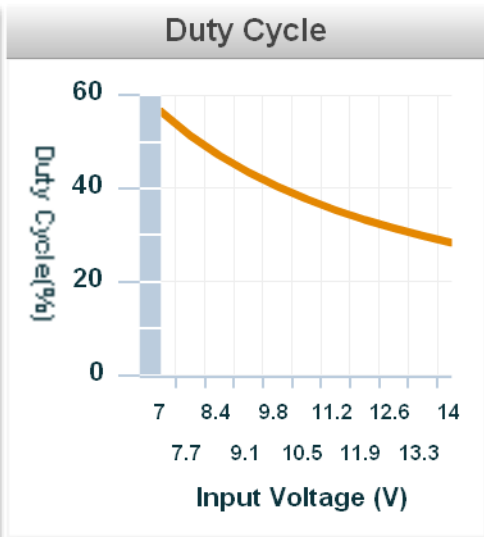
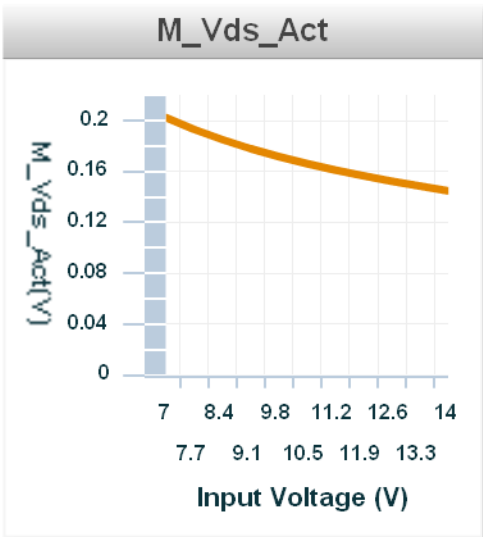
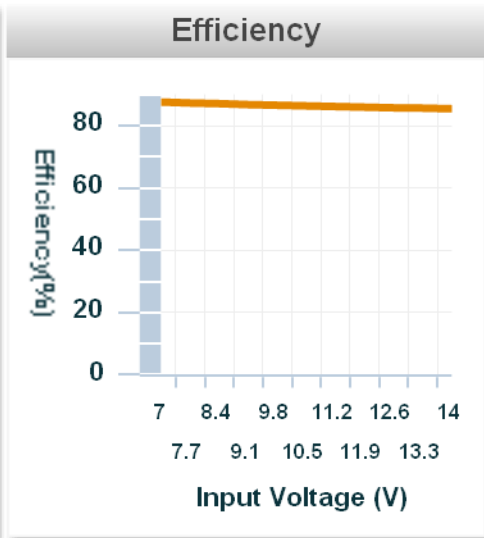
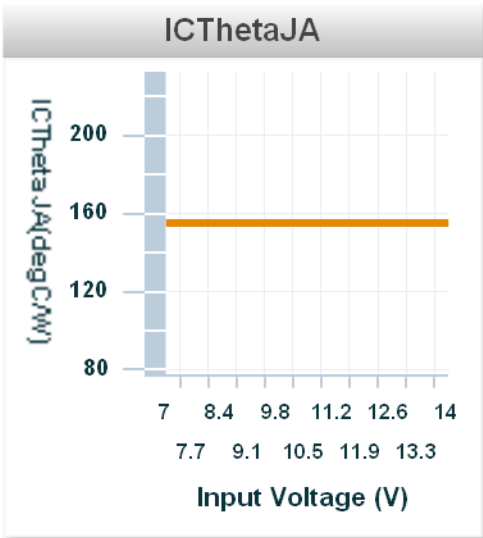
General



Charts (Continued)

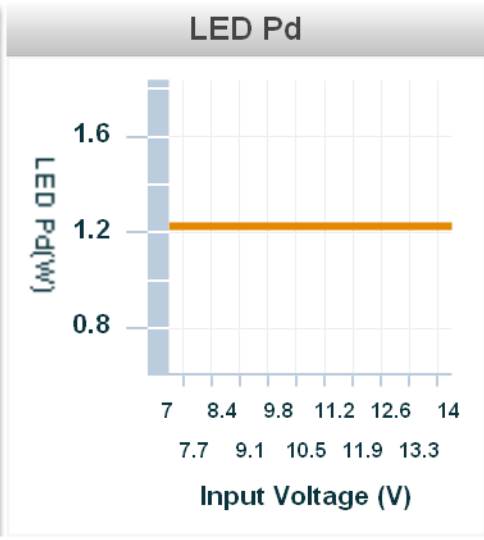
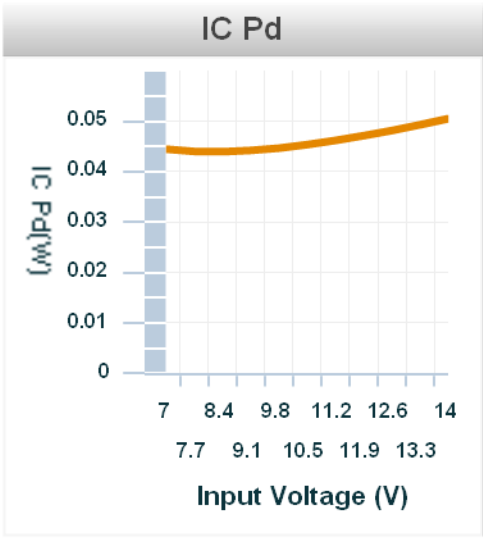
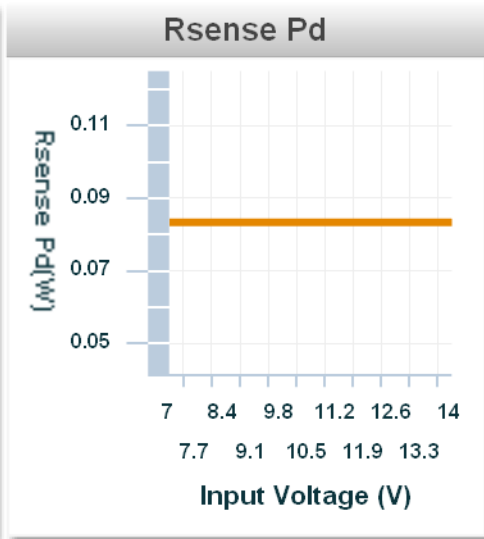
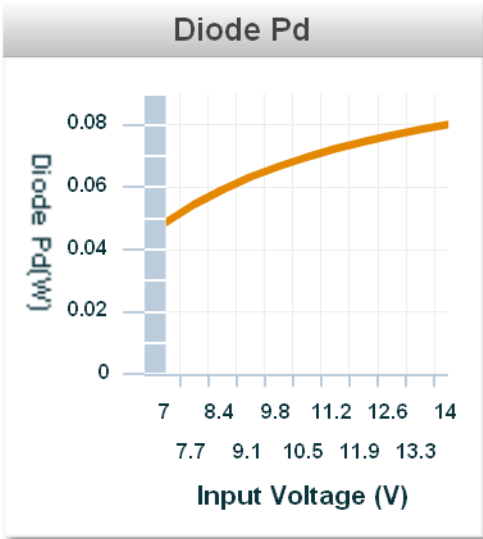
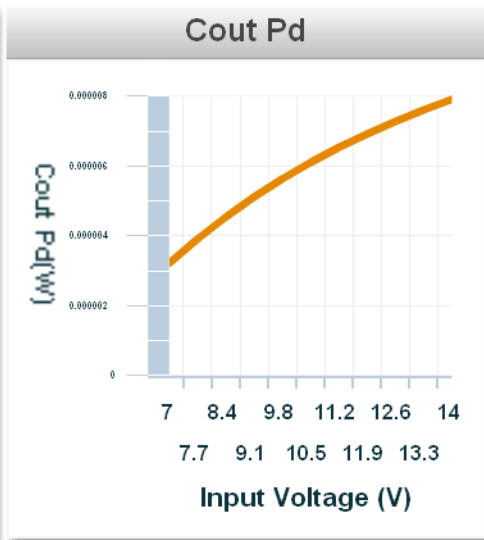
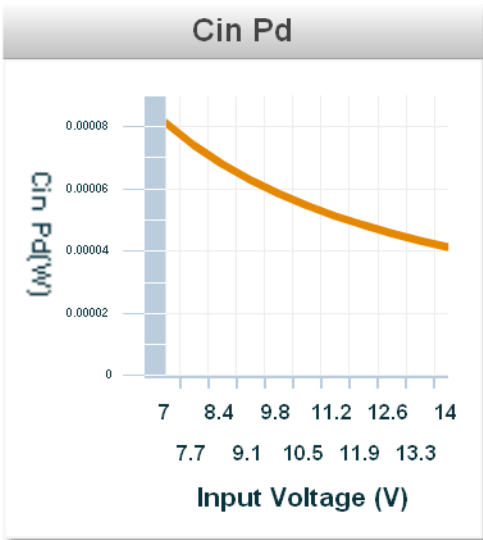
Op_point

■ Vin=14.00V



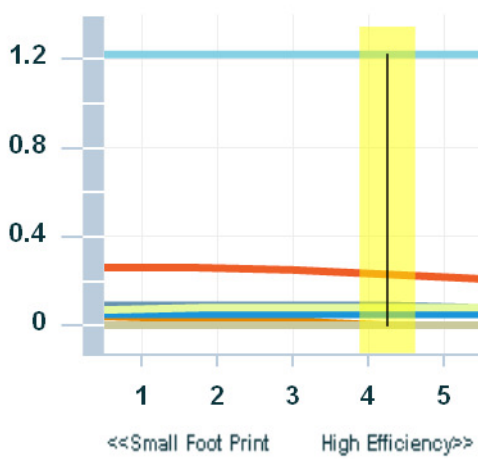
Charts (Continued)

Power



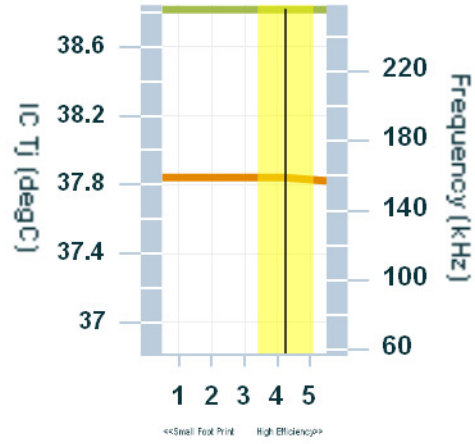
Optimization Plots

Power Dissipation Chart



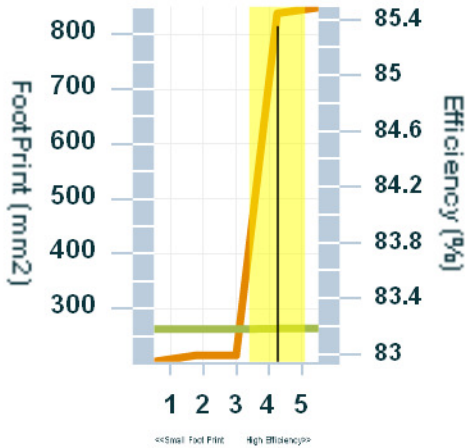
- L Pd
- Cin Pd
- IC Pd
- Cout Pd
- Diode Pd
- Total Pd
- LED Pd
- Rsense Pd

IC Temperature and Frequency Chart



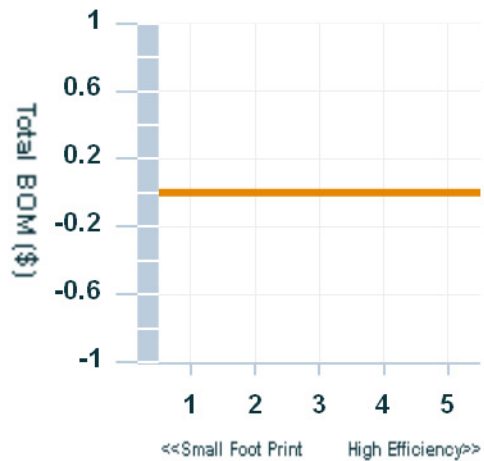
- IC Tj
- Frequency

Footprint And Efficiency Chart



- FootPrint
- Efficiency

Total BOM Price Chart



- Total BOM