描述 / Descriptions

TO-92 塑封封装 NPN 半导体三极管。Silicon NPN transistor in a TO-92 Plastic Package.

特征 / Features

耐压高,电流大,有极好的 h_{FE} 特性,低噪声系数,可与 2SA1015 互补。

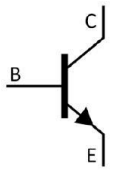
High voltage and high current, excellent h_{FE} linearity ,low noise ,complementary pair with 2SA1015.

用途 / Applications

用于音频放大,激励级放大。

Audio frequency general purpose ,driver stage amplifier applications.

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 / hFE Classifications & Marking

h_{FE} Classifications Symbol	O	Y	GR	BL
h_{FE} Range	70~140	120~240	200~400	350~700

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

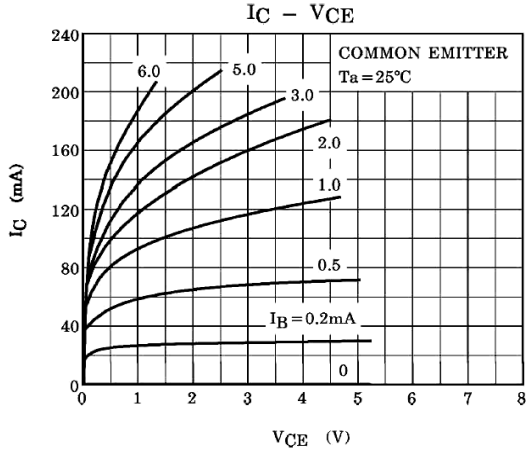
参数 Parameter	符号 Symbol	数值 Rating	单位 Unit
Collector to Base Voltage	V_{CBO}	60	V
Collector to Emitter Voltage	V_{CEO}	50	V
Emitter to Base Voltage	V_{EBO}	5.0	V
Collector Current - Continuous	I_C	150	mA
Base Current - Continuous	I_B	50	mA
Collector Power Dissipation	P_C	400	mW
Junction Temperature	T_j	150	℃
Storage Temperature Range	T_{stg}	-55～150	℃

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

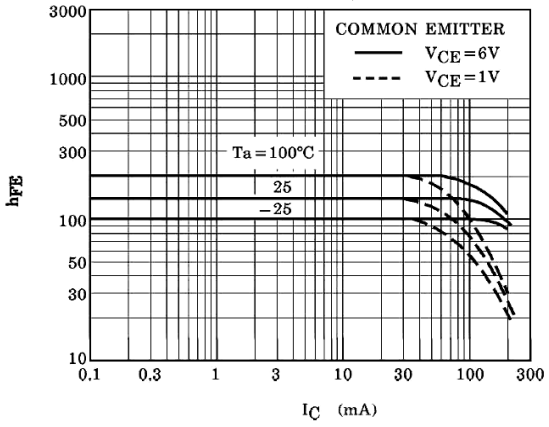
参数 Parameter	符号 Symbol	测试条件 Test Conditions	最小值 Min	典型值 Typ	最大值 Max	单位 Unit
Collector to Base Breakdown Voltage	V_{CBO}	I_C=100μA I_E=0	60			V
Collector to Emitter Breakdown Voltage	V_{CEO}	I_C=500μA I_B=0	50			V
Emitter to Base Breakdown Voltage	V_{EBO}	I_E=100μA I_C=0	5.0			V
Collector Cut-Off Current	I_{CBO}	V_{CB}=60V I_E=0			0.1	μA
Emitter Cut-Off Current	I_{EBO}	V_{EB}=5.0V I_C=0			0.1	μA
DC Current Gain	$h_{FE(1)}$	V_{CE}=6.0V I_C=2.0mA	70		700	
	$h_{FE(2)}$	V_{CE}=6.0V I_C=150mA	25	100		
Collector to Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=100mA I_B=10mA		0.1	0.25	V
Base to Emitter Saturation Voltage	$V_{BE(sat)}$	I_C=100mA I_B=10mA			1.0	V
Transition Frequency	f_T	V_{CE}=10V I_C=1.0mA	80			MHz
Collector Output Capacitance	C_{ob}	V_{CB}=10V I_E=0 f=1.0MHz		2.0	3.5	pF
Noise Figure	NF	V_{CE}=6.0V I_C=0.1mA R_g=10KΩ f=1.0KHz		1.0	10	dB
Base Intrinsic Resistance	rbb′	V_{CB}=10V I_C=1.0mA f=30MHz		50		Ω

电参数曲线图 / Electrical Characteristic Curve

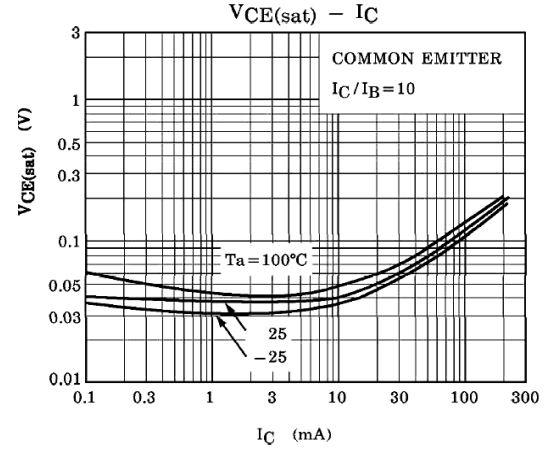
I_C – V_{CE}



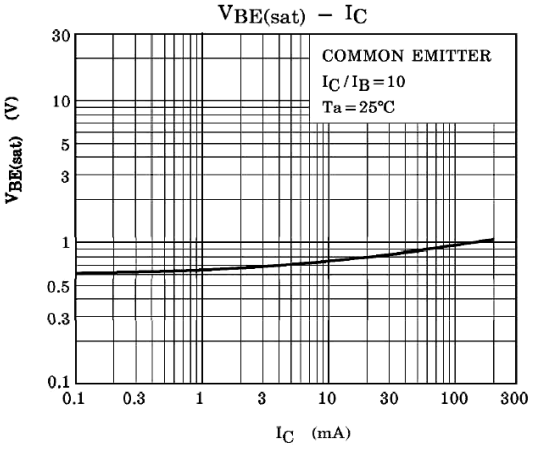
h_{FE} – I_C



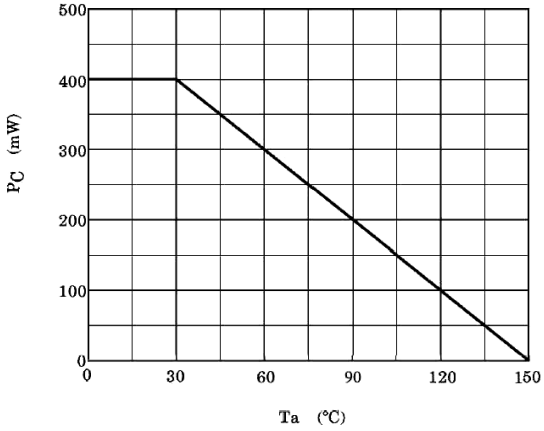
$V_{CE(sat)}$ – I_C



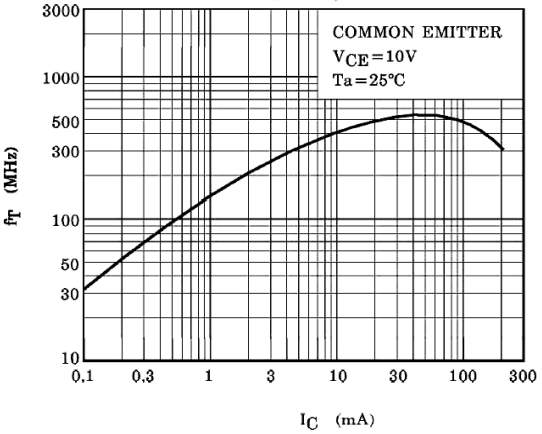
$V_{BE(sat)}$ – I_C



P_C – Ta

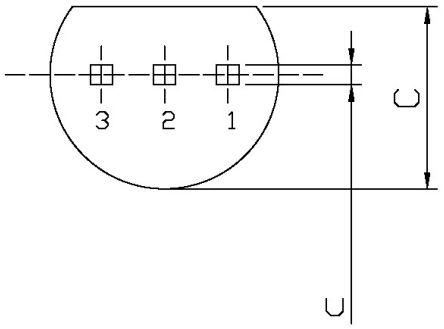


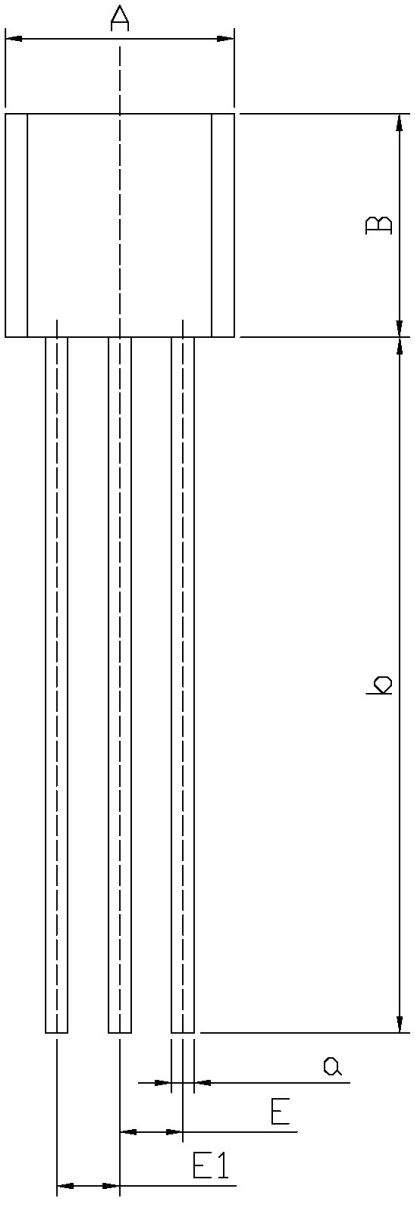
f_T – I_C



外形尺寸图 / Package Dimensions

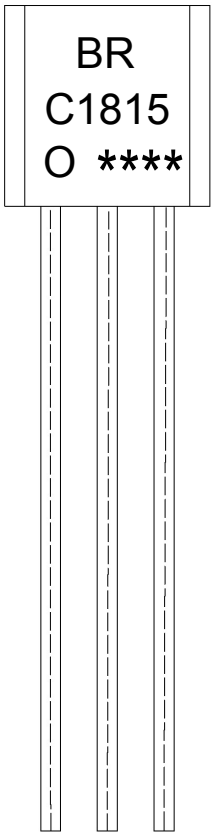
TO-92 Unit: mm





Symbol	Dimensions In Millmeters	
	Min	Max
A	4.4	4.8
B	4.3	4.7
b	13	15
a	0.40	0.60
E	1.22	1.32
E1	1.22	1.32
C	3.4	3.8
c	0.30	0.50

印章说明 / Marking Instructions



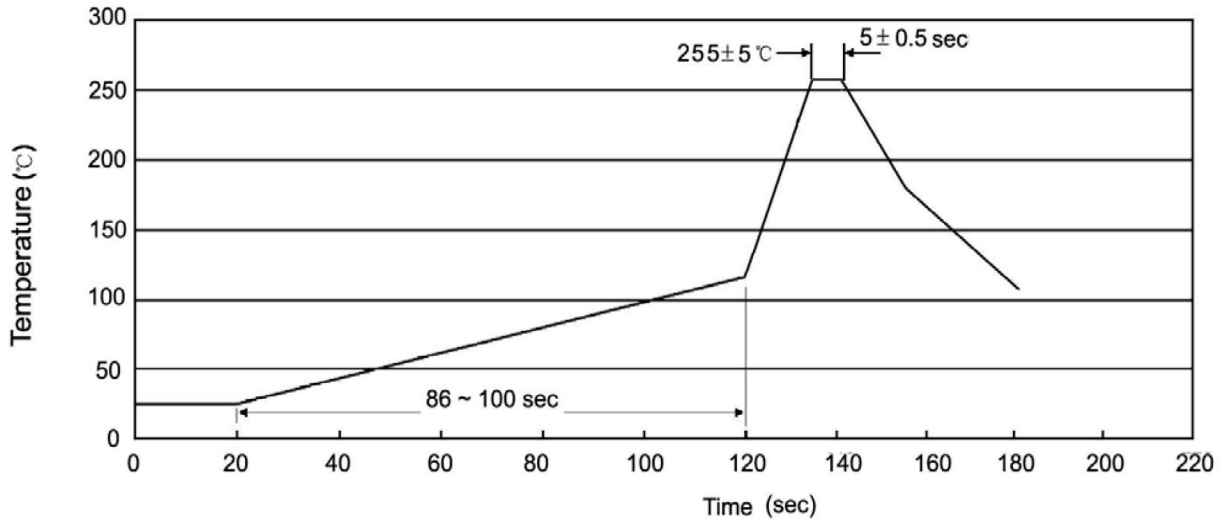
说明：

BR:	为公司代码
C1815：	为型号代码
O:	为 h_{FE} 分档代码
****：	为生产批号代码，随生产批号变化。

Note:

BR:	Company Code.
C1815:	Product Type.
O:	h_{FE} Classifications Symbol
****:	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: mm3)		
	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-92	1,000	10	10,000	5	50,000	135×190	237×172×102	560×245×195
	1,000	10	10,000	10	100,000	135×190	237×172×102	560×245×375

编带包装 / AMMO

Package Type 封装形式	Units 包装数量					Dimension 包装尺寸 (unit: mm3)	
	Units/tape 只/纸带	Tape/Inner Box 纸带/盒	Rows/Inner Box 纸带层/盒	Inner Boxes/Outer Box 盒/箱	Units/Outer Box 只/箱	Inner Box 盒	Outer Box 箱
TO-92	3,000	1	120	10	30,000	328×230×42	小箱 480×346×235， 大箱 547×407×268

使用说明 / Notices