

**/ Descriptions**

SOT-23          PNP                          Silicon PNP transistor in a SOT-23 Plastic Package.

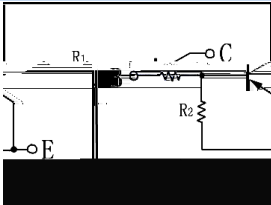
**/ Features**

With built-in bias resistors, simplify circuit design, reduce a quantity of parts and manufacturing process.

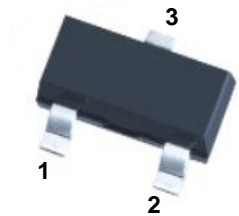
**/ Applications**

Switching, inverter circuit, interface circuit and driver circuit applications.

**/ Equivalent Circuit**



**/ Pinning**



PIN 1 Base          PIN 2 Emitter          PIN 3 Collector

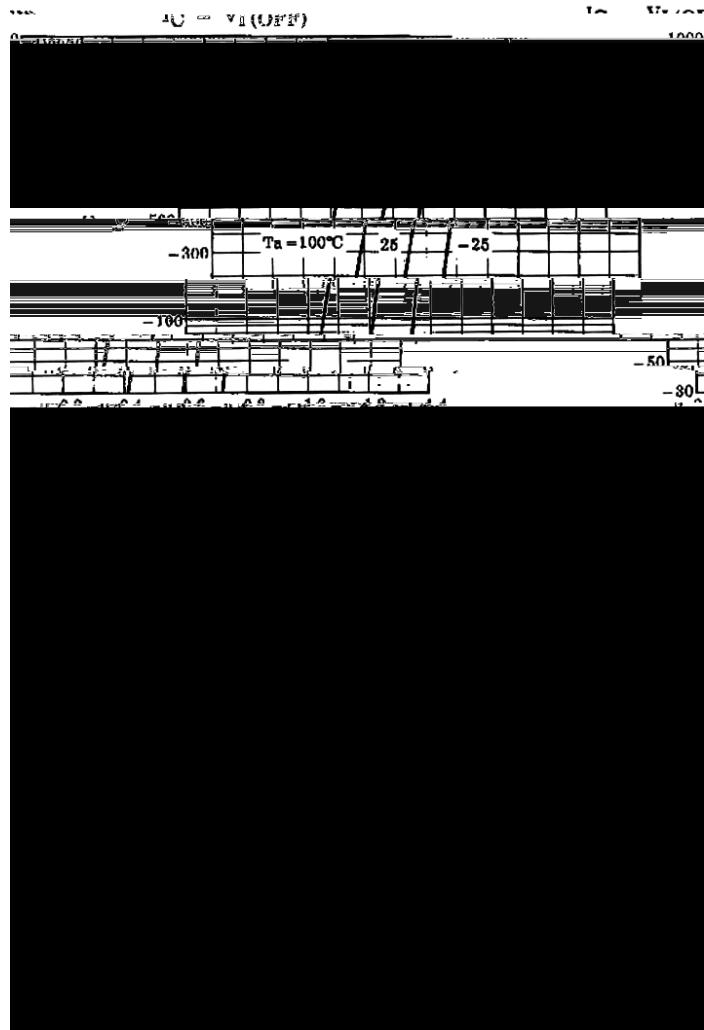
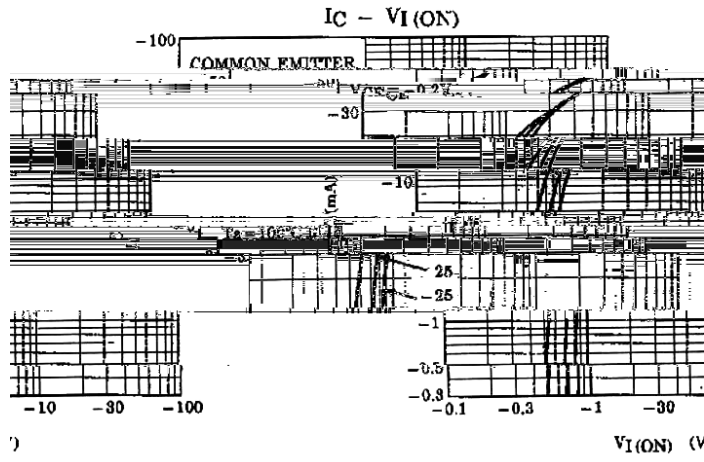
**/ h<sub>FE</sub> Classifications & Marking**

|                       |      |
|-----------------------|------|
| h <sub>FE</sub> Range | >80  |
| Marking               | HE32 |

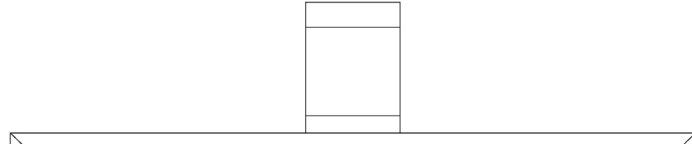
| Parameter                    | Symbol    | Rating  | Unit |
|------------------------------|-----------|---------|------|
| Collector to Base Voltage    | $V_{CBO}$ | -50     | V    |
| Collector to Emitter Voltage | $V_{CEO}$ | -50     | V    |
| Emitter to Base Voltage      | $V_{EBO}$ | -5.0    | V    |
| Collector Current            | $I_C$     | -100    | mA   |
| Collector Power Dissipation  | $P_C$     | 200     | mW   |
| Junction Temperature         | $T_j$     | 150     |      |
| Storage Temperature Range    | $T_{stg}$ | -55 150 |      |

| Parameter                               | Symbol        | Test Conditions                       | Min    | Typ  | Max    | Unit |
|---|---------------|---------------------------------------|--------|------|--------|------|
| Input Voltage                           | $V_{I(ON)}$   | $V_{CE}=-0.2V$ $I_C=-5.0mA$           | -0.6   |      | -1.1   | V    |
| Input Voltage                           | $V_{I(OFF)}$  | $V_{CE}=-5.0V$ $I_C=-0.1mA$           | -0.5   |      | -0.8   | V    |
| Collector Cut-Off Current               | $I_{CBO}$     | $V_{CB}=-50V$ $I_E=0$                 |        |      | -0.1   | A    |
| Collector Cut-Off Current               | $I_{CEO}$     | $V_{CE}=-50V$ $I_B=0$                 |        |      | -0.5   | A    |
| Emitter Cut-Off Current                 | $I_{EBO}$     | $V_{EB}=-5.0V$ $I_C=0$                | -0.078 |      | -0.145 | mA   |
| DC Current Gain                         | $h_{FE}$      | $V_{CE}=-5.0V$ $I_C=-10mA$            | 80     |      |        |      |
| Collector to Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C=-5.0mA$<br>$I_B=-0.25mA$         |        | -0.1 | -0.3   | V    |
| Transition Frequency                    | $f_T$         | $V_{CE}=-10V$ $I_C=-5.0mA$            |        | 200  |        | MHz  |
| Collector Output Capacitance            | $C_{ob}$      | $V_{CB}=-10V$ $I_E=0mA$<br>$f=1.0MHz$ |        | 3.0  | 6.0    | pF   |
| Input Resistor                          | $R_1$         |                                       | 1.54   | 2.2  | 2.86   | K    |
| Resistor ratio                          | $R_2/R_1$     |                                       | 19.4   | 21   | 23.7   |      |

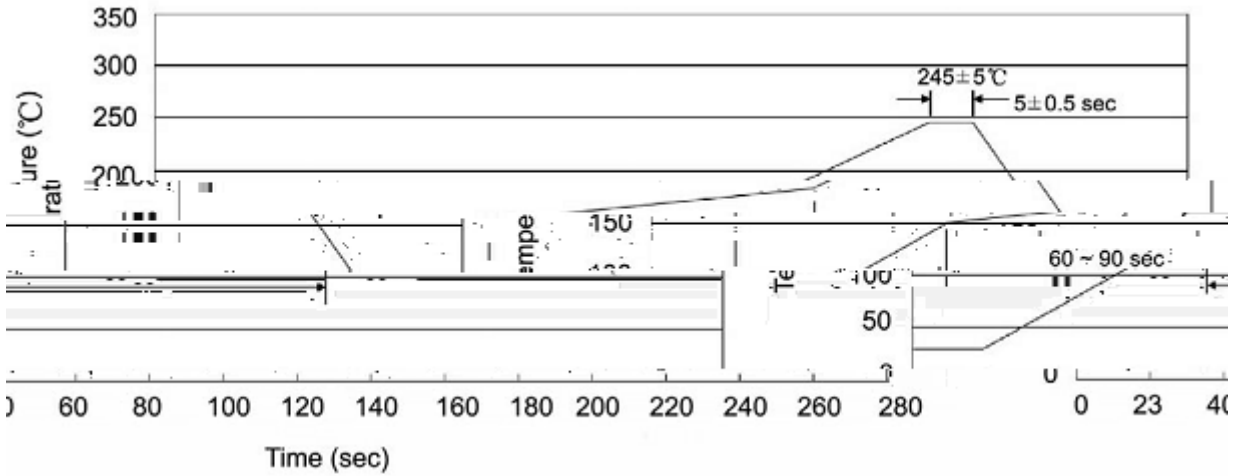
/ Electrical Characteristic Curve







( ) / Temperature Profile for IR Reflow Soldering(Pb-Free)



Note:

- |   |       |     |    |           |   |
|---|-------|-----|----|-----------|---|
| 1 | 25    | 150 | 60 | 90sec;    | 1.Preheating:25~150 , Time:60~90sec.    |
| 2 | 245±5 |     |    | 5±0.5sec; | 2.Peak Temp.:245±5 , Duration:5±0.5sec. |
| 3 |       |     | 2  | 10 /sec.  | 3. Cooling Speed: 2~10 /sec.            |

/ Resistance to Soldering Heat Test Conditions

260±5                      10±1 sec.                      Temp.:260±5                      Time:10±1 sec

/ Packaging SPEC.

/ REEL

| Package Type<br>封装形式 | Units 包装数量         |                         |                        |                              |                        | Dimension 包装尺寸 (unit: mm <sup>3</sup> ) |             |             |
|----------------------|--------------------|-------------------------|------------------------|------------------------------|------------------------|---|-------------|-------------|
|                      | Units/Reel<br>只/卷盘 | Reels/Inner Box<br>卷盘/盒 | Units/Inner Box<br>只/盒 | Inner Boxes/Outer Box<br>盒/箱 | Units/Outer Box<br>只/箱 | Reel                                    | Inner Box 盒 | Outer Box 箱 |