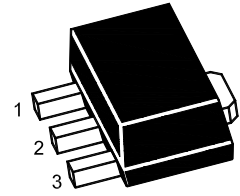


BCX53U

PNP Silicon Epitaxial Planar Power Transistor

Features

- Medium Power Transistor
- Low Collector Emitter Saturation Voltage



1.Base 2.Collector 3.Emitter
SOT-89 Plastic Package

Absolute Maximum Ratings ($T_a = 25^\circ\text{C}$)

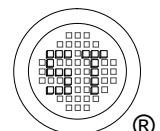
| Parameter | Symbol | Value | Unit |
|---------------------------|-------------------|--|------------------|
| Collector Base Voltage | $-V_{\text{CBO}}$ | 100 | V |
| Collector Emitter Voltage | $-V_{\text{CEO}}$ | 80 | V |
| Emitter Base Voltage | $-V_{\text{EBO}}$ | 5 | V |
| Collector Current | $-I_{\text{C}}$ | 1 | A |
| Peak Collector Current | $-I_{\text{CM}}$ | 2 | A |
| Total Power Dissipation | P_{tot} | 0.5 ¹⁾ 1.3 ²⁾ | W |
| Junction Temperature | T_{j} | 150 | $^\circ\text{C}$ |
| Storage Temperature Range | T_{stg} | - 65 to + 150 | $^\circ\text{C}$ |

Thermal Characteristics

| Parameter | Symbol | Max. | Unit |
|---|-----------------------|---------------------------------------|--------------------|
| Thermal Resistance from Junction to Ambient | $R_{\theta\text{JA}}$ | 250 ¹⁾ 96 ²⁾ | $^\circ\text{C/W}$ |

¹⁾ Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.

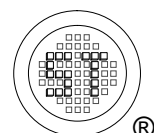
²⁾ Device mounted on FR-4 substrate PC board, 2oz copper, with 1-inch square copper plate.



BCX53U

Characteristics at $T_a = 25^\circ\text{C}$

| Parameter | Symbol | Min. | Typ. | Max. | Unit |
|---|----------------|------|------|------|------|
| DC Current Gain at $-V_{CE} = 2\text{ V}$, $-I_C = 5\text{ mA}$ at $-V_{CE} = 2\text{ V}$, $-I_C = 150\text{ mA}$ at $-V_{CE} = 2\text{ V}$, $-I_C = 500\text{ mA}$ | h_{FE} | 40 | - | - | - |
| | h_{FE} | 63 | - | 160 | - |
| | h_{FE} | 100 | - | 250 | - |
| | h_{FE} | 25 | - | - | - |
| Collector Base Cutoff Current at $-V_{CB} = 30\text{ V}$ | $-I_{CBO}$ | - | - | 100 | nA |
| Emitter Base Cutoff Current at $-V_{EB} = 5\text{ V}$ | $-I_{EBO}$ | - | - | 100 | nA |
| Collector Base Breakdown Voltage at $-I_C = 100\text{ }\mu\text{A}$ | $-V_{(BR)CBO}$ | 100 | - | - | V |
| Collector Emitter Breakdown Voltage at $-I_C = 1\text{ mA}$ | $-V_{(BR)CEO}$ | 80 | - | - | V |
| Emitter Base Breakdown Voltage at $-I_E = 100\text{ }\mu\text{A}$ | $-V_{(BR)EBO}$ | 5 | - | - | V |
| Collector Emitter Saturation Voltage at $-I_C = 500\text{ mA}$, $-I_B = 50\text{ mA}$ | $-V_{CE(sat)}$ | - | - | 0.5 | V |
| Base Emitter Voltage at $-V_{CE} = 2\text{ V}$, $-I_C = 500\text{ mA}$ | $-V_{BE}$ | - | - | 1 | V |
| Transition Frequency at $-V_{CE} = 5\text{ V}$, $-I_C = 50\text{ mA}$, $f = 100\text{ MHz}$ | f_T | - | 145 | - | MHz |
| Collector Capacitance at $-V_{CB} = 15\text{ V}$, $f = 1\text{ MHz}$ | C_c | - | 15 | - | pF |



BCX53U

Electrical Characteristics Curves

Fig. 1 Output Characteristics Curve

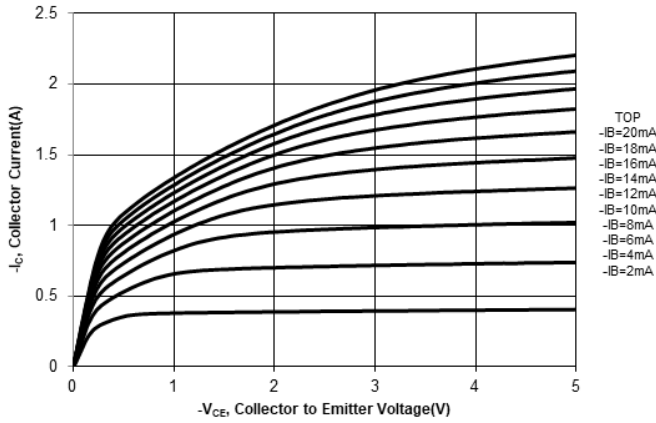


Fig. 2 Collector Current vs. Base to Emitter Voltage

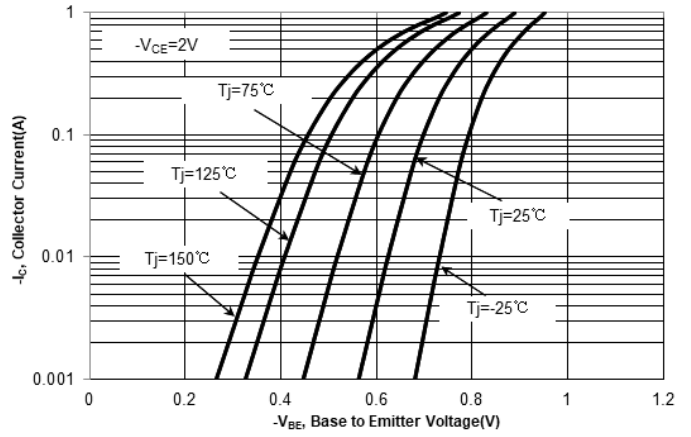


Fig. 3 DC Current Gain vs. Collector Current

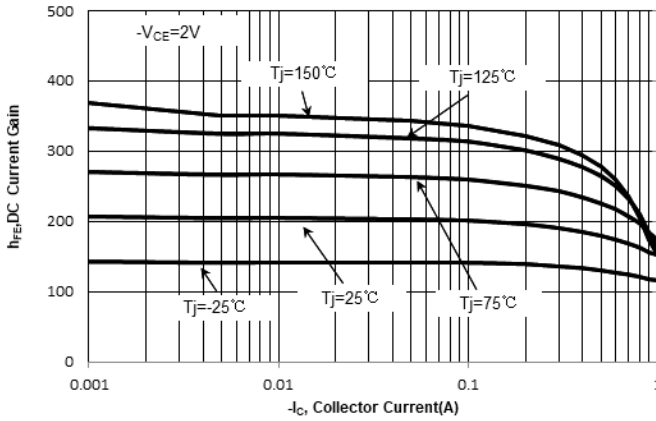
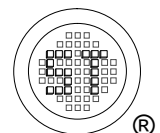
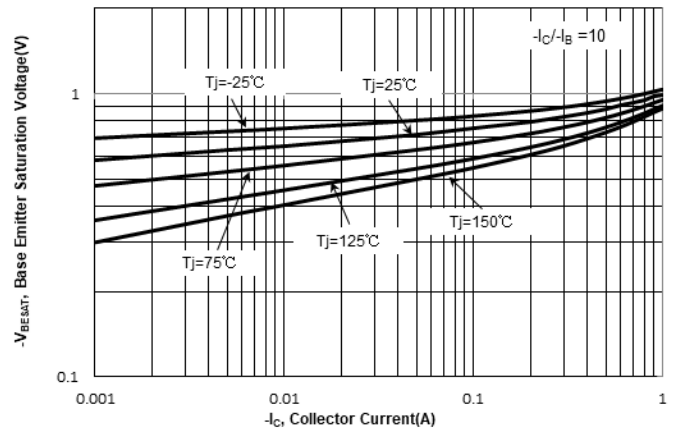


Fig. 4 $V_{BE(sat)}$ vs. Collector Current



BCX53U

Electrical Characteristics Curves

Fig. 5 $V_{CE(sat)}$ vs. Collector Current

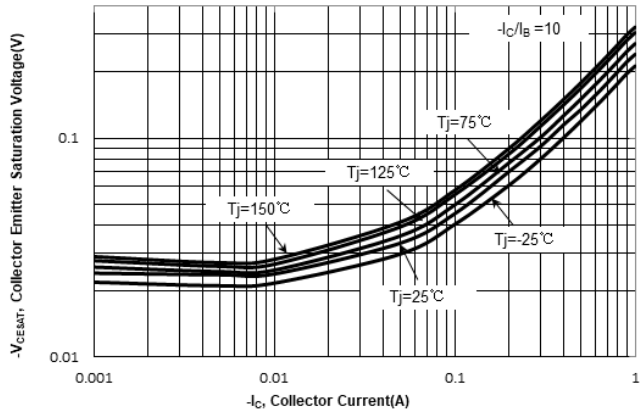


Fig. 6 Junction Capacitance

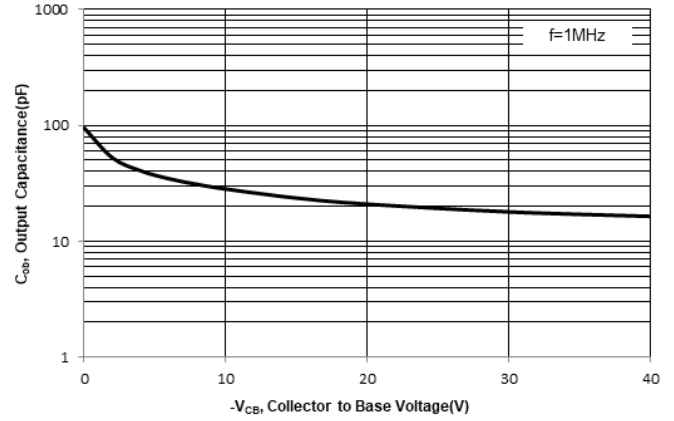
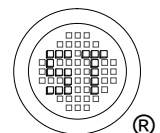
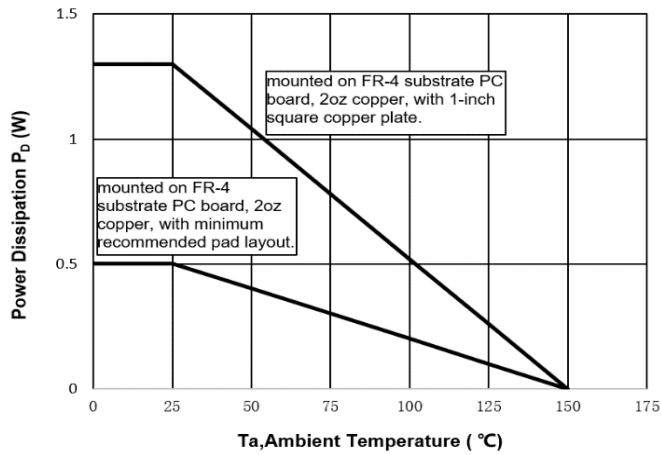


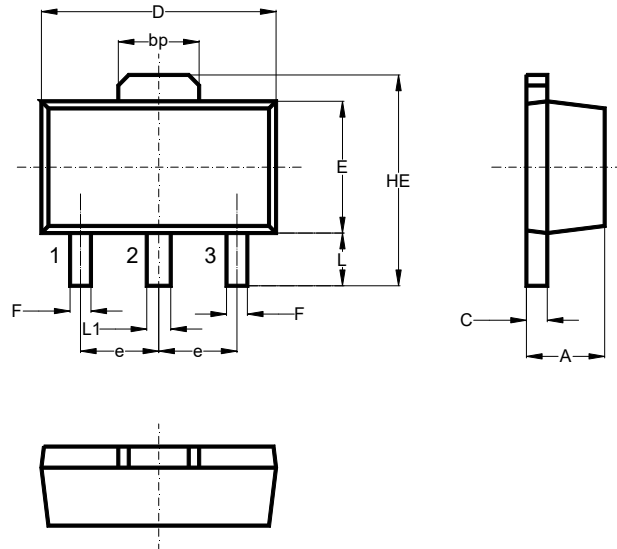
Fig. 7 Power Derating Curve



BCX53U

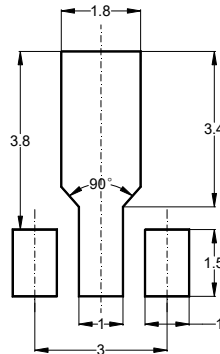
Package Outline (Dimensions in mm)

SOT-89



| Unit | A | bp | C | D | E | F | HE | e | L | L1 |
|------|-----|------|-----|-----|-----|------|------|------|------|------|
| mm | 1.6 | 1.60 | 0.5 | 4.6 | 2.6 | 0.45 | 4.25 | 1.5 | 1.05 | 0.51 |
| | 1.4 | 1.50 | 0.3 | 4.4 | 2.4 | 0.35 | 3.75 | typ. | 0.95 | 0.41 |

Recommended Soldering Footprint



Packing information

| Package | Tape Width (mm) | Pitch | | Reel Size | | Per Reel Packing Quantity |
|---------|-----------------|---------|---------------|-----------|------|---------------------------|
| | | mm | inch | mm | inch | |
| SOT-89 | 12 | 8 ± 0.1 | 0.315 ± 0.004 | 178 | 7 | 1,000 |

Marking information

"BCX53-**U" = Part No. ("**" = HFE grouping Code)

"YM" = Date Code Marking

"Y" = Year

"M" = Month

Font type: Arial

