

**/ Descriptions**

SOT-23

PNP

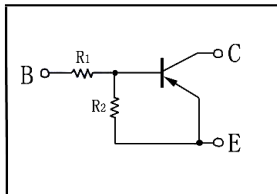
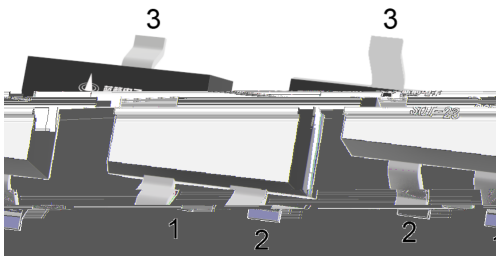
Silicon PNP Digital transistor in a SOT-23 Plastic Package.

**/ Features**

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

**/ 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**

|         |      |
|---------|------|
| Marking | HE13 |
|---------|------|

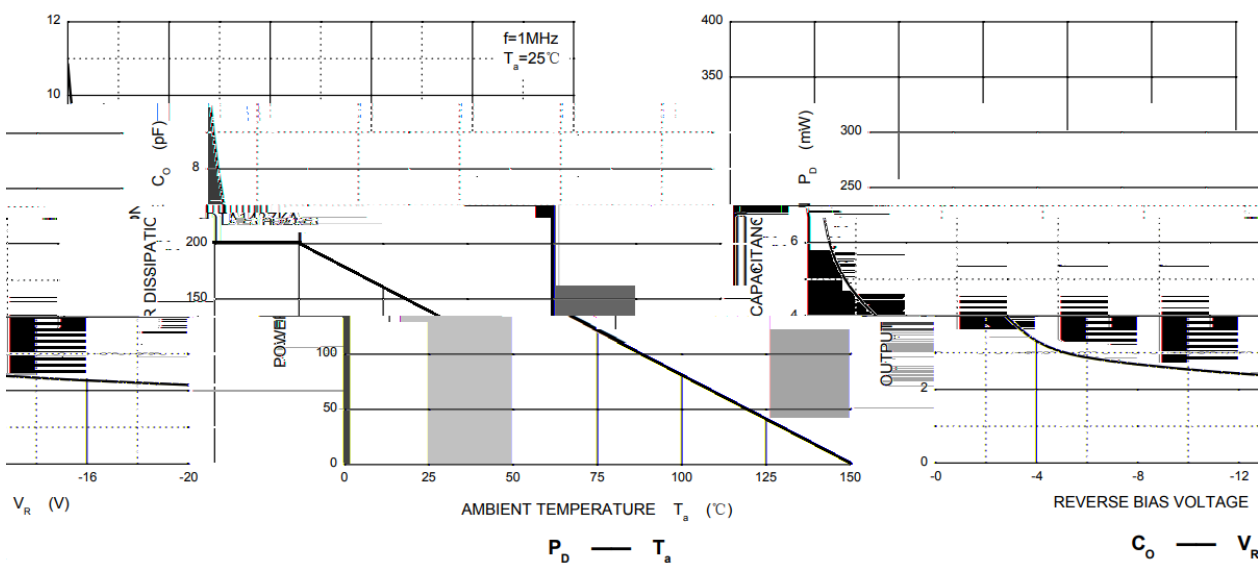
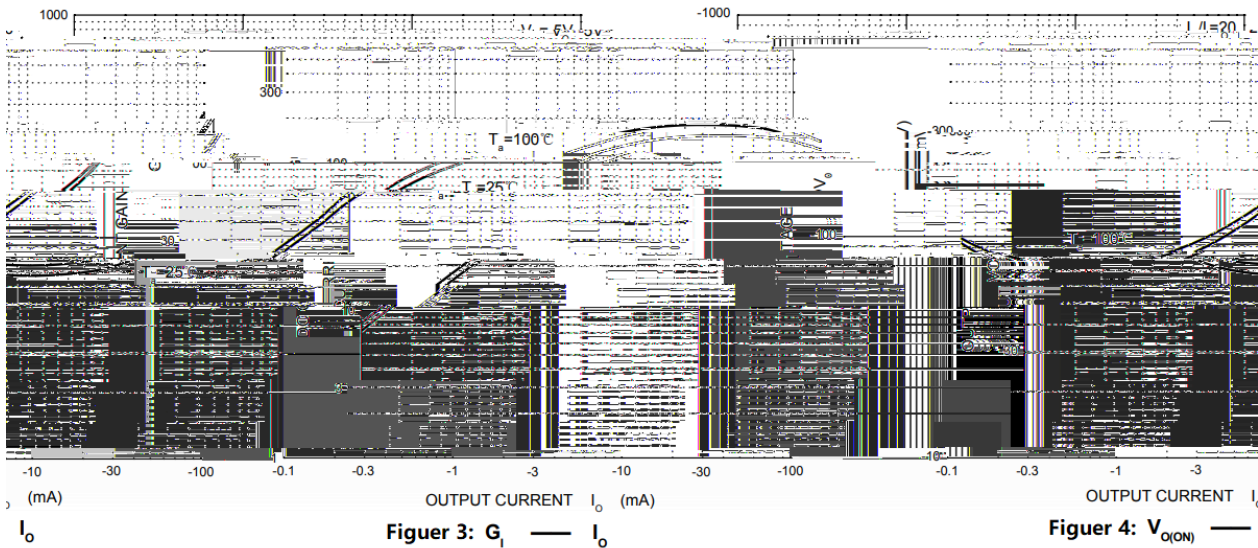
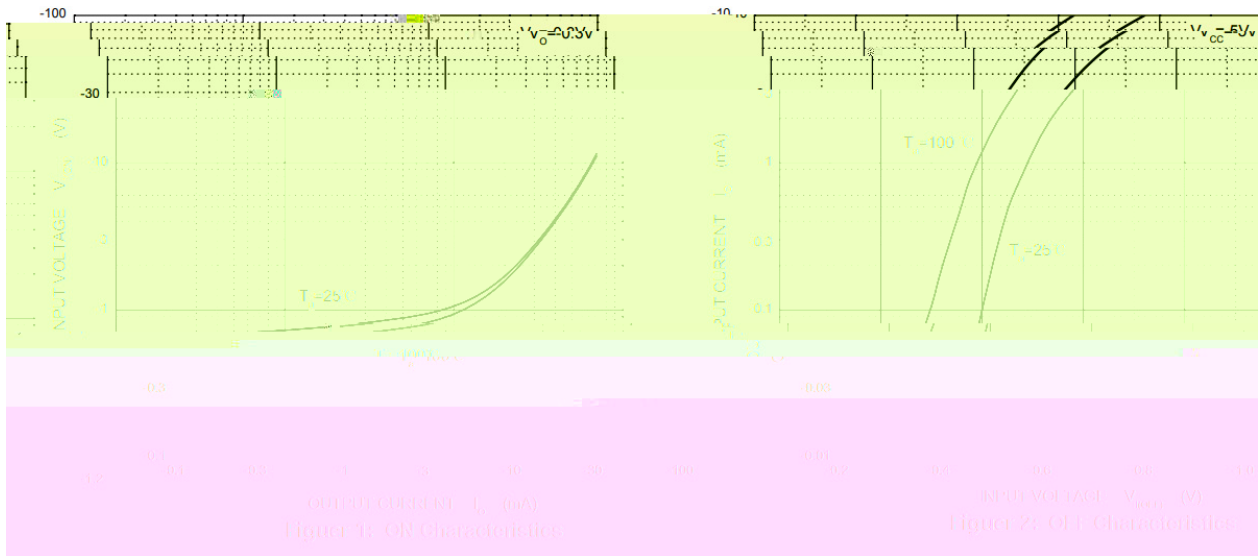
/ Absolute Maximum Ratings( $T_a=25^\circ\text{C}$ )

| Parameter                 | Symbol    | Rating  | Unit |
|---------------------------|-----------|---------|------|
| Output Voltage            | $V_{CC}$  | -50     | V    |
| Input Voltage             | $V_{IN}$  | -30     | V    |
|                           |           | 5.0     | V    |
| Output Current            | $I_O$     | -100    | mA   |
| Power Dissipation         | $P_C$     | 200     | mW   |
| Junction Temperature      | $T_j$     | 150     |      |
| Storage Temperature Range | $T_{stg}$ | -55 150 |      |

/ Electrical Characteristics( $T_a=25^\circ\text{C}$ )

| Parameter              | Symbol       | Test Conditions                         | Min  | Typ  | Max  | Unit       |
|------------------------|--------------|-----------------------------------------|------|------|------|------------|
| Input Voltage          | $V_{I(off)}$ | $V_{CC}=-5.0V$ $I_O=-100\mu A$          | -0.5 |      |      | V          |
|                        | $V_{I(on)}$  | $V_O=-0.3V$ $I_O=-5.0mA$                |      |      | -1.3 | V          |
| Output Voltage         | $V_{O(on)}$  | $I_O=-5.0mA$ $I_I=-0.25mA$              |      | -0.1 | -0.3 | V          |
| Input Current          | $I_I$        | $V_I=-5.0V$                             |      |      | -1.8 | mA         |
| Output Cut-off Current | $I_{O(off)}$ | $V_{CC}=-50V$ $V_I=0V$                  |      |      | -0.5 | $\mu A$    |
| DC Current Gain        | $G_I$        | $V_O=-5.0V$ $I_O=-10mA$                 | 80   |      |      |            |
| Transition Frequency   | $f_T$        | $V_{CE}=-10V$ $I_E=5.0mA$<br>$f=100MHz$ |      | 250  |      | MHz        |
| Resistance1            | $R_1$        |                                         | 3.29 | 4.7  | 6.11 | K $\Omega$ |
| Resistance Ratio       | $R_2/R_1$    |                                         | 8.0  | 10   | 12   |            |

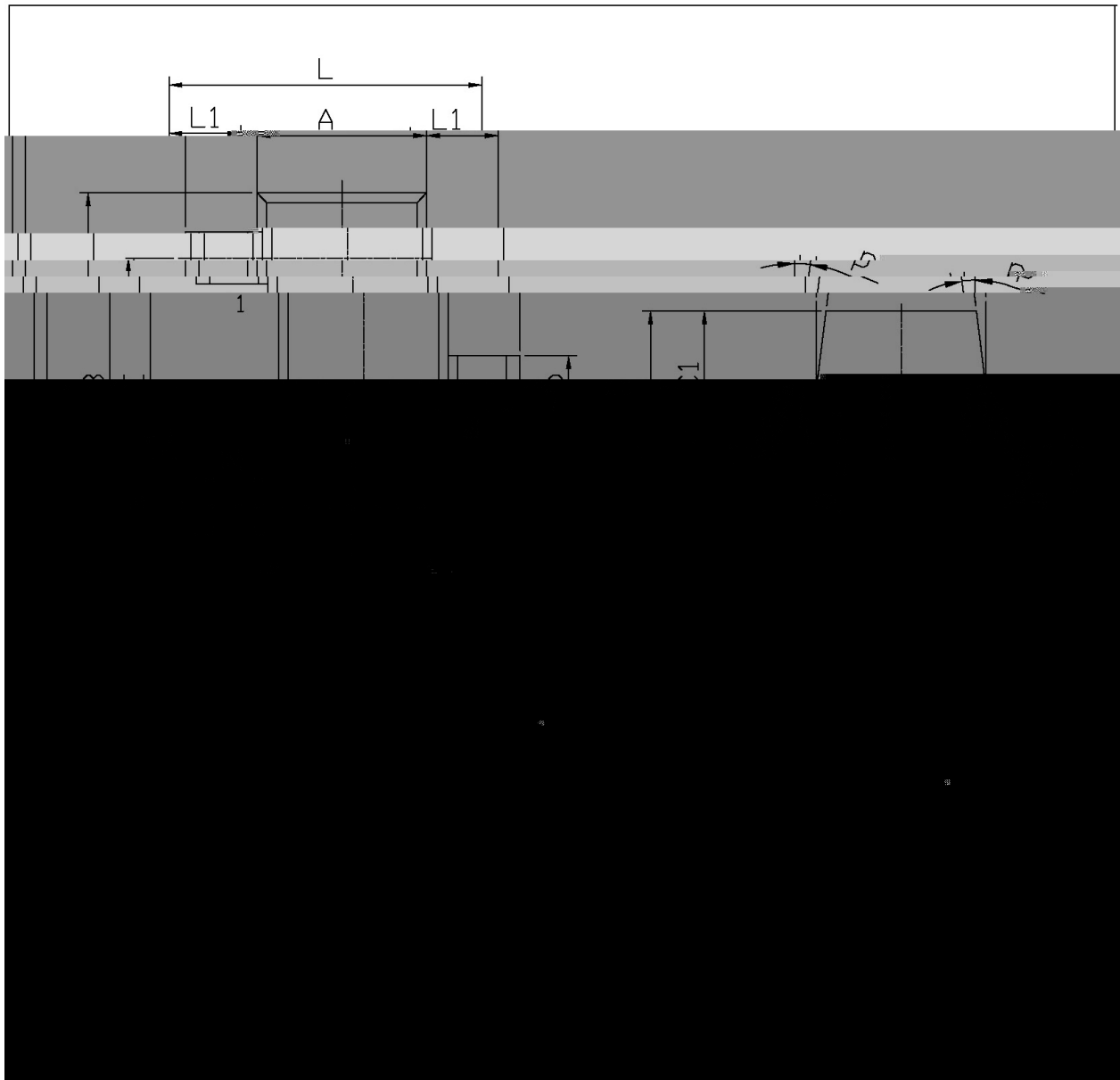
## / Electrical Characteristic Curve



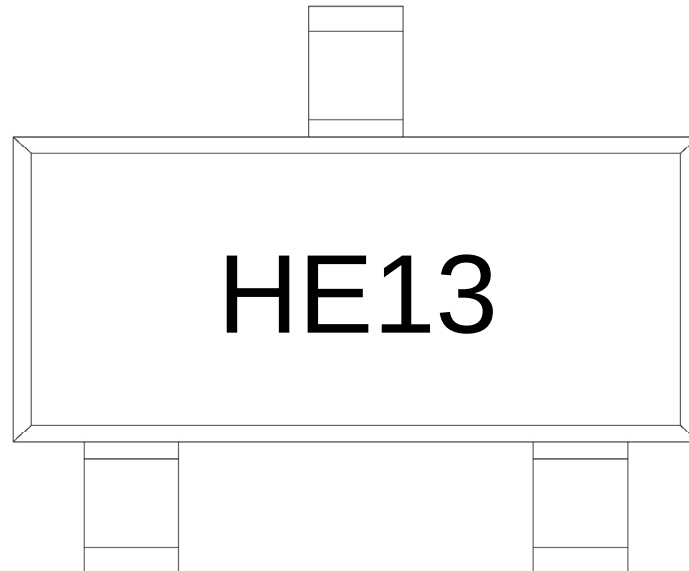
/ Package Dimensions

SOT-23

单位: mm



**/ Marking Instructions**



H

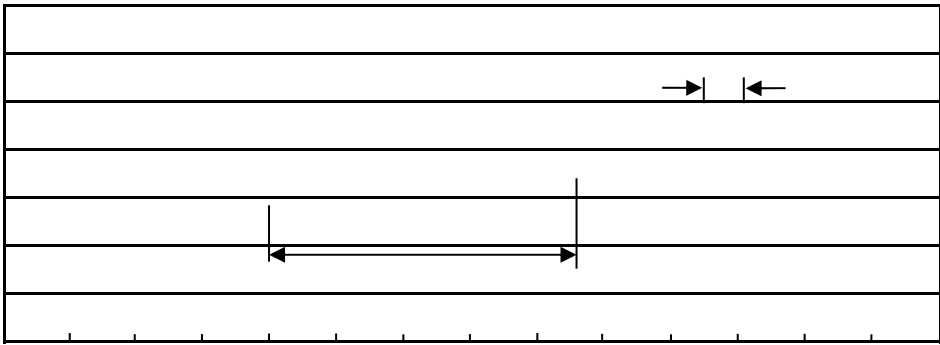
E13

Note:

H            Company Code

E13        Product Type Code

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



Note:

- 1

150 180

60 90sec;

1.Preheating:150~180 , 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 | Units           |                      |                      |                            |                      | Dimension (unit mm <sup>3</sup> ) |             |             |
|--------------|-----------------|----------------------|----------------------|----------------------------|----------------------|-----------------------------------|-------------|-------------|
|              | Units/Reel<br>/ | Reels/Inner Box<br>/ | Units/Inner Box<br>/ | Inner Boxes/Outer Box<br>/ | Units/Outer Box<br>/ | Reel                              | Inner Box   | Outer Box   |
| SOT-23       | 3,000           | 10                   | 30,000               | 6                          | 180,000              | 7 ×8                              | 180×120×180 | 390×385×205 |

/ Notices