

### 描述 / Descriptions

TO-252 塑封封装 PNP 半导体三极管。Silicon PNP transistor in a TO-252 Plastic Package.

### 特征 / Features

饱和压降低，电流大， $f_T$  高，极好的放大线性，开关速度快。

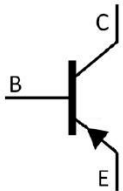
Low  $V_{CE(sat)}$ , high current and high  $f_T$ , excellent linearity of  $h_{FE}$ , fast switching time.

### 用途 / Applications

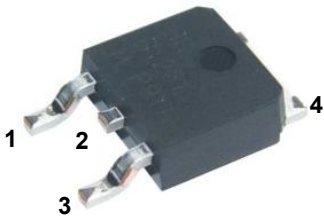
用于继电器驱动电路，高速转换电路，及其它大电流开关电路。

Relay drivers, high-speed inverters, general high-current switching applications.

### 内部等效电路 / Equivalent Circuit



### 引脚排列 / Pinning



PIN1 : Base      PIN 2,4 : Collector      PIN 3 : Emitter

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

$h_{FE}$ Classifications Symbol	Q	R	S	T
$h_{FE}$ Range	70~140	100~200	140~280	200~400

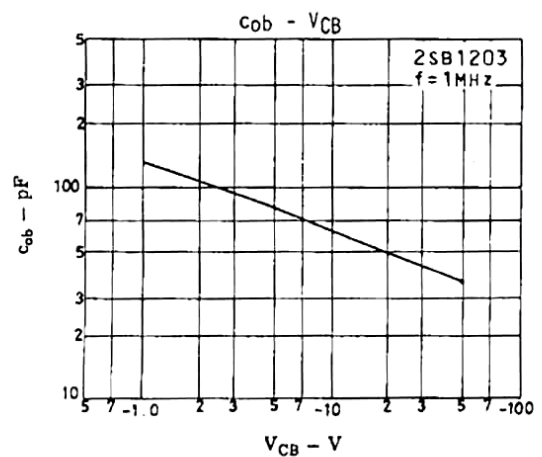
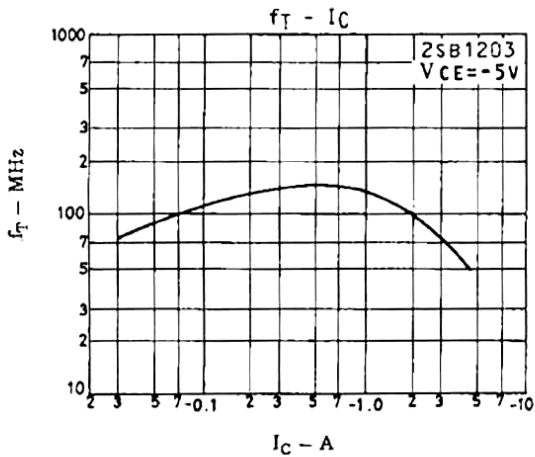
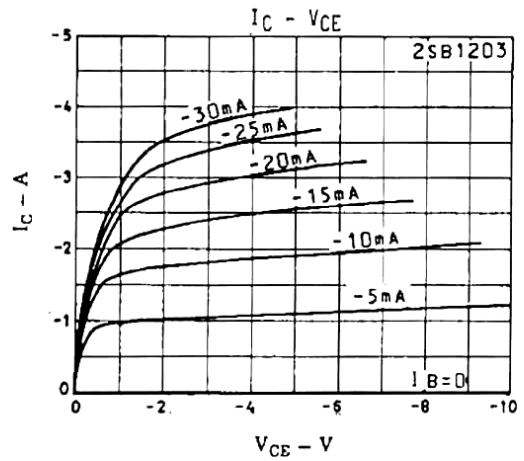
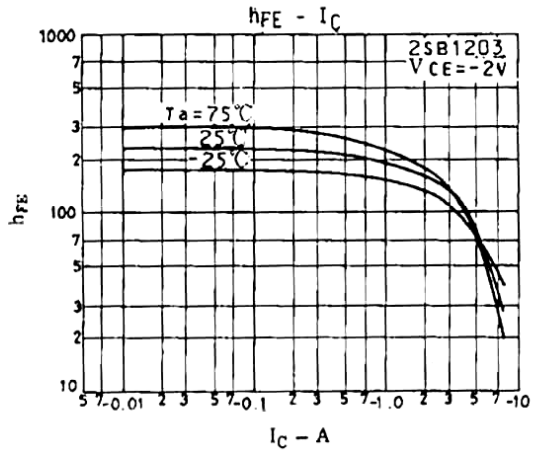
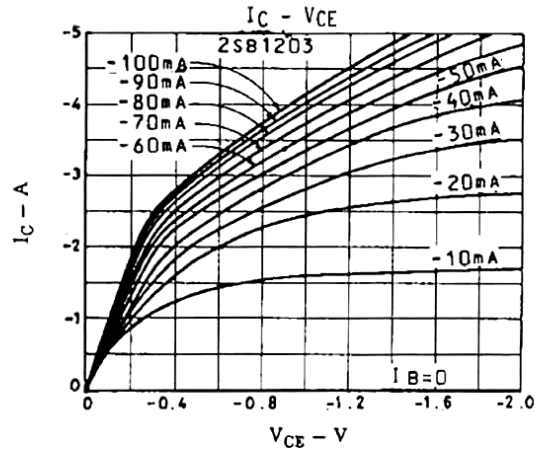
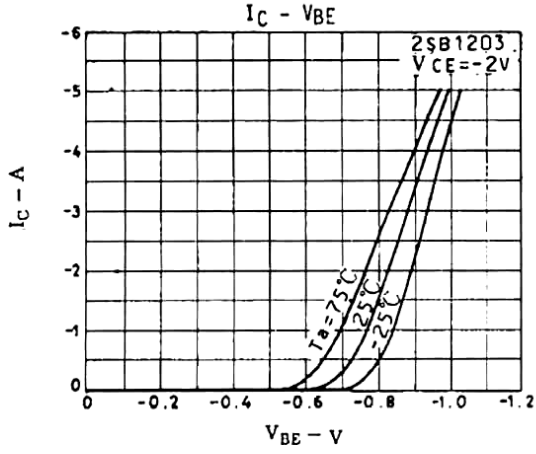
**极限参数 / Absolute Maximum Ratings(Ta=25°C)**

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	$V_{EBO}$	-6.0	V
Collector Current - Continuous	$I_C$	-5.0	A
Collector Current – Continuous(Pulse)	$I_{CP}$	-8.0	A
Collector Power Dissipation	$P_C$	1.0	W
Collector Power Dissipation	$P_C(T_c=25^\circ C)$	20	W
Junction Temperature	$T_j$	150	°C
Storage Temperature Range	$T_{stg}$	-55~150	°C

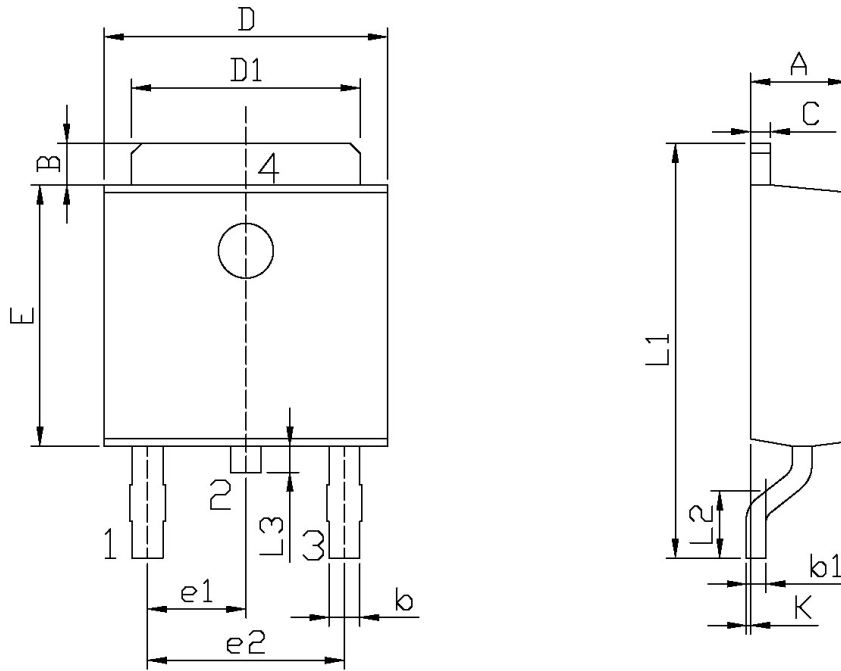
**电性能参数 / Electrical Characteristics(Ta=25°C)**

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	$V_{CBO}$	$I_C=-10\mu A$ $I_E=0$	-60			V
Collector to Emitter Breakdown Voltage	$V_{CEO}$	$I_C=-1.0mA$ $R_{BE}=\infty$	-50			V
Emitter to Base Breakdown Voltage	$V_{EBO}$	$I_E=-10\mu A$ $I_C=0$	-6.0			V
Collector Cut-Off Current	$I_{CBO}$	$V_{CB}=-40V$ $I_E=0$			-1.0	$\mu A$
Emitter Cut-Off Current	$I_{EBO}$	$V_{EB}=-4.0V$ $I_C=0$			-1.0	$\mu A$
DC Current Gain	$h_{FE(1)}$	$V_{CE}=-2.0V$ $I_C=-0.5A$	70		400	
	$h_{FE(2)}$	$V_{CE}=-2.0V$ $I_C=-4.0A$	35			
Collector to Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=-3.0A$ $I_B=-0.15A$		-0.28	-0.55	V
Base to Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=-3.0A$ $I_B=-0.15A$		-0.95	-1.3	V
Transition Frequency	$f_T$	$V_{CE}=-5.0V$ $I_C=-1.0A$		130		MHz
Collector output capacitance	$C_{ob}$	$V_{CB}=-10V$ $I_E=0$ $f=1.0MHz$		60		pF
Turn-On Time	$t_{on}$	$I_C=-10I_{B1}=10I_{B2}=-2.0A$		50		ns
Storage Time	$t_{stg}$			450		ns
Fall Time	$t_f$			20		ns

电参数曲线图 / Electrical Characteristic Curve



外形尺寸图 / Package Dimensions

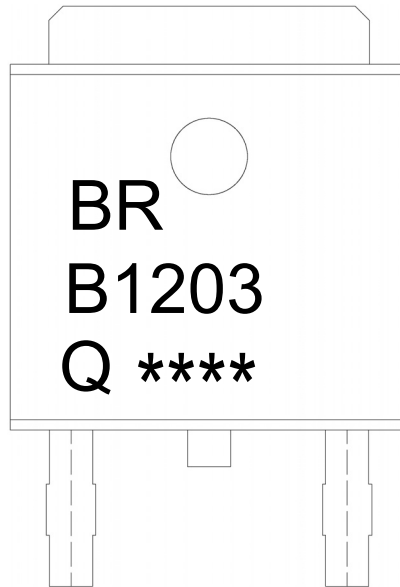


单位: mm

Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max		Min	Max
A	2.20	2.40	E	5.95	6.25
B	0.95	1.25	e1	2.24	2.34
b	0.50	0.70	e2	4.43	4.73
b1	0.45	0.55	L1	9.45	9.95
C	0.45	0.55	L2	1.25	1.75
D	6.45	6.75	L3	0.60	0.90
D1	5.10	5.50	K	0.00	0.10

TO-252

印章说明 / Marking Instructions



说明：

BR： 为公司代码

B1203： 为型号代码

Q： 为  $h_{FE}$  分档代码

\*\*\*\*\*： 为生产批号代码，随生产批号变化。

Note:

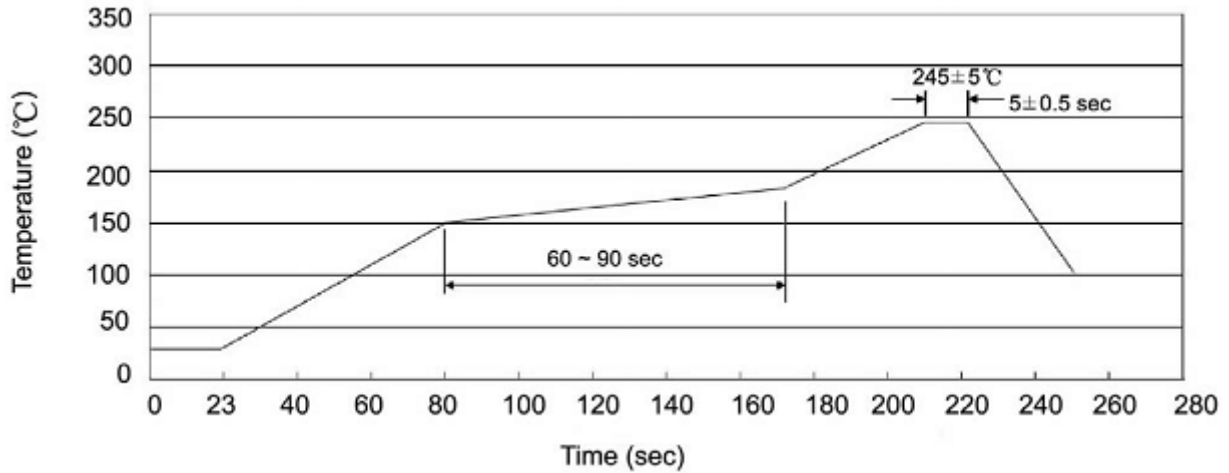
BR: Company Code

B1203: Product Type.

Q:  $h_{FE}$  Classifications Symbol

\*\*\*\*\*: Lot No. Code, code change with Lot No.

**回流焊温度曲线图(无铅) / Temperature Profile for IR Reflow Soldering(Pb-Free)**



说明：

- 1、预热温度 25~150℃，时间 60~90sec;
- 2、峰值温度 245±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.:245±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：260±5℃      时间：10±1 sec.      Temp.:260±5℃      Time:10±1 sec

**包装规格 / Packaging SPEC.**

卷盘包装 / REEL

Package Type 封装形式	Units 包装数量					Dimension 包装尺寸 (unit: mm <sup>3</sup> )		
	Units/Reel 只/卷盘	Reels/Inner Box 卷盘/盒	Units/Inner Box 只/盒	Inner Boxes/Outer Box 盒/箱	Units/Outer Box 只/箱	Reel	Inner Box 盒	Outer Box 箱
TO-252	2,500	2	5,000	5	25,000	13" × 16	360×360×50	385×257×392

套管包装 / TUBE

Package Type 封装形式	Units 包装数量					Dimension 包装尺寸 (unit: mm <sup>3</sup> )		
	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**