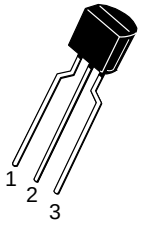
# PNP Epitaxial Silicon Transistor

# BC640




**TO−92−3**
**CASE 135AR**
Bent Lead

1. Emitter
2. Collector
3. Base

### Features

- Switching and Amplifier Applications
- Complement to BC639
- These Devices are Pb−Free, Halogen Free/BFR Free and are RoHS Compliant

### ABSOLUTE MAXIMUM RATINGS

(Values are at $T_A$ = 25°C unless otherwise noted)

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Collector−Emitter Voltage at $R_{BE}$ = 1 kΩ | $V_{CER}$ | −100 | V |
| Collector−Emitter Voltage | $V_{CES}$ | −100 | V |
| Collector−Emitter Voltage | $V_{CEO}$ | −80 | V |
| Emitter−Base Voltage | $V_{EBO}$ | −5 | V |
| Collector Current | $I_C$ | −1 | A |
| Peak Collector Current | $I_{CP}$ | −1.5 | A |
| Base Current | $I_B$ | −100 | mA |
| Junction Temperature | $T_J$ | 150 | °C |
| Storage Temperature | $T_{STG}$ | −65 to 150 | °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.

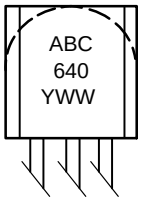
### THERMAL CHARACTERISTICS (Note 1)

(Values are at $T_A$ = 25°C unless otherwise noted)

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Power Dissipation | $P_D$ | 1 | W |
| Dissipation Derate Above 25°C | $P_D$ | 8 | mW/°C |
| Thermal Resistance, Junction−to−Ambient | $R_{\theta JA}$ | 125 | °C/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.

### MARKING DIAGRAM




A = Assembly Code
BC640 = Device Code
YWW = Date Code

### ORDERING INFORMATION

See detailed ordering and shipping information on page 2 of this data sheet.

## ELECTRICAL CHARACTERISTICS

(Values are at $T_A$ = 25°C unless otherwise noted)

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| $BV_{CEO}$ | Collector−Emitter Breakdown Voltage | $I_C$ = −10 mA, $I_B$ = 0 | −80 | | | V |
| $I_{CBO}$ | Collector Cut−Off Current | $V_{CB}$ = −30 V, $I_E$ = 0 | | | −0.1 | μA |
| $I_{EBO}$ | Emitter Cut−Off Current | $V_{EB}$ = −5 V, $I_C$ = 0 | | | −10 | μA |
| $h_{FE1}$ | DC Current Gain | $V_{CE}$ = −2 V, $I_C$ = −5 mA | 25 | | | |
| $h_{FE2}$ | | $V_{CE}$ = −2 V, $I_C$ = −150 mA | 40 | | 160 | |
| $h_{FE3}$ | | $V_{CE}$ = −2 V, $I_C$ = −500 mA | 25 | | | |
| $V_{CE}$(sat) | Collector−Emitter Saturation Voltage | $I_C$ = −500 mA, $I_B$ = −50 mA | | | −0.5 | V |
| $V_{BE}$(on) | Base−Emitter On Voltage | $V_{CE}$ = −2 V, $I_C$ = −500 mA | | | −1 | V |
| $f_T$ | Current Gain Bandwidth Product | $V_{CE}$ = −5 V, $I_C$ = −10 mA, f = 50 MHz | | 100 | | MHz |

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

## ORDERING INFORMATION

| Part Number | Top Mark | Package | Shipping |
|---|---|---|---|
| BC640TA | BC640 | TO−92−3, case 135AR (Pb−Free) | 2,000 Units / Fan Fold |

## TYPICAL PERFORMANCE CHARACTERISTICS

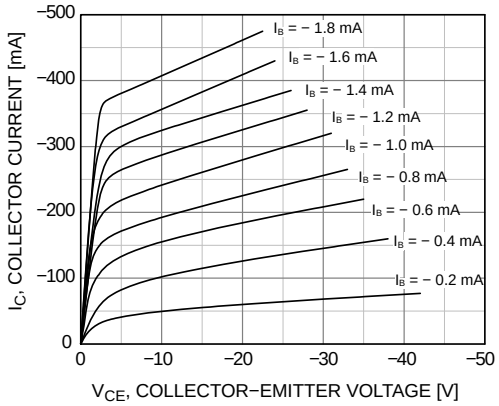



**Figure 1. Static Characteristic**

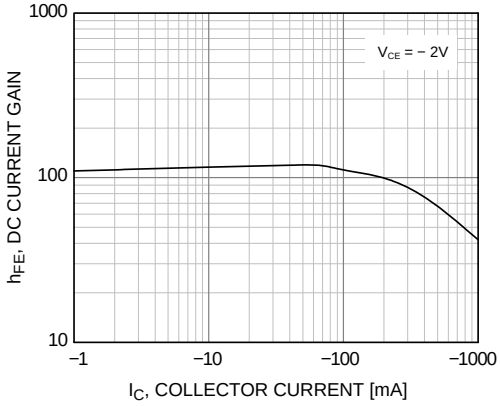



**Figure 2. DC Current Gain**

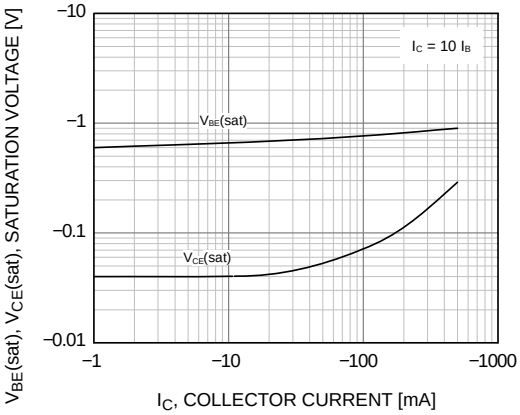



**Figure 3. Base−Emitter Saturation Voltage and Collector−Emitter Saturation Voltage**

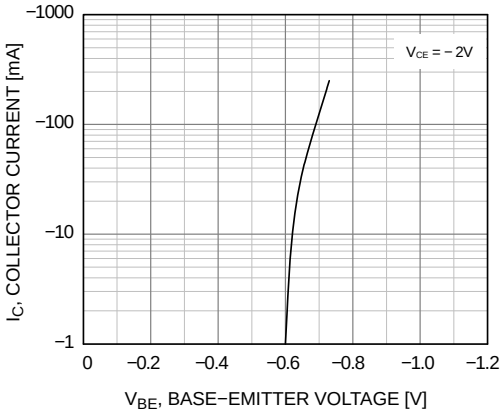



**Figure 4. Base−Emitter On Voltage**

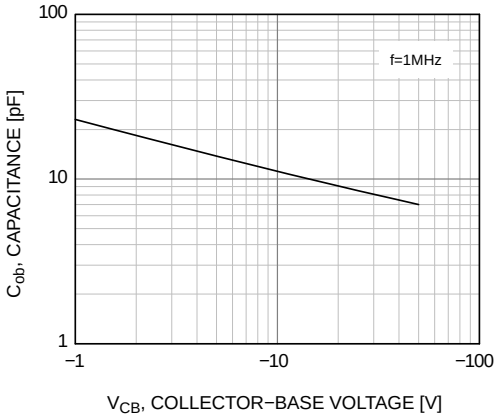


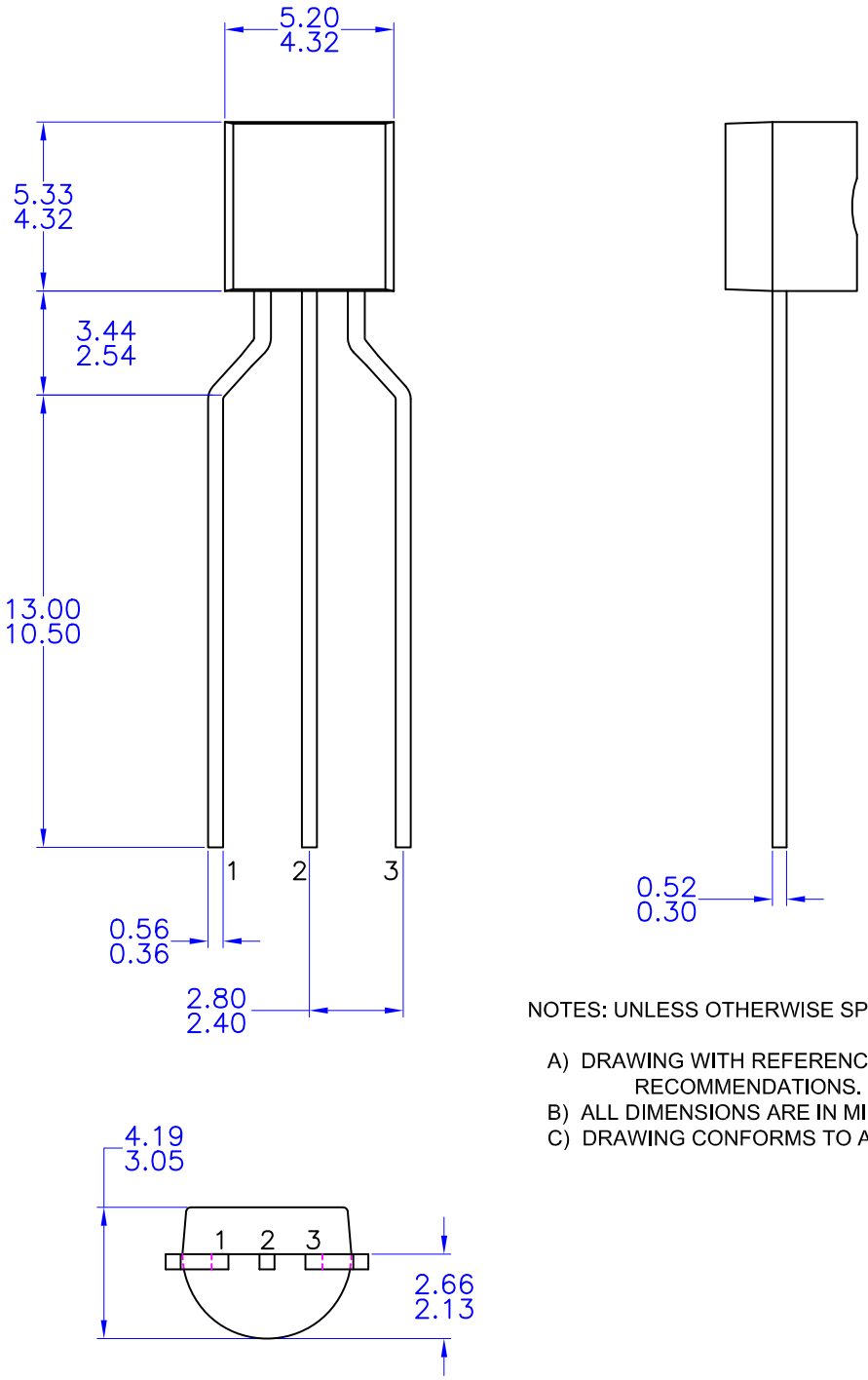

**Figure 5. Collector Output Capacitance**

# MECHANICAL CASE OUTLINE
## PACKAGE DIMENSIONS

ON Semiconductor®

**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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