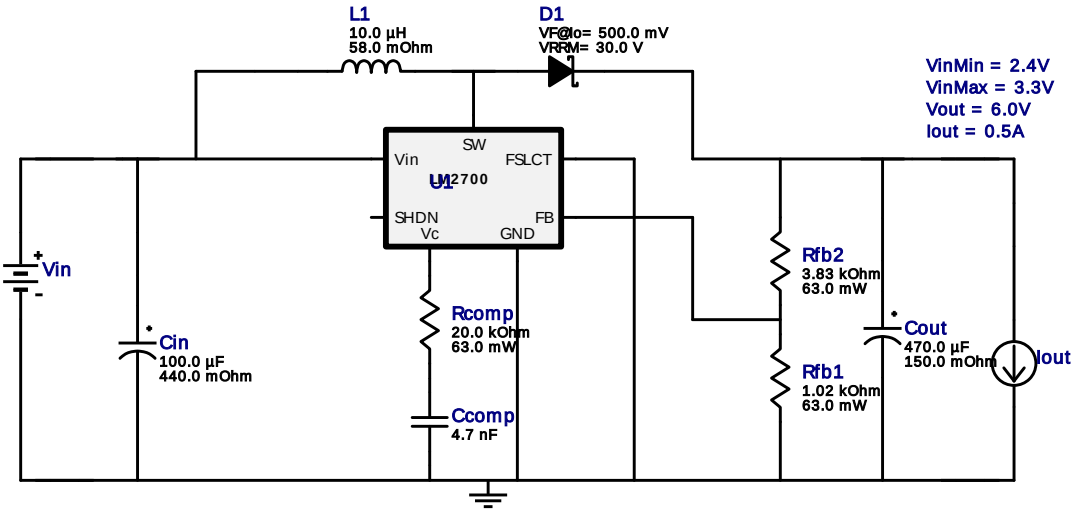
WEBENCH® 设计报告

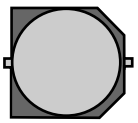
VinMin = 2.4V
VinMax = 3.3V
Vout = 6.0V
Iout = 0.5A

Device = LM2700MT-ADJ/NOPB
Topology = Boost
创建 = 12/9/13 8:32:48 PM
BOM成本 = $2.19
Total Pd = 0.65W
大小 = 428.0mm2
BOM 数量 = 9

Design : 1025083/37 LM2700MT-ADJ/NOPB
LM2700MT-ADJ/NOPB 2.4V-3.3V to 6.0V @ 0.5A



电气材料清单

#	名称	制造商	零件编号	属性	Qty	Price	大小
1.	Ccomp	Yageo America	CC0805KRX7R9BB472 Series= X7R	Cap= 4.7 nF VDC= 50.0 V IRMS= 0.0 A	1	$0.01	 0805 7mm2
2.	Cin	Nichicon	UUD1A101MCL1GS Series= uD	Cap= 100.0 µF ESR= 440.0 mOhm VDC= 10.0 V IRMS= 230.0 mA	1	$0.10	 SM_RADIAL_6.3AMM 80mm2
3.	Cout	Panasonic	EEE-FC1C471P Series= FC	Cap= 470.0 µF ESR= 150.0 mOhm VDC= 16.0 V IRMS= 670.0 mA	1	$0.24	 SM_RADIAL_G 172mm2
4.	D1	Diodes Inc.	B130-13-F	VF@Io= 500.0 mV VRRM= 30.0 V	1	$0.06	 SMA 37mm2
5.	L1	TDK	VLC6045T-100M	L= 10.0 µH DCR= 58.0 mOhm	1	$0.20	 VLC6045 64mm2
6.	Rcomp	Vishay-Dale	CRCW040220K0FKED Series= CRCW..e3	Res= 20.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	 0402 3mm2
7.	Rfb1	Vishay-Dale	CRCW04021K02FKED Series= CRCW..e3	Res= 1.02 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	 0402 3mm2
8.	Rfb2	Vishay-Dale	CRCW04023K83FKED Series= CRCW..e3	Res= 3.83 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	 0402 3mm2
9.	U1	Texas Instruments	LM2700MT-ADJ/NOPB	Switcher	1	$1.55	 MTC14 59mm2

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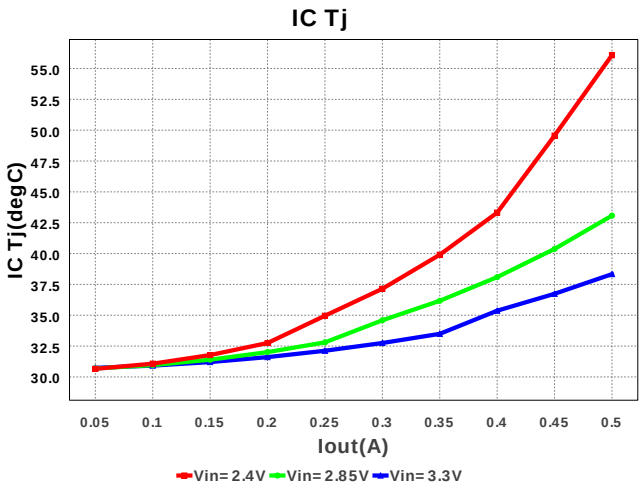

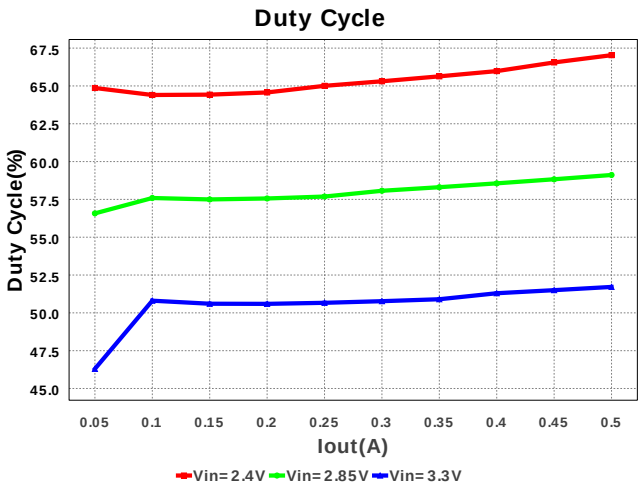

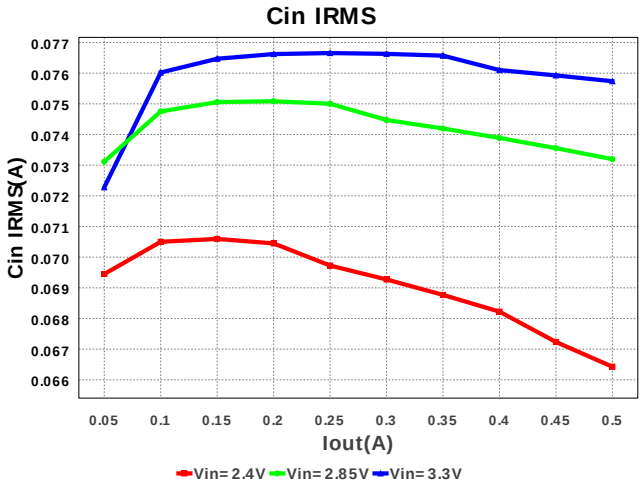

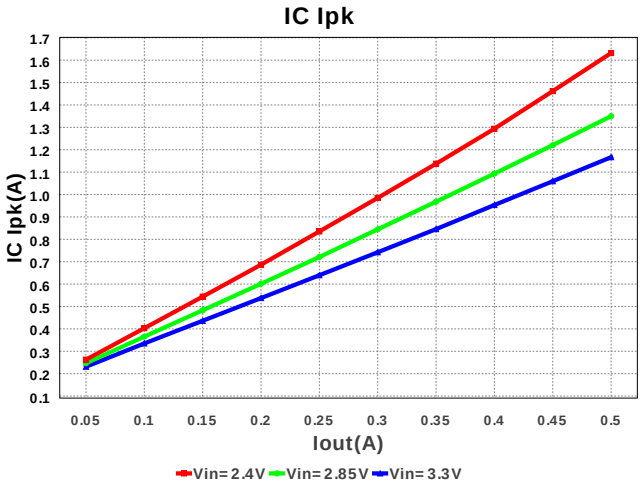

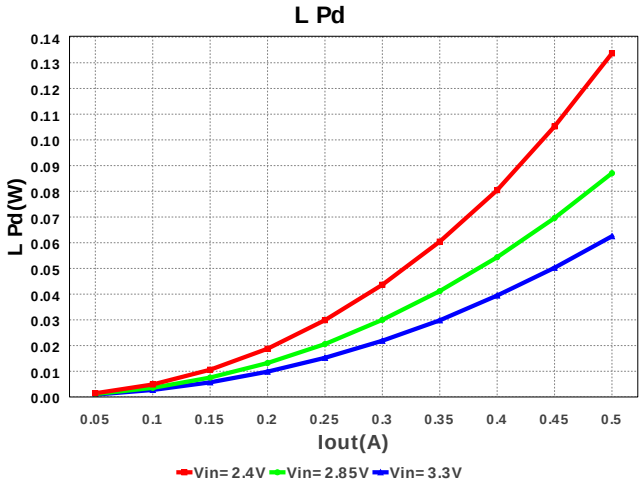

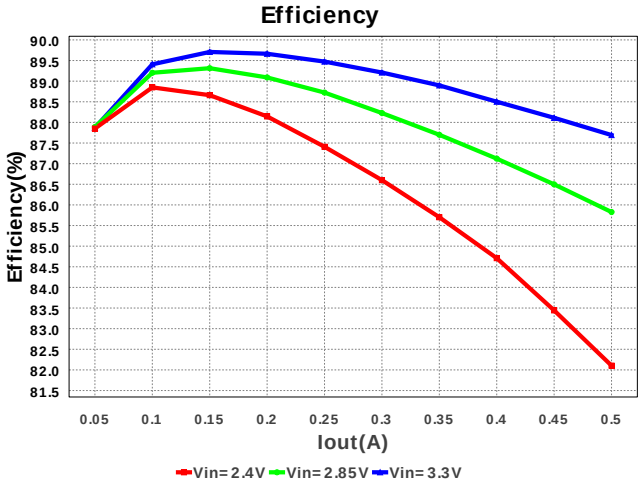

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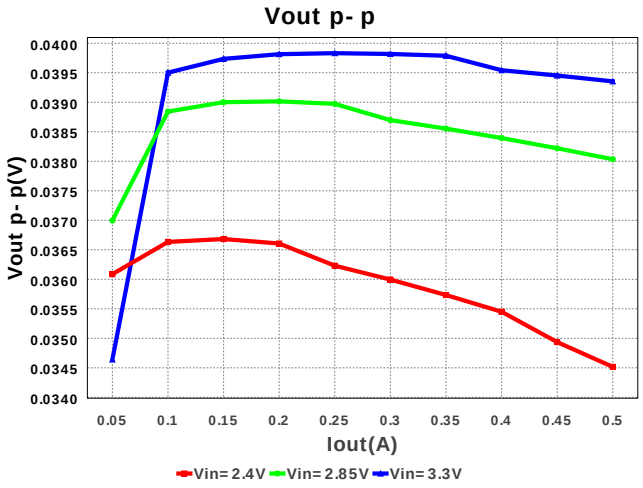

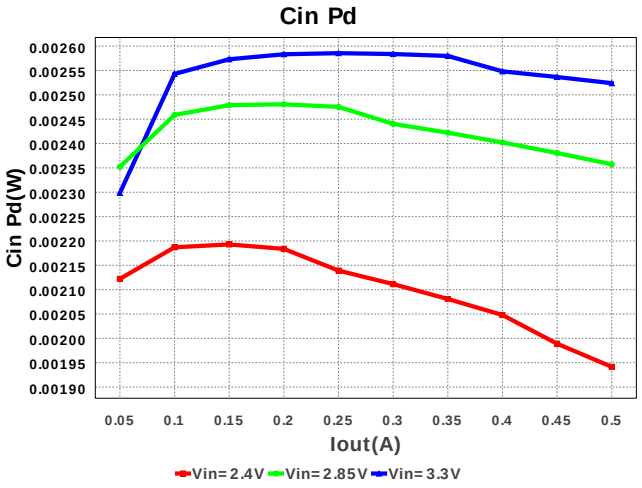

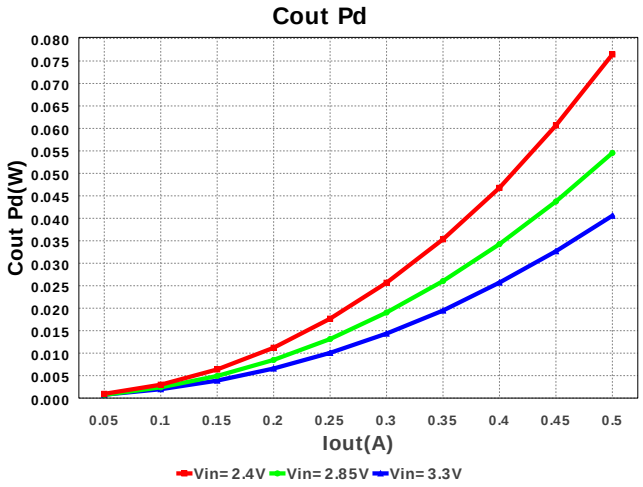

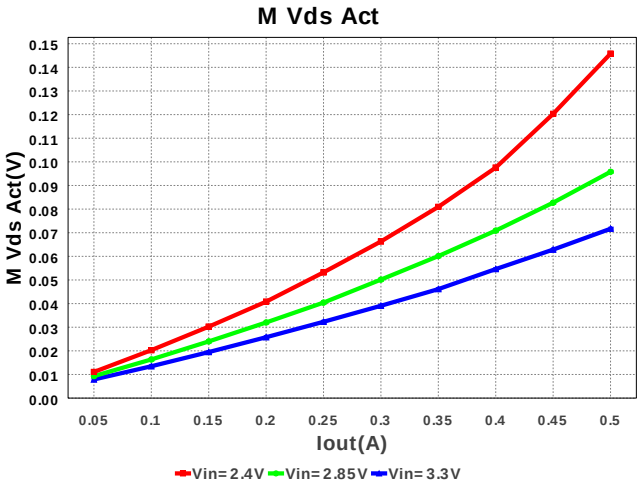

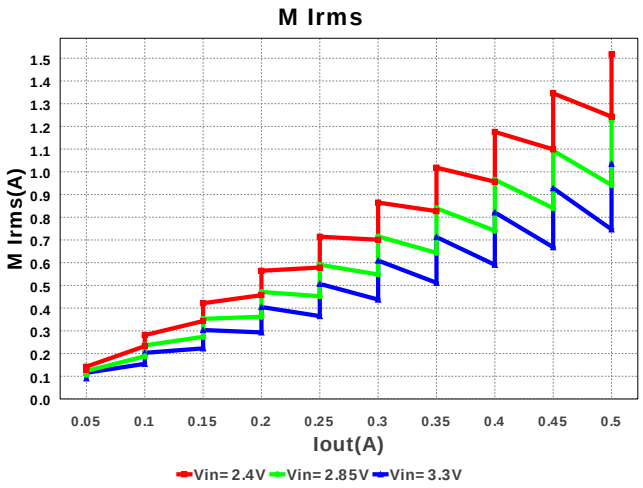

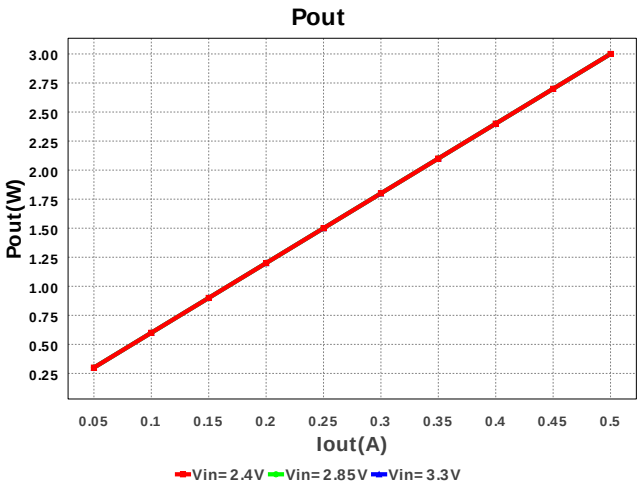

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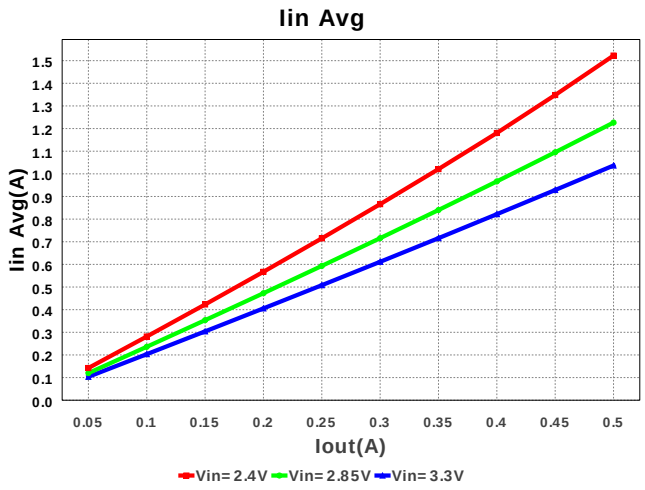

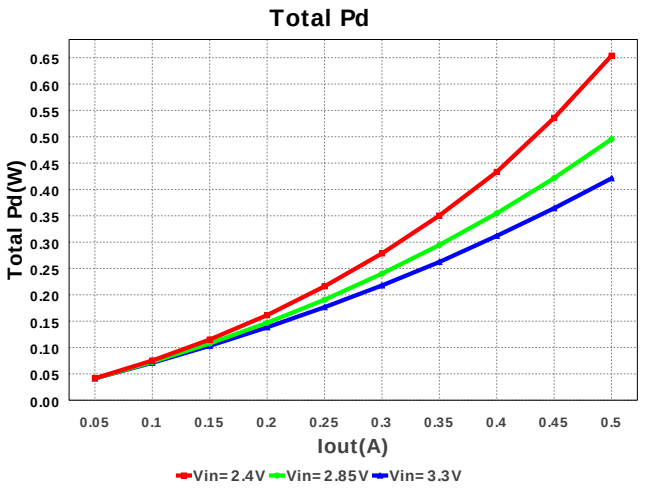

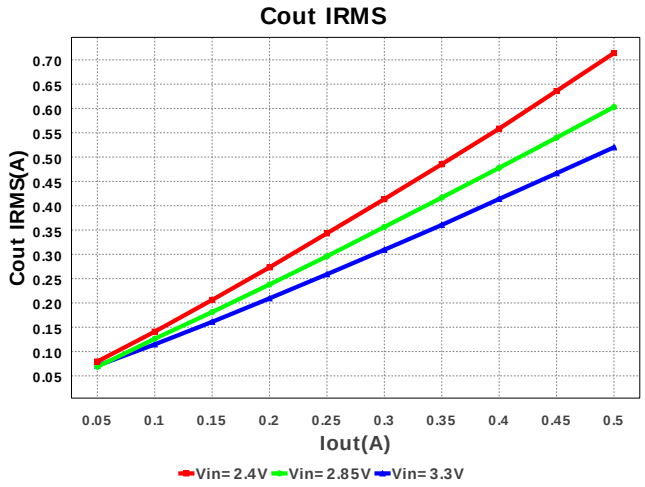

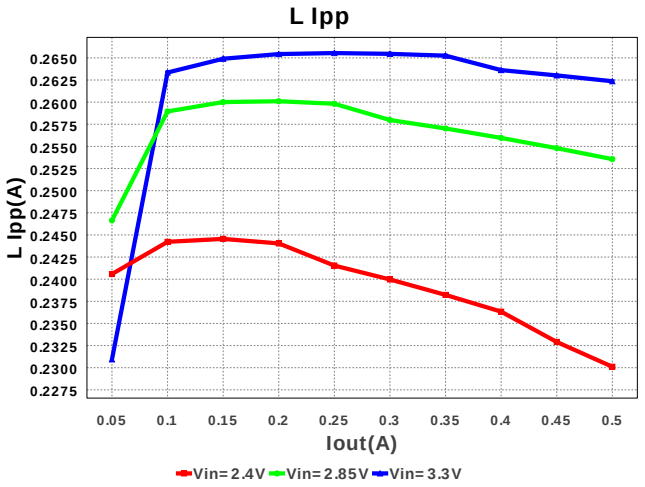

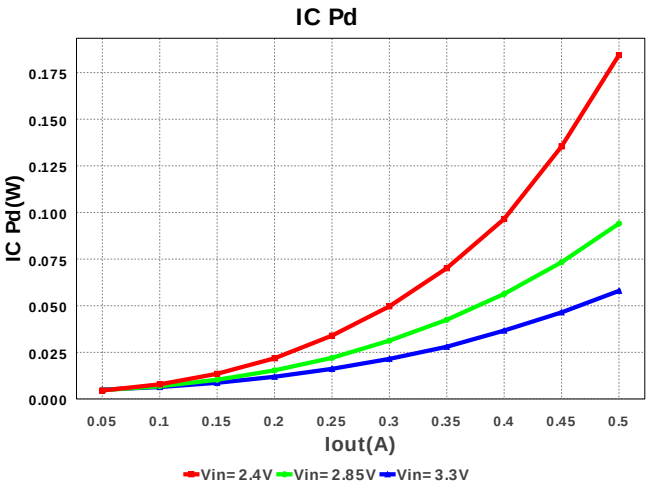

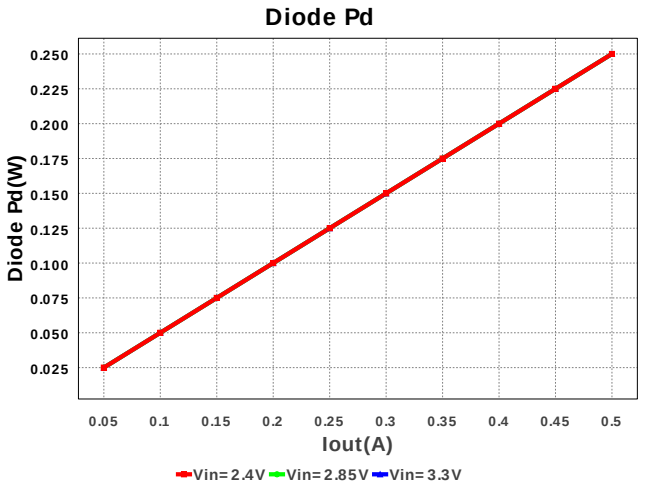

工作数值

#	名称	数值	类别	说明
1.	Cin IRMS	66.427 mA	Current	输入电容器均方根纹波电流
2.	Cout IRMS	713.992 mA	Current	输出电容器均方根纹波电流
3.	IC Ipk	1.632 A	Current	电路内的峰值开关电流
4.	Iin Avg	1.522 A	Current	平均输入电流
5.	L Ipp	230.109 mA	Current	峰值到峰值电感器纹波电流
6.	M1 Irms	1.243 A	Current	Q Iavg
7.	BOM 数量	9	General	Total Design BOM count
8.	大小	428.0 mm2	General	BOM组件的总所占面积
9.	频率	600.0 kHz	General	开关频率
10.	IC Tolerance	31.5 mV	General	IC Feedback Tolerance
11.	M Vds Act	145.79 mV	General	

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#	名称	数值	类别	说明
12.	Pout	3.0 W	General	总输出功率
13.	总 BOM	$2.19	General	Total BOM Cost
14.	交叉频率	855.214 Hz	Op_point	波特图交叉频率
15.	占空比	67.033 %	Op_point	占空比
16.	效率	82.104 %	Op_point	稳态效率
17.	IC Tj	56.079 degC	Op_point	电路接点温度
18.	ICThetaJA	150.0 degC/W	Op_point	电路接点到环境热敏电阻
19.	IOUT_OP	500.0 mA	Op_point	Iout 操作点
20.	相位裕度	49.375 deg	Op_point	波特图相位裕度
21.	VIN_OP	2.4 V	Op_point	Vin操作点
22.	Vout p-p	34.516 mV	Op_point	峰值到峰值输出纹波电压
23.	Cin Pd	1.942 mW	Power	输入电容器功率耗散
24.	Cout Pd	76.468 mW	Power	输出电容器功率耗散
25.	二极管 Pd	250.0 mW	Power	二极管功率耗散
26.	IC Pd	184.414 mW	Power	电路功率耗散
27.	L Pd	133.671 mW	Power	电感器功率耗散
28.	整体 Pd	653.92 mW	Power	总功率耗散

设计输入

#	名称	数值	说明
1.	输出电流	500.0 mA	最大输出电流
2.	Iout1	500.0 mAmps	Output Current #1
3.	Vin 最大	3.3 V	最高输入电压
4.	Vin 最小	2.4 V	最低输入电压
5.	输出电压:	6.0 V	输出电压
6.	Vout1	6.0 Volt	Output Voltage #1
7.	base_pn	LM2700	美国国家半导体的产品编号
8.	源	DC	输入源类别
9.	工作环境温度	30.0 degC	环境温度

设计协助

1. LM2700 Product Folder : http://www.ti.com/product/lm2700 : contains the data sheet and other resources.

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