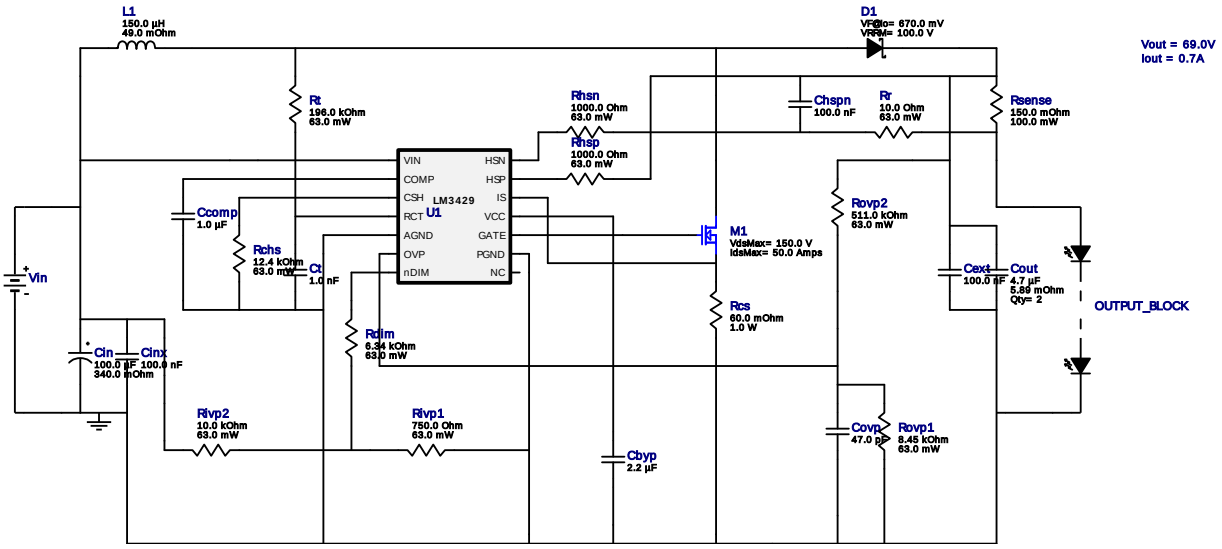
VinMin = 20.0V
VinMax = 32.0V
Vout = 69.0V
Iout = 0.7A

Device = LM3429MH/NOPB
Topology = Boost
Created = 7/15/16 8:18:09 PM
BOM Cost = $26.35
BOM Count = 32
Total Pd = 7.34W

WEBENCH® Design Report

Design : 906020/2246 LM3429MH/NOPB
LM3429MH/NOPB 20.0V-32.0V to 113.18V @ 0.6639684946236559A



1. This regulator device is qualified for Automotive applications. All passives and other components selected in this design may not be qualified for Automotive applications. The user is required to verify that all components in the design meet the qualification and safety requirements for their specific application.View WEBENCH(R) Disclaimer.

Electrical BOM

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cbyp	Taiyo Yuden	EMK212B7225KG-T Series= X7R	Cap= 2.2 uF VDC= 16.0 V IRMS= 0.0 A	1	$0.03	0805 7 mm²
2.	Ccomp	Taiyo Yuden	EMK212B7105KG-T Series= X7R	Cap= 1.0 uF VDC= 16.0 V IRMS= 0.0 A	1	$0.02	0805 7 mm²
3.	Cext	Taiyo Yuden	HMK212B7104KG-T Series= X7R	Cap= 100.0 nF VDC= 100.0 V IRMS= 0.0 A	1	$0.03	0805 7 mm²
4.	Chspn	MuRata	GRM21BR71E104KA01L Series= X7R	Cap= 100.0 nF VDC= 25.0 V IRMS= 0.0 A	1	$0.01	0805 7 mm²
5.	Cin	Panasonic	EEE-FK1H101P Series= FK	Cap= 100.0 uF ESR= 340.0 mOhm VDC= 50.0 V IRMS= 350.0 mA	1	$0.24	SM_RADIAL_F 124 mm²
6.	Cinx	MuRata	GRM188R72A104KA35D Series= X7R	Cap= 100.0 nF VDC= 100.0 V IRMS= 0.0 A	1	$0.03	0603 5 mm²
7.	Cout	TDK	C3225X7S2A475M200AB Series= X7S	Cap= 4.7 uF ESR= 5.89 mOhm VDC= 100.0 V IRMS= 6.7739 A	2	$0.42	1210 15 mm²
8.	Covp	Kemet	C0805C470K5GACTU Series= C0G/NP0	Cap= 47.0 pF VDC= 50.0 V IRMS= 0.0 A	1	$0.01	0805 7 mm²
9.	Ct	Samsung Electro-Mechanics	CL21C102JBCNFNC Series= C0G/NP0	Cap= 1.0 nF VDC= 50.0 V IRMS= 0.0 A	1	$0.01	0805 7 mm²

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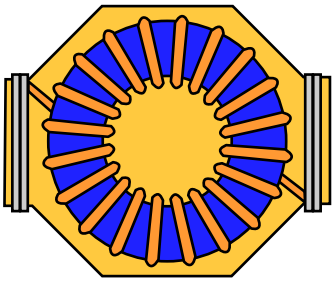
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
10.	D1	Fairchild Semiconductor	FSV8100V	VF@Io= 670.0 mV VRRM= 100.0 V	1	$0.21	 TO-277A 56 mm^2
11.	D_LED	Cree	XHP50A-00-0000-0D00J20DT	LED	6	$3.51	 xlampxhp 0 mm^2
12.	L1	Bourns	PM2110-151K-RC	L= 150.0 µH DCR= 49.0 mOhm	1	$1.21	 PM2110 890 mm^2
13.	M1	Infineon Technologies	BSC190N15NS3 G	VdsMax= 150.0 V IdsMax= 50.0 Amps	1	$1.18	 PG-TDSON-8 55 mm^2
14.	Rchs	Vishay-Dale	CRCW040212K4FKED Series= CRCW..e3	Res= 12.4 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	 0402 3 mm^2
15.	Rcs	Stackpole Electronics Inc	CSRN2010FK60L0 Series= ?	Res= 60.0 mOhm Power= 1.0 W Tolerance= 1.0%	1	$0.14	 2010 32 mm^2
16.	Rdim	Vishay-Dale	CRCW04026K34FKED Series= CRCW..e3	Res= 6.34 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	 0402 3 mm^2
17.	Rhsn	Vishay-Dale	CRCW04021K00FKED Series= CRCW..e3	Res= 1000.0 Ohm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	 0402 3 mm^2
18.	Rhsp	Vishay-Dale	CRCW04021K00FKED Series= CRCW..e3	Res= 1000.0 Ohm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	 0402 3 mm^2
19.	Rivp1	Vishay-Dale	CRCW0402750RFKED Series= CRCW..e3	Res= 750.0 Ohm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	 0402 3 mm^2
20.	Rivp2	Vishay-Dale	CRCW040210K0FKED Series= CRCW..e3	Res= 10.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	 0402 3 mm^2
21.	Rovp1	Vishay-Dale	CRCW04028K45FKED Series= CRCW..e3	Res= 8.45 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	 0402 3 mm^2
22.	Rovp2	Vishay-Dale	CRCW0402511KFKED Series= CRCW..e3	Res= 511.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	 0402 3 mm^2
23.	Rr	Vishay-Dale	CRCW040210R0FKED Series= CRCW..e3	Res= 10.0 Ohm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	 0402 3 mm^2
24.	Rsense	Panasonic	ERJ-3RSFR15V Series= ERJ-3R	Res= 150.0 mOhm Power= 100.0 mW Tolerance= 1.0%	1	$0.03	 0603 5 mm^2
25.	Rt	Vishay-Dale	CRCW0402196KFKED Series= CRCW..e3	Res= 196.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	 0402 3 mm^2

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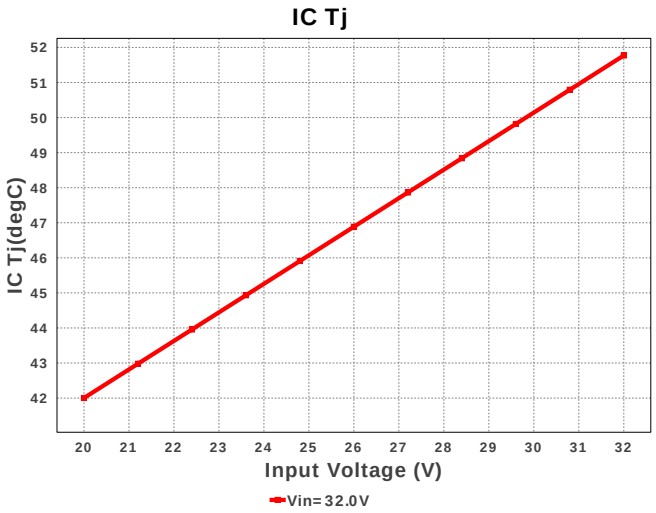
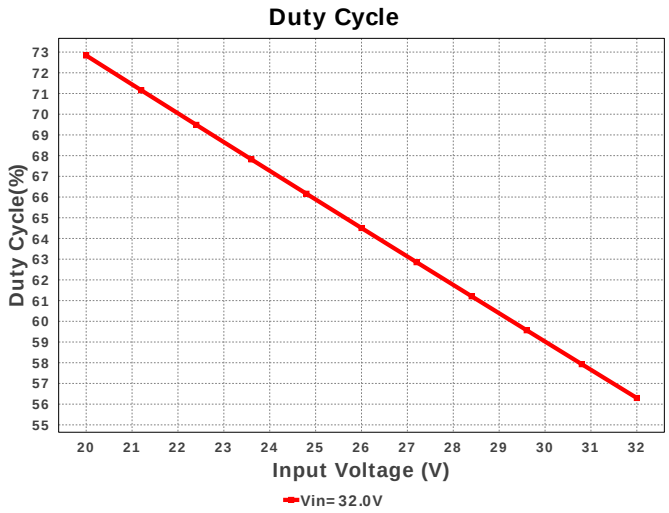
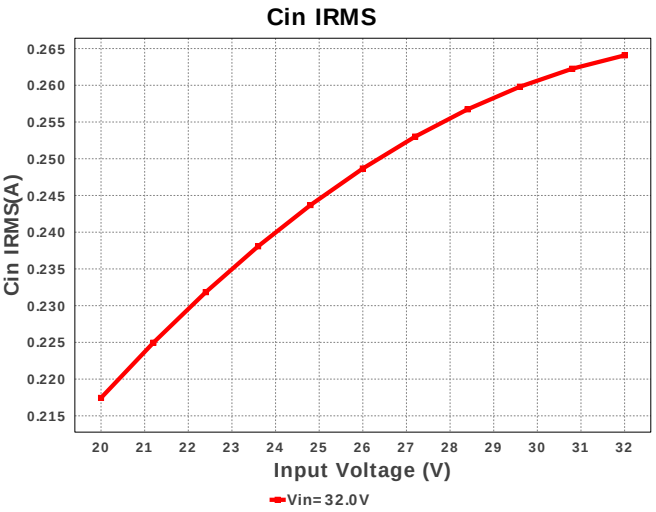
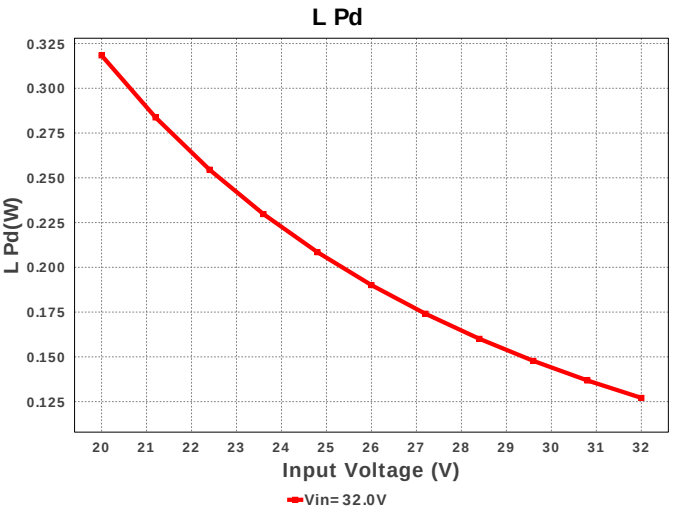
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
26.	U1	Texas Instruments	LM3429MH/NOPB	Switcher	1	$1.20	MXA14A 59 mm²









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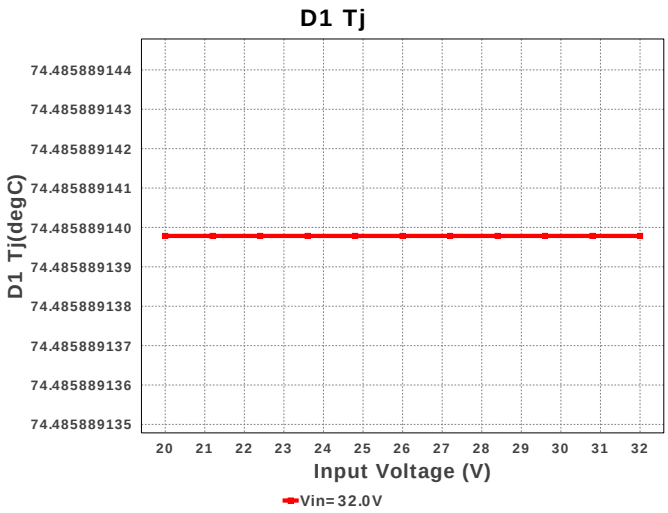

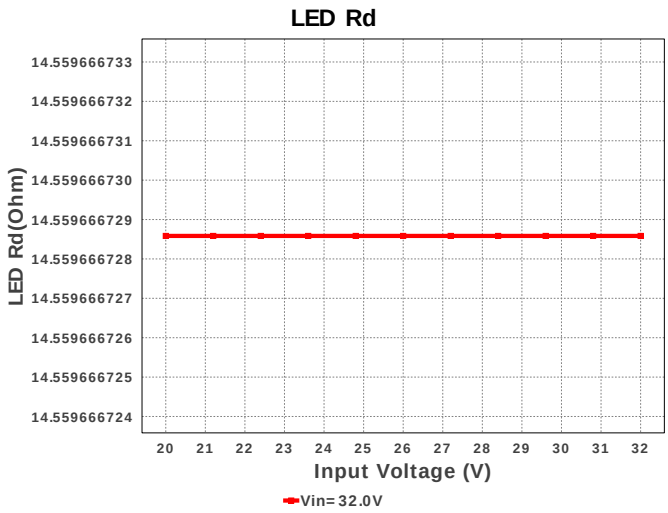

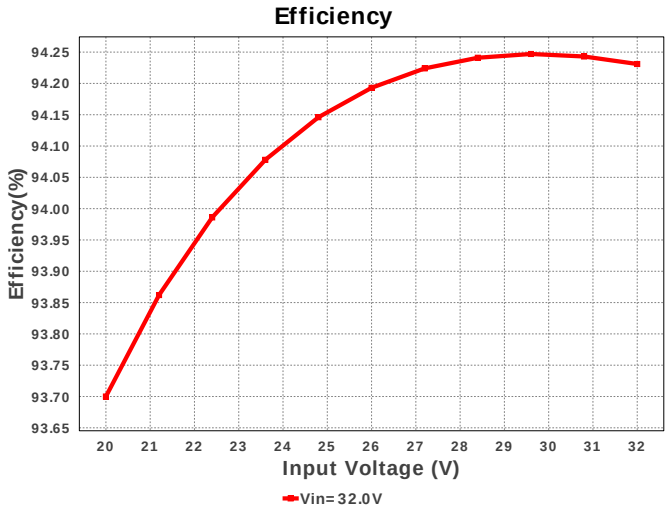

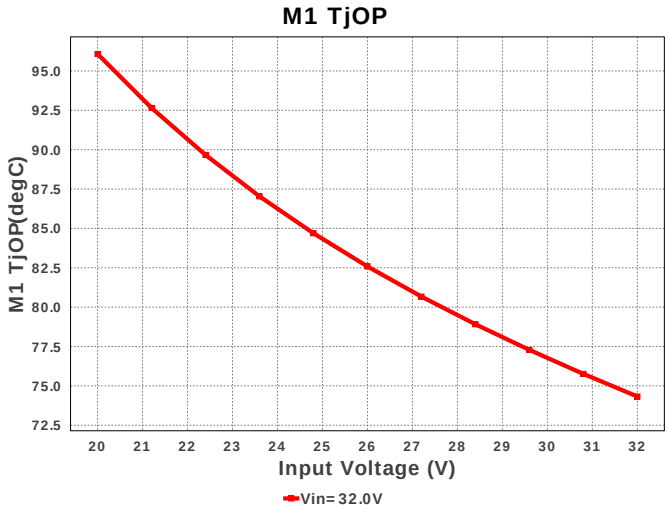

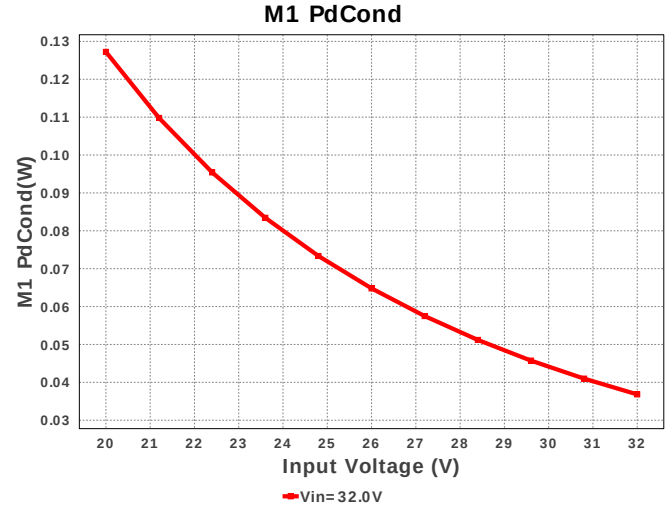

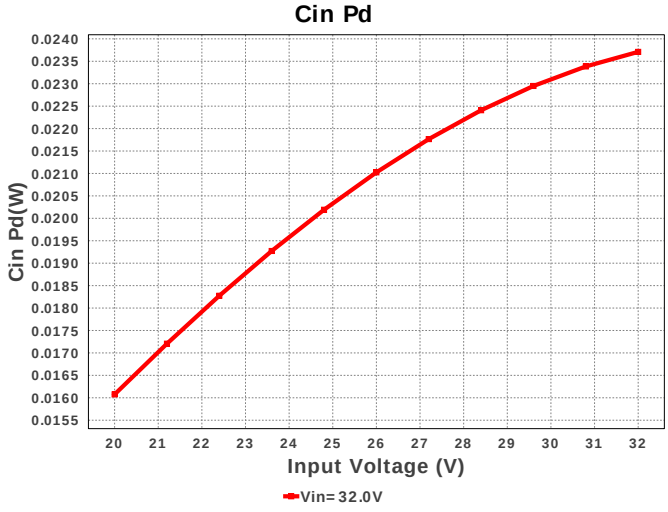

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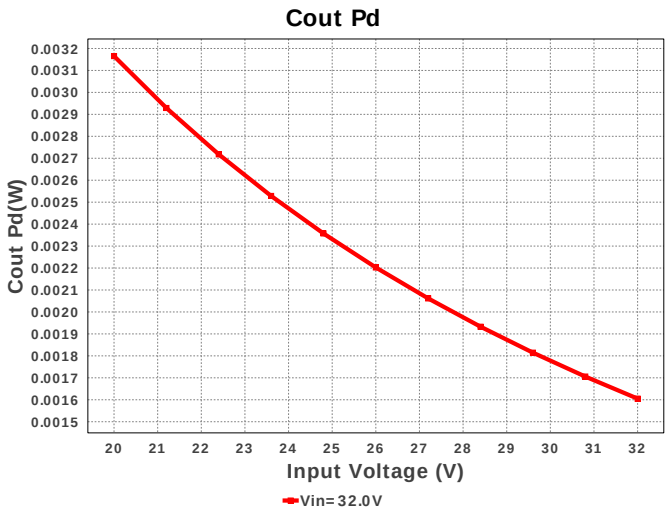

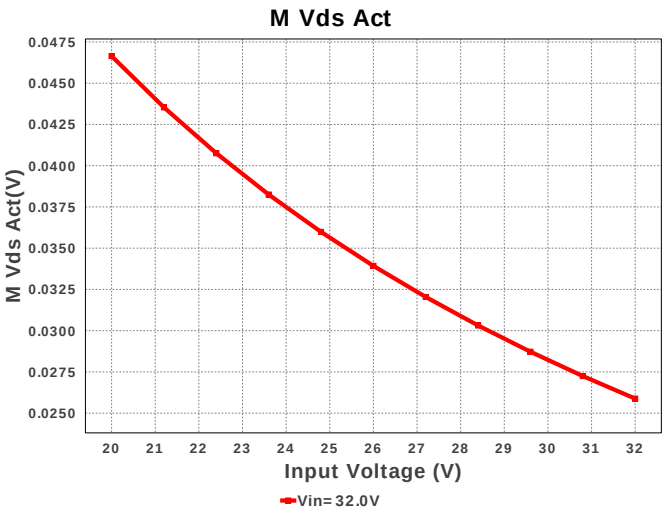

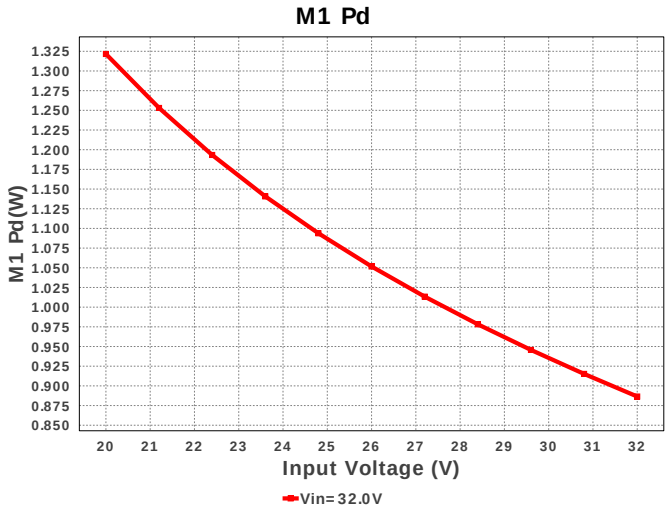

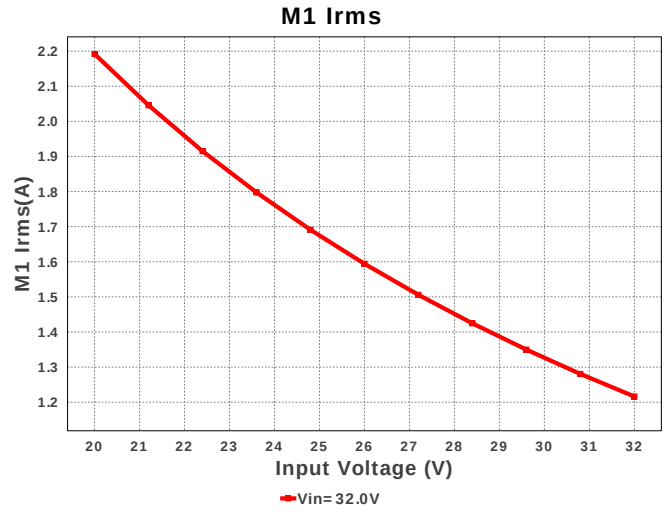

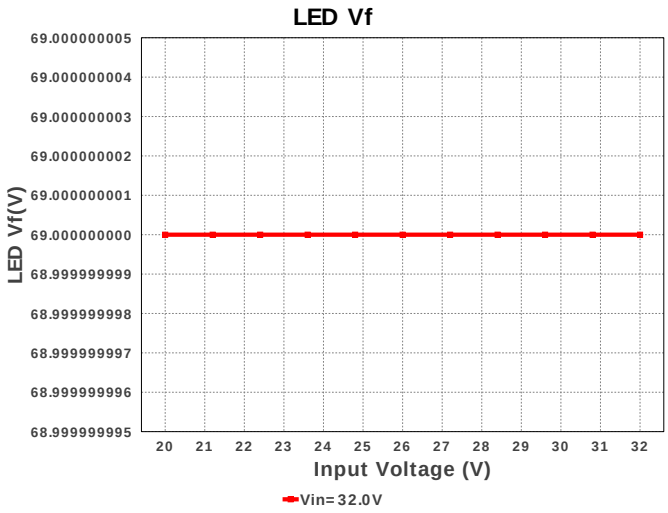

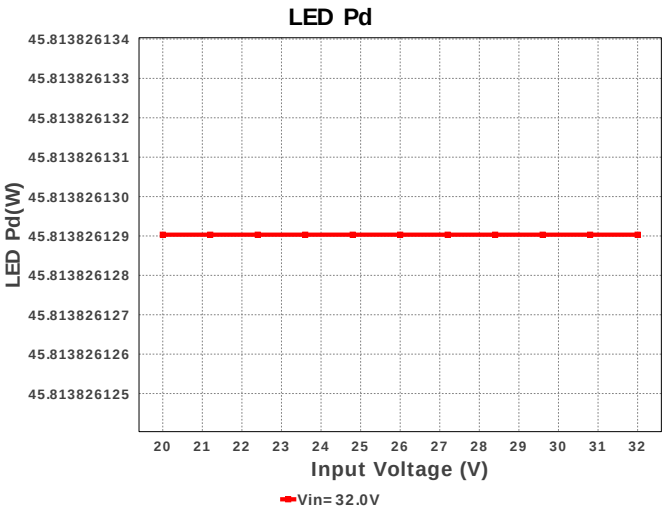

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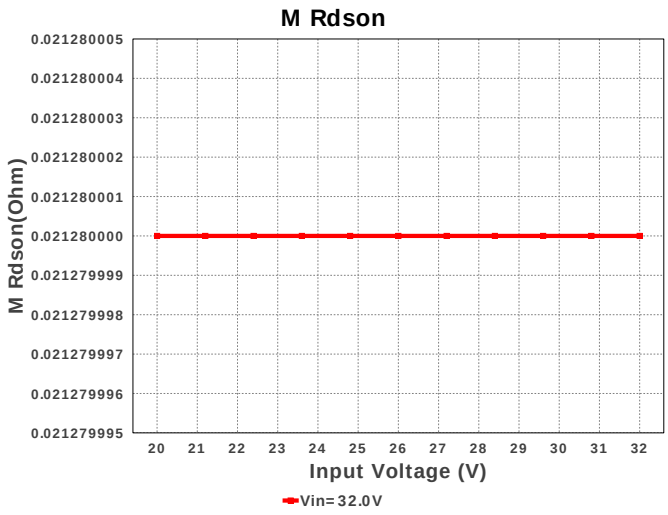

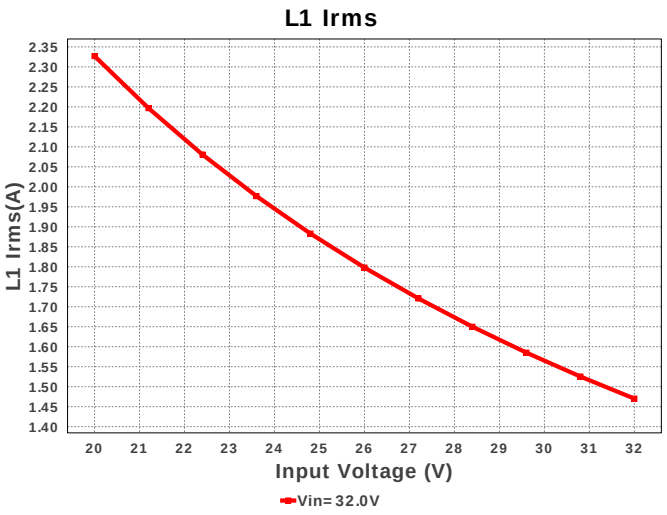

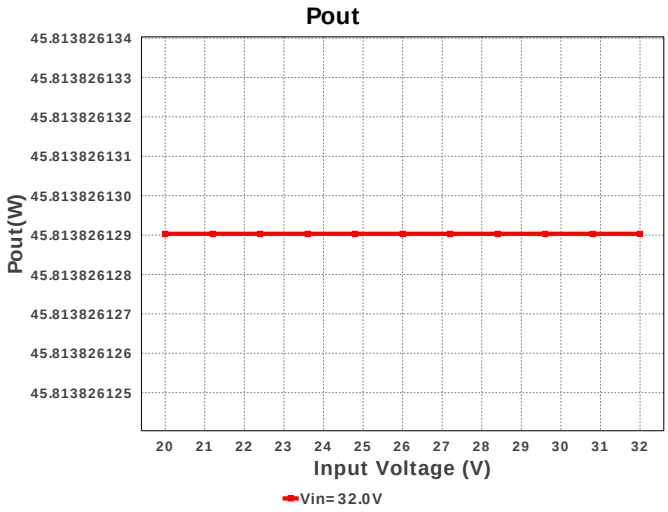

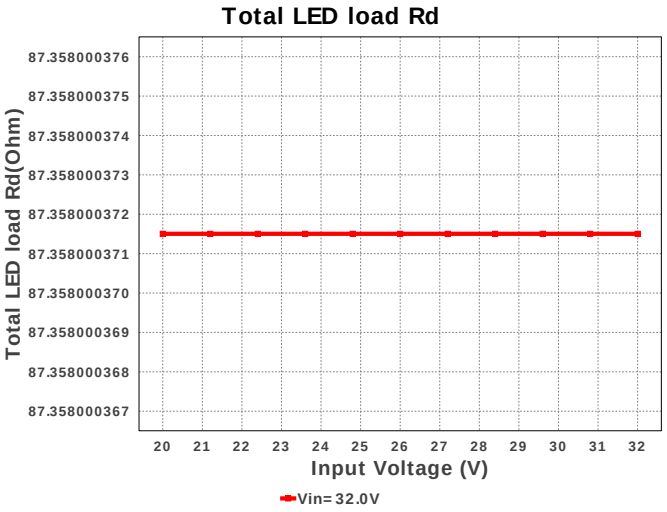

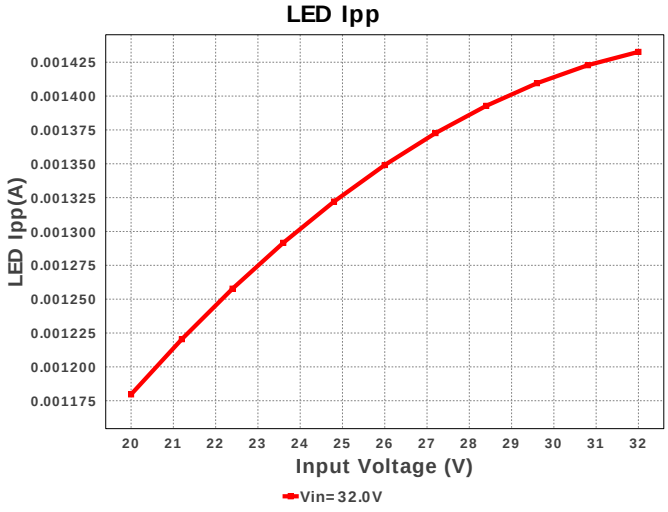

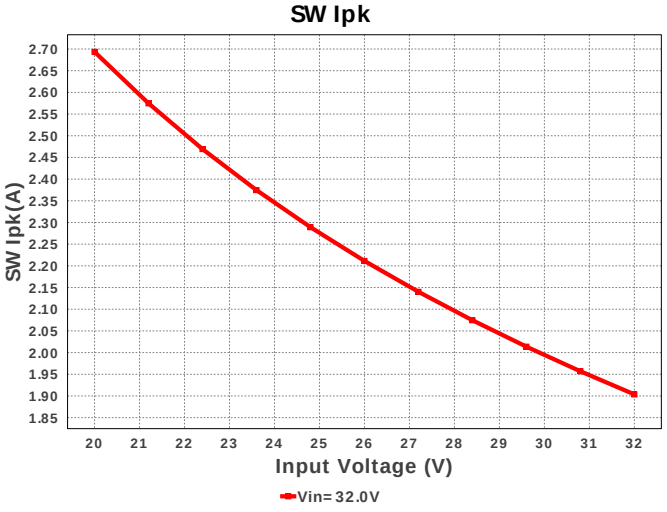

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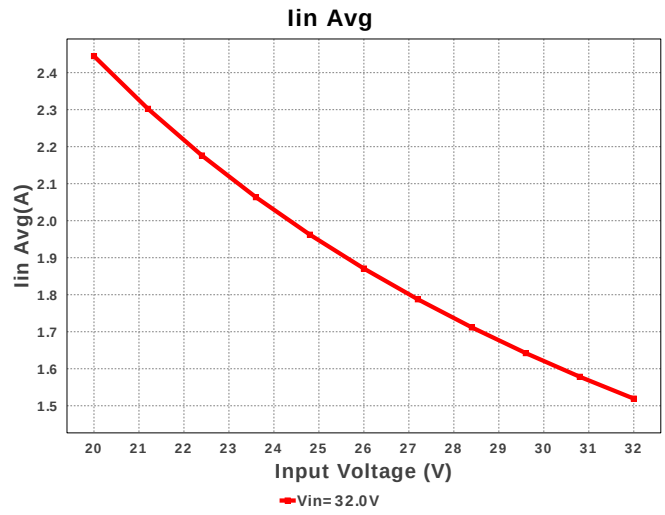

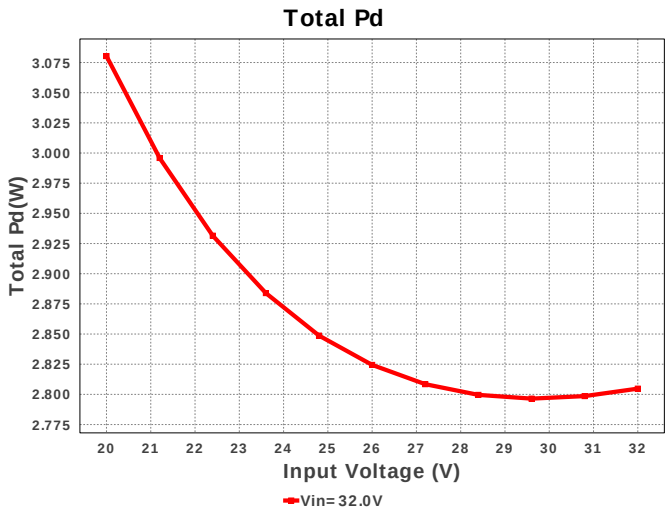

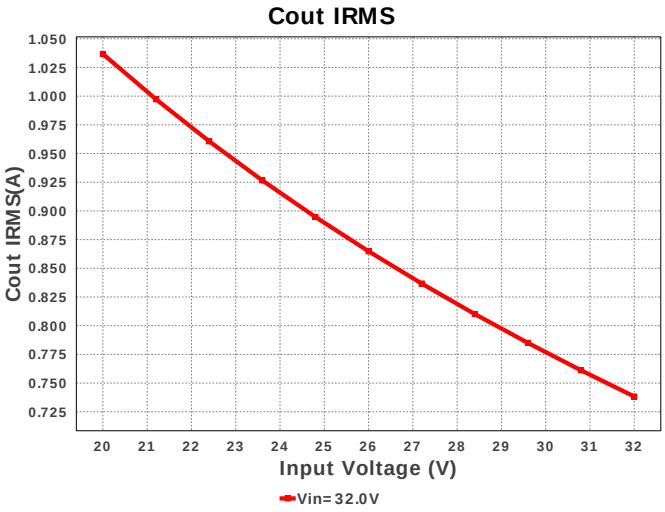

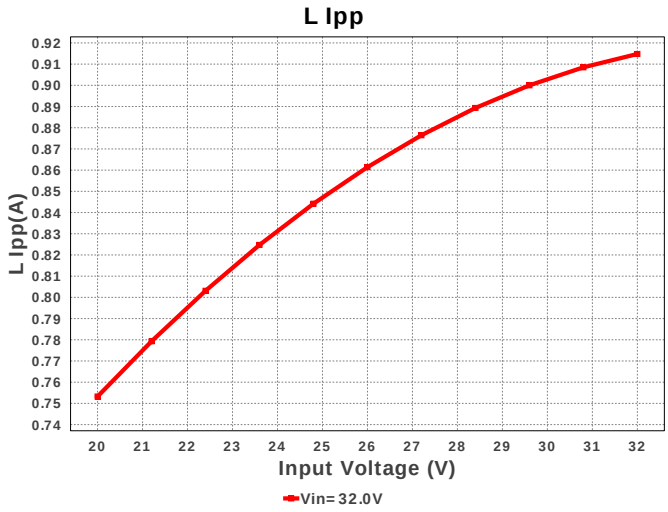

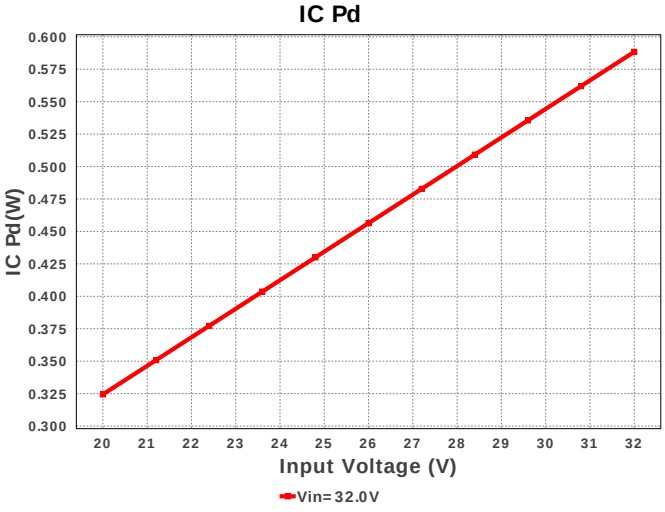

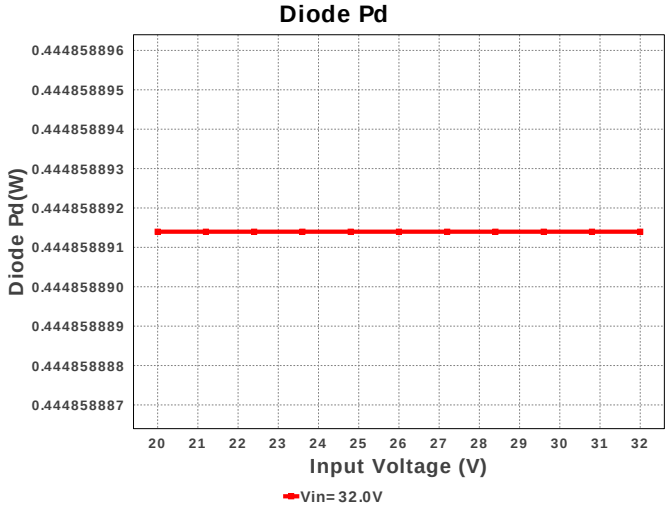

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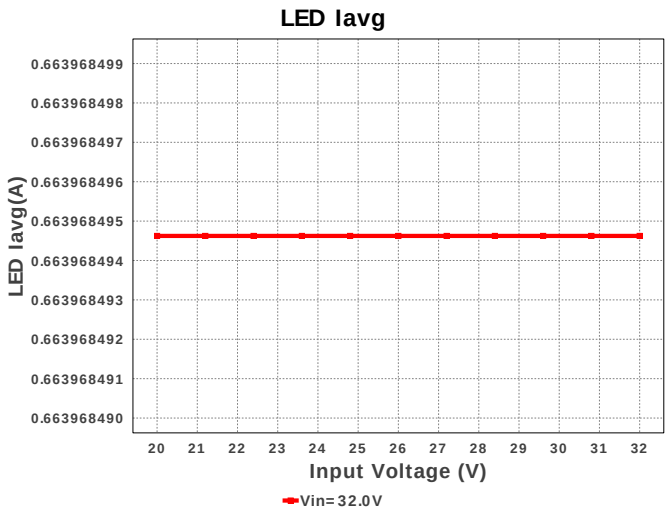

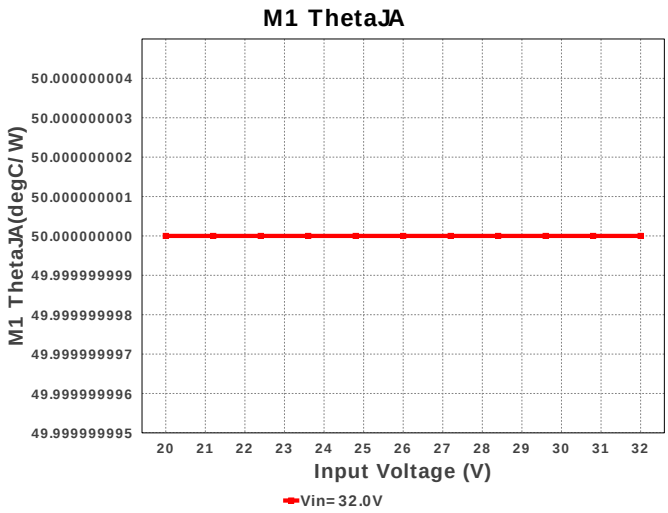

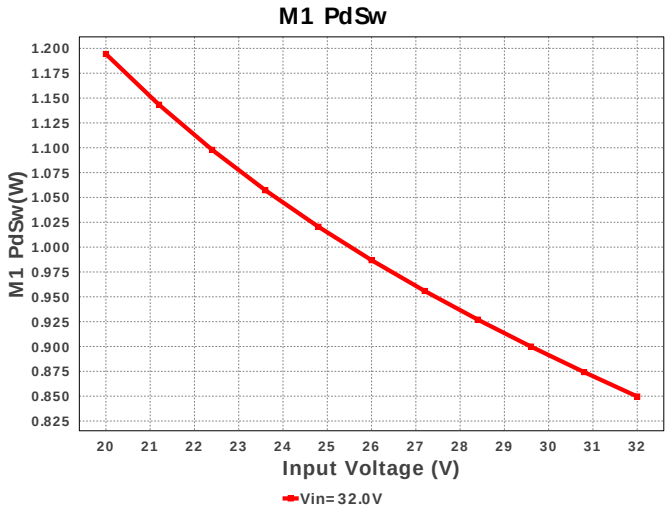

Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	251.499 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	1.395 A	Current	Output capacitor RMS ripple current
3.	Iin Avg	4.124 A	Current	Average input current
4.	L Ipp	871.22 mA	Current	Peak-to-peak inductor ripple current
5.	L1 Irms	3.793 A	Current	Inductor ripple current
6.	LED Iavg	663.968 mA	Current	LED Average Current
7.	LED Ipp	1.364 mA	Current	LED Ripple Current
8.	M1 Irms	3.836 A	Current	M1 MOSFET Irms
9.	SW Ipk	4.22 A	Current	Peak switch current
10.	BOM Count	32	General	Total Design BOM count
11.	FootPrint	1.325 k mm^2	General	Total Foot Print Area of BOM components
12.	Frequency	126.276 kHz	General	Switching frequency
13.	IC Tolerance	25.0 mV	General	IC Feedback Tolerance
14.	M Rdson	6.8 mOhm	General	Drain-Source On-resistance
15.	M Vds Act	26.082 mV	General	M Vds
16.	M1 ThetaJA	50.0 degC/W	General	MOSFET junction-to-ambient thermal resistance
17.	Pout	75.145 W	General	Total output power
18.	Total BOM	$26.35	General	Total BOM Cost
19.	D1 Tj	168.479 degC	Op_Point	D1 junction temperature
20.	Vout OP	113.176 V	Op_Point	Operational Output Voltage
21.	Duty Cycle	83.887 %	Op_point	Duty cycle
22.	Efficiency	91.099 %	Op_point	Steady state efficiency
23.	IC Tj	42.042 degC	Op_point	IC junction temperature
24.	ICThetaJA	37.0 degC/W	Op_point	IC junction-to-ambient thermal resistance
25.	IOUT_OP	663.97 mA	Op_point	Iout operating point
26.	LED Rd	14.56 Ohm	Op_point	LED DynamicResistance
27.	LED Vf	113.176 V	Op_point	Total LED Forward Calculated Voltage
28.	M1 TjOP	205.639 degC	Op_point	M1 MOSFET junction temperature
29.	VIN_OP	20.0 V	Op_point	Vin operating point
30.	Cin Pd	21.506 mW	Power	Input capacitor power dissipation
31.	Cout Pd	5.731 mW	Power	Output capacitor power dissipation

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#	Name	Value	Category	Description
32.	Diode Pd	1.385 W	Power	Diode power dissipation
33.	IC Pd	325.457 mW	Power	IC power dissipation
34.	L Pd	845.823 mW	Power	Inductor power dissipation
35.	LED Pd	75.145 W	Power	LED Power Dissipation
36.	M1 Pd	3.513 W	Power	M1 MOSFET total power dissipation
37.	M1 PdCond	172.33 mW	Power	M1 MOSFET conduction losses
38.	M1 PdSw	3.34 W	Power	M1 MOSFET switching losses
39.	Total Pd	7.342 W	Power	Total Power Dissipation
40.	Total LED load Rd	87.358 Ohm		Total LED Load DynamicResistance
41.	Vout Tolerance	22.09 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	20.0	Minimum input voltage
4.	Vout	69.0	Output Voltage
5.	application	LED_DRIVER	LED Application
6.	base_pn	LM3429	Texas Instruments Base Part Number
7.	isLEDArchitect	N	LED Architect Project
8.	ledparallel	1.0	Number of LED in parallel
9.	ledpartnumber	XHP50A-00-0000-0D00L20DF	LED Part number
10.	ledseries	6.0	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. LM3429 Product Folder : http://www.ti.com/product/LM3429 : 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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