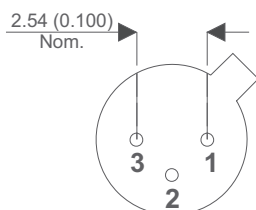
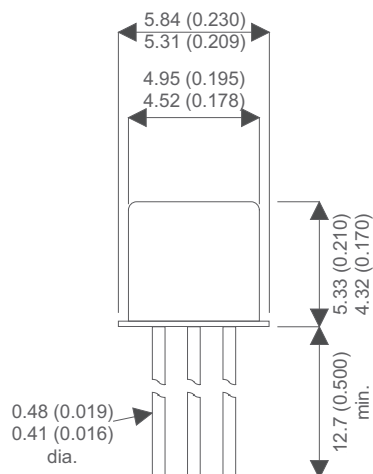


## MECHANICAL DATA

Dimensions in mm (inches)



## TO-18 METAL PACKAGE

### Underside View

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

## GENERAL PURPOSE SMALL SIGNAL PNP BIPOLAR TRANSISTOR

## APPLICATIONS

The BC 177, BC 178 & BC 179 are silicon epitaxial planar PNP transistors in TO-18 metal case. They are suitable for use in driver audio stages, low noise input audio stages and as low power, high gain general purpose transistors.

## FEATURES

- SILICON NPN
- HERMETICALLY SEALED TO18
- SCREENING OPTIONS AVAILABLE

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

|                |                                                                            | BC177 | BC178                        | BC179 |
|----------------|----------------------------------------------------------------------------|-------|------------------------------|-------|
| $V_{CBO}$      | Collector – Base Continuous Voltage                                        | -50V  | -30V                         | -25V  |
| $V_{CEO}$      | Collector – Emitter Continuous Voltage With Zero Base Current              | -45V  | -25V                         | -20V  |
| $V_{CES}$      | Collector – Emitter Continuous Voltage With Base Shortcircuited to Emitter | -50V  | -30V                         | -25V  |
| $V_{EBO}$      | Emitter – Base Continuous Voltage Reverse Voltage                          |       | -5V                          |       |
| $I_C$          | Continuous Collector Current                                               |       | -0.1A                        |       |
| $P_D$          | Power Device Dissipation @ $T_A = 25^\circ\text{C}$                        |       | 0.3W                         |       |
|                | Derate above $25^\circ\text{C}$                                            |       | 500W/ $^\circ\text{C}$       |       |
| $P_D$          | Power Device Dissipation @ $T_C = 25^\circ\text{C}$ ,                      |       | 0.75W                        |       |
|                | Derate above $25^\circ\text{C}$                                            |       | 200W/ $^\circ\text{C}$       |       |
| $T_j, T_{stg}$ | Operating and Storage Junction to Case                                     |       | -65 to +175 $^\circ\text{C}$ |       |

Semelab Plc reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by Semelab is believed to be both accurate and reliable at the time of going to press. However Semelab assumes no responsibility for any errors or omissions discovered in its use. Semelab encourages customers to verify that datasheets are current before placing orders.

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

| Parameter                                            | Test Conditions                                                     | Min.          | Typ.   | Max.  | Unit          |
|------------------------------------------------------|---------------------------------------------------------------------|---------------|--------|-------|---------------|
| $I_{CES}$ Collector-Emitter Leakage Current          | $V_{CE} = -20\text{V}$ $V_{BE} = 0$                                 |               |        | -100  | nA            |
|                                                      | $T_{amb} = 150^\circ\text{C}$                                       |               |        | -10   | $\mu\text{A}$ |
| $V_{(BR)CBO}$ Collector Base Breakdown Voltage       | $I_C = -10\mu\text{A}$                                              | <b>BC177</b>  | -50    |       | V             |
|                                                      |                                                                     | <b>BC178</b>  | -30    |       |               |
|                                                      |                                                                     | <b>BC179</b>  | -25    |       |               |
| $V_{(BR)CEO}$ Collector Emitter Breakdown Voltage    | $I_C = -2\text{mA}$<br>$I_E = 0$                                    | <b>BC177</b>  | -45    |       | V             |
|                                                      |                                                                     | <b>BC178</b>  | -25    |       |               |
|                                                      |                                                                     | <b>BC179</b>  | -20    |       | V             |
| $V_{(BR)EBO}$ Emitter Breakdown Voltage              | $I_E = -10\mu\text{A}$ $I_C = 0$                                    | -5            |        |       |               |
| $h_{FE}$ DC Current Gain                             | $V_{CE} = -5\text{V}$<br>$I_C = -2\text{mA}$<br>$f = 1\text{kHz}$   | <b>BC177A</b> | 125    | 260   | —             |
|                                                      |                                                                     | <b>BC177B</b> | 240    | 500   |               |
|                                                      |                                                                     | <b>BC178A</b> | 125    | 260   |               |
|                                                      |                                                                     | <b>BC178B</b> | 240    | 500   |               |
|                                                      |                                                                     | <b>BC179A</b> | 125    | 260   |               |
|                                                      |                                                                     | <b>BC179B</b> | 240    | 500   |               |
| $V_{CE(sat)}$ Collector – Emitter Saturation Voltage | $I_B = -0.5\text{mA}$ $I_C = -10\text{mA}$                          |               | -0.075 | -0.25 | V             |
|                                                      | $I_B = -5\text{mA}$ $I_C = -100\text{mA}$                           |               | -0.2   |       |               |
| $V_{BE(sat)}$ Base – Emitter Saturation Voltage      | $I_B = -0.5\text{mA}$ $I_C = -10\text{mA}$                          |               | -0.72  | -0.8  | V             |
|                                                      | $I_B = -5\text{mA}$ $I_C = -100\text{mA}$                           |               | -0.86  |       |               |
| $V_{BE(on)}$ Base – Emitter on Voltage               | $V_{CE} = -5\text{V}$ $I_C = -2\text{mA}$ -5V                       | -0.55         | -0.64  | -0.75 | V             |
| $f_T$ Transition Frequency                           | $V_{CE} = -5\text{V}$ $I_C = -10\text{mA}$<br>$f = 100\text{MHz}$   |               | 200    |       | MHz           |
| NF Noise Figure                                      | $V_{CE} = -5\text{V}$<br>$f = 1\text{kHz}$<br>$I_C = -0.2\text{mA}$ | <b>BC177</b>  | 2      | 10    | dB            |
|                                                      |                                                                     | <b>BC178</b>  | 2      | 10    |               |
|                                                      |                                                                     | <b>BC179</b>  | 1.2    | 4     |               |
| $C_{cbo}$ Collector Base Capacitance                 | $I_C = -0.2\text{mA}$ $V_{CB} = -10\text{V}$                        |               | 5.0    |       | pF            |

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