

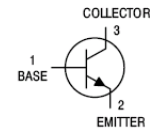
### Features

- High DC current gain
- Complimentary to SS8550E
- RoHS compliant with Halogen-free

HF

### Mechanical Data

- Case: SOT-89
- Molding compound: UL flammability classification rating 94V-0
- Terminals: Tin-plated; solderability per MIL-STD-202, Method 208



### Ordering Information

| Part Number | Package | Shipping Quantity      | Marking Code |
|-------------|---------|------------------------|--------------|
| SS8050E-L   | SOT-89  | 1000 pcs / Tape & Reel | Y1           |
| SS8050E-H   | SOT-89  | 1000 pcs / Tape & Reel | Y1           |
| SS8050E-J   | SOT-89  | 1000 pcs / Tape & Reel | Y1           |

### Maximum Ratings (@ T<sub>A</sub> = 25°C unless otherwise specified)

| Parameter                           | Symbol           | Value | Unit |
|-------------------------------------|------------------|-------|------|
| Collector-Base Breakdown Voltage    | V <sub>CBO</sub> | 40    | V    |
| Collector-Emitter Breakdown Voltage | V <sub>CEO</sub> | 25    | V    |
| Emitter-Base Breakdown Voltage      | V <sub>EBO</sub> | 6     | V    |
| Collector Current (Continuous)      | I <sub>C</sub>   | 1.5   | A    |
| Collector Current (Peak)            | I <sub>CM</sub>  | 2     | A    |

### Thermal Characteristics

| Parameter                                                                             | Symbol           | Value      | Unit |
|---------------------------------------------------------------------------------------|------------------|------------|------|
| Power Dissipation (T <sub>A</sub> = 25°C) *1                                          | P <sub>D</sub>   | 0.5        | W    |
| Power Dissipation (T <sub>A</sub> = 25°C, based on R <sub>θJA</sub> (Typ.) = 175°C/W) | P <sub>D</sub>   | 0.7        | W    |
| Thermal Resistance Junction-to-Air *1                                                 | R <sub>θJA</sub> | 250        | °C/W |
| Operating Junction Temperature Range                                                  | T <sub>J</sub>   | -55 ~ +150 | °C   |
| Storage Temperature Range                                                             | T <sub>STG</sub> | -55 ~ +150 | °C   |

Note 1: The data tested by surface mounted on a minimum recommended FR-4 board

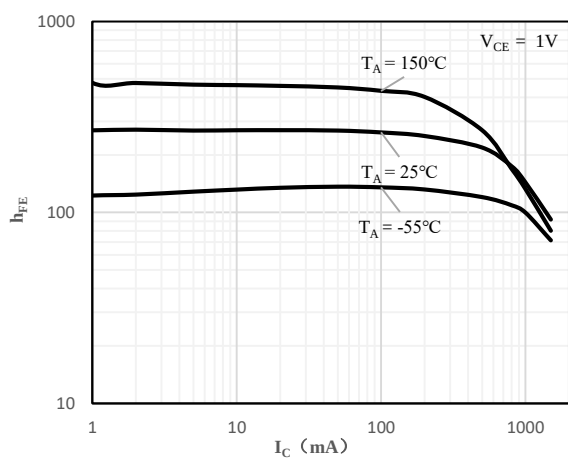
### Electrical Characteristics (@ $T_A = 25^\circ\text{C}$ unless otherwise specified)

| Parameter                            | Symbol        | Test Condition                                  | Min. | Typ. | Max. | Unit          |
|--------------------------------------|---------------|-------------------------------------------------|------|------|------|---------------|
| Collector-Base Breakdown Voltage     | $V_{(BR)CBO}$ | $I_C = 100\mu\text{A}, I_E = 0$                 | 40   | -    | -    | V             |
| Collector-Emitter Breakdown Voltage  | $V_{(BR)CEO}$ | $I_C = 2\text{mA}, I_B = 0$                     | 25   | -    | -    | V             |
| Emitter-Base Breakdown Voltage       | $V_{(BR)EBO}$ | $I_E = 100\mu\text{A}, I_C = 0$                 | 6    | -    | -    | V             |
| Collector Cut-off Current            | $I_{CBO}$     | $V_{CB} = 35\text{V}, I_E = 0$                  | -    | -    | 0.1  | $\mu\text{A}$ |
| Collector Cut-off Current            | $I_{CEO}$     | $V_{CE} = 20\text{V}, I_B = 0$                  | -    | -    | 0.1  | $\mu\text{A}$ |
| Emitter Cut-off Current              | $I_{EBO}$     | $V_{EB} = 6\text{V}, I_C = 0$                   | -    | -    | 0.1  | $\mu\text{A}$ |
| DC Current Gain                      | $h_{FE}$      | $V_{CE} = 1\text{V}, I_C = 0.1\text{A}$         | 120  | -    | 400  | -             |
|                                      |               | $V_{CE} = 1\text{V}, I_C = 0.8\text{A}$         | 40   | -    | -    | -             |
| Collector-emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C = 0.8\text{A}, I_B = 0.08\text{A}$         | -    | 0.28 | 0.5  | V             |
| Base-emitter Saturation Voltage      | $V_{BE(sat)}$ | $I_C = 0.8\text{A}, I_B = 0.08\text{A}$         | -    | 0.98 | 1.2  | V             |
| Base-emitter on Voltage              | $V_{BE(on)}$  | $V_{CE} = 1\text{V}, I_C = 10\text{mA}$         | -    | 0.66 | 1    | V             |
| Transition Frequency                 | $f_T$         | $I_C = 50\text{mA}, V_{CE} = 10\text{V}$        | 100  | -    | -    | MHz           |
| Collector Output Capacitance         | $C_{OB}$      | $V_{CB} = 10\text{V}, I_E = 0, f = 1\text{MHz}$ | -    | 15   | -    | pF            |

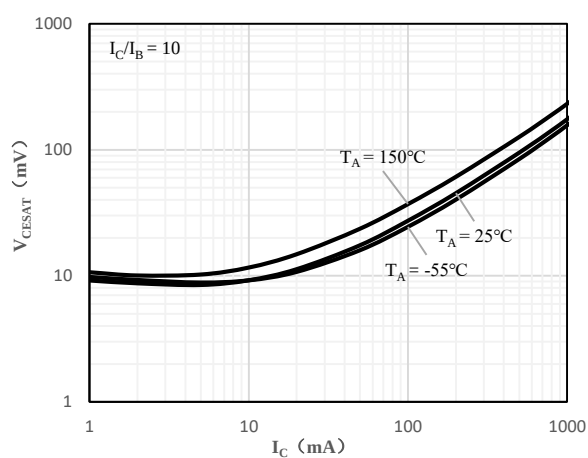
### Classification of $h_{FE}$

| Rank  | L       | H       | J       |
|-------|---------|---------|---------|
| Range | 120-200 | 200-350 | 300-400 |

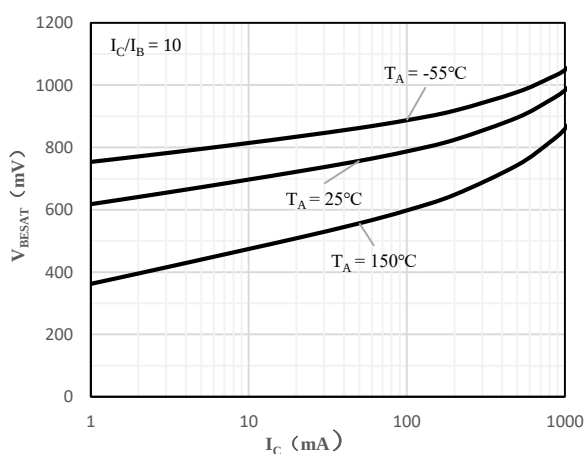
**Ratings and Characteristics Curves** (@  $T_A = 25^\circ\text{C}$  unless otherwise specified)



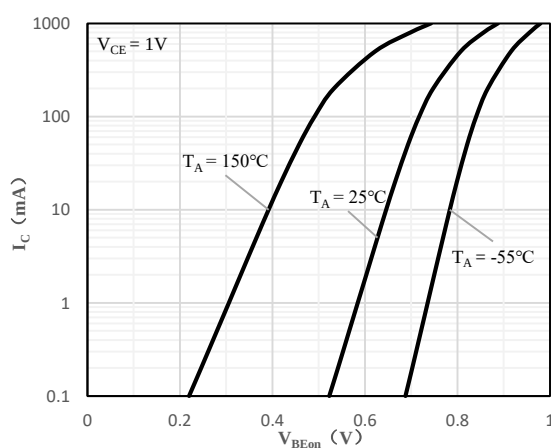
**Fig 1**  $h_{FE}$  vs.  $I_C$  (H)



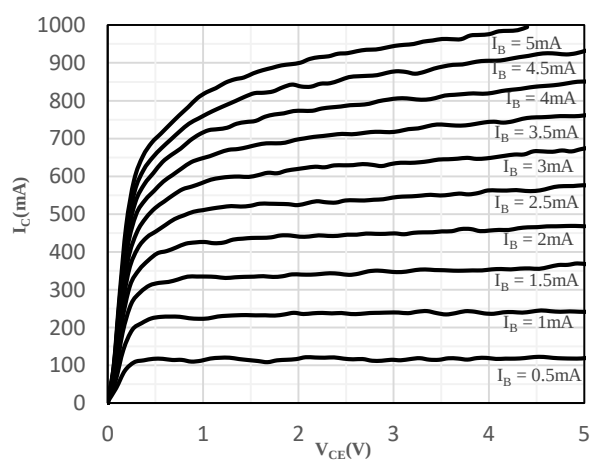
**Fig 2**  $V_{CE(sat)}$  vs.  $I_C$



**Fig 3**  $V_{BE(sat)}$  vs.  $I_C$

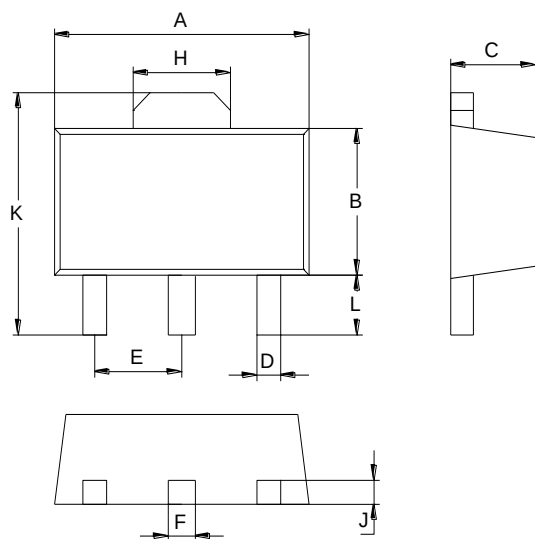


**Fig 4**  $V_{BE(on)}$  vs.  $I_C$



**Fig 5**  $I_C$  vs.  $V_{CE}$

## Package Outline Dimensions (Unit: mm)



| SOT-89    |      |      |
|-----------|------|------|
| Dimension | Min. | Max. |
| A         | 4.30 | 4.70 |
| B         | 2.25 | 2.65 |
| C         | 1.30 | 1.70 |
| D         | 0.30 | 0.50 |
| E         | 1.40 | 1.60 |
| F         | 0.38 | 0.58 |
| H         | 1.60 | 1.80 |
| J         | 0.30 | 0.50 |
| L         | 0.90 | 1.10 |
| K         | 3.95 | 4.35 |

## Mounting Pad Layout (Unit: mm)

### SOT-89

