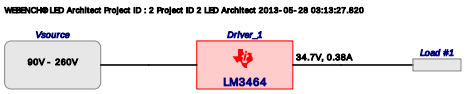

WEBENCH® LED Architect

项目报告

项目 : 3738675/2 : Project ID 2
创建 : 2013-05-28 03:13:27.820
LED Architect with light output=800.0

发布 WEBENCH LED Architect.

项目概览

总 BOM 成本 : $13.84
整体大小 : 6,513 mm2
总 BOM 数量 : 27
整体效率 : 17.51%
Total Efficacy : 60.4 lumens / Watt
Total Power Dissipation (loss) : 0.0 Watts

设计输入 :

1.	Vin 最大	260.0	最高输入电压
2.	Vin 最小	90.0	最低输入电压
3.	line_fsw	60.0	交流线路频率
4.	color	cool white	LED Color
5.	源	AC	输入源类别
6.	lightOutput	800.0	Light Output in Lumen
7.	maxHeatSinkLength	200.0	Max Heat Sink Length
8.	maxHeatSinkWidth	50.0	Max Heat Sink Width
9.	maxJunctionTemp	150.0	Max LED Junction Temperature
10.	maxLEDStringVout	60.0	Max LED String Voltage
11.	optfactor	3	Optimization factor to tune up the design
12.	priceFactor	0	Price factor to tune up the design cost
13.	工作环境温度	30.0	环境温度

Regulators

Main Driver NSID : LM3464MH/NOPB Dynamic Headroom Controller with Thermal Control Interface; Driver Efficiency = 97.28%

Drivers Electrical BOM

制造商	零件编号	数量	Budgetary Price	大小 (mm^2)
Yageo America	CC0805KRX7R9BB222	1	$0.01	13
Vishay-Dale	CRCW040210K0FKED	2	$0.02	15
Vishay-Dale	CRCW040214K3FKED	1	$0.01	8
Vishay-Dale	CRCW0402158KFKED	1	$0.01	8
Vishay-Dale	CRCW04022K43FKED	1	$0.01	8
Vishay-Dale	CRCW04024K75FKED	1	$0.01	8
Vishay-Dale	CRCW04027K15FKED	1	$0.01	8
Panasonic	ERT-J0EV104H	1	$0.08	8
Fairchild Semiconductor	FDD2572	1	$0.66	102
MuRata	GRM155C80J474KE19D	1	$0.01	8
MuRata	GRM155R61A105KE15D	1	$0.01	8
MuRata	GRM155R61A224KE19D	1	$0.01	8
Texas Instruments	LM3464MH/NOPB	1	$3.42	0
Rohm	MCR25JZHFLR510	1	$0.04	23
Cree	XPCWHT-L1-R250-00A01	11	$0.73	30
Total		26	$5.04	250

LED Array Solution BOM = LEDs + Heatsink

制造商	零件编号	数量	Cost	大小 (cm^2)
Cree	XPCWHT-L1-R250-00A01	11	$8.03	-
Aavid	61585	1	$1.50	62
Total			$9.53	62

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LED Array Solution

LED Array
Light Output : 800 lumens
Color : cool white
LED quantity : 11系列 = 11Parallel = 1
Total Vout : 34.7 Volts
Total Iload : 0.4 Amps
Total Light Output : 800 lumens
Flux : 73 lumens
ThetaSA : 4.61 C / Watt
Junction Temp : 101 degrees
Operating Vf : 3.155 Volts
Operating Io : 0.382 Amps
效率 : 18%
Efficacy : 60.4 lumens / Watt
整体大小 : 6267.2 mm2
Total LED Cost : $9.53
Max LED Vout : 60.0 Volts

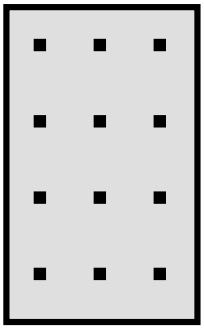
Selected LED

制造商 : Cree
零件编号 : XPCWHT-L1-R250-00A01
Vf : 3.2 V
Io : 0.35 A
Angle : 110.0 degree
PhiV : 87.4
Color Temperature : 6500.0 K
Color : cool white
Tj : 150.0 deg C
IfMin : 0.1 Amps
IfMax : 0.5 Amps
RJC : 12.0 deg C/Ohm
Isat : 0.0 Amps
Package mount : SMT
Footprint : 29.7 mm2

Heatsink

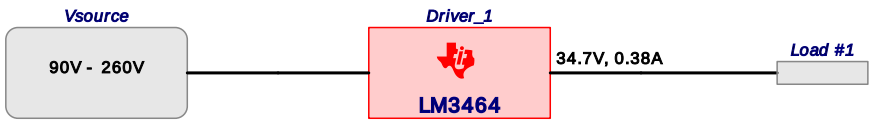
Length : 61.68 mm
Width : 101.6 mm
Height : 7.62 mm
Total Heatsink Footprint : 6267 mm2
Total Heatsink Cost : $1.5

制造商 : Aavid
零件编号 : 61585
ThetaSA : 5.03 C/W



Project Diagram

WEBENCH® LED Architect Project ID : 2 Project ID 2 LED Architect 2013-05-28 03:13:27.820



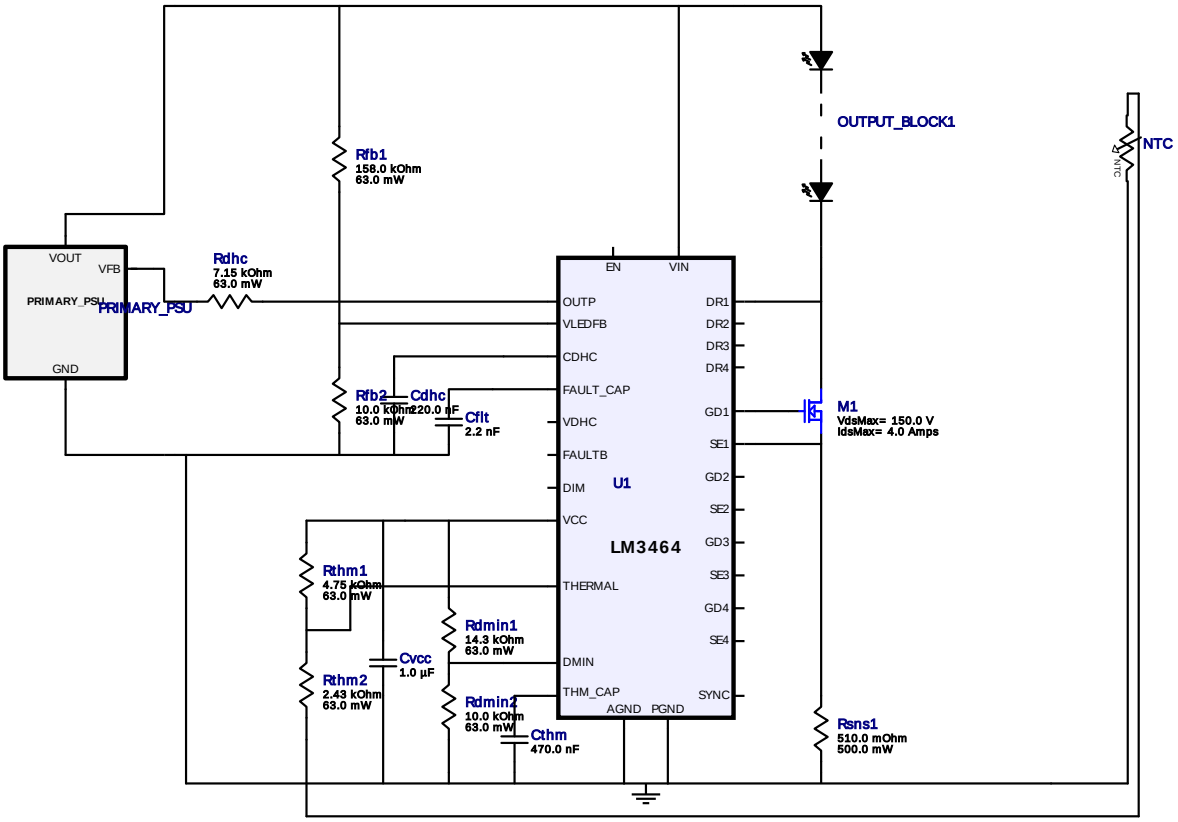
TEXAS INSTRUMENTS

WEBENCH® 设计报告

VinMin = 90.0V
VinMax = 260.0V
Vout = 34.7V
Iout = 0.38A

Device = LM3464MH/NOPB
Topology = Buck
创建 = 5/28/13 3:13:27 AM
BOM成本 = $4.31
Total Pd = 0.38W
大小 = 246.0mm2
BOM 数量 = 26

Design : 3738675/16 LM3464MH/NOPB
LM3464MH/NOPB 90.0V-260.0V to 35.6V @ 0.382A



电气材料清单

#	名称	制造商	零件编号	属性	Qty	Price	大小
1.	Cdhc	MuRata	GRM155R61A224KE19D Series= X5R	Cap= 220.0 nF VDC= 10.0 V IRMS= 0.0 A	1	$0.01	0402 8mm2
2.	Cflt	Yageo America	CC0805KRX7R9BB222 Series= X7R	Cap= 2.2 nF VDC= 50.0 V IRMS= 0.0 A	1	$0.01	0805 13mm2
3.	Cthm	MuRata	GRM155C80J474KE19D Series= 379	Cap= 470.0 nF VDC= 6.3 V IRMS= 0.0 A	1	$0.01	0402 8mm2
4.	Cvcc	MuRata	GRM155R61A105KE15D Series= X5R	Cap= 1.0 µF VDC= 10.0 V IRMS= 0.0 A	1	$0.01	0402 8mm2
5.	D_LED1	Cree	XPCWHT-L1-R250-00A01	LED	11	$0.73	xlampxpc 30mm2
6.	M1	Fairchild Semiconductor	FDD2572	VdsMax= 150.0 V IdsMax= 4.0 Amps	1	$0.66	DPAK 102mm2
7.	Rdhc	Vishay-Dale	CRCW04027K15FKED Series= CRCW..e3	Res= 7.15 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 8mm2

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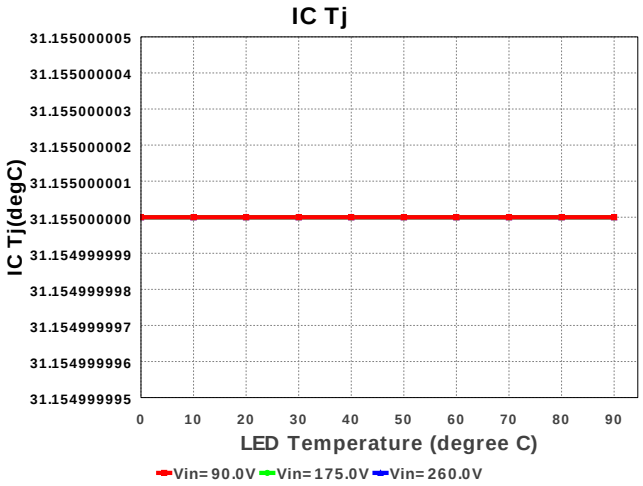
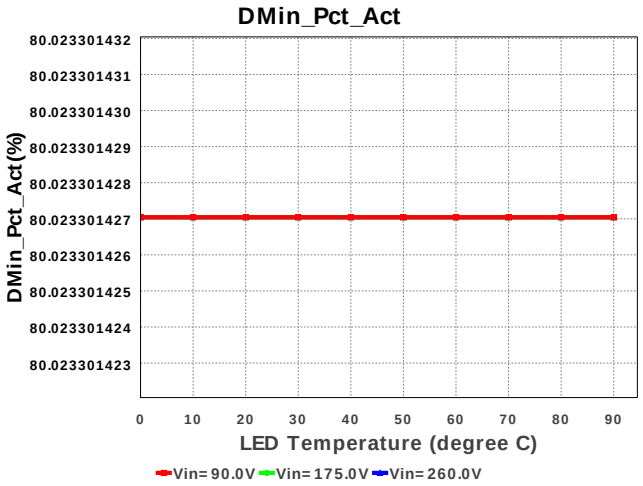
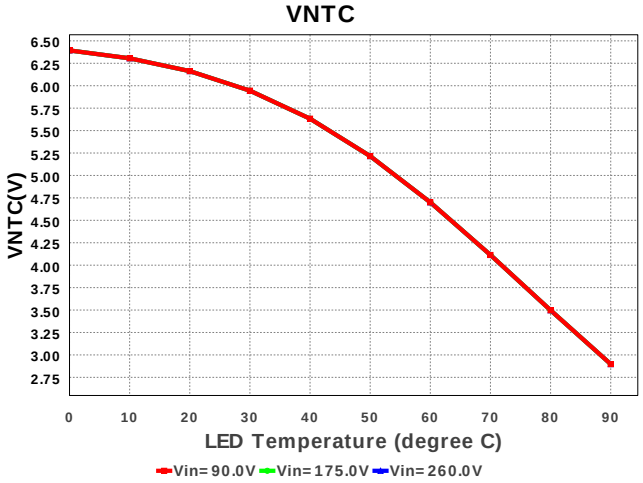
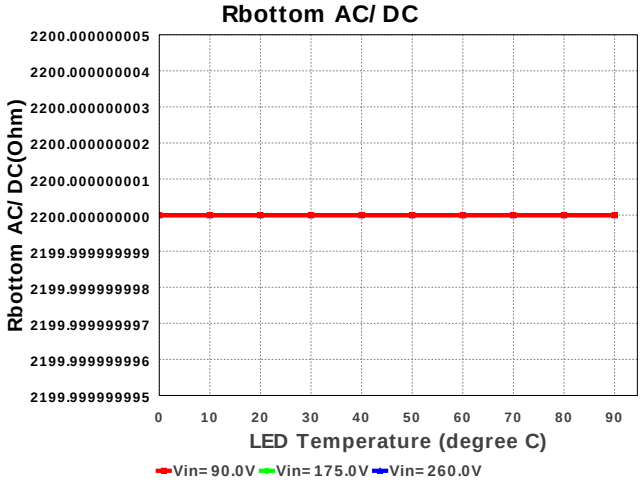
#	名称	制造商	零件编号	属性	Qty	Price	大小
8.	Rdmin1	Vishay-Dale	CRCW040214K3FKED Series= CRCW..e3	Res= 14.3 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 8mm2
9.	Rdmin2	Vishay-Dale	CRCW040210K0FKED Series= CRCW..e3	Res= 10.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 8mm2
10.	Rfb1	Vishay-Dale	CRCW0402158KFKED Series= CRCW..e3	Res= 158.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 8mm2
11.	Rfb2	Vishay-Dale	CRCW040210K0FKED Series= CRCW..e3	Res= 10.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 8mm2
12.	Rsns1	Rohm	MCR25JZHFLR510 Series= 298	Res= 510.0 mOhm Power= 500.0 mW Tolerance= 1.0%	1	$0.04	1210 23mm2
13.	Rthm1	Vishay-Dale	CRCW04024K75FKED Series= CRCW..e3	Res= 4.75 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 8mm2
14.	Rthm2	Vishay-Dale	CRCW04022K43FKED Series= CRCW..e3	Res= 2.43 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 8mm2
15.	U1	Texas Instruments	LM3464MH/NOPB	Switcher	1	$3.42	NA 0mm2









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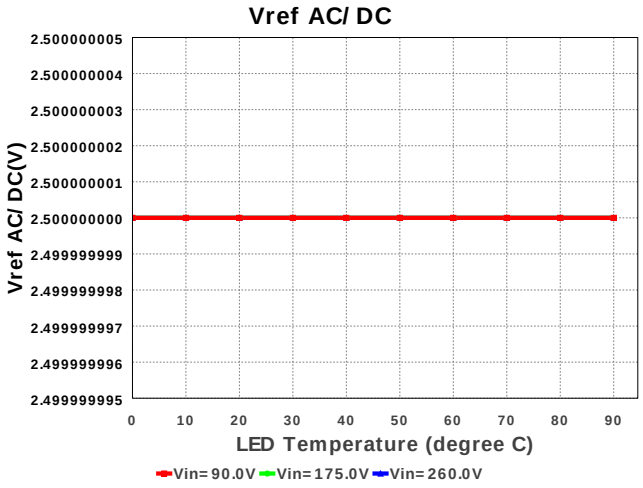

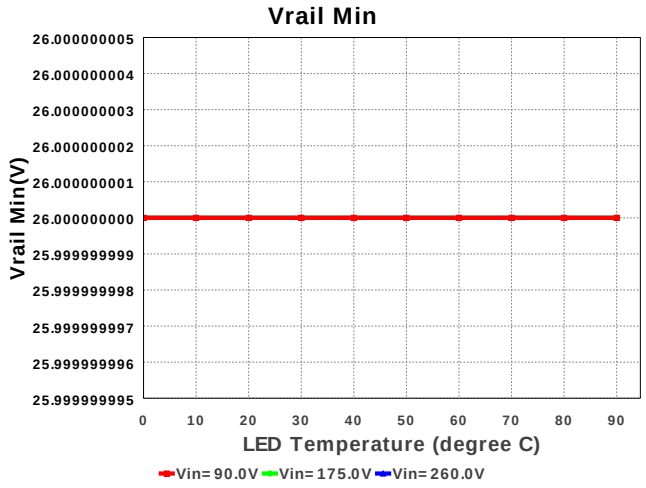

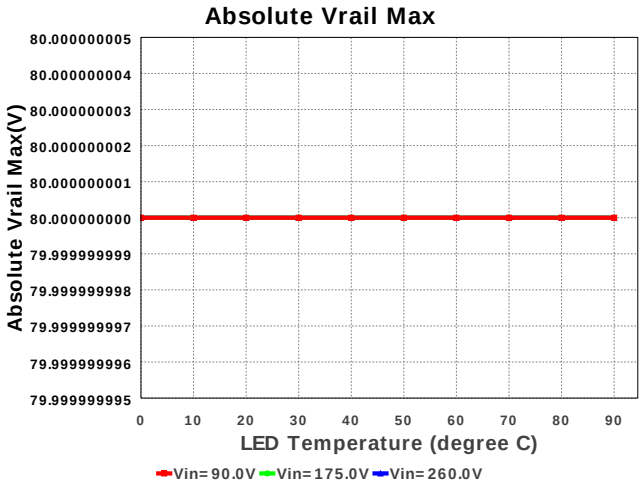

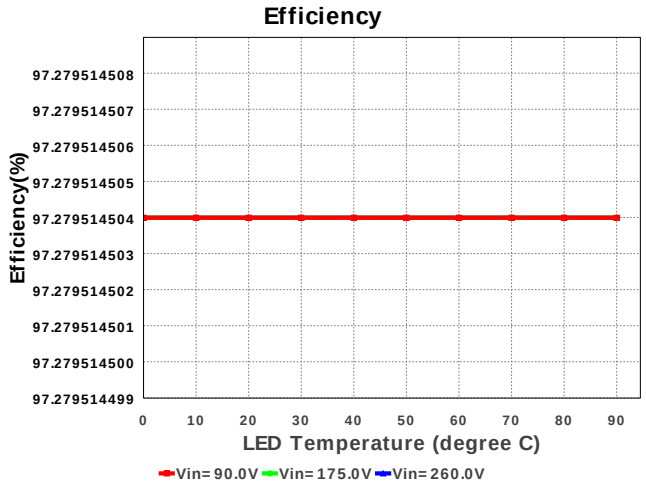

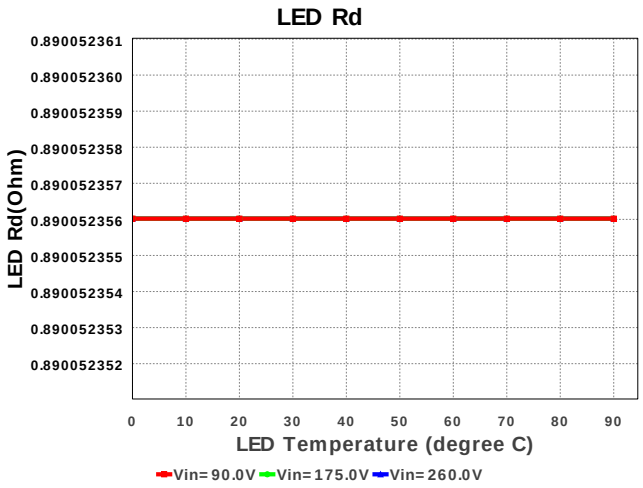

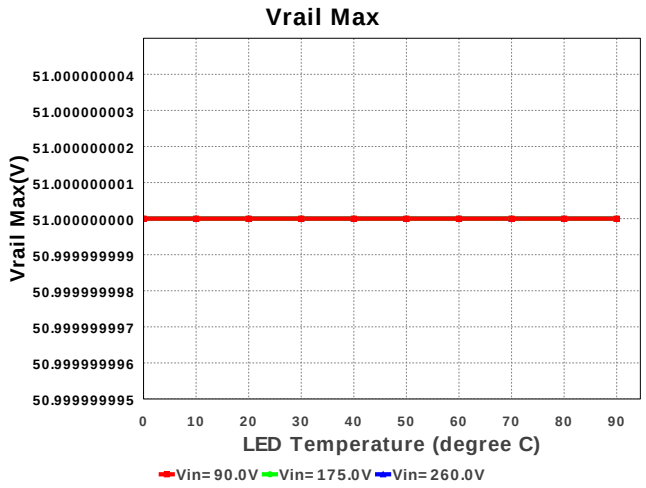

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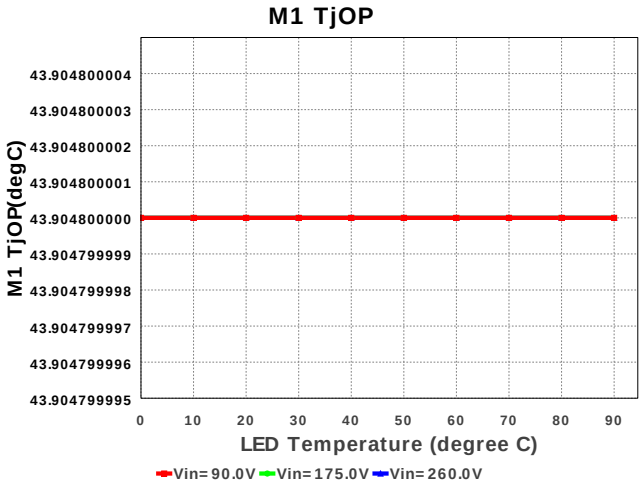

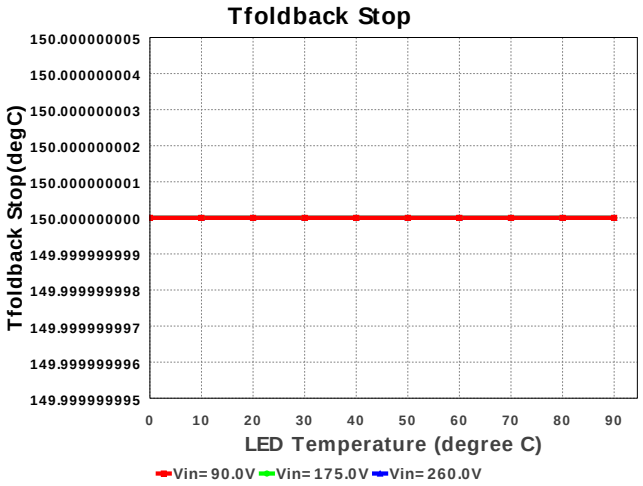

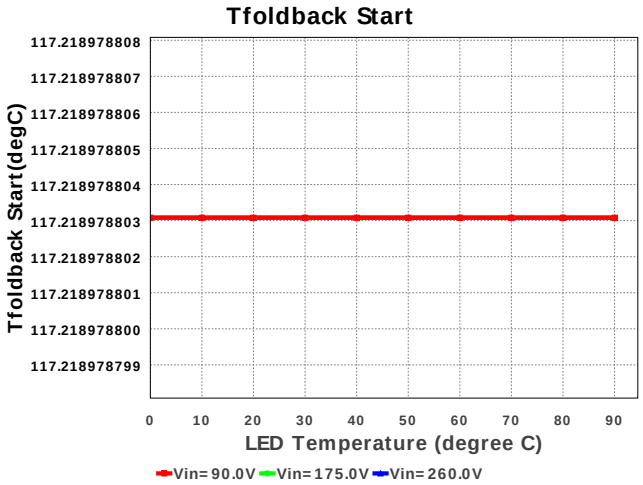

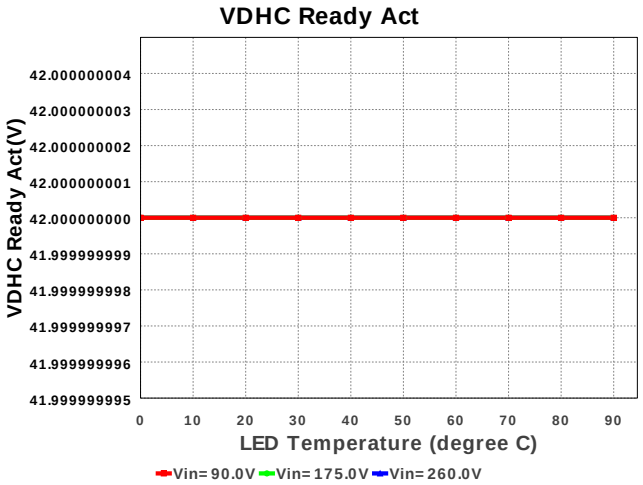

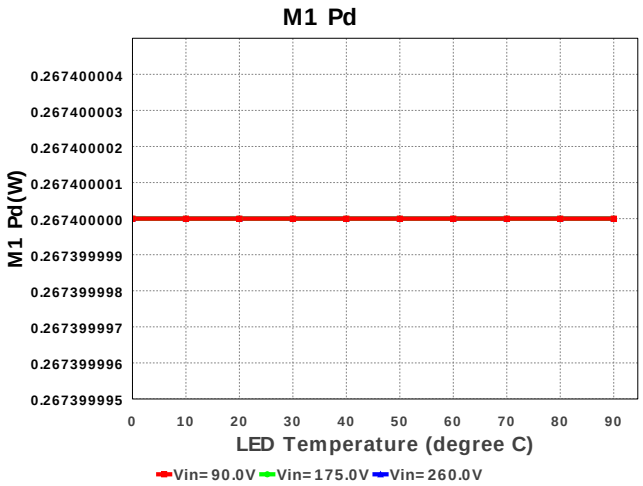

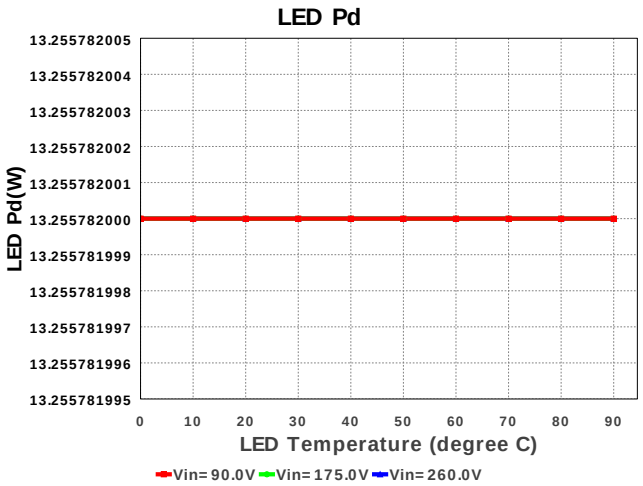

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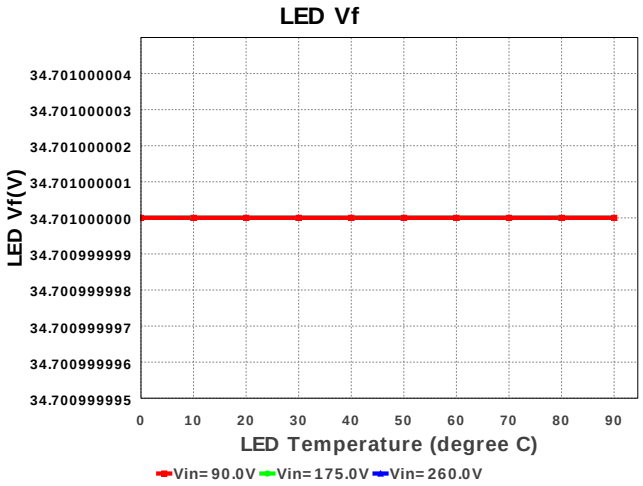

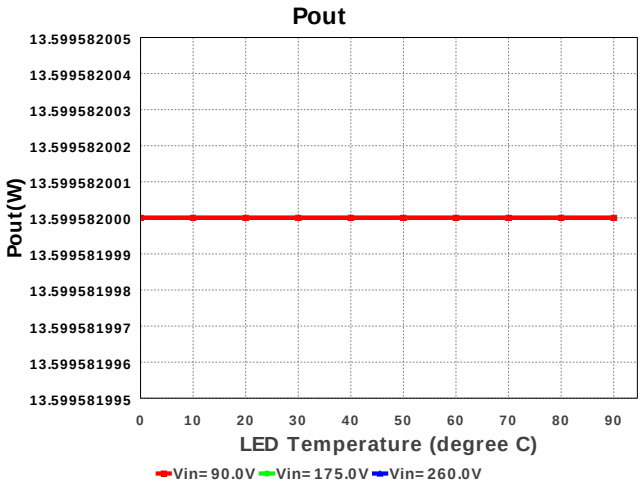

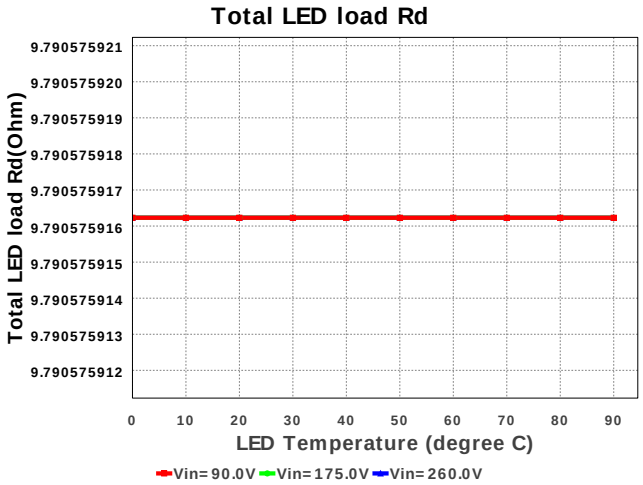

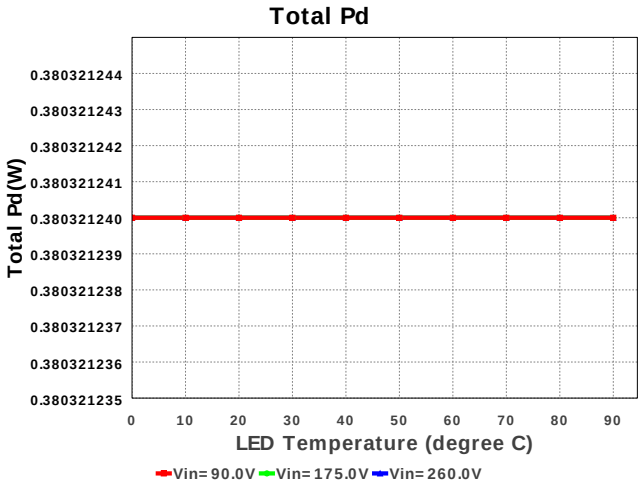

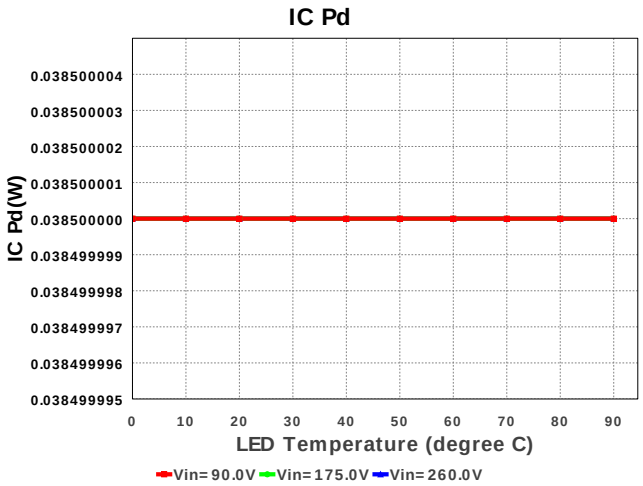

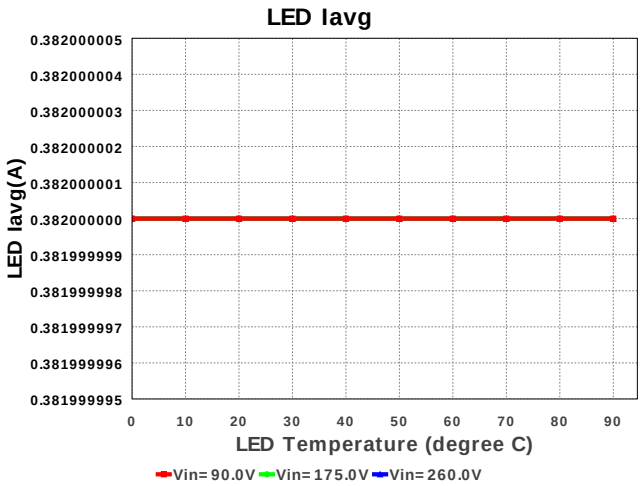

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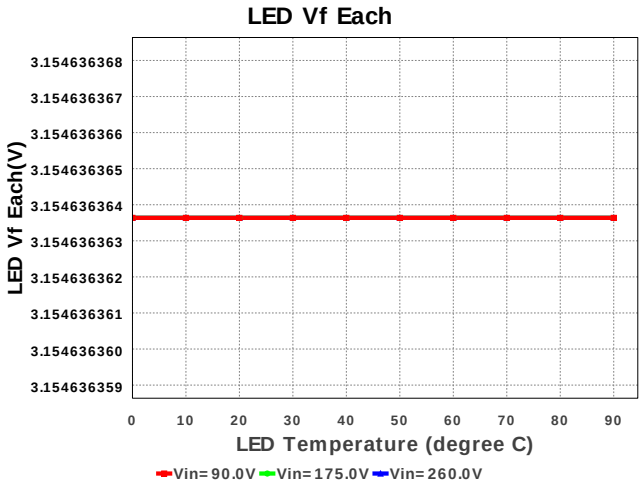

工作数值

#	名称	数值	类别	说明
1.	LED Iavg	382.0 mA	Current	LED 平均电流
2.	BOM 数量	26	General	Total Design BOM count
3.	大小	246.0 mm2	General	BOM组件的总所占面积
4.	频率	0.0 Hz	General	开关频率
5.	Pout	13.599 W	General	总输出功率
6.	总 BOM	$4.31	General	Total BOM Cost
7.	Tfoldback Stop	150.0 degC	Op_Point	Stop Temperature for Thermal Foldback
8.	效率	97.279 %	Op_point	稳态效率
9.	IC Tj	30.0 degC	Op_point	电路接点温度
10.	IOUT_OP	382.0 mA	Op_point	Iout 操作点
11.	LED Rd	890.052 mOhm	Op_point	LED 动态电阻
12.	LED Vf	34.7 V	Op_point	总 LED 正激计算电压
13.	M1 TjOP	43.905 degC	Op_point	MOSFET 接点温度
14.	VIN_OP	260.0 V	Op_point	Maximum AC voltage input to power supply
15.	IC Pd	38.5 mW	Power	电路功率耗散
16.	LED Pd	13.256 W	Power	LED 功率耗散
17.	M1 Pd	267.4 mW	Power	在交流线路期间于开关FET内的平均功率耗散
18.	整体 Pd	380.321 mW	Power	总功率耗散
19.	Absolute Vrail Max	80.0 V	Unknown	Absolute Vrail Maximum
20.	DMin_Pct_Act	80.023 %	Unknown	Minimum Duty Cycle Limit when LEDs are Hot
21.	Single LED Vf	3.155 V	Unknown	Calculated Forward Voltage of Each LED
22.	Rbottom AC/DC	2.2 kOhm	Unknown	Bottom Resistor in Feedback Loop of Power Supply Unit
23.	Tfoldback Start	117.219 degC	Unknown	Start Temperature for Thermal Foldback
24.	整体 LED 负载 Rd	9.791 Ohm	Unknown	总 LED 负载动态电阻
25.	VDHC Ready Act	42.0 V	Unknown	Ready Voltage for DHC Startup
26.	VNTC	2.3 V	Unknown	Voltage across NTC resistor
27.	Vrail Max	51.0 V	Unknown	Maximum Rail voltage that can be pushed up by the LM3464
28.	Vrail Min	26.0 V	Unknown	Minimum Rail voltage of Power Supply Unit
29.	Vref AC/DC	2.5 V	Unknown	Reference Voltage for Circuit in Power Supply Unit

设计输入

#	名称	数值	说明
1.	输出电流	382.0 mA	最大输出电流
2.	Iout1	382.0 mAmps	Output Current #1
3.	Vin 最大	260.0 V	最高输入电压
4.	Vin 最小	90.0 V	最低输入电压
5.	输出电压:	34.701 V	输出电压
6.	Vout1	34.701 Volt	Output Voltage #1
7.	应用	LED_DRIVER	LED 应用
8.	base_pn	LM3464	美国国家半导体的产品编号
9.	LED_Architect	Y	LED Architect Project
10.	ledparallel	1.0	并联的LED数量
11.	LED 零件编号	XPCWHT-L1-R250-00A01	LED 零件编号
12.	ledseries	11.0	串联的LED数量
13.	line_fsw	60.0	交流线路频率
14.	源	AC	输入源类别
15.	热能回折启动温度	116.15	热能回折启动温度
16.	热能回折关闭温度	146.15	热能回折关闭温度
17.	工作环境温度	30.0 degC	环境温度
18.	使用热能回折	Y	使用热能回折

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设计协助

1. Thermal foldback is necessary in many applications due to the extreme temperatures created in LED environments. In general, two functions are necessary a temperature break-point after which the nominal operating current needs to be reduced, and a slope corresponding to the amount of LED current decrease per temperature increase.

2. The user can set the 'Start' and 'Stop' temperatures for the thermal foldback by changing the default settings on the 'Thermal Foldback start and end temperatures' in the 'Advanced Options' menu on the left side bar. These values are then updated on the 'Op-Vals' section. The 'Op-Vals' section has a slider to simulate the increase or decrease in temperature. The operating value 'Thermal Resistance' changes based on the change in temperature. This is the resistance of the thermistor at the selected temperature and it's value is then updated in the simulation directly

3. LM3464 Product Folder : http://www.ti.com/product/lm3464 : contains the data sheet and other resources.

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