描述 / Descriptions

TO-251 塑封封装 NPN 半导体三极管。Silicon NPN transistor in a TO-251 Plastic Package.

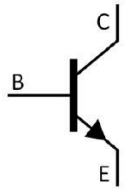
特征 / Features

耐高压,开关速度快,安全工作区宽。
High Voltage Capability, High Speed Switching, Wide SOA.

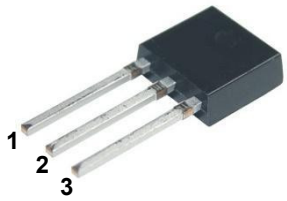
用途 / Applications

主要用于节能灯、日光灯电子镇流器及其它开关、振荡电路。
High frequency electronic lighting ballast applications,converters, inverters switching regulators, etc.

内部等效电路 / Equivalent Circuit



引脚排列 / Pinning



PIN1：Base　　PIN 2：Collector　　PIN 3：Emitter

放大及印章代码 / h_{FE} Classifications & Marking

见印章说明。See Marking Instructions.

极限参数 / Absolute Maximum Ratings(Ta=25℃)

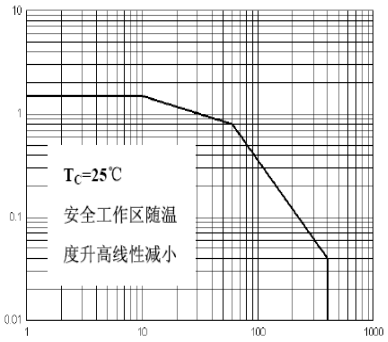
参数 Parameter	符号 Symbol	数值 Rating	单位 Unit
Collector to Base Voltage	V_{CBO}	700	V
Collector to Emitter Voltage	V_{CEO}	450	V
Emitter to Base Voltage	V_{EBO}	9.0	V
Collector Current - Continuous	I_C	1.5	A
Collector Power Dissipation	P_C	1	W
Collector Power Dissipation	P_C(Tc=25℃)	10	W
Junction Temperature	T_j	150	℃
Storage Temperature Range	T_{stg}	-55～150	℃

电性能参数 / Electrical Characteristics(Ta=25℃)

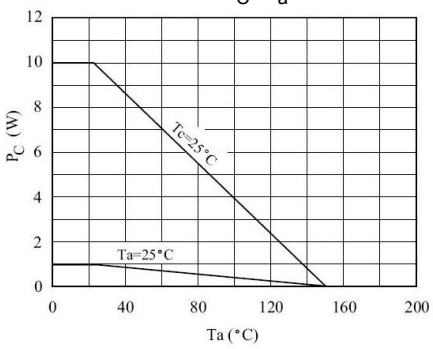
参数 Parameter	符号 Symbol	测试条件 Test Conditions		最小值 Min	典型值 Typ	最大值 Max	单位 Unit
Collector to Base Breakdown Voltage	V_{CBO}	I_C=1mA	I_E=0	700			V
Collector to Emitter Breakdown Voltage	V_{CEO}	I_C=10mA	I_B=0	450			V
Emitter to Base Breakdown Voltage	V_{EBO}	I_E=1mA	I_C=0	9.0			V
Collector Cut-Off Current	I_{CBO}	V_{CB}=700V	I_E=0			0.1	mA
Collector Cut-Off Current	I_{CEO}	V_{CE}=450V	I_B=0			0.1	mA
Emitter Cut-Off Current	I_{EBO}	V_{EB}=9.0V	I_C=0			0.1	mA
DC Current Gain	$h_{FE(1)}$	V_{CE}=2.0V	I_C=0.5A	20		40	
	$h_{FE(2)}$	V_{CE}=2.0V	I_C=1.0A	10		20	
Collector to Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=1.0A	I_B=0.25A			0.9	V
Base to Emitter Saturation Voltage	$V_{BE(sat)}$	I_C=1.0A	I_B=0.5A			1.2	V
Transition Frequency	f_T	V_{CE}=10V f=1.0MHz	I_C=0.1A	5.0			MHz
Storage Time	t_s	V_{CE}=5V (UI9600)	I_C=250mA			4	μs
Fall Time	t_f					0.8	μs

电参数曲线图 / Electrical Characteristic Curve

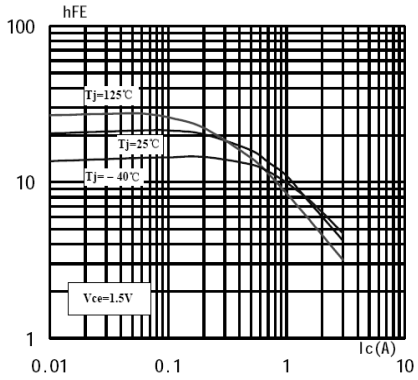
SOA(DC)



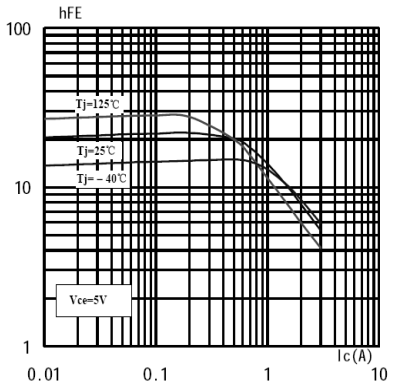
P_C-P_a



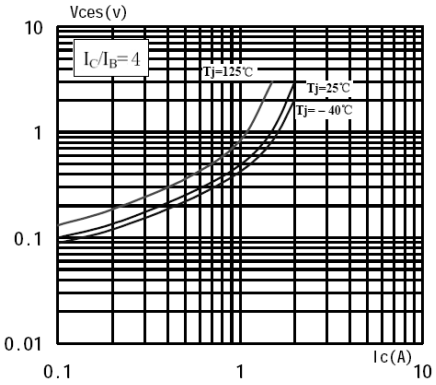
h_{FE}-I_c



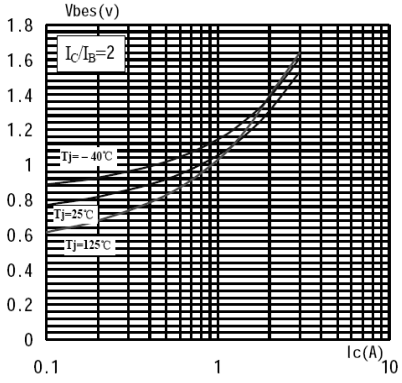
h_{FE}-I_c



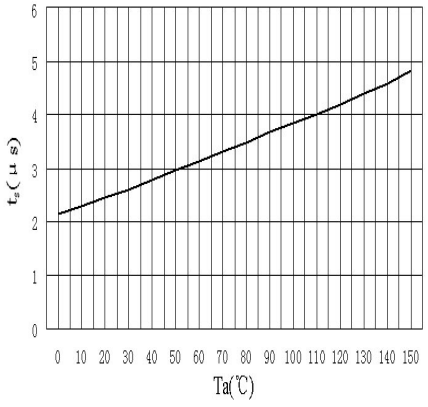
V_{ces}-I_C



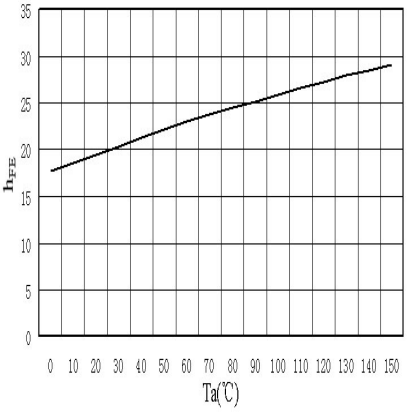
V_{bes}-I_C



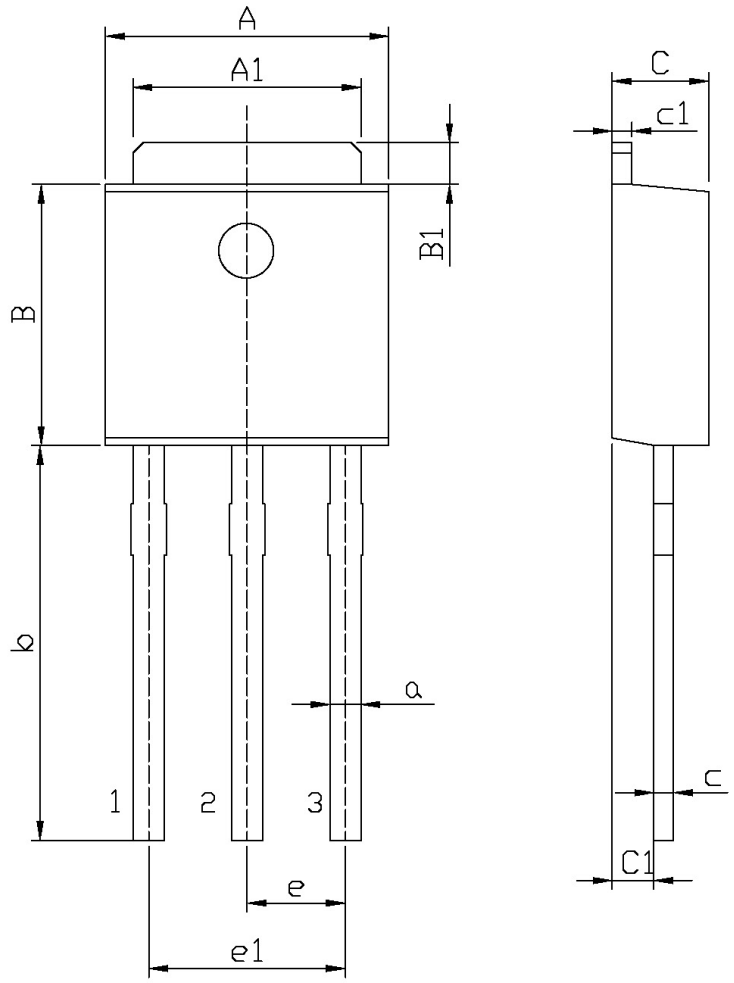
t_S-T_a



h_{FE}-T_a



外形尺寸图 / Package Dimensions

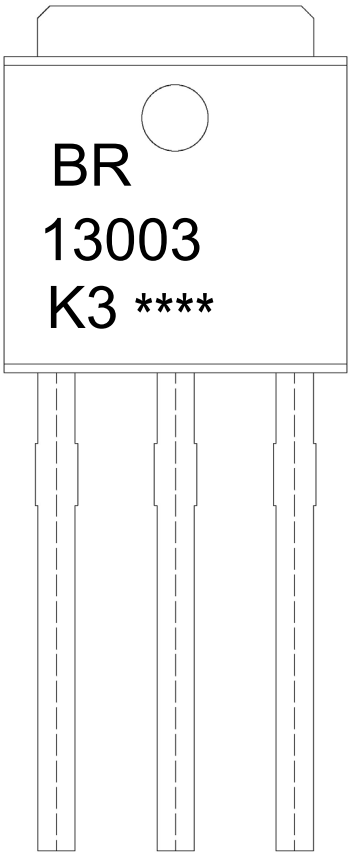


单位：mm

Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max		Min	Max
A	6.45	6.75	a	0.50	0.70
A1	5.10	5.50	b	9.00	9.40
B	5.95	6.25	c	0.45	0.55
B1	0.95	1.25	c1	0.45	0.55
C	2.20	2.40	e	2.24	2.34
C1	0.95	1.15	e1	4.43	4.73

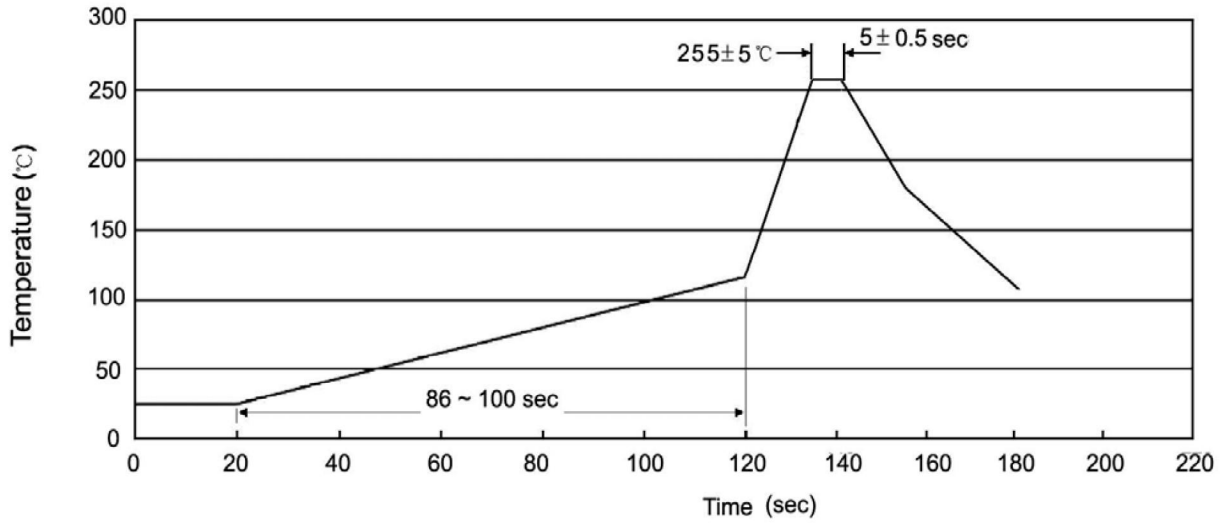
TO-251

印章说明 / Marking Instructions



说明：	
BR：	为公司代码
13003：	为型号代码
K3:	为规格代码
****：	为生产批号代码，随生产批号变化。
Note:	
BR:	Company Code
13003:	Product Type.
K3:	Specification Code
****:	Lot No. Code, code change with Lot No.

波峰焊温度曲线图(无铅) / Temperature Profile for Dip Soldering(Pb-Free)



说明：

1、预热温度 25～150℃，时间 60～90sec;

2、峰值温度 255±5℃，时间持续为 5±0.5sec;

3、焊接制程冷却速度为 2～10℃/sec.

Note:

1.Preheating:25~150℃, Time:60~90sec.

2.Peak Temp.:255±5℃, Duration:5±0.5sec.

3. Cooling Speed: 2~10℃/sec.

耐焊接热试验条件 / Resistance to Soldering Heat Test Conditions

温度：270±5℃ 时间：10±1 sec. Temp.:270±5℃ Time:10±1 sec

包装规格 / Packaging SPEC.

散件包装 / BULK

Package Type 封装形式	Units 包装数量					Dimension 包装尺寸 (unit: mm^3)		
	Units/Bag 只/袋	Bags/Inner Box 袋/盒	Units/Inner Box 只/盒	Inner Boxes/Outer Box 盒/箱	Units/Outer Box 只/箱	Bag 袋	Inner Box 盒	Outer Box 箱
TO-251	1,000	10	10,000	5	50,000	135×190	237×172×102	560×245×195

套管包装 / TUBE

Package Type 封装形式	Units 包装数量					Dimension 包装尺寸 (unit: mm^3)		
	Units/Tube 只/套管	Tubes/Inner Box 套管/盒	Units/Inner Box 只/盒	Inner Boxes/Outer Box 盒/箱	Units/Outer Box 只/箱	Tube 套管	Inner Box 盒	Outer Box 箱
TO-251/252	75	48	3,600	5	18,000	526×20.5×5.25	555×164×50	575×290×180

使用说明 / Notices