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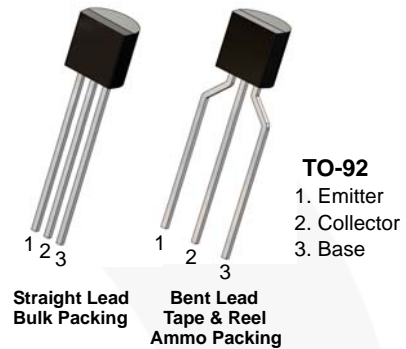
December 2015

BC640 — PNP Epitaxial Silicon Transistor

# BC640 PNP Epitaxial Silicon Transistor

## Features

- Switching and Amplifier Applications
- Complement to BC639



## Ordering Information

Part Number	Top Mark	Package	Packing Method
BC640TA	BC640	TO-92 3L	Ammo

## 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
$V_{CER}$	Collector-Emitter Voltage at $R_{BE} = 1\text{ K}\Omega$	-100	V
$V_{CES}$	Collector-Emitter Voltage	-100	V
$V_{CEO}$	Collector-Emitter Voltage	-80	V
$V_{EBO}$	Emitter-Base Voltage	-5	V
$I_C$	Collector Current	-1	A
$I_{CP}$	Peak Collector Current	-1.5	A
$I_B$	Base Current	-100	mA
$T_J$	Junction Temperature	150	$^\circ\text{C}$
$T_{STG}$	Storage Temperature	-65 to 150	$^\circ\text{C}$

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

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

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

**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**

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

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

## Typical Performance Characteristics

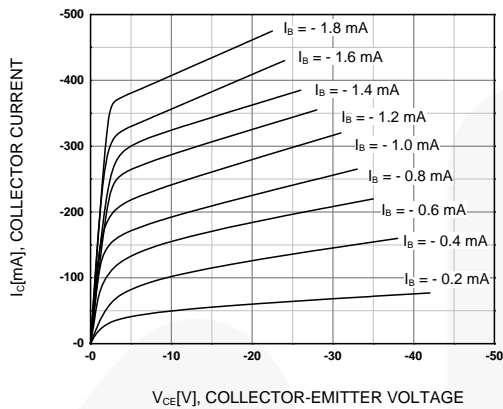


Figure 1. Static Characteristic

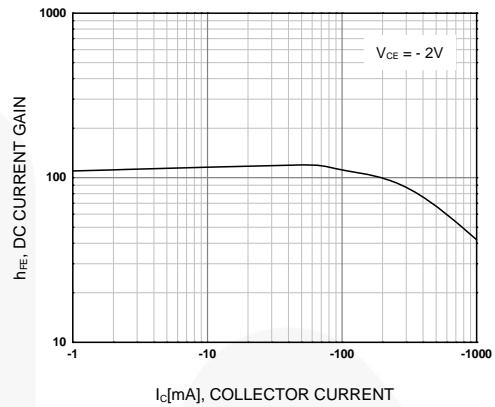


Figure 2. DC Current Gain

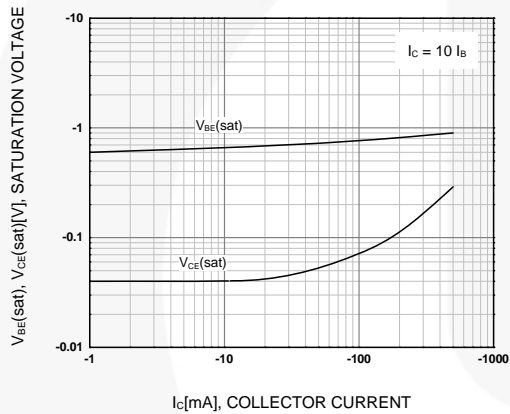


Figure 3. Base-Emitter Saturation Voltage and Collector-Emitter Saturation Voltage

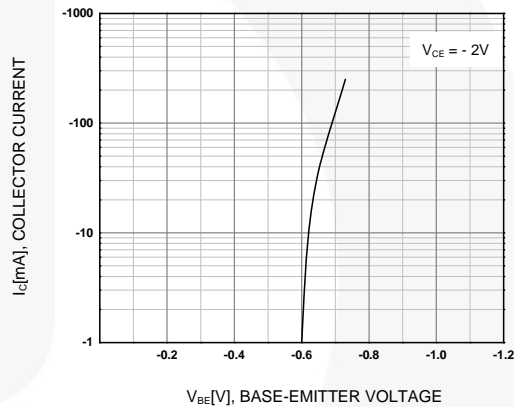


Figure 4. Base-Emitter On Voltage

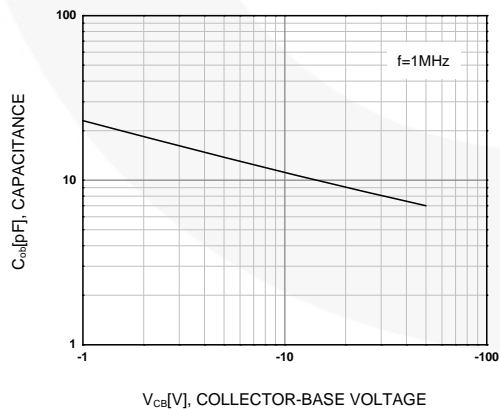
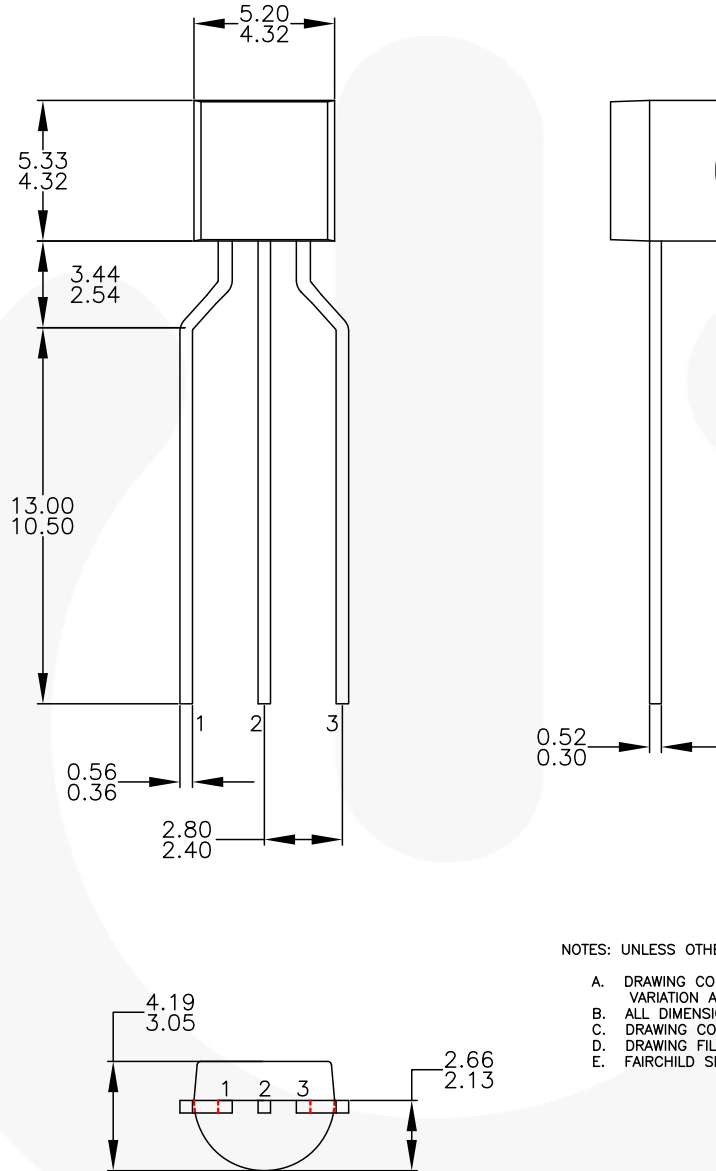


Figure 5. Collector Output Capacitance

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.
- E. FAIRCHILD SEMICONDUCTOR.

Figure 6. 3-Lead, TO-92, Molded, 0.2 In Line Spacing Lead Form, Ammo Type



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