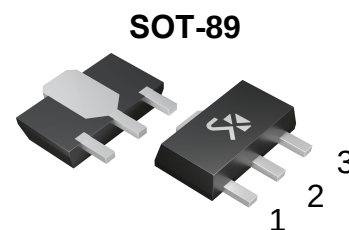


## PNP Silicon Epitaxial Planar Transistor

### FEATURES

- High current.
- Three current gain selections.
- 1.2 W total power dissipation.



1base 2collector 3emitter

### MAXIMUM RATINGS ( $T_A=25^{\circ}\text{C}$ unless otherwise noted)

| Symbol        | Parameter                                        | Value           | Units              |
|---------------|--------------------------------------------------|-----------------|--------------------|
| $V_{CBO}$     | Collector-Base Voltage                           | -32             | V                  |
| $V_{CEO}$     | Collector-Emitter Voltage                        | -20             | V                  |
| $V_{EBO}$     | Emitter-Base Voltage                             | -5              | V                  |
| $I_C$         | Collector Current -Continuous                    | -1.0            | A                  |
| $I_{CM}$      | Peak current of collector                        | -2.0            | A                  |
| $I_{BM}$      | Base peak current                                | -200            | mA                 |
| $P_{tot}$     | Total power consumption                          | *1and*2<br>0.5  | W                  |
|               |                                                  | *1and*3<br>0.85 |                    |
|               |                                                  | *1and*4<br>1.2  |                    |
| $T_j$         | Junction Temperature                             | 150             | $^{\circ}\text{C}$ |
| $T_{stg}$     | Storage Temperature                              | -65-150         | $^{\circ}\text{C}$ |
| $R_{amb}$     | Operating Ambient Temperature                    | -65-150         | $^{\circ}\text{C}$ |
| $R_{th(j-a)}$ | Thermal resistance from junction to environment  | *1and*2<br>250  | K/W                |
|               |                                                  | *1and*3<br>147  |                    |
|               |                                                  | *1and*4<br>104  |                    |
| $R_{th(j-s)}$ | Thermal resistance from junction to solder joint | 20              | K/W                |

\*1.Refer to SOT89 standard mounting conditions.

\*2.Device mounted on an FR4 printed-circuit board, single-sided copper, tin-plated footprint.

\*3.Device mounted on an FR4 printed-circuit board, single-sided copper, tin-plated, mounting pad for collector 1 cm<sup>2</sup>.

\*4.Device mounted on an FR4 printed-circuit board, single-sided copper, tin-plated, mounting pad for collector 6 cm<sup>2</sup>

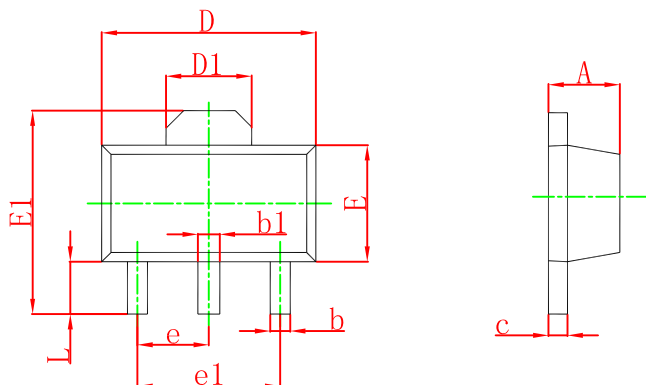
## ELECTRICAL CHARACTERISTICS (Tamb=25°C unless otherwise specified)

| Parameter                            |          | Symbol        | Test conditions                       | MIN | TYP | MAX  | UNIT |
|--------------------------------------|----------|---------------|---------------------------------------|-----|-----|------|------|
| Collector cut-off current            |          | $I_{CBO}$     | $V_{CB}=-25V, I_E=0$                  |     |     | -100 | nA   |
|                                      |          |               | $V_{CB}=-25V, I_E=0, T_j=25^{\circ}C$ |     |     | -10  | uA   |
| Collector cut-off current            |          | $I_{EBO}$     | $V_{EB}=-5V, I_C=0$                   |     |     | -100 | nA   |
| DC current gain                      | BC869    | $h_{FE}$      | $V_{CE}=-10V, I_C=-5mA$               | 50  |     |      |      |
|                                      |          |               | $V_{CE}=-1V, I_C=-500mA$              | 85  |     | 375  |      |
|                                      |          |               | $V_{CE}=-1V, I_C=-1A$                 | 60  |     |      |      |
|                                      | BC869-16 | $h_{FE}$      | $V_{CE}=-1V, I_C=-500mA$              | 100 |     | 250  |      |
|                                      | BC869-25 | $h_{FE}$      | $V_{CE}=-1V, I_C=-500mA$              | 160 |     | 375  |      |
| Collector-emitter saturation voltage |          | $V_{CE(Sat)}$ | $I_C=-1A, I_B=-100mA$                 |     |     | -0.5 | V    |
| Base-emitter voltage                 |          | $V_{BE}$      | $V_{CE}=-10V, I_C=-5mA$               |     |     | -0.7 | V    |
|                                      |          |               | $V_{CE}=-1V, I_C=-1A$                 |     |     | -1   | V    |
| Transition frequency                 |          | $f_T$         | $V_{CE}=-5V, I_E=-50mA, f_T=100MHz$   | 40  | 140 |      | MHz  |
| Transition frequency                 |          | $C_C$         | $V_{CB}=-10V, I_E=0, f_T=1MHz$        |     | 28  |      | pF   |

## CLASSIFICATION OF $h_{FE}$

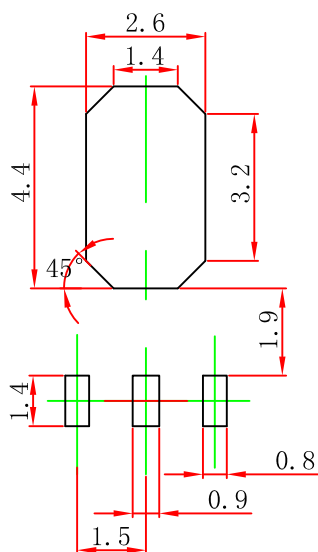
|         |       |          |          |
|---------|-------|----------|----------|
| Rank    | BC869 | BC869-16 | BC869-25 |
| Marking | CEC   | CGC      | CHC      |

## SOT-89 Package Outline Dimensions



| Symbol | Dimensions In Millimeters |       | Dimensions In Inches |       |
|--------|---------------------------|-------|----------------------|-------|
|        | Min                       | Max   | Min                  | Max   |
| A      | 1.400                     | 1.600 | 0.055                | 0.063 |
| b      | 0.320                     | 0.520 | 0.013                | 0.020 |
| b1     | 0.400                     | 0.580 | 0.016                | 0.023 |
| c      | 0.350                     | 0.440 | 0.014                | 0.017 |
| D      | 4.400                     | 4.600 | 0.173                | 0.181 |
| D1     | 1.550 REF.                |       | 0.061 REF.           |       |
| E      | 2.300                     | 2.600 | 0.091                | 0.102 |
| E1     | 3.940                     | 4.250 | 0.155                | 0.167 |
| e      | 1.500 TYP.                |       | 0.060 TYP.           |       |
| e1     | 3.000 TYP.                |       | 0.118 TYP.           |       |
| L      | 0.900                     | 1.200 | 0.035                | 0.047 |

## SOT-89 Suggested Pad Layout



Note:

1. Controlling dimension: in millimeters.
2. General tolerance:  $\pm 0.05\text{mm}$ .
3. The pad layout is for reference purposes only.