描述 / Descriptions

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

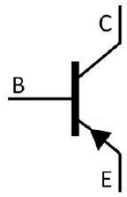
特征 / Features

高电流，低电压。
High current, Low voltage.

用途 / Applications

用于集电极电流达 500mA 的普通放大及开关电路。
General purpose amplifier and switch requiring collector currents up to 500 mA.

内部等效电路 / Equivalent Circuit



引脚排列 / Pinning

PIN1：Collector　　PIN 2：Base　　PIN 3：Emitter

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

见印章说明。See Marking Instructions.

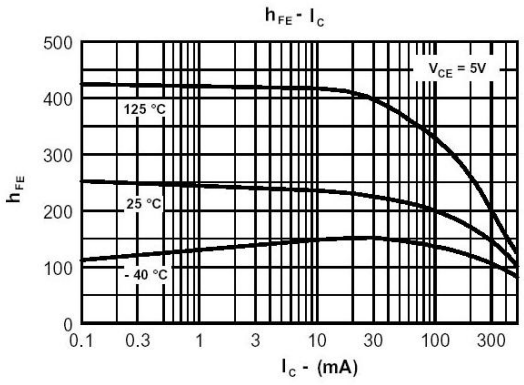
极限参数 / Absolute Maximum Ratings(Ta=25℃)

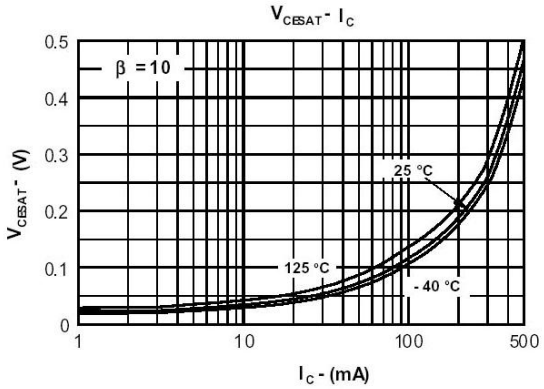
参数 Parameter	符号 Symbol	数值 Rating	单位 Unit
Collector to Base Voltage	V_{CBO}	-40	V
Collector to Emitter Voltage	V_{CEO}	-40	V
Emitter to Base Voltage	V_{EBO}	-5.0	V
Collector Current - Continuous	I_C	-600	mA
Collector Power Dissipation	P_C	625	mW
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	200	℃/W
Junction Temperature	T_j	150	℃
Storage Temperature Range	T_{stg}	-55～150	℃

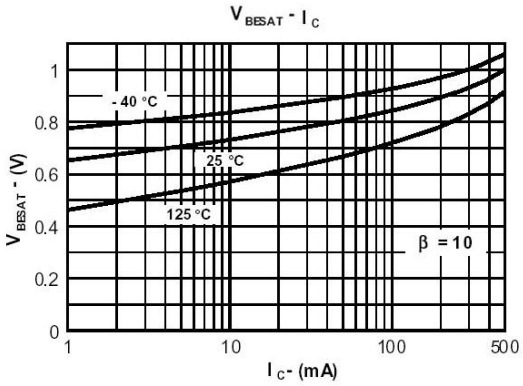
电性能参数 / Electrical Characteristics(Ta=25℃)

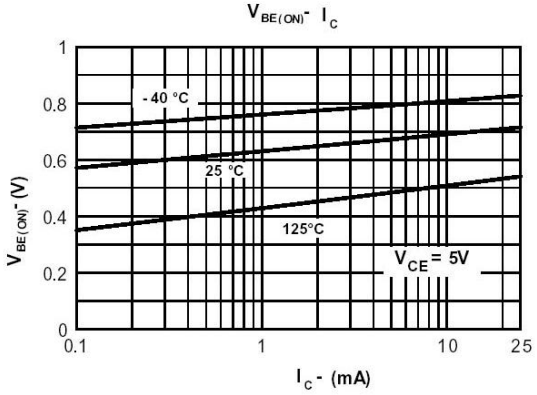
参数 Parameter	符号 Symbol	测试条件 Test Conditions	最小值 Min	典型值 Typ	最大值 Max	单位 Unit
Collector to Base Breakdown Voltage	V_{CBO}	I_C=-0.1mA I_E=0	-40			V
Collector to Emitter Breakdown Voltage	V_{CEO}	I_C=-1.0mA I_B=0	-40			V
Emitter to Base Breakdown Voltage	V_{EBO}	I_E=-0.1mA I_C=0	-5.0			V
Collector Cut-Off Current	I_{CBO}	V_{CB}=-40V I_E=0			-50	nA
Emitter Cut-Off Current	I_{EBO}	V_{EB}=-5V I_C=0			-50	nA
DC Current Gain	$h_{FE(1)}$	V_{CE}=-2.0V I_C=-150mA	100		300	
	$h_{FE(2)}$	V_{CE}=-1.0V I_C=-0.1mA	30			
	$h_{FE(3)}$	V_{CE}=-1.0V I_C=-1.0mA	60			
	$h_{FE(4)}$	V_{CE}=-1.0V I_C=-10mA	100			
	$h_{FE(5)}$	V_{CE}=-2.0V I_C=-500mA	20			
Collector to Emitter Saturation Voltage	$V_{CE(sat)\ (1)}$	I_C=-150mA I_B=-15mA			-0.4	V
	$V_{CE(sat)\ (2)}$	I_C=-500mA I_B=-50mA			-0.75	V
Base to Emitter Saturation Voltage	$V_{BE(sat)\ (1)}$	I_C=-150mA I_B=-15mA	-0.75		-0.95	V
	$V_{BE(sat)\ (2)}$	I_C=-500mA I_B=-50mA			-1.3	V
Current Gain Bandwidth Product	f_T	V_{CE}=-10V I_C=-20mA	200			MHz
Delay Time	t_d	V_{CC}=-30V I_C=-150mA I_{B1}=-15mA			15	ns
Rise Time	t_r				20	ns
Storage Time	t_s	V_{CC}=-30V I_C=-150mA I_{B1}=I_{B2}=-15mA			225	ns
Fall Time	t_f				30	ns

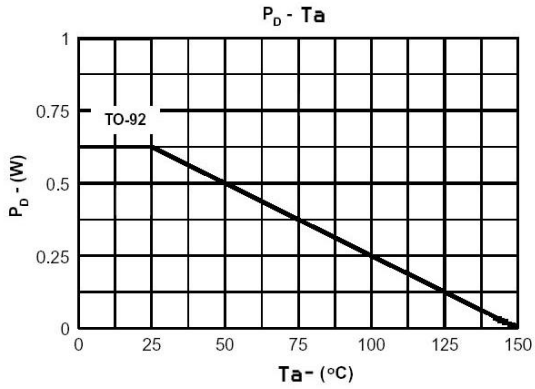
电参数曲线图 / Electrical Characteristic Curve

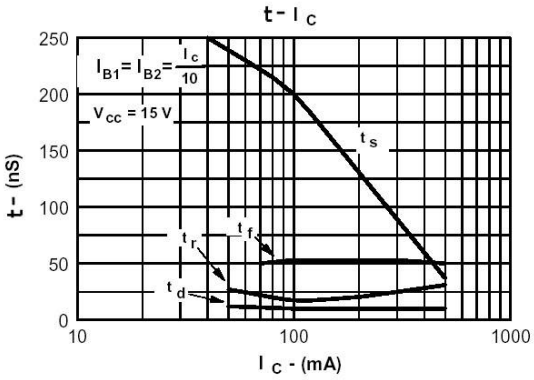






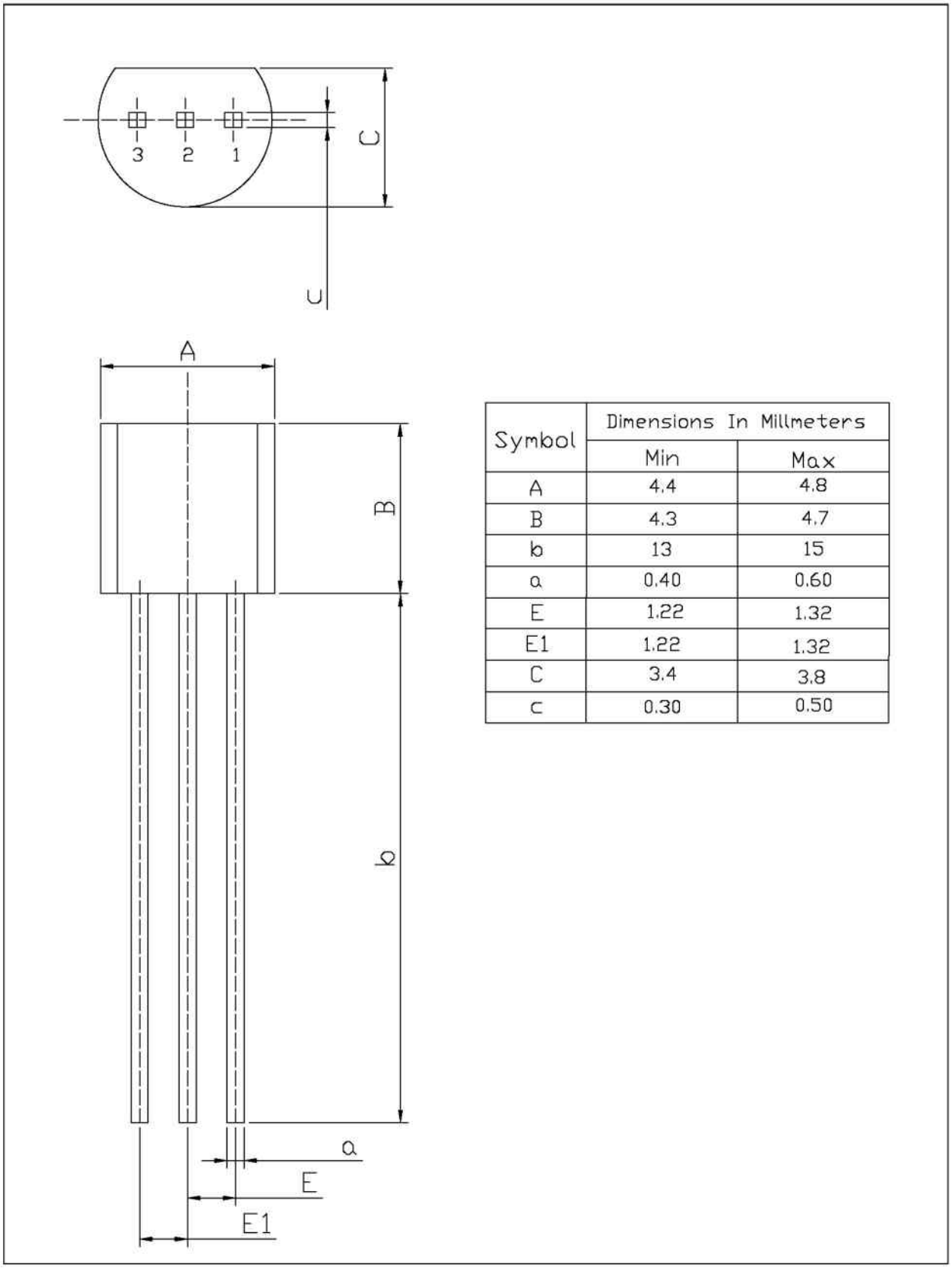






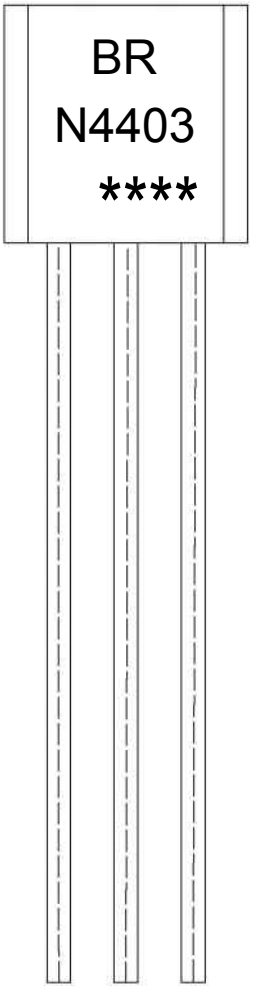
外形尺寸图 / Package Dimensions

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



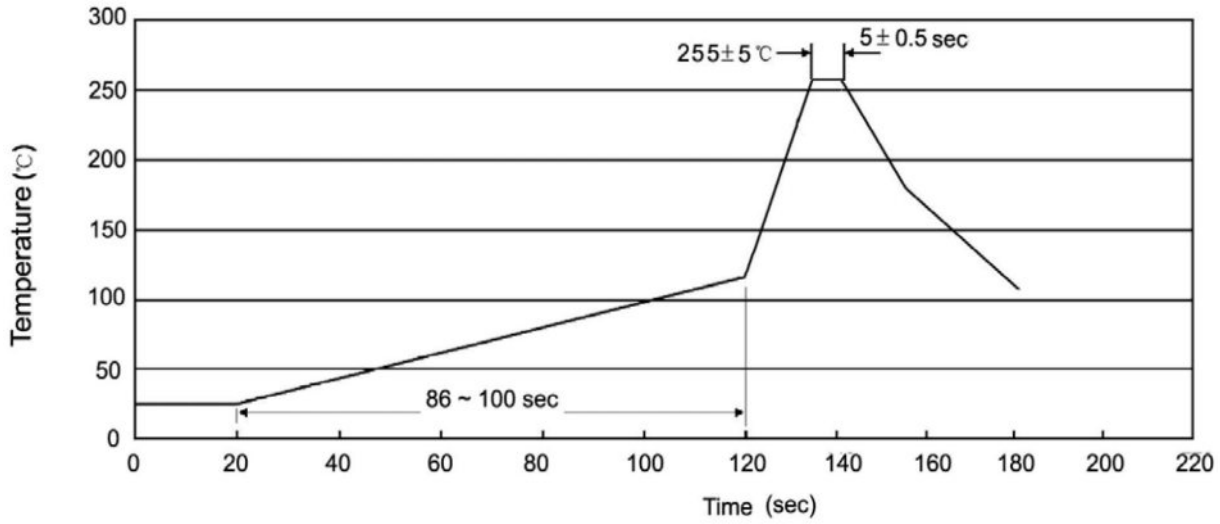
说明：

BR：	为公司代码
N4403：	为型号代码
****：	为生产批号代码，随生产批号变化。

Note:

BR:	Company Code.
N4403:	Product Type.
****:	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