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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⁽¹⁾

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°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	μA
I_{EBO}	Emitter Cut-Off Current	$V_{EB} = -5\text{ V}$, $I_C = 0$			-10	μA
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

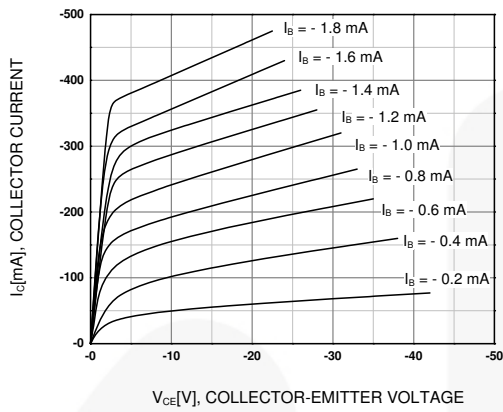


Figure 1. Static Characteristic

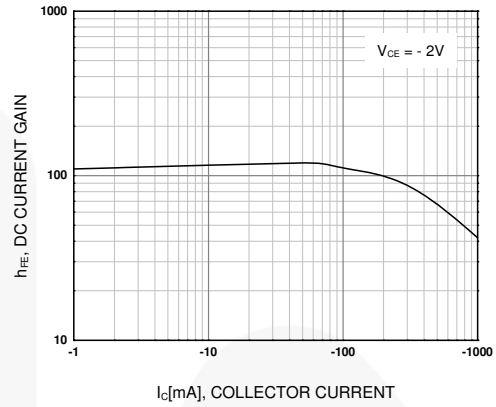


Figure 2. DC Current Gain

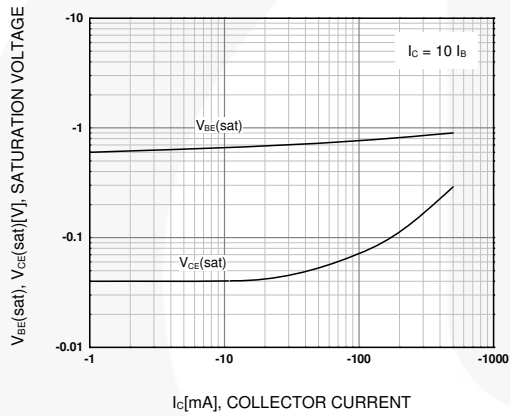


Figure 3. Base-Emitter Saturation Voltage and Collector-Emitter Saturation Voltage

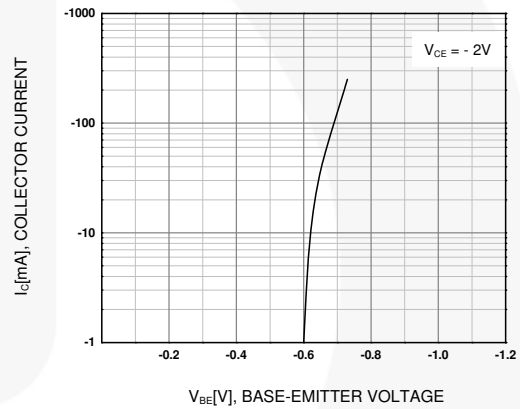


Figure 4. Base-Emitter On Voltage

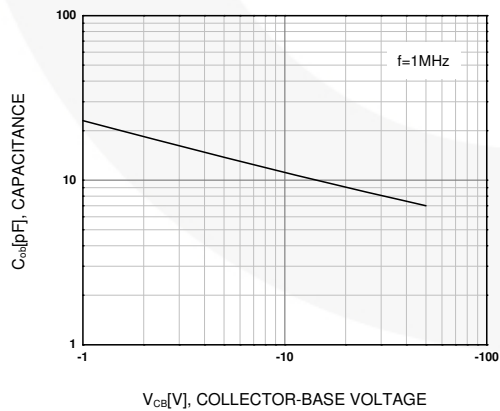
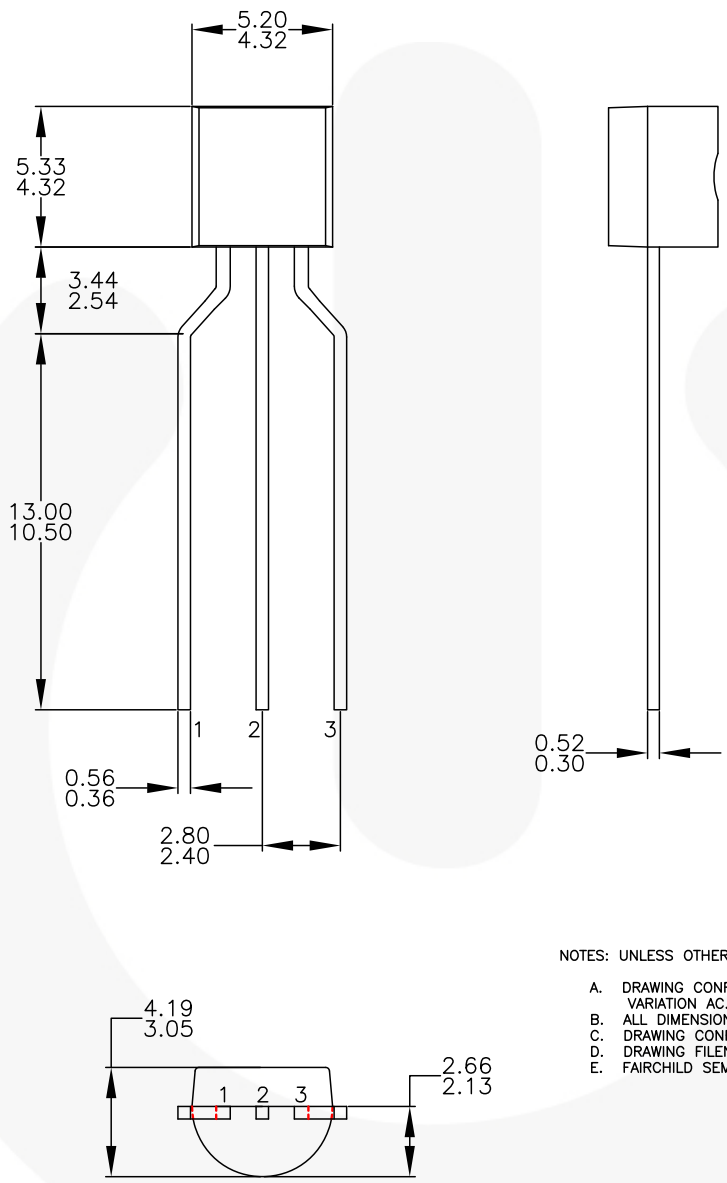


Figure 5. Collector Output Capacitance

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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