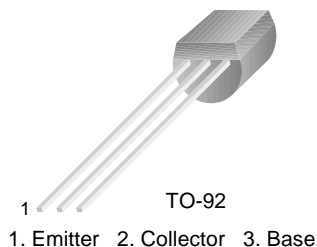


## BC635/637/639

### Switching and Amplifier Applications

- Complement to BC636/638/640



### NPN Epitaxial Silicon Transistor

#### Absolute Maximum Ratings $T_a=25^\circ\text{C}$ unless otherwise noted

| Symbol           | Parameter  | Value     | Units            |
|------------------|--|-----------|------------------|
| $V_{\text{CER}}$ | Collector-Emitter Voltage at $R_{\text{BE}}=1\text{K}\Omega$ |           |                  |
|                  | : BC635  | 45        | V                |
|                  | : BC637  | 60        | V                |
|                  | : BC639  | 100       | V                |
| $V_{\text{CES}}$ | Collector-Emitter Voltage                                    |           |                  |
|                  | : BC635  | 45        | V                |
|                  | : BC637  | 60        | V                |
|                  | : BC639  | 100       | V                |
| $V_{\text{CEO}}$ | Collector-Emitter Voltage                                    |           |                  |
|                  | : BC635  | 45        | V                |
|                  | : BC637  | 60        | V                |
|                  | : BC639  | 80        | V                |
| $V_{\text{EBO}}$ | Emitter-Base Voltage   | 5         | V                |
| $I_{\text{C}}$   | Collector Current  | 1         | A                |
| $I_{\text{CP}}$  | Peak Collector Current                                       | 1.5       | A                |
| $I_{\text{B}}$   | Base Current   | 100       | mA               |
| $P_{\text{C}}$   | Collector Power Dissipation                                  | 1         | W                |
| $T_{\text{J}}$   | Junction Temperature   | 150       | $^\circ\text{C}$ |
| $T_{\text{STG}}$ | Storage Temperature  | -65 ~ 150 | $^\circ\text{C}$ |

•  $PW=5\text{ms}$ , Duty Cycle=10%

#### Electrical Characteristics $T_a=25^\circ\text{C}$ unless otherwise noted

| Symbol               | Parameter                            | Test Condition   | Min. | Typ. | Max. | Units         |
|----------------------|--------------------------------------|--|------|------|------|---------------|
| $BV_{\text{CEO}}$    | Collector-Emitter Breakdown Voltage  | $I_{\text{C}}=10\text{mA}$ , $I_{\text{B}}=0$                                |      |      |      |               |
|                      | : BC635                              |  | 45   |      |      | V             |
|                      | : BC637                              |  | 60   |      |      | V             |
|                      | : BC639                              |  | 80   |      |      | V             |
| $I_{\text{CBO}}$     | Collector Cut-off Current            | $V_{\text{CB}}=30\text{V}$ , $I_{\text{E}}=0$                                |      |      | 0.1  | $\mu\text{A}$ |
| $I_{\text{EBO}}$     | Emitter Cut-off Current              | $V_{\text{EB}}=5\text{V}$ , $I_{\text{C}}=0$                                 |      |      | 0.1  | $\mu\text{A}$ |
| $h_{\text{FE1}}$     | DC Current Gain                      | : All  | 25   |      |      |               |
| $h_{\text{FE2}}$     |                                      | : BC635  | 40   |      | 250  |               |
|                      |                                      | : BC637/BC639  | 40   |      | 160  |               |
| $h_{\text{FE3}}$     | : All                                | $V_{\text{CE}}=2\text{V}$ , $I_{\text{C}}=500\text{mA}$                      | 25   |      |      |               |
| $V_{\text{CE(sat)}}$ | Collector-Emitter Saturation Voltage | $I_{\text{C}}=500\text{mA}$ , $I_{\text{B}}=50\text{mA}$                     |      |      | 0.5  | V             |
| $V_{\text{BE(on)}}$  | Base-Emitter On Voltage              | $V_{\text{CE}}=2\text{V}$ , $I_{\text{C}}=500\text{mA}$                      |      |      | 1    | V             |
| $f_{\text{T}}$       | Current Gain Bandwidth Product       | $V_{\text{CE}}=5\text{V}$ , $I_{\text{C}}=10\text{mA}$ ,<br>$f=50\text{MHz}$ |      | 100  |      | MHz           |

# Typical Characteristics

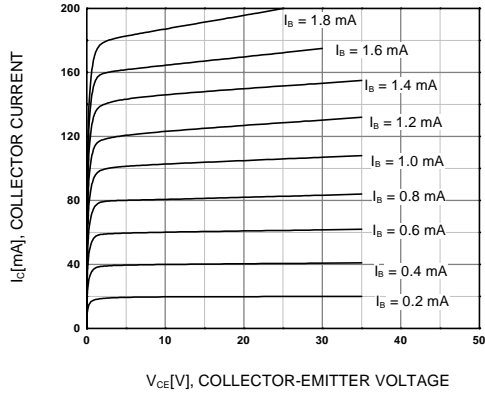


Figure 1. Static Characteristic

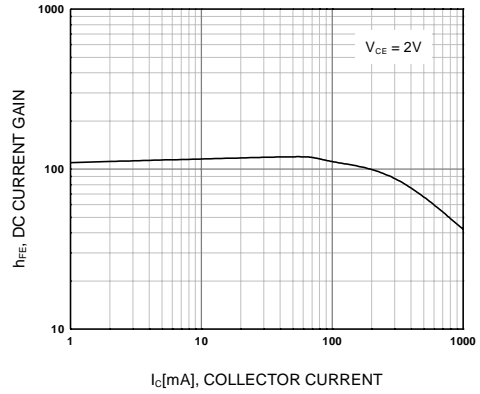


Figure 2. DC current Gain

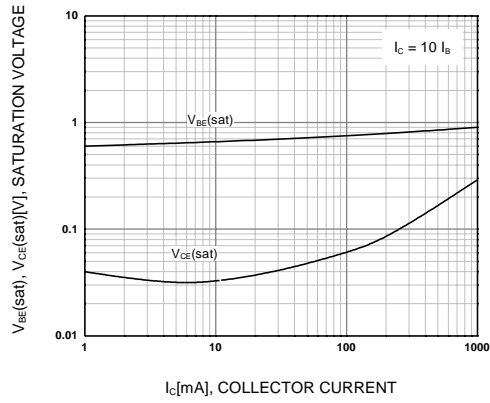


Figure 3. Base-Emitter Saturation Voltage  
Collector-Emitter Saturation Voltage

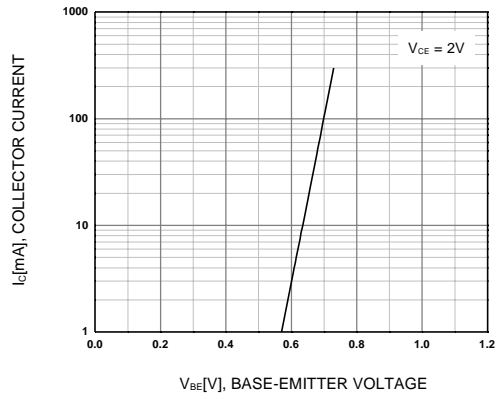


Figure 4. Base-Emitter On Voltage

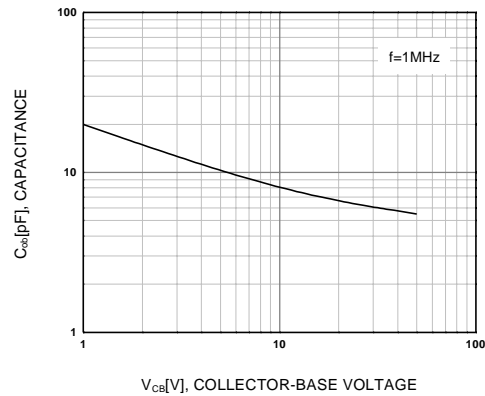
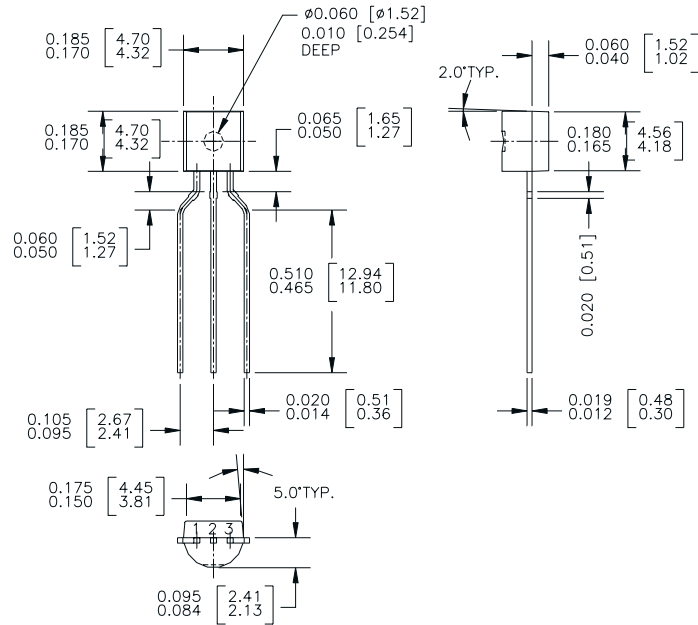


Figure 5. Collector Output Capacitance

# Package Dimensions

BC635/637/639

## TO-92



Dimensions in Millimeters

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