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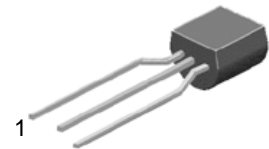


August 2015

# BC516 PNP Darlington Transistor

## Features

- This device is designed for applications requiring extremely high current gain at currents to 1 A.
- Sourced from process 61.



TO-92

1. Collector 2. Base 3. Emitter

## Ordering Information

Part Number	Top Mark	Package	Packing Method
BC516_D27Z	BC516	TO-92 3L	Tape and Reel

## Absolute Maximum Ratings

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only. Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

Symbol	Parameter	Value	Unit
$V_{CEO}$	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	A
$T_J, T_{STG}$	Operating and Storage Junction Temperature Range	-55 to +150	$^\circ\text{C}$

**Thermal Characteristics<sup>(1)</sup>**

Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

Symbol	Parameter	Max.	Unit
$P_D$	Total Device Dissipation, $T_A = 25^\circ\text{C}$	625	mW
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	200	$^\circ\text{C/W}$
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	83.3	$^\circ\text{C/W}$

**Note:**

1. PCB size: FR-4, 76 mm x 114 mm x 1.57 mm (3.0 inch x 4.5 inch x 0.062 inch) with minimum land pattern size.

**Electrical Characteristics<sup>(2)</sup>**

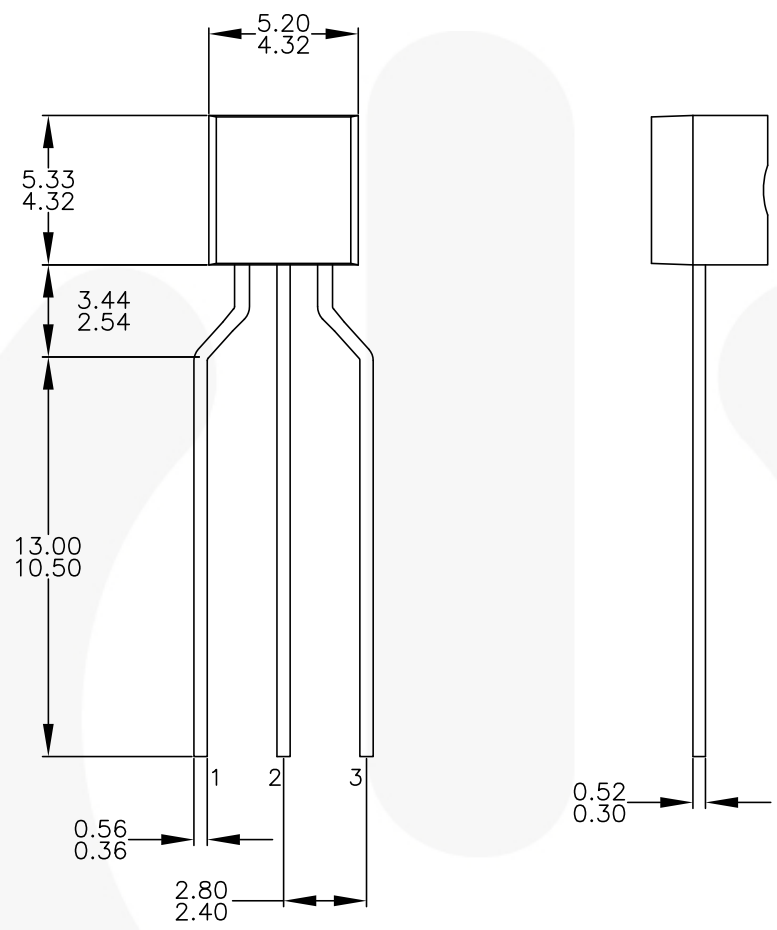
Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$V_{CEO}$	Collector-Emitter Breakdown Voltage	$I_C = -2\text{ mA}, I_B = 0$	-30			V
$V_{CBO}$	Collector-Base Breakdown Voltage	$I_C = -100\ \mu\text{A}, I_E = 0$	-40			V
$V_{EBO}$	Emitter-Base Breakdown Voltage	$I_E = -10\ \mu\text{A}, I_C = 0$	-10			V
$I_{CBO}$	Collector Cut-Off Current	$V_{CB} = -30\text{ V}, I_E = 0$			-100	nA
$h_{FE}$	DC Current Gain	$I_C = -20\text{ mA}, V_{CE} = -2\text{ V}$	30,000			
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = -100\text{ mA}, I_B = -0.1\text{ mA}$			-1	V
$V_{BE(on)}$	Base-Emitter On Voltage	$I_C = -10\text{ mA}, V_{CE} = -5\text{ V}$			-1.4	V
$f_T$	Current Gain - Bandwidth Product <sup>(3)</sup>	$I_C = -10\text{ mA}, V_{CE} = -5\text{ V},$ $f = 100\text{ MHz}$		200		MHz

**Notes:**

- Pulse test: pulse width  $\leq 2.0\%$
- $f_T = |h_{fe}| \cdot f_{test}$

Physical Dimensions



- NOTES: UNLESS OTHERWISE SPECIFIED
- A. DRAWING CONFORMS TO JEDEC MS-013, VARIATION AC.
  - B. ALL DIMENSIONS ARE IN MILLIMETERS.
  - C. DRAWING CONFORMS TO ASME Y14.5M-2009.
  - D. DRAWING FILENAME: MKT-ZA03FREV3.
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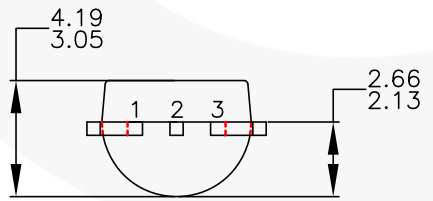



Figure 1. 3-Lead, TO-92, Molded, 0.2 In Line Spacing Lead Form





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