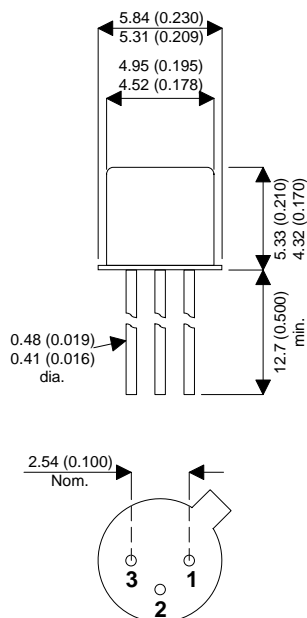


MECHANICAL DATA

Dimensions in mm (inches)



TO-18 METAL PACKAGE

Underside View

PIN 1 – Emitter PIN 2 – Base PIN 3 – Collector

**GENERAL PURPOSE
SMALL SIGNAL
NPN BIPOLAR TRANSISTOR**

FEATURES

- SILICON NPN
- HERMETICALLY SEALED TO18
- SCREENING OPTIONS AVAILABLE

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

| | | | |
|-----------|--|---------------------|---------------|
| V_{CBO} | Collector – Base Continuous Voltage | BC017 | 50V |
| | | BC108, BC109 | 30V |
| V_{CEO} | Collector – Emitter Continuous Voltage With Zero Base Current | BC107 | 45V |
| | | BC108, BC109 | 20V |
| V_{CES} | Collector – Emitter Continuous Voltage With Base Shortcircuited to Emitter | BC107 | 50V |
| | | BC108, BC109 | 30V |
| V_{EBO} | Emitter – Base Continuous Voltage Reverse Voltage | BC107 | 6V |
| | | BC108, BC109 | 5V |
| I_C | Continuous Collector Current | | 100mA |
| I_{CM} | Peak Collector Current | | 200mA |
| P_{tot} | Power Dissipation @ $T_{amb} = 25^\circ\text{C}$ | | 300mW |
| T_{amb} | Ambient Operating Temperature Range | | -65 to +175°C |
| T_{stg} | Storage Temperature Range | | -65 to +175°C |

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise stated)

| Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|---|---|------------|------|------------|--------------------|
| $I_{CBO(1)}$ Collector-Base Leakage Current | $V_{CB} = 45V$ BC107 $V_{CB} = 25V$ BC108, BC109 | | | 15 15 | nA |
| $I_{CBO(1)}$ Collector-Emitter Leakage Current @ $T_{amb} = 125^\circ\text{C}$ | $V_{CB} = 45V$ BC107 $V_{CB} = 25V$ BC108, BC109 | | | 4 4 | μA |
| I_{EBO} Emitter Cut-off Current | $V_{EB} = 4V$ $I_C = 0$ | | | 1 | μA |
| h_{21E} Static Forward Current Transfer Ratio | $V_{CE} = 5V$ $I_C = 2mA$ Group A BC107, BC108 | 110 | | 220 | |
| | Group B All Types | 180 | | 460 | |
| | Group C BC108, BC109 | 380 | | 800 | |
| | BC107 | 110 | | 460 | |
| | BC108 BC109 | 110 180 | | 800 800 | |
| V_{BE} Base – Emitter Breakdown | $V_{CE} = 5V$ $I_C = 2mA$ | | | 0.7 | V |
| $V_{BE(sat)(1)}$ Base – Emitter Saturation Voltage | $I_B = 0.5mA$ $I_C = 10mA$ | | | 0.83 | V |
| $V_{CE(sat)(1)}$ Collector – Emitter Saturation Voltage | $I_B = 0.5mA$ $I_C = 10mA$ | | | 0.25 | V |
| f_T Transition Frequency | $V_{CE} = 5V$ $I_C = 10mA$ $f = 100MHz$ | 150 | | | MHz |
| F Noise Factor | $V_{CE} = 5V$ $I_C = 0.2mA$ $R = 2k\Omega$ $f = 1kHz$ $\Delta F = 200Hz$ BC109 | | | 4 | dB |
| | BC107, BC108 | | | 10 | |
| h_{21e} Small Signal Forward Current Transfer Ratio | $V_{CE} = 5V$ $I_C = 2mA$ $f = 100kHz$ Group A BC107, BC108 | 125 | | 260 | |
| | Group B All Types | 240 | | 500 | |
| | Group C BC108, BC109 | 450 | | 900 | |
| | BC107 | 125 | | 500 | |
| | BC108 BC109 | 125 240 | | 900 900 | |
| h_{11e} Common Emitter Input Impedance | $V_{CE} = 5V$ $I_C = 2mA$ $f = 1kHz$ Group A BC107, BC108 | 1.6 | | 4.5 | k Ω |
| | Group B All Types | 3.2 | | 8.5 | |
| | Group C BC108, BC109 | 6.0 | | 15 | |
| h_{22e} Common Emitter Output Admittance | $V_{CE} = 5V$ $I_C = 2mA$ $f = 1kHz$ Group A BC107, BC108 | | | 30 | μS |
| | Group B All Types | | | 60 | |
| | Group C BC108, BC109 | | | 110 | |
| C_{22b} Common Base Output Capacitance | $V_{CB} = 10V$ $f = 1MHz$ | | | 6 | pF |
| $R_{th(j-amb)}$ Thermal Resistance: Junction to Ambient | | | | 500 | $^\circ\text{C/W}$ |