

PNP Darlington Transistor

BC516

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.

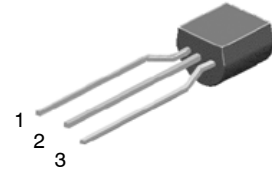
ELECTRICAL CHARACTERISTICS (Note 2)

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	$I_C = -100\text{ }\mu\text{A}, I_E = 0$	–40	–	–	V
V_{EBO}	Emitter–Base Breakdown Voltage	$I_E = -10\text{ }\mu\text{A}, I_C = 0$	–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 $\leq 0.2\%$.

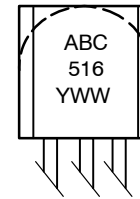
3. $f_T = |h_{fe}| \cdot f_{test}$



1. Collector
2. Base
3. Emitter

TO–92–3
CASE 135AR

MARKING DIAGRAM



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

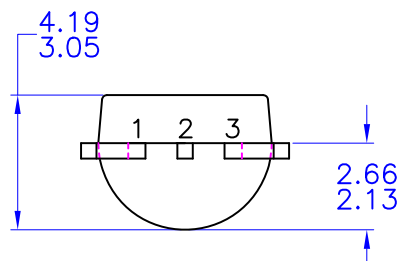
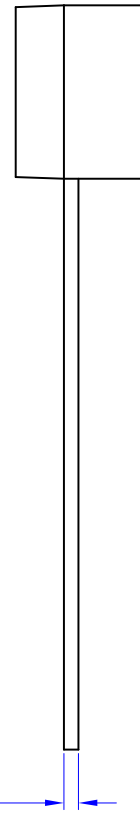
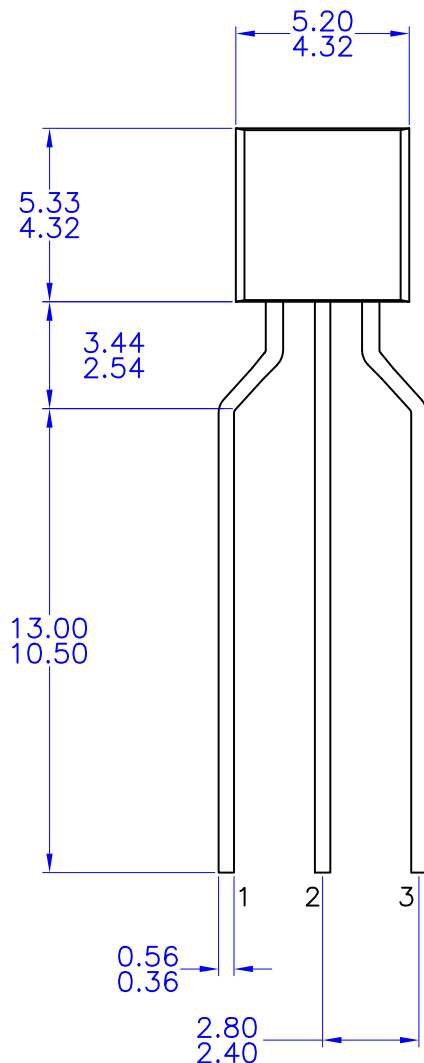
ORDERING INFORMATION

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

†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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