

## Features

- Power Amplifier Applications
- Halogen Free. “Green” Device (Note 1)
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

**Maximum Ratings @ 25°C Unless Otherwise Specified**

- Operating Junction Temperature Range: -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 250°C/W Junction to Ambient

| Parameter                   | Symbol    | Rating                         | Unit |
|-----------------------------|-----------|--------------------------------|------|
| Collector-Base Voltage      | $V_{CBO}$ | 120                            | V    |
| Collector-Emitter Voltage   | $V_{CEO}$ | 120                            | V    |
| Emitter-Base Voltage        | $V_{EBO}$ | 5                              | V    |
| Collector Current           | $I_C$     | 800                            | mA   |
| Base Current                | $I_B$     | 160                            | mA   |
| Collector Power Dissipation | $P_C$     | 500<br>1000 <sup>(Note2)</sup> | mW   |

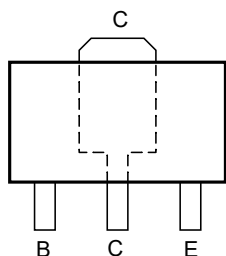
## Classification Of $h_{FE}$

|         |        |         |
|---------|--------|---------|
| Rank    | O      | Y       |
| Range   | 80-160 | 120-240 |
| Marking | CO1    | CY1     |

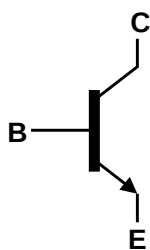
Note 1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

Note 2. Mounted on ceramic substrate (250mm<sup>2</sup> x 0.8t)

### Pin Configuration - Top View

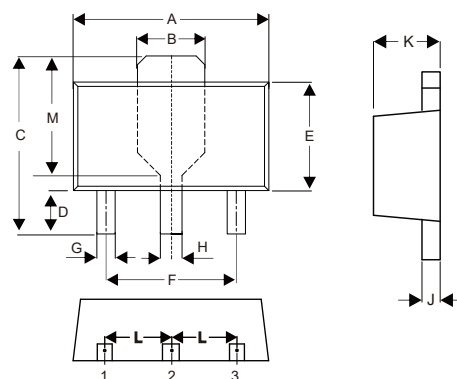


## Internal Structure



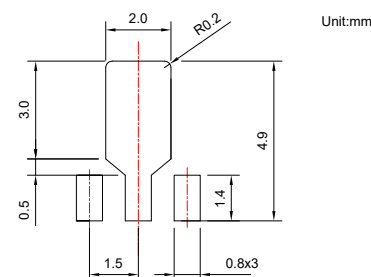
# NPN Silicon Power Transistors

SOT-89



| DIMENSIONS |        |       |      |      |      |
|------------|--------|-------|------|------|------|
| DIM        | INCHES |       | MM   |      | NOTE |
|            | MIN    | MAX   | MIN  | MAX  |      |
| A          | 0.169  | 0.185 | 4.30 | 4.70 |      |
| B          | 0.061  |       | 1.55 |      | TYP. |
| C          | 0.154  | 0.171 | 3.91 | 4.35 |      |
| D          | 0.031  | 0.047 | 0.80 | 1.20 |      |
| E          | 0.089  | 0.104 | 2.25 | 2.65 |      |
| F          | 0.118  |       | 3.00 |      | TYP. |
| G          | 0.013  | 0.020 | 0.33 | 0.52 |      |
| H          | 0.015  | 0.021 | 0.38 | 0.53 |      |
| J          | 0.014  | 0.017 | 0.35 | 0.44 |      |
| K          | 0.055  | 0.063 | 1.40 | 1.60 |      |
| L          | 0.059  |       | 1.50 |      | TYP. |
| M          | 0.108  |       | 2.75 |      | TYP. |

### Suggested Solder Pad Layout



**Electrical Characteristics @ 25°C Unless Otherwise Specified**

| Parameter                            | Symbol        | Min | Typ | Max | Units   | Conditions                    |
|--------------------------------------|---------------|-----|-----|-----|---------|-------------------------------|
| Collector-Base Breakdown Voltage     | $V_{(BR)CBO}$ | 120 |     |     | V       | $I_C=1mA, I_E=0$              |
| Collector-Emitter Breakdown Voltage  | $V_{(BR)CEO}$ | 120 |     |     | V       | $I_C=10mA, I_B=0$             |
| Emitter-Base Breakdown Voltage       | $V_{(BR)EBO}$ | 5.0 |     |     | V       | $I_E=1mA, I_C=0$              |
| Collector-Base Cutoff Current        | $I_{CBO}$     |     |     | 0.1 | $\mu A$ | $V_{CB}=120V, I_E=0$          |
| Emitter-Base Cutoff Current          | $I_{EBO}$     |     |     | 0.1 | $\mu A$ | $V_{EB}=5V, I_C=0$            |
| DC Current Gain                      | $h_{FE}$      | 80  |     | 240 |         | $V_{CE}=5V, I_C=100mA$        |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ |     |     | 1.0 | V       | $I_C=500mA, I_B=50mA$         |
| Base-Emitter Voltage                 | $V_{BE}$      |     |     | 1.0 | V       | $V_{CE}=5V, I_B=500mA$        |
| Transition Frequency                 | $f_T$         |     | 120 |     | MHz     | $V_{CE}=5V, I_C=100mA$        |
| Collector Output Capacitance         | $C_{ob}$      |     |     | 30  | pF      | $V_{CB}=10V, I_E=0, f=1.0MHz$ |

## Curve Characteristics

Fig. 1 - Static Characteristics

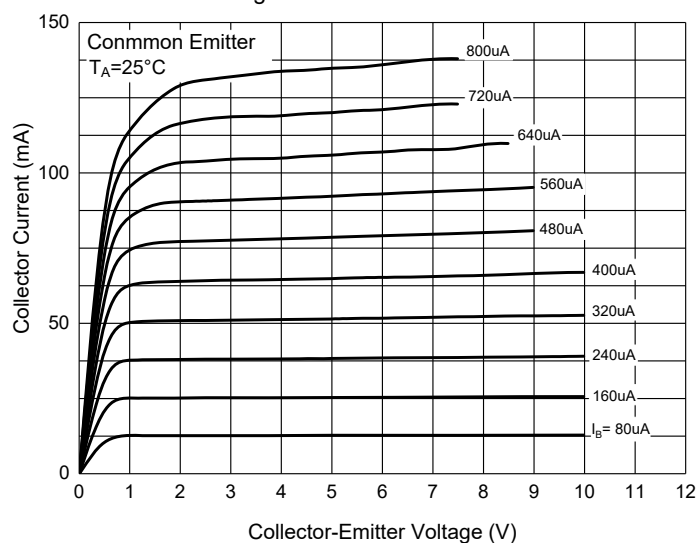


Fig. 2 - DC Current Gain Characteristics

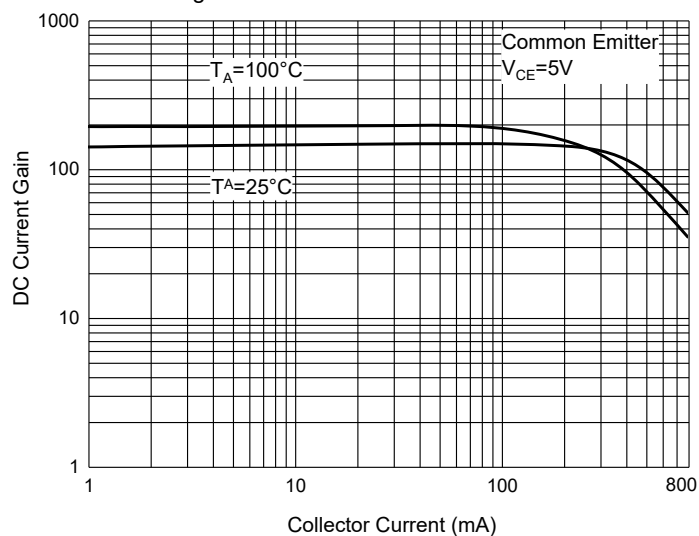


Fig. 3 - Collector-Emitter Saturation Voltage Characteristics

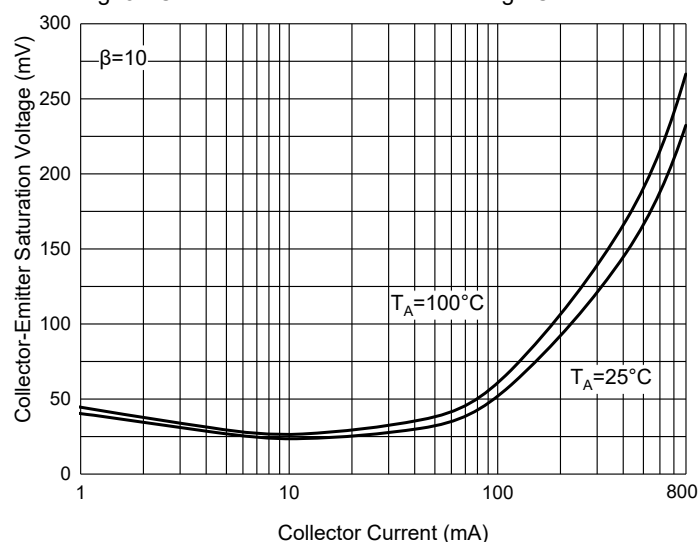


Fig. 4 - Base-Emitter Saturation Voltage Characteristics

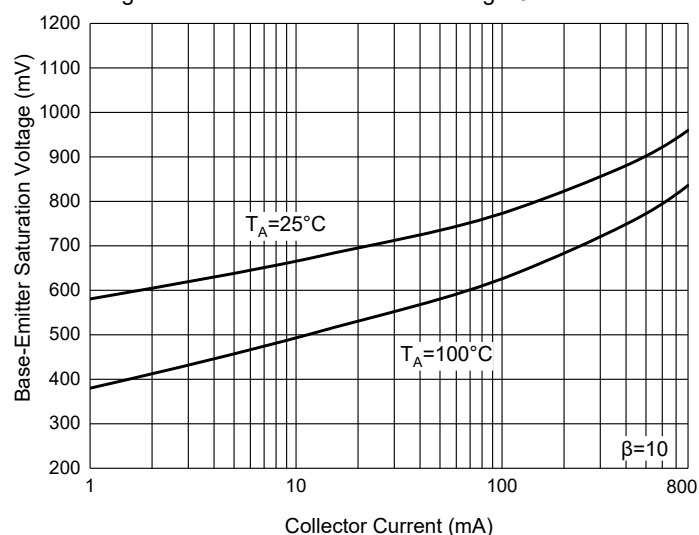


Fig. 5 - Base-Emitter Voltage Characteristics

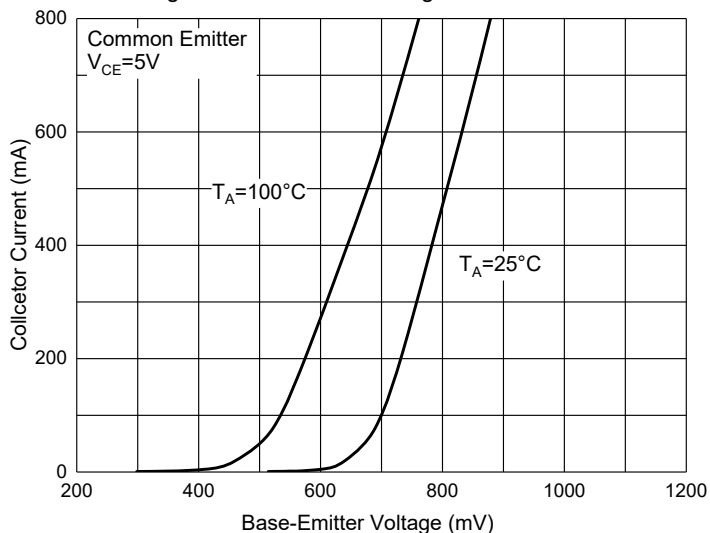
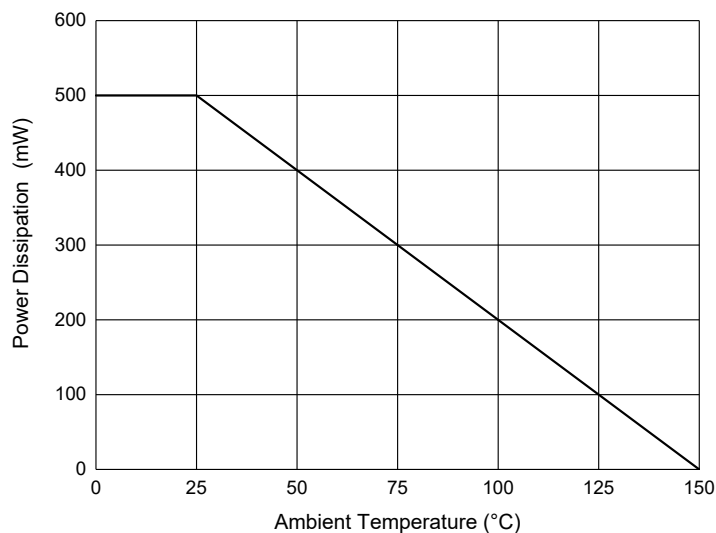


Fig. 6 - Power Derating Curve



## Ordering Information

| Device         | Packing              |
|----------------|----------------------|
| Part Number-TP | Tape&Reel:1Kpcs/Reel |

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