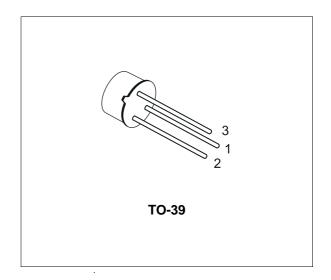


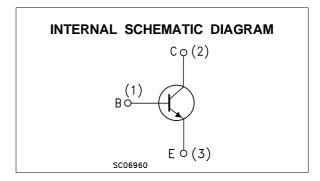
# GENERAL PURPOSE TRANSISTOR

#### **DESCRIPTION**

The BC141-16 is a silicon Planar Epitaxial NPN transistor in Jedec TO-39 metal case. It is particularly designed for audio amplifiers and switching application up to 1A.

The complementary PNP type is the BC161-16.





#### **ABSOLUTE MAXIMUM RATINGS**

| Symbol           | Parameter                                      | Value      | Unit |
|------------------|--|------------|------|
| V <sub>CBO</sub> | Collector-Base Voltage (I <sub>E</sub> = 0)    | 100        | V    |
| $V_{CEO}$        | Collector-Emitter Voltage (I <sub>B</sub> = 0) | 60         | V    |
| V <sub>EBO</sub> | Emitter-Base Voltage (I <sub>C</sub> = 0)      | 7          | V    |
| Ic               | Collector Current                              | 1          | А    |
| I <sub>B</sub>   | Base Current                                   | 0.1        | А    |
| P <sub>tot</sub> | Total Dissipation at T <sub>amb</sub> ≤ 25 °C  | 0.65       | W    |
|                  | at T <sub>C</sub> ≤ 25 °C                      | 3.7        | W    |
| T <sub>stg</sub> | Storage Temperature                            | -55 to 175 | °C   |
| T <sub>i</sub>   | Max. Operating Junction Temperature            | 175        | °C   |

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#### THERMAL DATA

| R <sub>thj-case</sub> | Thermal Resistance Junction-Case    |     | 35  | °C/W |
|-----------------------|-------------------------------------|-----|-----|------|
| R <sub>thj-amb</sub>  | Max                                 |     | 200 | °C/W |
|                       | Thermal Resistance Junction-Ambient | Max |     |      |

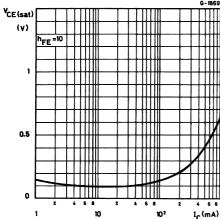
## **ELECTRICAL CHARACTERISTICS** ( $T_{case} = 25$ $^{\circ}C$ unless otherwise specified)

| Symbol Parameter       |  | Test Conditions  | Min. | Тур.               | Max.       | Unit        |
|------------------------|--|--|------|--------------------|------------|-------------|
| I <sub>CES</sub>       | Collector Cut-off<br>Current (V <sub>BE</sub> = 0)             | V <sub>CE</sub> = 60 V<br>V <sub>CE</sub> = 60 V T <sub>C</sub> = 150 °C   |      |                    | 100<br>100 | nΑ<br>μΑ    |
| $V_{(BR)CBO}^*$        | Collector-Base<br>Breakdown Voltage<br>(I <sub>E</sub> = 0)    | I <sub>C</sub> = 100 μA  | 100  |                    |            | V           |
| $V_{(BR)CEO^*}$        | Collector-Emitter<br>Breakdown Voltage<br>(I <sub>B</sub> = 0) | I <sub>C</sub> = 30 mA   | 60   |                    |            | V           |
| $V_{(BR)EBO}^*$        | Emitter-Base<br>Breakdown Voltage<br>(I <sub>C</sub> = 0)      | I <sub>E</sub> = 100 μA  | 7    |                    |            | V           |
| V <sub>CE(sat)</sub> * | Collector-Emitter<br>Saturation Voltage                        | $I_{C} = 100 \text{ mA}$ $I_{B} = 10 \text{ mA}$<br>$I_{C} = 500 \text{ mA}$ $I_{B} = 50 \text{ mA}$<br>$I_{C} = 1 \text{ A}$ $I_{B} = 100 \text{ mA}$ |      | 0.1<br>0.35<br>0.6 | 1          | V<br>V<br>V |
| V <sub>BE(on)</sub> *  | Base-Emitter On<br>Voltage                                     | I <sub>C</sub> = 1 A V <sub>CE</sub> = 1 V   |      | 1.25               | 1.8        | V           |
| h <sub>FE</sub> *      | DC Current Gain  | I <sub>C</sub> = 100 μA  | 100  | 90<br>160<br>30    | 250        |             |
| $f_{T}$                | Transition Frequency   | $I_C = 50 \text{ mA}$ $V_{CE} = 10 \text{ V}$  | 50   |                    |            | MHz         |
| Ссво                   | Collector-Base<br>Capacitance                                  | $I_E = 0$ $V_{CB} = 5 V$ $f = 1MHz$  |      | 12                 | 25         | pF          |
| $t_{on}$               | Turn-on Time   | $I_{C} = 100 \text{ mA}$ $I_{B1} = 5 \text{ mA}$   |      |                    | 250        | ns          |
| t <sub>off</sub>       | Turn-off Time  | $I_C = 100 \text{ mA}$ $I_{B1} = I_{B2} = 5 \text{ mA}$  |      |                    | 850        | ns          |

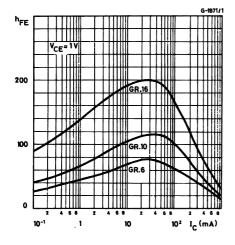
<sup>\*</sup> Pulsed: Pulse duration = 300 μs, duty cycle ≤ 1 %

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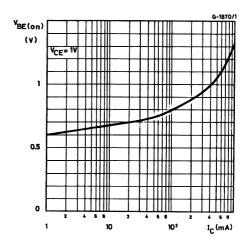
#### Collector-emitter Saturation Voltage.



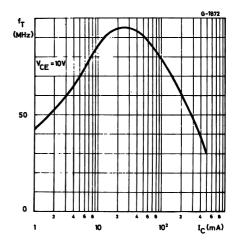
DC Curent Gain.



#### Base-emitter Voltage.

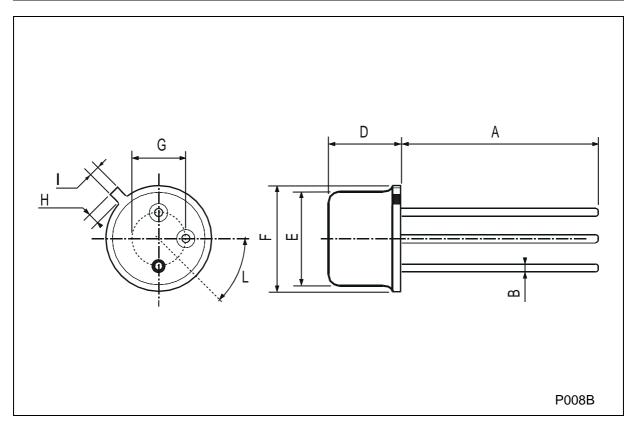


### Transiition Frequency.



## **TO-39 MECHANICAL DATA**

| DIM. | mm         |      | inch |       |      |       |
|------|------------|------|------|-------|------|-------|
|      | MIN.       | TYP. | MAX. | MIN.  | TYP. | MAX.  |
| А    | 12.7       |      |      | 0.500 |      |       |
| В    |            |      | 0.49 |       |      | 0.019 |
| D    |            |      | 6.6  |       |      | 0.260 |
| Е    |            |      | 8.5  |       |      | 0.334 |
| F    |            |      | 9.4  |       |      | 0.370 |
| G    | 5.08       |      |      | 0.200 |      |       |
| Н    |            |      | 1.2  |       |      | 0.047 |
| ı    |            |      | 0.9  |       |      | 0.035 |
| L    | 45° (typ.) |      |      |       |      |       |



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