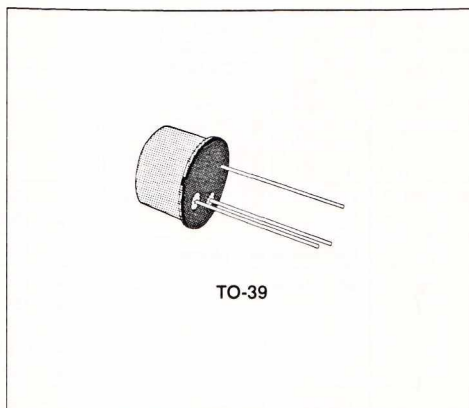


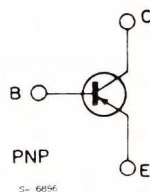
## MEDIUM POWER AUDIO DRIVERS

### DESCRIPTION

The BC303 and BC304 are silicon planar epitaxial PNP transistors in TO-39 metal case. They are intended particularly as audio driver stages in commercial and professional equipments. In addition they are useful as high speed saturated switches and general purpose amplifiers. The complementary NPN types are respectively the BC301 and BC302.



### INTERNAL SCHEMATIC DIAGRAM



### ABSOLUTE MAXIMUM RATINGS

| Symbol    | Parameter   | Value       |       | Unit             |
|-----------|---|-------------|-------|------------------|
|           |   | BC303       | BC304 |                  |
| $V_{CBO}$ | Collector-base Voltage ( $I_E = 0$ )  | - 85        | - 60  | V                |
| $V_{CEO}$ | Collector-emitter Voltage ( $I_B = 0$ )   | - 60        | - 45  | V                |
| $V_{EBO}$ | Emitter-base Voltage ( $I_C = 0$ )  | - 6         |       | V                |
| $I_C$     | Collector Current   | - 0.5       |       | A                |
| $I_{CM}$  | Collector Peak Current  | - 1         |       | A                |
| $I_{BM}$  | Base Peak Current   | - 0.5       |       | A                |
| $P_{tot}$ | Total Power Dissipation at $T_{amb} \leq 25^\circ\text{C}$<br>at $T_{case} \leq 25^\circ\text{C}$ | 0.85        |       | W                |
|           |   | 6           |       | W                |
| $T_{stg}$ | Storage Temperature   | - 65 to 175 |       | $^\circ\text{C}$ |
| $T_J$     | Junction Temperature  | 175         |       | $^\circ\text{C}$ |

**THERMAL DATA**

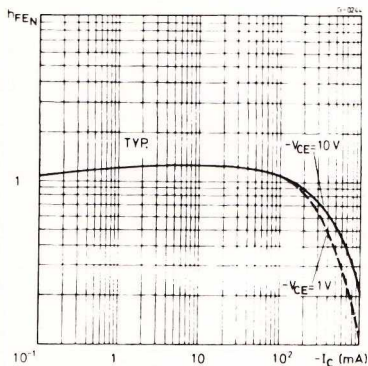
|                  |                                     |     |     |               |
|------------------|-------------------------------------|-----|-----|---------------|
| $R_{th(j-case)}$ | Thermal Resistance Junction-case    | Max | 25  | $^{\circ}C/W$ |
| $R_{th(j-amb)}$  | Thermal Resistance Junction-ambient | Max | 175 | $^{\circ}C/W$ |

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

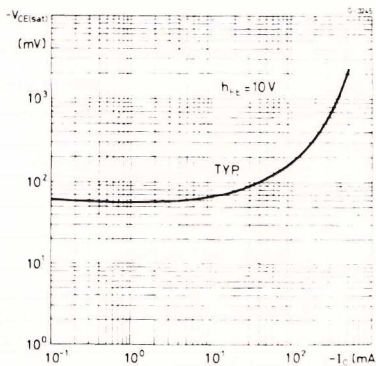
| Symbol          | Parameter  | Test Conditions   | Min.                        | Typ.                 | Max.             | Unit       |
|-----------------|--|---|-----------------------------|----------------------|------------------|------------|
| $I_{CBO}$       | Collector Cutoff Current<br>( $I_E = 0$ )            | $V_{CB} = -60 V$  |                             | -5                   | -20              | nA         |
| $I_{EBO}$       | Emitter Cutoff Current<br>( $I_C = 0$ )              | $V_{EB} = -5 V$   |                             |                      | -20              | nA         |
| $V_{(BR)CEO}^*$ | Collector-emitter Breakdown Voltage<br>( $I_B = 0$ ) | $I_C = -10 mA$<br><br>For BC303<br>For BC304  | -60<br>-45                  |                      |                  | V<br>V     |
| $V_{CE(sat)}^*$ | Collector-emitter Saturation Voltage                 | $I_C = -150 mA$<br>$I_B = -15 mA$   |                             | -0.25                | -0.65            | V          |
| $V_{BE}^*$      | Base-emitter Voltage                                 | $I_C = -150 mA$ $V_{CE} = -10 V$  |                             | -0.78                |                  | V          |
| $h_{FE}^*$      | DC Current Gain                                      | Gr.4 $I_C = -150 mA$ $V_{CE} = -10 V$<br>Gr.5 $I_C = -150 mA$ $V_{CE} = -10 V$<br>Gr.6 $I_C = -150 mA$ $V_{CE} = -10 V$<br>$I_C = -0.1 mA$ $V_{CE} = -10 V$<br>$I_C = -500 mA$ $V_{CE} = -10 V$ | 40<br>70<br>120<br>20<br>20 |                      | 80<br>140<br>240 |            |
| $f_T$           | Transition frequency                                 | $I_C = -50 mA$ $V_{CE} = -10 V$<br>$f = 100 MHz$  |                             | 100                  |                  | MHz        |
| $C_{CBO}$       | Collector-base Capacitance                           | $I_E = 0$ $V_{CB} = -10 V$  |                             | 15                   |                  | pF         |
| $h_{ie}$        | Input Impedance                                      | $I_C = -5 mA$ $V_{CE} = -10 V$<br>$f = 1 kHz$   |                             | 0.9                  |                  | k $\Omega$ |
| $h_{re}$        | Reverse Voltage Ratio                                | $I_C = -5 mA$ $V_{CE} = -10 V$<br>$f = 1 kHz$   |                             | $1.7 \times 10^{-4}$ |                  |            |
| $h_{fe}$        | Small Signal Current Gain                            | $I_C = -5 mA$ $V_{CE} = -10 V$<br>$f = 1 kHz$   |                             | 140                  |                  |            |
| $h_{oe}$        | Output Admittance                                    | $I_C = -5 mA$ $V_{CE} = -10 V$<br>$f = 1 kHz$   |                             | 45                   |                  | $\mu S$    |

\* Pulsed : pulse duration = 300 $\mu s$ , duty cycle = 1%.

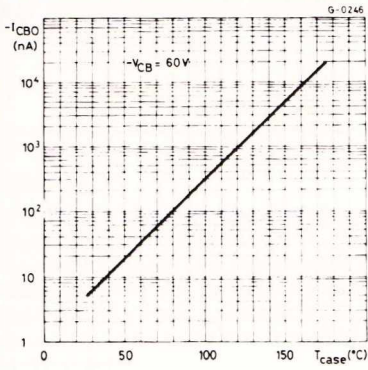
**DC Normalized Current Gain.**



**Collector-emitter saturation voltage.**



Collector Cutoff Current.



Transition Frequency.

