

## Features

- Halogen Free. "Green" Device (Note 1)
- AEC-Q101 Qualified
- Moisture Sensitivity Level 1
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

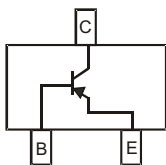
## Maximum Ratings

- Operating Junction Temperature Range: -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 417°C/W Junction to Ambient

| Parameter                   | Symbol    | Rating | Unit |
|-----------------------------|-----------|--------|------|
| Collector-Base Voltage      | $V_{CBO}$ | -50    | V    |
| Collector-Emitter Voltage   | $V_{CEO}$ | -45    | V    |
| Emitter-Base Voltage        | $V_{EBO}$ | -5     | V    |
| Collector Current           | $I_C$     | -500   | mA   |
| Peak Collector Current      | $I_{CM}$  | -1000  | mA   |
| Collector Power Dissipation | $P_C$     | 300    | mW   |

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

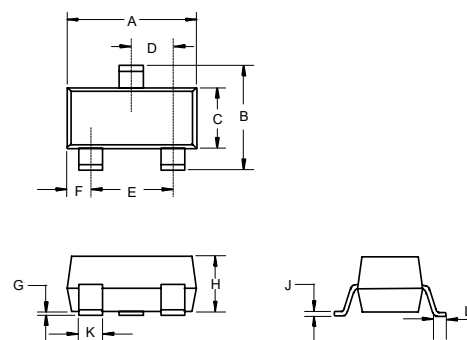
## Internal Structure



**Marking:**  
**BC807-16HE3: 5A**  
**BC807-25HE3: 5B**  
**BC807-40HE3: 5C**

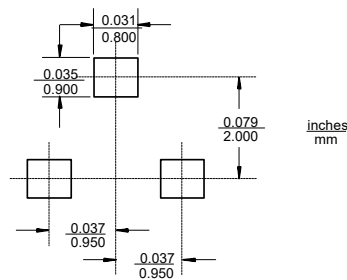
## PNP Small Signal Transistor 300mW

## SOT-23



| DIM | INCHES |       | MM   |      | NOTE |
|-----|--------|-------|------|------|------|
|     | MIN    | MAX   | MIN  | MAX  |      |
| A   | 0.110  | 0.120 | 2.80 | 3.04 |      |
| B   | 0.083  | 0.104 | 2.10 | 2.64 |      |
| C   | 0.047  | 0.055 | 1.20 | 1.40 |      |
| D   | 0.034  | 0.041 | 0.85 | 1.05 |      |
| E   | 0.067  | 0.083 | 1.70 | 2.10 |      |
| F   | 0.018  | 0.024 | 0.45 | 0.60 |      |
| G   | 0.0004 | 0.006 | 0.01 | 0.15 |      |
| H   | 0.035  | 0.043 | 0.90 | 1.10 |      |
| J   | 0.003  | 0.007 | 0.08 | 0.18 |      |
| K   | 0.014  | 0.020 | 0.35 | 0.51 |      |
| L   | 0.007  | 0.020 | 0.20 | 0.50 |      |

## Suggested Solder Pad Layout



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

| Parameter                            | Symbol        | Min | Typ | Max  | Units   | Conditions                              |
|--------------------------------------|---------------|-----|-----|------|---------|---|
| Collector-Base Breakdown Voltage     | $V_{(BR)CBO}$ | -50 |     |      | V       | $I_C = -10\mu A, I_E = 0$               |
| Collector-Emitter Breakdown Voltage  | $V_{(BR)CEO}$ | -45 |     |      | V       | $I_C = -10mA, I_B = 0$                  |
| Emitter-Base Breakdown Voltage       | $V_{(BR)EBO}$ | -5  |     |      | V       | $I_E = -1\mu A, I_C = 0$                |
| Collector Cutoff Current             | $I_{CBO}$     |     |     | -0.1 | $\mu A$ | $V_{CB} = -45V, I_E = 0$                |
| Collector Cutoff Current             | $I_{CEO}$     |     |     | -0.2 | $\mu A$ | $V_{CB} = -40V, I_E = 0$                |
| Emitter-Base Cutoff Current          | $I_{EBO}$     |     |     | -0.1 | $\mu A$ | $V_{EB} = -4V, I_C = 0$                 |
| DC Current Gain                      | $h_{FE1}$     | 100 |     | 600  |         | $V_{CE} = -1V, I_C = -100mA$            |
|                                      | $h_{FE2}$     | 40  |     |      |         | $V_{CE} = -1V, I_C = -500mA$            |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ |     |     | -0.7 | V       | $I_C = -500mA, I_B = -50mA$             |
| Base-Emitter Saturation Voltage      | $V_{BE(sat)}$ |     |     | -1.2 | V       | $I_C = -500mA, I_B = -50mA$             |
| Transition Frequency                 | $f_T$         | 100 |     |      | MHz     | $V_{CE} = -5V, I_C = -10mA, f = 100MHz$ |

**CLASSIFICATION OF  $h_{FE}$  (1)**

| Rank  | BC807-16HE3 | BC807-25H3 | BC807-40H3 |
|-------|-------------|------------|------------|
| Range | 100-250     | 160-400    | 250-600    |

## Curve Characteristics

Fig. 1 - Static Characteristics

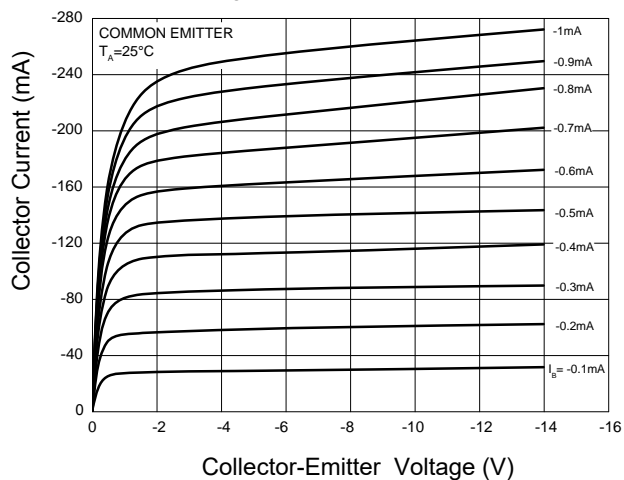


Fig. 2 - DC Current Gain Characteristics

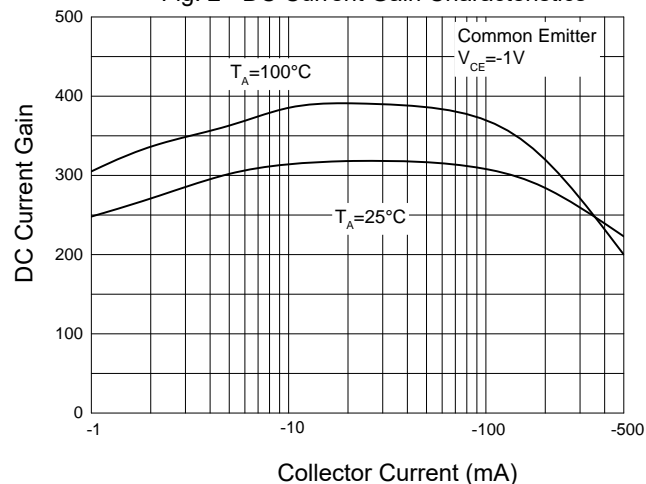


Fig. 3 - Collector-Emitter Saturation Voltage Characteristics

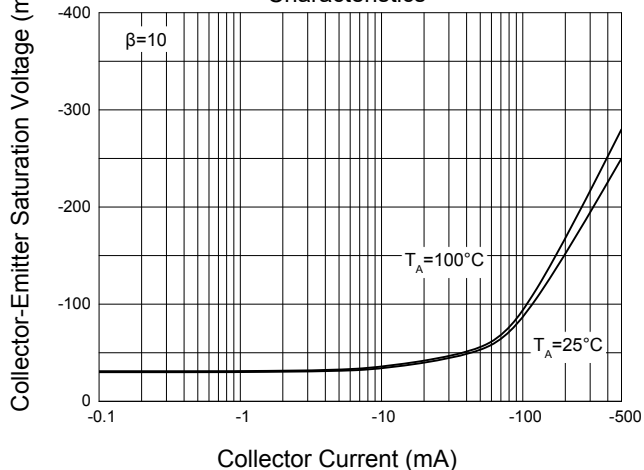


Fig. 4 - Base-Emitter Saturation Voltage Characteristics

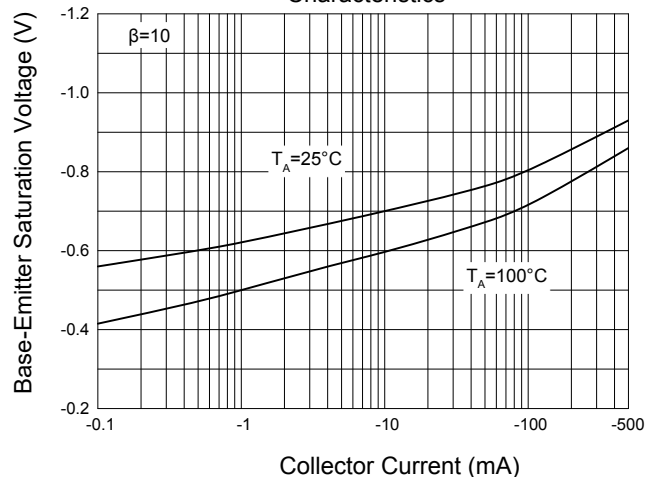


Fig. 5 - Base-Emitter Voltage Characteristics

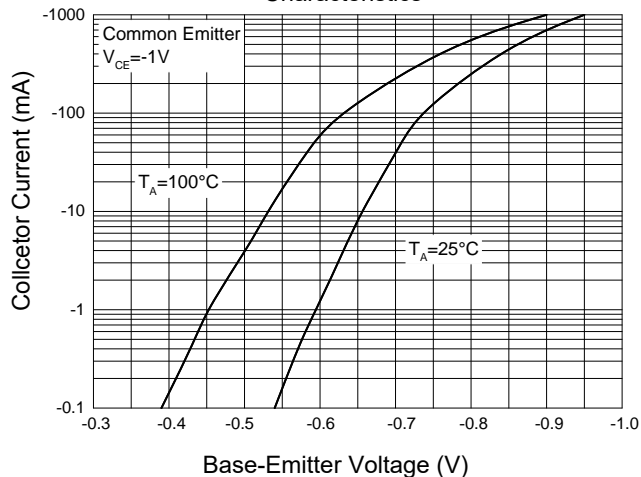
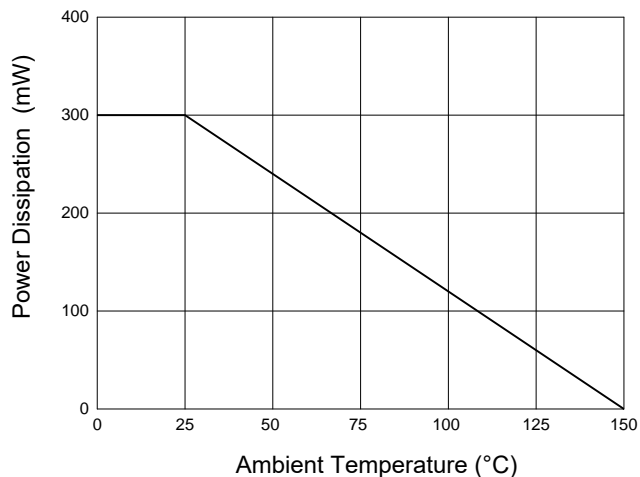


Fig. 6 - Power Derating Curve



## Ordering Information

| Device          | Packing                |
|-----------------|------------------------|
| Part Number-TP  | Tape&Reel: 3Kpcs/Reel  |
| Part Number-13P | Tape&Reel: 10Kpcs/Reel |

For packaging details, go to our website at <https://www.mccsemi.com/pdf/productpackaging/SOD-323%20Package.pdf>

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