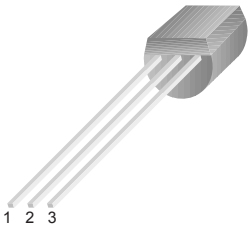
# Bipolar Transistor




## Description:

- General Purpose NPN Silicon Planar Epitaxial Amplifier Transistors.
- This device is designed for general purpose amplifier application at collector currents to 100mA.

**Pin Configuration:**
1. Collector
2. Base
3. Emitter

## Absolute Maximum Ratings (Tc=25°C unless otherwise noted)

| Description | Symbol | Value | Unit |
|---|---|---|---|
| Collector-Emitter Voltage | $V_{CEO}$ | 50 | V |
| Collector-Base Voltage | $V_{CBO}$ | 60 | |
| Emitter-Base Voltage | $V_{EBO}$ | 6 | |
| Collector Current Continuous | $I_C$ | 100 | mA |
| Operating and Storage Junction Temperature Range | $T_j$, $T_{stg}$ | - 55 to + 150 | °C |

## Electrical Characteristics (Tc = 25°C unless specified otherwise)

| Parameter | Symbol | Test Condition | Min. | Typ. | Max. | Units |
|---|---|---|---|---|---|---|
| **Off Characteristics** | | | | | | |
| Collector-Emitter Breakdown Voltage | $V_{(BR)CEO}$ | $I_C$ = 2mA, $I_B$ = 0 | 50 | | | V |
| Collector-Base Breakdown Voltage | $V_{(BR)CBO}$ | $I_C$ = 10µA, $I_E$ = 0 | 60 | | | V |
| Emitter-Base Breakdown Voltage | $V_{(BR)EBO}$ | $I_E$ = 10µA, $I_C$ = 0 | 6 | | | V |
| Collector Cut-off Current | $I_{CBO}$ | $V_{CB}$ = 50V, $V_{BE}$ = 0 | | | 15 | nA |
| Emitter-Base Leakage Current | $I_{EBO}$ | $V_{EB}$ = 4V, $I_E$ = 0 | | | 15 | nA |
| **On Characteristics** | | | | | | |
| DC Current Gain | $h_{FE}$ | $V_{CE}$ = 5V, $I_C$ = 10µA<br>$V_{CE}$ = 5V, $I_C$ = 100mA | 40<br>80 | | | |
| Collector-Emitter Saturation Voltage | $V_{CE(SAT)}$ | $I_C$ = 10mA, $I_B$ = 0.5mA<br>$I_C$ = 100mA, $I_B$ = 5mA | | | 0.25<br>0.6 | V |
| Base-Emitter Saturation Voltage | $V_{BE(SAT)}$ | $I_C$ = 100mA, $I_B$ = 5mA | | | 1.2 | V |
| Base-Emitter On Voltage | $V_{BE(ON)}$ | $V_{CE}$ = 5V, $I_C$ = 2mA | 0.55 | | 0.7 | V |

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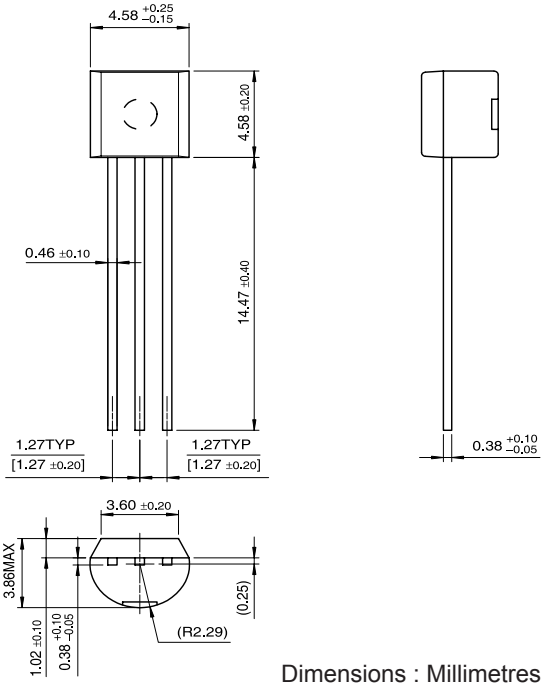
| Parameter | Symbol | Test Condition | Min. | Typ. | Max. | Units |
|---|---|---|---|---|---|---|
| **Dynamic Characteristics** | | | | | | |
| Current Gain Bandwidth Product | $f_T$ | $V_{CE}$ = 5V, $I_C$ = 10mA, f = 100MHz | 150 | | | MHz |
| Output Capacitance | $C_{ob}$ | $V_{CE}$ = 10V, $I_C$ = 0, f = 1MHz | | | 5 | pF |
| Small Signal Current Gain | $h_{fe}$ | $V_{CE}$ = 5V, $I_C$ = 2mA, f = 1KHz | 240 | | 500 | |
| Noise Figure | NF | $V_{CE}$ = 5V, $I_C$ = 0.2mA<br>$R_S$ = 2KΩ, f = 1KHz, BW = 200Hz | | | 10 | dB |

## Thermal Characteristics $T_A$=25°C unless otherwise noted

| Parameter | Symbol | Max. | Max. |
|---|---|---|---|
| Total Device Dissipation @$T_A$=25°C<br>Derate above 25°C | $P_D$ | 350<br>2.8 | mW<br>mW/°C |
| Thermal Resistance, Junction to Ambient | $R_{\theta JA}$ | 357 | mW/°C |
| Thermal Resistance, Junction to Case | $R_{\theta JC}$ | 125 | °C/W |

## TO-92




Dimensions : Millimetres

## Part Number Table

| Description | Part Number |
|---|---|
| Transistor, NPN, TO-92 | BC182B |