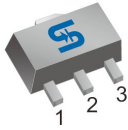


### SOT-89



#### Pin Definition:

1. Base
2. Collector
3. Emitter

### PRODUCT SUMMARY

|                            |                                                     |
|----------------------------|-----------------------------------------------------|
| <b>BV<sub>CBO</sub></b>    | 80V                                                 |
| <b>BV<sub>CEO</sub></b>    | 50V                                                 |
| <b>I<sub>C</sub></b>       | 3A                                                  |
| <b>V<sub>CE(SAT)</sub></b> | 0.5V @ I <sub>C</sub> / I <sub>B</sub> = 2A / 200mA |

### Features

- Low V<sub>CE(SAT)</sub> 0.1 @ I<sub>C</sub> / I<sub>B</sub> = 1A / 50mA (Typ.)
- Complementary part with TSB1424A

### Structure

- Epitaxial Planar Type
- NPN Silicon Transistor

### Ordering Information

| Part No.      | Package | Packing         |
|---------------|---------|-----------------|
| TSD2150ACY RM | SOT-89  | 1Kpcs / 7" Reel |

### Absolute Maximum Ratings (T<sub>a</sub> = 25°C unless otherwise noted)

| Parameter                                        | Symbol           | Limit        | Unit |
|--------------------------------------------------|------------------|--------------|------|
| Collector-Base Voltage                           | V <sub>CBO</sub> | 80           | V    |
| Collector-Emitter Voltage                        | V <sub>CEO</sub> | 50           | V    |
| Emitter-Base Voltage                             | V <sub>EBO</sub> | 6            | V    |
| Collector Current                                | DC               | 3            | A    |
|                                                  | Pulse            | 6 (note1)    |      |
| Collector Power Dissipation                      | P <sub>D</sub>   | 0.6          | W    |
| Operating Junction Temperature                   | T <sub>J</sub>   | +150         | °C   |
| Operating Junction and Storage Temperature Range | T <sub>STG</sub> | - 55 to +150 | °C   |

**Note:** 1. Single pulse, Pw=10ms, Duty≤50%  
2. When mounted on a 40 x 50 x 0.7mm ceramic board.

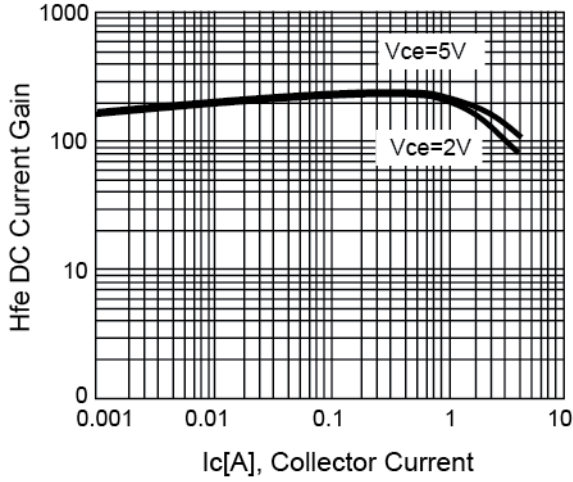
### Electrical Specifications (T<sub>A</sub>=25°C unless otherwise noted)

| Parameter                            | Conditions                                              | Symbol               | Min | Typ  | Max  | Unit |
|--------------------------------------|---------------------------------------------------------|----------------------|-----|------|------|------|
| Collector-Base Breakdown Voltage     | I <sub>C</sub> = 50uA, I <sub>E</sub> = 0               | BV <sub>CBO</sub>    | 80  | --   | --   | V    |
| Collector-Emitter Breakdown Voltage  | I <sub>C</sub> = 1mA, I <sub>B</sub> = 0                | BV <sub>CEO</sub>    | 50  | --   | --   | V    |
| Emitter-Base Breakdown Voltage       | I <sub>E</sub> = 50uA, I <sub>C</sub> = 0               | BV <sub>EBO</sub>    | 6   | --   | --   | V    |
| Collector Cutoff Current             | V <sub>CB</sub> = 60V, I <sub>E</sub> = 0               | I <sub>CBO</sub>     | --  | --   | 0.1  | μA   |
| Emitter Cutoff Current               | V <sub>EB</sub> = 3V, I <sub>C</sub> = 0                | I <sub>EBO</sub>     | --  | --   | 0.1  | μA   |
| Collector-Emitter Saturation Voltage | I <sub>C</sub> / I <sub>B</sub> = 1A / 50mA             | V <sub>CE(SAT)</sub> | --  | 0.1  | 0.25 | V    |
|                                      | I <sub>C</sub> / I <sub>B</sub> = 2A / 200mA            | V <sub>CE(SAT)</sub> | --  | 0.25 | 0.5  |      |
| Base-Emitter Saturation Voltage      | I <sub>C</sub> / I <sub>B</sub> = 2A / 200mA            | V <sub>BE(SAT)</sub> | --  | --   | 2    | V    |
| DC Current Transfer Ratio            | V <sub>CE</sub> = 2V, I <sub>C</sub> = 100mA            | h <sub>FE</sub> 1    | 180 | --   | --   |      |
|                                      | V <sub>CE</sub> = 2V, I <sub>C</sub> = 500mA            | h <sub>FE</sub> 2    | 200 | --   | 400  |      |
|                                      | V <sub>CE</sub> = 2V, I <sub>C</sub> = 1A               | h <sub>FE</sub> 3    | 150 | --   | --   |      |
| Transition Frequency                 | V <sub>CE</sub> = 5V, I <sub>E</sub> = 0.1A, f = 100MHz | f <sub>T</sub>       | --  | 90   | --   | MHz  |
| Output Capacitance                   | V <sub>CB</sub> = 10V, f = 1MHz                         | Cob                  | --  | 45   | --   | pF   |

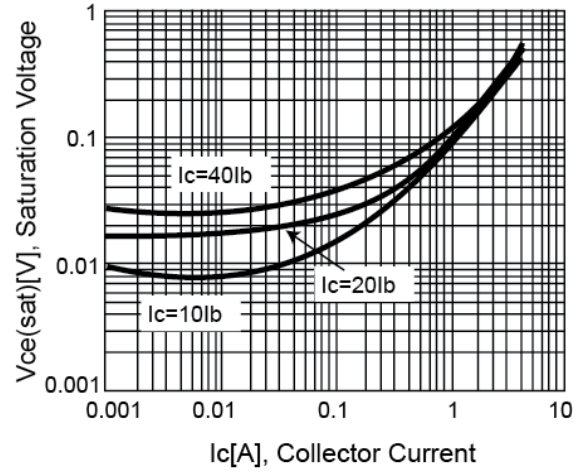
**Note:** Pulse test: pulse width ≤380μs, Duty cycle≤2%

**Electrical Characteristics Curves** ( $T_A=25^{\circ}\text{C}$ , unless otherwise noted)

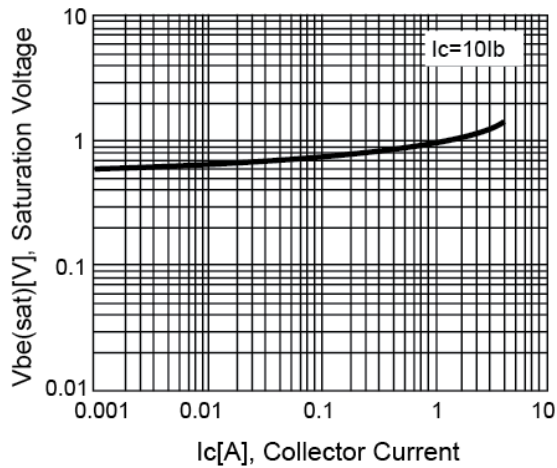
**Figure 1. DC Current Gain**



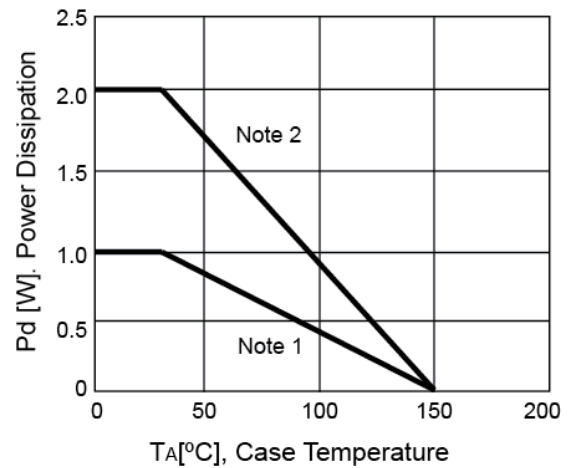
**Figure 2.  $V_{CE(SAT)}$  v.s. Collector Current**



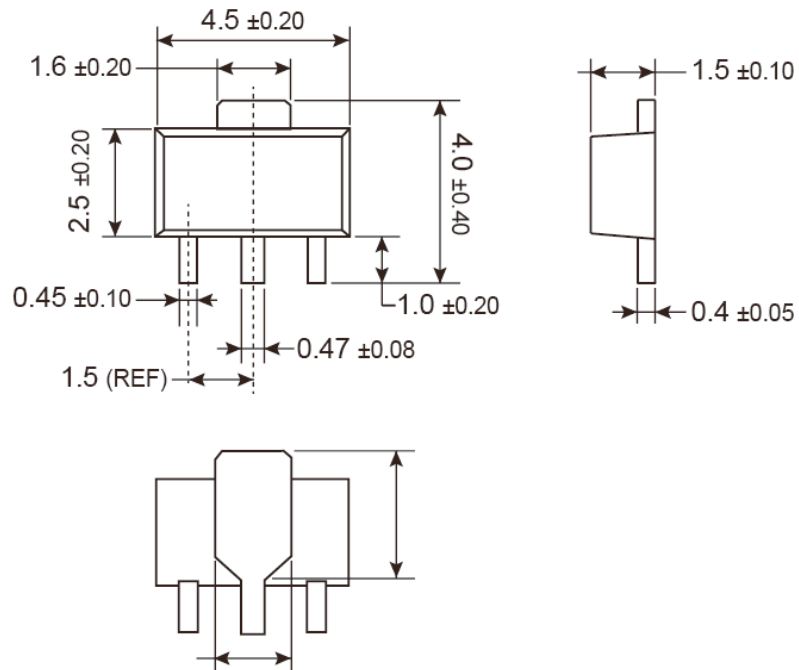
**Figure 3.  $V_{BE(SAT)}$  v.s. Collector Current**



**Figure 4. Power Derating Curve**



**SOT-89 Mechanical Drawing**



Unit: Millimeters

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