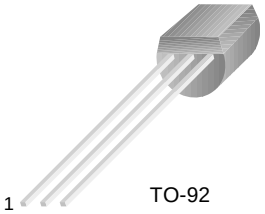
FAIRCHILD SEMICONDUCTOR®

January 2005

# BC517

## NPN Darlington Transistor

- This device is designed for applications requiring extremely high current gain at currents to 1.0A.
- Sourced from process 05.



1 TO-92

1. Collector 2. Base 3. Emitter

## Absolute Maximum Ratings * $T_a$ = 25°C unless otherwise noted

| Symbol | Parameter | Value | Units |
|---|---|---|---|
| $V_{CEO}$ | Collector-Emitter Voltage | 30 | V |
| $V_{CBO}$ | Collector-Base Voltage | 40 | V |
| $V_{EBO}$ | Emitter-Base Voltage | 10 | V |
| $I_C$ | Collector Current - Continuous | 1.2 | A |
| $T_J$, $T_{STG}$ | Operating and Storage Junction Temperature Range | -55 ~ 150 | °C |



* These ratings are limiting values above which the serviceability of any semiconductor device may impaired.

**NOTES:**

1. These ratings are based on a maximum junction temperature of 150 degrees C.
2. These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.

## Electrical Characteristics $T_a$ = 25°C unless otherwise noted

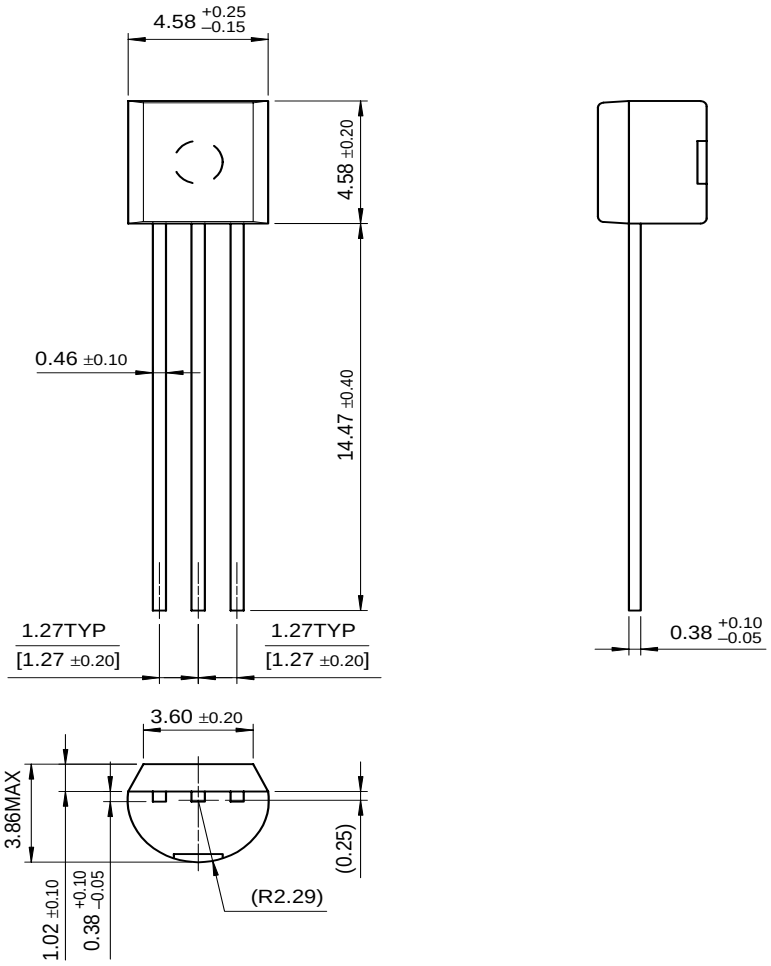
| Symbol | Parameter | Conditions | Min. | Max | Units |
|---|---|---|---|---|---|
| **Off Characteristics** | | | | | |
| $V_{(BR)CEO}$ | Collector-Emitter Breakdown Voltage * | $I_C$ = 2.0mA, $I_B$ = 0 | 30 | | V |
| $V_{(BR)CBO}$ | Collector-Base Breakdown Voltage | $I_C$ = 10µA, $I_E$ = 0 | 40 | | V |
| $V_{(BR)EBO}$ | Emitter-Base Breakdown Voltage | $I_E$ = 100nA, $I_C$ = 0 | 10 | | V |
| $I_{CBO}$ | Collector Cut-off Current | $V_{CB}$ = 30V, $I_E$ = 0 | | 100 | nA |
| **On Characteristics *** | | | | | |
| $h_{FE}$ | DC Current Gain | $V_{CE}$ = 2.0V, $I_C$ = 20mA | 30,000 | | |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage | $I_C$ = 100mA, $I_B$ = 0.1mA | | 1 | V |
| $V_{BE(on)}$ | Base-Emitter On Voltage | $I_C$ = 10mA, $V_{CE}$ = 5.0V | | 1.4 | V |

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

| Symbol | Parameter | Value | Units |
|---|---|---|---|
| $P_D$ | Total Device Dissipation<br>Derate above 25°C | 625<br>5.0 | mW<br>mW/°C |
| $R_{\theta JC}$ | Thermal Resistance, Junction to Case | 83.3 | °C/W |
| $R_{\theta JA}$ | Thermal Resistance, Junction to Ambient | 200 | °C/W |

## Mechanical Dimensions

# TO-92




Dimensions in Millimeters

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**PRODUCT STATUS DEFINITIONS**

**Definition of Terms**

| Datasheet Identification | Product Status | Definition |
|---|---|---|
| Advance Information | Formative or In Design | This datasheet contains the design specifications for product development. Specifications may change in any manner without notice. |
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