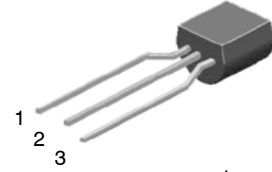


# PNP Darlington Transistor

## BC516



1. Collector
2. Base
3. Emitter

### Features

- This Device is Designed for Applications Requiring Extremely High Current Gain at Currents to 1 A.
- This is a Pb-Free Device

### ABSOLUTE MAXIMUM RATINGS

(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
$T_J, T_{STG}$	Junction and Storage Junction Temperature Range	–55 to +150	$^\circ\text{C}$

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

### THERMAL CHARACTERISTICS (Note1)

(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	$^\circ\text{C}/\text{W}$
$R_{\theta JC}$	Thermal Resistance, Junction–to–Case	83.3	$^\circ\text{C}/\text{W}$

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 (Note 2)

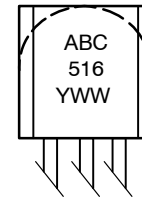
Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$V_{CEO}$	Collector–Emitter Breakdown Voltage	$I_C = -2\text{ mA}, I_B = 0$	–30	–	–	V
$V_{CBO}$	Emitter–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 (Note 3)	$I_C = -10\text{ mA}, V_{CE} = -5\text{ V}, f = 100\text{ MHz}$	–	200	–	MHz

2. Pulse Test: Pulse Width  $\leq 0.2\%$ .
3.  $f_T = |h_{fe}| \cdot f_{test}$

TO-92-3  
CASE 135AR

### MARKING DIAGRAM



- A = Assembly Location  
BC516 = Specific Device Code  
Y = Year  
WW = Work Week

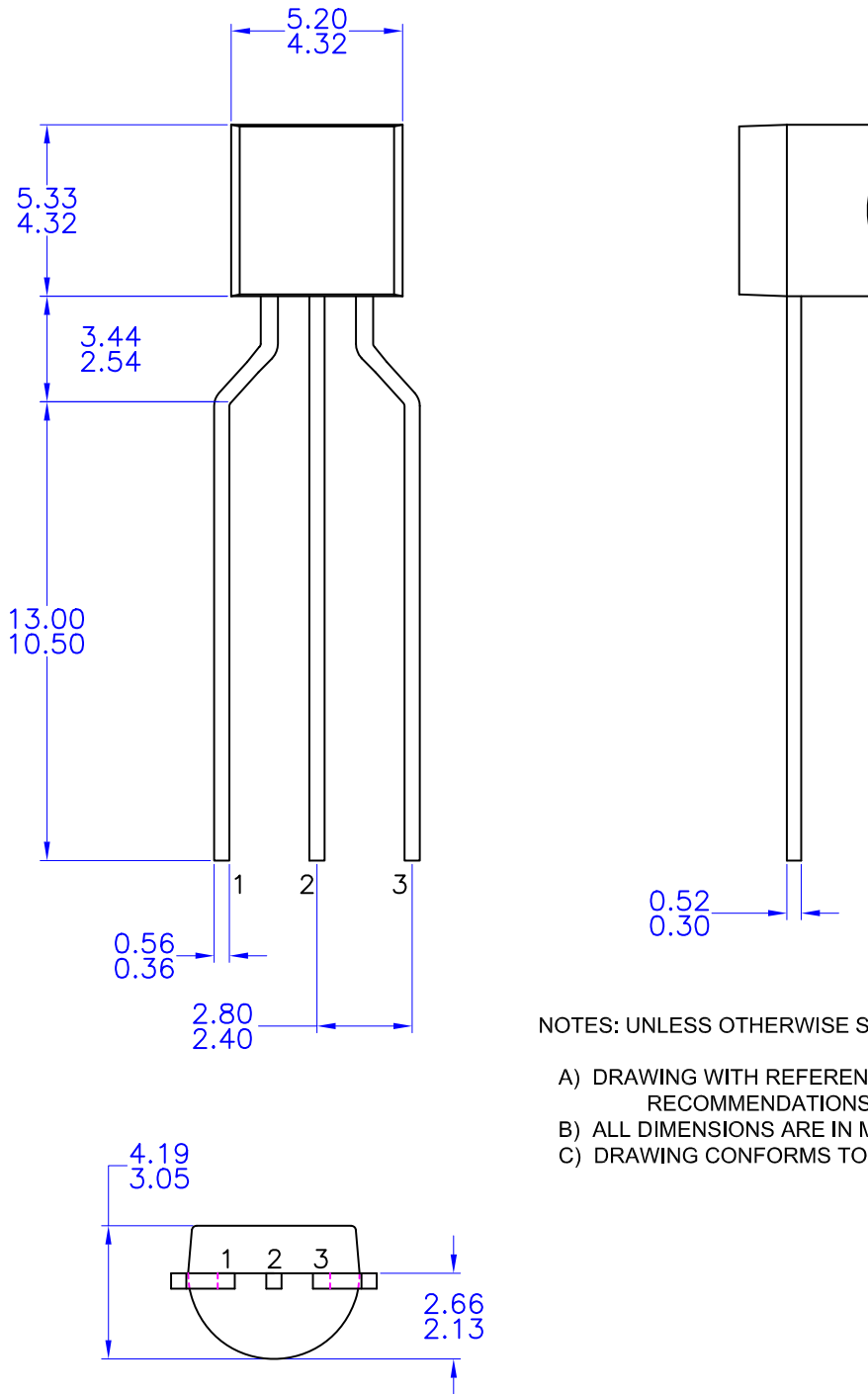
### ORDERING INFORMATION

Device	Package	Shipping <sup>†</sup>
BC516–D27Z	TO-92 3L	2000 / Tape & Reel

<sup>†</sup>For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, [BRD8011/D](#).

**TO-92 3 4.83x4.76 LEADFORMED**  
**CASE 135AR**  
**ISSUE O**


DATE 30 SEP 2016



NOTES: UNLESS OTHERWISE SPECIFIED

- A) DRAWING WITH REFERENCE TO JEDEC TO-92 RECOMMENDATIONS.
- B) ALL DIMENSIONS ARE IN MILLIMETERS.
- C) DRAWING CONFORMS TO ASME Y14.5M-1994

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