TEXAS INSTRUMENTS

WEBENCH® 设计报告

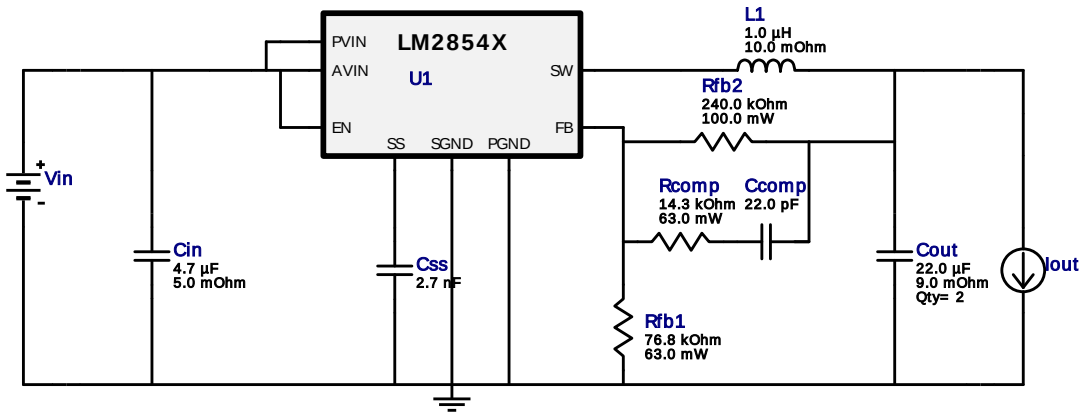
VinMin = 3.5V
VinMax = 4.5V
Vout = 3.3V
Iout = 1.0A

Device = LM2854MH-1000/NOPB
Topology = Buck
创建 = 5/22/14 1:59:06 AM
BOM成本 = $2.43
大小 = 201.0mm2
BOM 数量 = 10
Total Pd = 0.15W

Design : 3820738/89 LM2854MH-1000/NOPB
LM2854MHX-1000/NOPB 3.5V-4.5V to 3.3V @ 1.0A

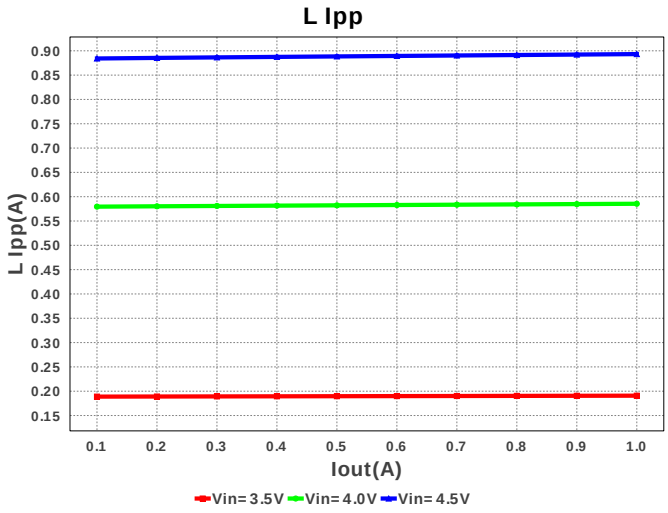
VinMin = 3.5V
VinMax = 4.5V

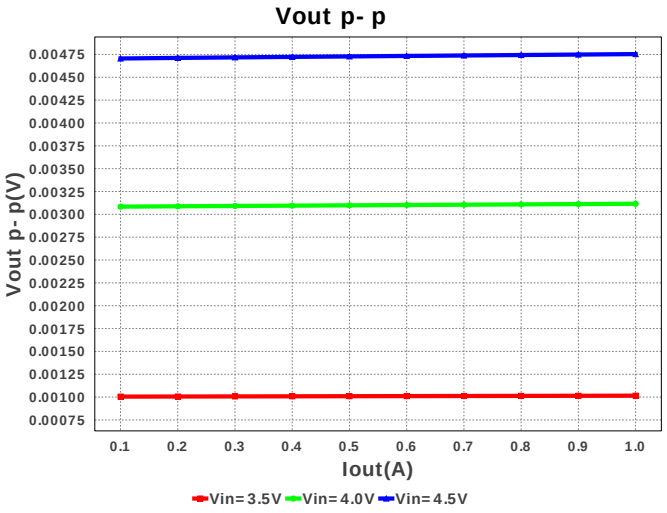
Vout = 3.3V
Iout = 1.0A

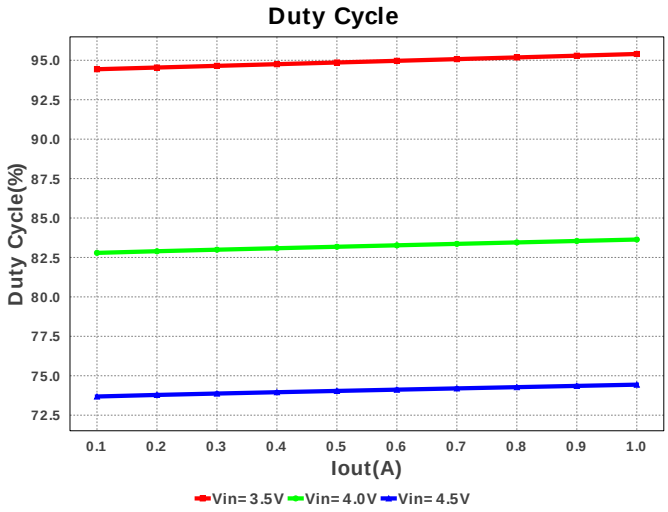


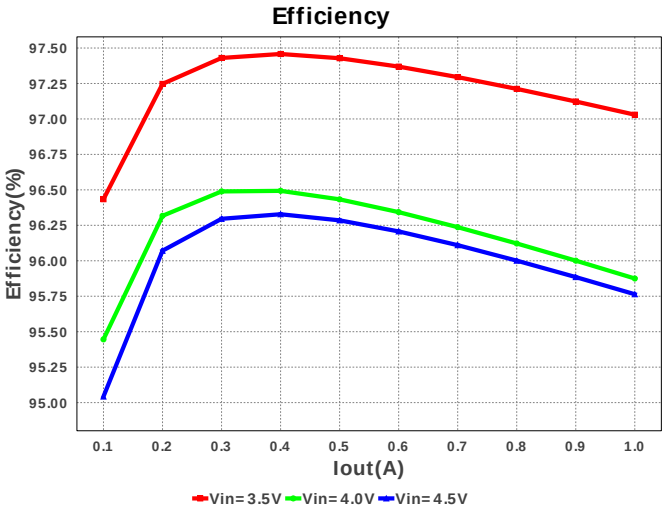
电气材料清单

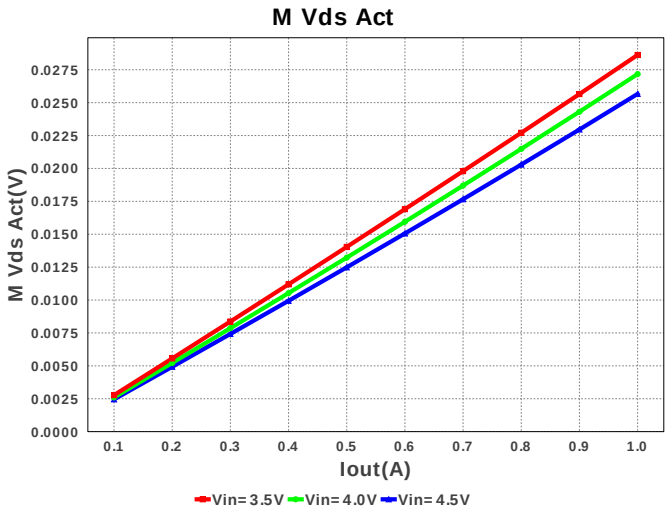
#	名称	制造商	零件编号	属性	Qty	Price	大小
1.	Ccomp	Yageo America	CC0805JRNP09BN220 Series= C0G/NP0	Cap= 22.0 pF VDC= 50.0 V IRMS= 0.0 A	1	$0.01	0805 7mm2
2.	Cin	MuRata	GRM188R60J475KE19D Series= X5R	Cap= 4.7 µF ESR= 5.0 mOhm VDC= 6.3 V IRMS= 2.0 A	1	$0.02	0603 5mm2
3.	Cout	MuRata	GRM21BR60J226ME39L Series= X5R	Cap= 22.0 µF ESR= 9.0 mOhm VDC= 6.3 V IRMS= 3.5 A	2	$0.03	0805 7mm2
4.	Css	Yageo America	CC0805KRX7R9BB272 Series= X7R	Cap= 2.7 nF VDC= 50.0 V IRMS= 0.0 A	1	$0.01	0805 7mm2
5.	L1	Bourns	SRN8040-1R0Y	L= 1.0 µH DCR= 10.0 mOhm	1	$0.21	SRN8040 100mm2
6.	Rcomp	Vishay-Dale	CRCW040214K3FKED Series= CRCW..e3	Res= 14.3 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3mm2
7.	Rfb1	Vishay-Dale	CRCW040276K8FKED Series= CRCW..e3	Res= 76.8 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3mm2
8.	Rfb2	Yageo America	RC0603FR-07240KL Series= 233	Res= 240.0 kOhm Power= 100.0 mW Tolerance= 1.0%	1	$0.01	0603 5mm2
9.	U1	Texas Instruments	LM2854MHX-1000/NOPB	Switcher	1	$2.10	MXA16A 59mm2

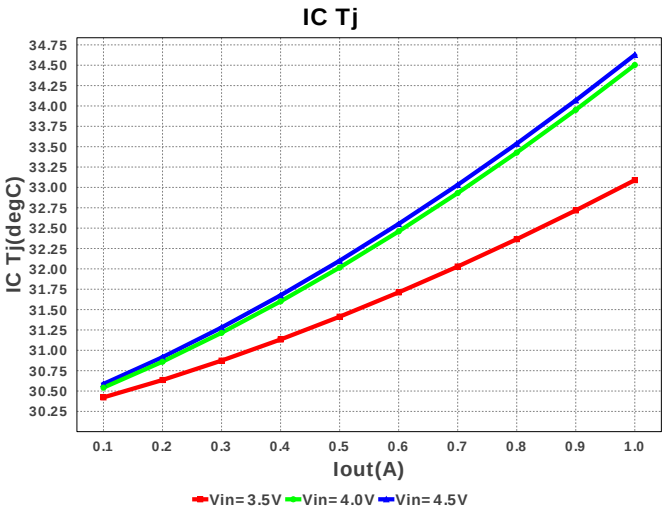




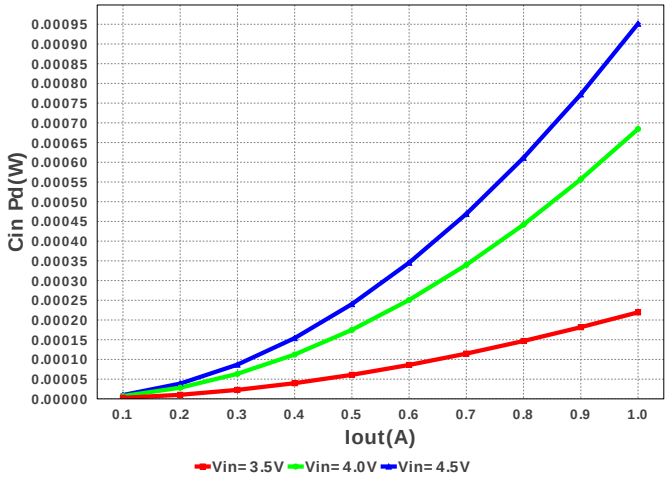




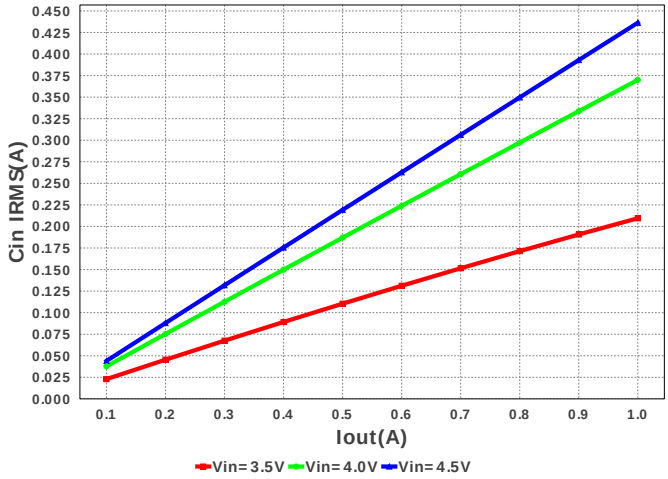




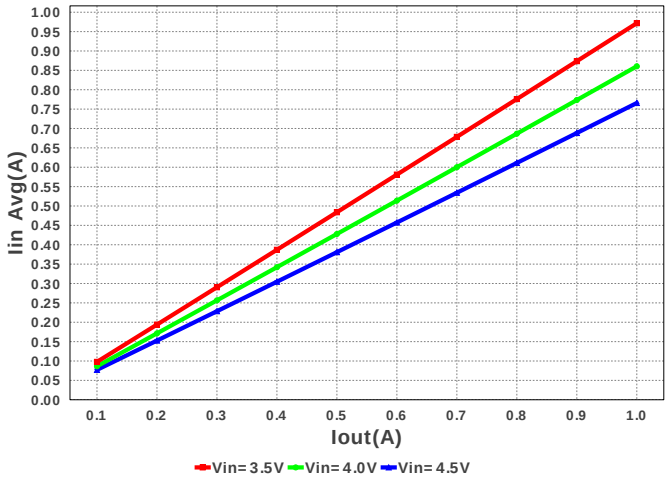
Cin Pd



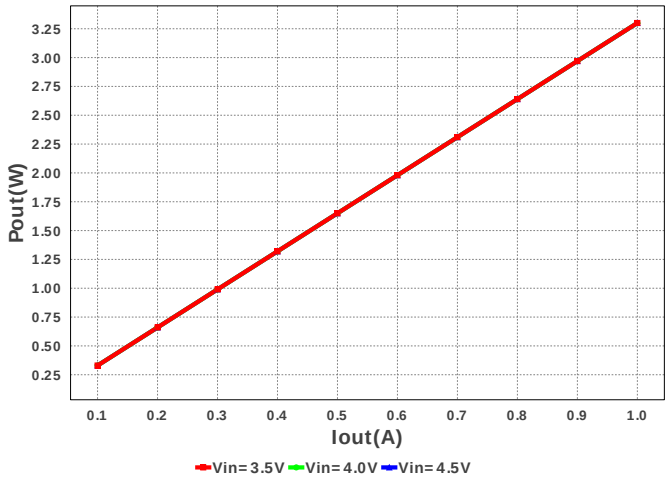
Cin IRMS



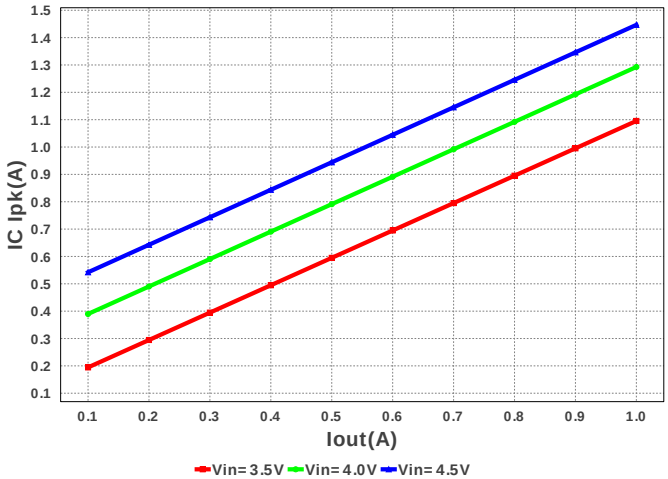
Iin Avg



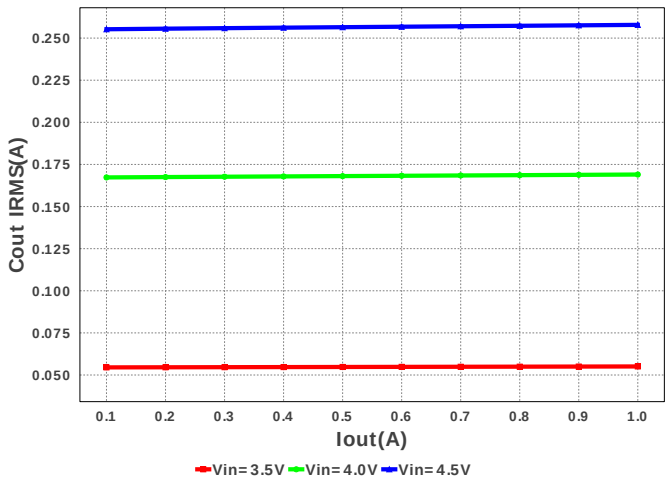
Pout

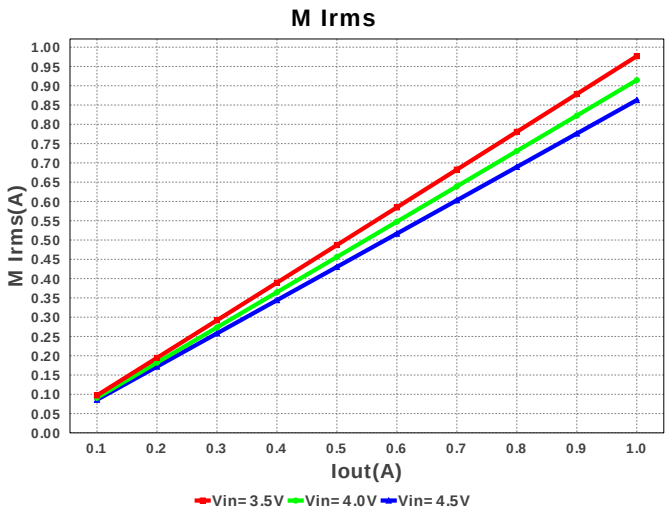


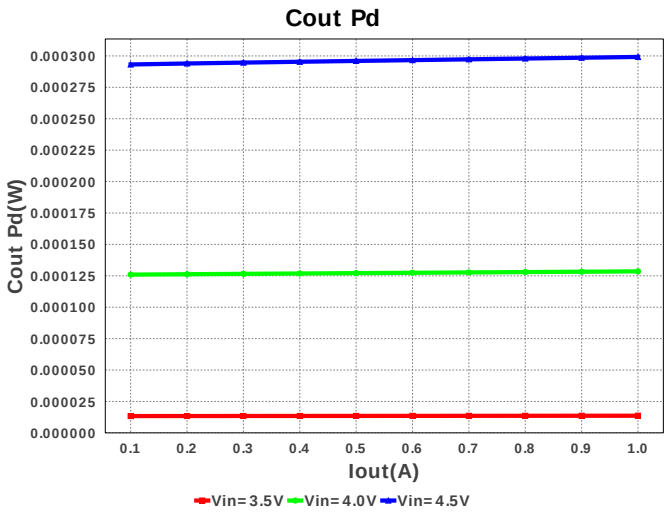
IC Ipk

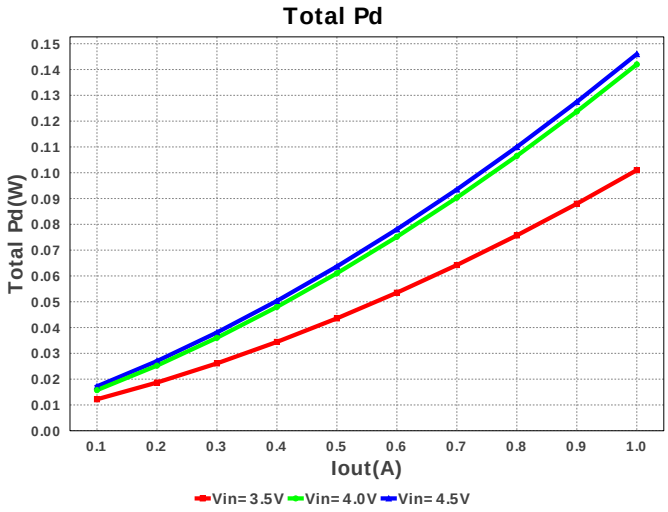


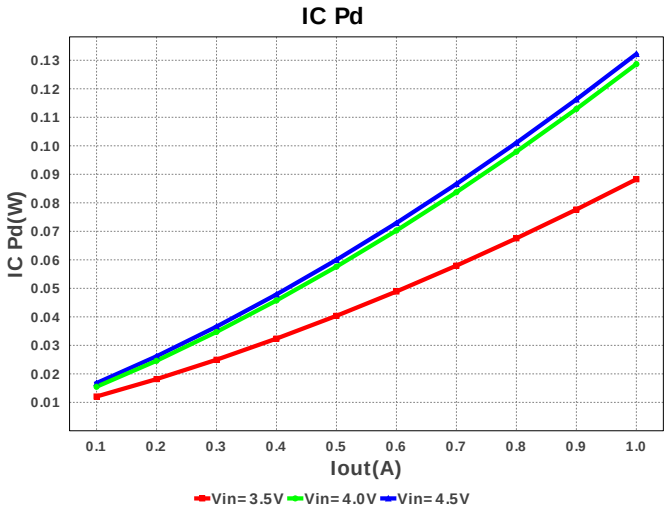
Cout IRMS

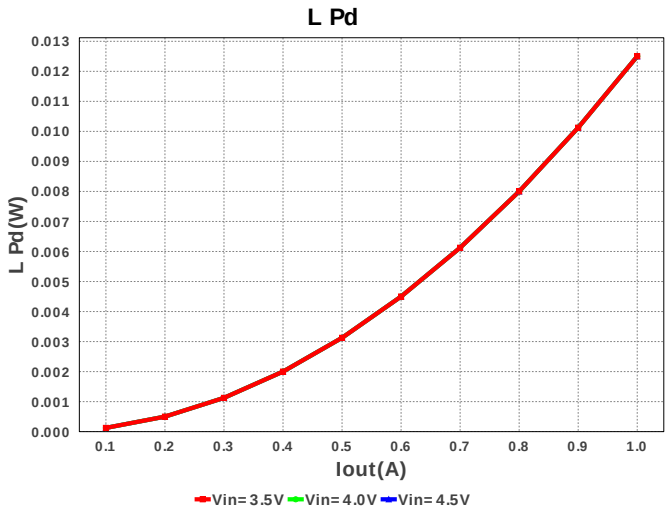












工作数值

#	名称	数值	类别	说明
1.	Cin IRMS	436.223 mA	Current	输入电容器均方根纹波电流
2.	Cout IRMS	257.852 mA	Current	输出电容器均方根纹波电流
3.	IC Ipk	1.447 A	Current	电路内的峰值开关电流
4.	Iin Avg	765.77 mA	Current	平均输入电流
5.	L Ipp	893.226 mA	Current	峰值到峰值电感器纹波电流
6.	M1 Irms	862.76 mA	Current	Q Iavg
7.	BOM 数量	10	General	Total Design BOM count
8.	大小	201.0 mm2	General	BOM组件的总所占面积
9.	频率	1000.0 kHz	General	开关频率
10.	IC Tolerance	10.0 mV	General	IC Feedback Tolerance
11.	M Vds Act	25.662 mV	General	Voltage drop across the MosFET

#	名称	数值	类别	说明
12.	Pout	3.3 W	General	总输出功率
13.	总 BOM	$2.43	General	Total BOM Cost
14.	Vout OP	3.3 V	Op_Point	Operational Output Voltage
15.	交叉频率	57.544 kHz	Op_point	波特图交叉频率
16.	占空比	74.435 %	Op_point	占空比
17.	效率	95.764 %	Op_point	稳态效率
18.	IC Tj	34.627 degC	Op_point	电路接点温度
19.	ICThetaJA	35.0 degC/W	Op_point	电路接点到环境热敏电阻
20.	IOUT_OP	1.0 A	Op_point	Iout 操作点
21.	相位裕度	49.426 deg	Op_point	波特图相位裕度
22.	VIN_OP	4.5 V	Op_point	Vin操作点
23.	Vout p-p	4.754 mV	Op_point	峰值到峰值输出纹波电压
24.	Cin Pd	951.454 µW	Power	输入电容器功率耗散
25.	Cout Pd	299.195 µW	Power	输出电容器功率耗散
26.	IC Pd	132.207 mW	Power	电路功率耗散
27.	L Pd	12.5 mW	Power	电感器功率耗散
28.	整体 Pd	145.971 mW	Power	总功率耗散

设计输入

#	名称	数值	说明
1.	输出电流	1.0 A	最大输出电流
2.	Iout1	1.0 Amps	Output Current #1
3.	Vin 最大	4.5 V	最高输入电压
4.	Vin 最小	3.5 V	最低输入电压
5.	输出电压:	3.3 V	输出电压
6.	Vout1	3.3 Volt	Output Voltage #1
7.	base_pn	LM2854X	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. LM2854X Product Folder : http://www.ti.com/product/lm2854 : contains the data sheet and other resources.