

**Features**

- Halogen Free. "Green" Device (Note 1)
- Moisture Sensitivity Level 1
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

**Maximum Ratings @ 25°C Unless Otherwise Specified**

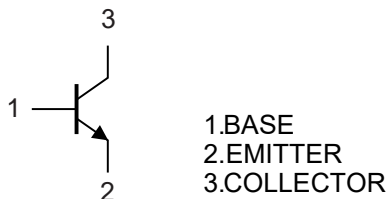
- Operating Junction Temperature Range: -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 556°C/W Junction to Ambient<sup>(Note 2)</sup>
- Thermal Resistance: 417°C/W Junction to Ambient<sup>(Note 3)</sup>

| Parameter                             | Symbol           | Rating | Unit |
|---------------------------------------|------------------|--------|------|
| Collector-Base Voltage                | V <sub>CBO</sub> | 200    | V    |
| Collector-Emitter Voltage             | V <sub>CEO</sub> | 200    | V    |
| Emitter-Base Voltage                  | V <sub>EBO</sub> | 6      | V    |
| Continuous Collector Current          | I <sub>C</sub>   | 500    | mA   |
| Power Dissipation <sup>(Note 2)</sup> | P <sub>D</sub>   | 225    | mW   |
| Power Dissipation <sup>(Note 3)</sup> | P <sub>D</sub>   | 300    | mW   |

- Note:
1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
  2. Device Mounted on FR-5 Board.
  3. Device with Alumina Substrate.

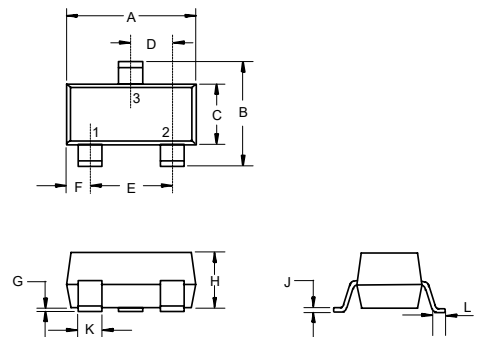
**Marking: ABX**

**Internal Structure**



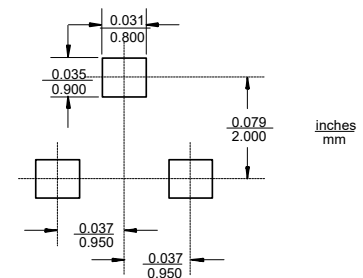
**NPN Silicon High Voltage Transistor**

**SOT-23**



| DIM | DIMENSIONS |       |      |      | NOTE |
|-----|------------|-------|------|------|------|
|     | INCHES     |       | MM   |      |      |
|     | MIN        | MAX   | MIN  | MAX  |      |
| A   | 0.110      | 0.120 | 2.80 | 3.04 |      |
| B   | 0.083      | 0.104 | 2.10 | 2.64 |      |
| C   | 0.047      | 0.055 | 1.20 | 1.40 |      |
| D   | 0.034      | 0.041 | 0.85 | 1.05 |      |
| E   | 0.067      | 0.083 | 1.70 | 2.10 |      |
| F   | 0.018      | 0.024 | 0.45 | 0.60 |      |
| G   | 0.0004     | 0.006 | 0.01 | 0.15 |      |
| H   | 0.035      | 0.043 | 0.90 | 1.10 |      |
| J   | 0.003      | 0.007 | 0.08 | 0.18 |      |
| K   | 0.012      | 0.020 | 0.30 | 0.51 |      |
| L   | 0.007      | 0.020 | 0.20 | 0.50 |      |

**Suggested Solder Pad Layout**

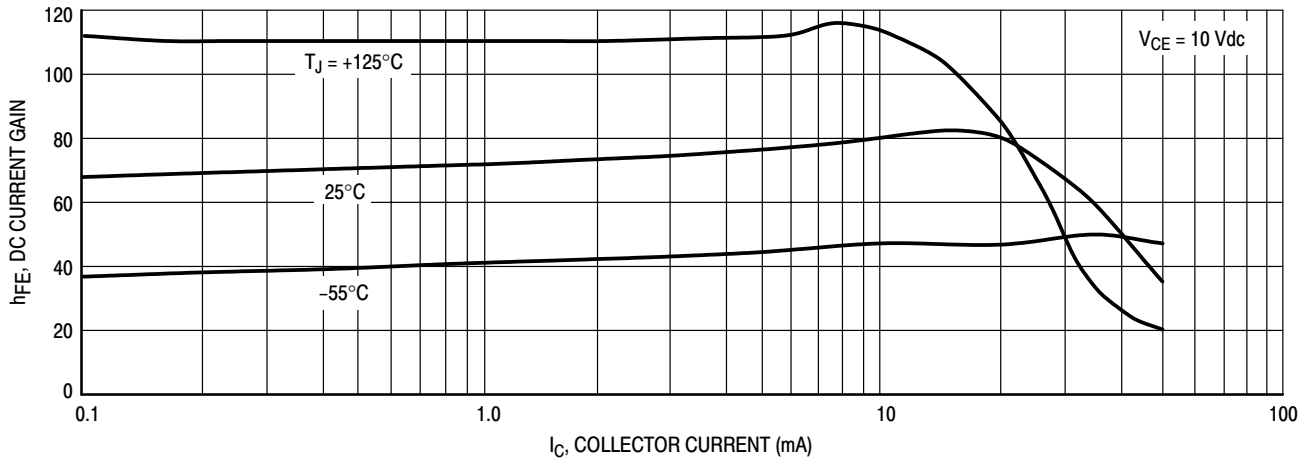


**Electrical Characteristics @  $T_A=25^\circ\text{C}$  Unless Otherwise Specified**

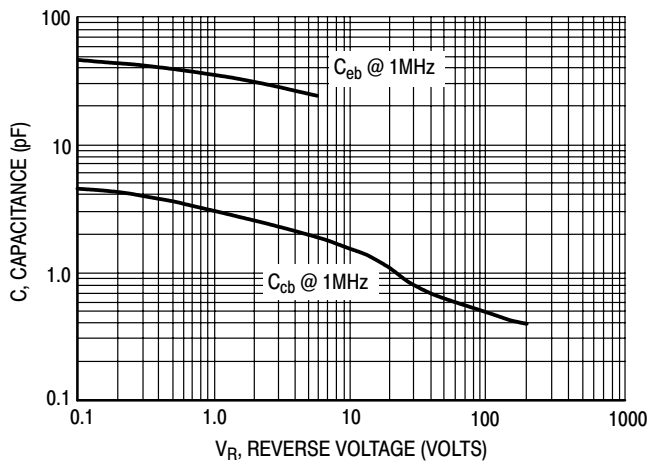
| Parameter                            | Symbol        | Min | Typ | Max | Units         | Conditions  |
|--------------------------------------|---------------|-----|-----|-----|---------------|---|
| Collector-Base Breakdown Voltage     | $V_{(BR)CBO}$ | 200 |     |     | V             | $I_C=100\mu\text{A}, I_E=0$                           |
| Collector-Emitter Breakdown Voltage* | $V_{(BR)CEO}$ | 200 |     |     | V             | $I_C=1\text{mA}, I_B=0$                               |
| Emitter-Base Breakdown Voltage       | $V_{(BR)EBO}$ | 6   |     |     | V             | $I_E=100\mu\text{A}, I_C=0$                           |
| Collector Cutoff Current             | $I_{CBO}$     |     |     | 0.1 | $\mu\text{A}$ | $V_{CB}=160\text{V}, I_E=0$                           |
| Emitter Cutoff Current               | $I_{EBO}$     |     |     | 0.1 | $\mu\text{A}$ | $V_{EB}=4\text{V}, I_C=0$                             |
| DC Current Gain*                     | $h_{FE(1)}$   | 25  |     |     |               | $V_{CE}=10\text{V}, I_C=1\text{mA}$                   |
|                                      | $h_{FE(2)}$   | 40  |     |     |               | $V_{CE}=10\text{V}, I_C=10\text{mA}$                  |
|                                      | $h_{FE(3)}$   | 40  |     |     |               | $V_{CE}=10\text{V}, I_C=30\text{mA}$                  |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ |     |     | 0.5 | V             | $I_C=20\text{mA}, I_B=2\text{mA}$                     |
| Base-Emitter Saturation Voltage      | $V_{BE(sat)}$ |     |     | 0.9 | V             | $I_C=20\text{mA}, I_B=2\text{mA}$                     |
| Transition Frequency                 | $f_T$         | 50  |     |     | MHz           | $V_{CE}=20\text{V}, I_C=10\text{mA}, f=100\text{MHz}$ |
| Collector output Capacitance         | $C_{cb}$      |     |     | 4   | pF            | $V_{CB}=20\text{V}, I_E=0, f=1\text{MHz}$             |

\*.Pulse test: Pulse Width $\leq 300\mu\text{s}$ , Duty Cycle $\leq 2.0\%$ .

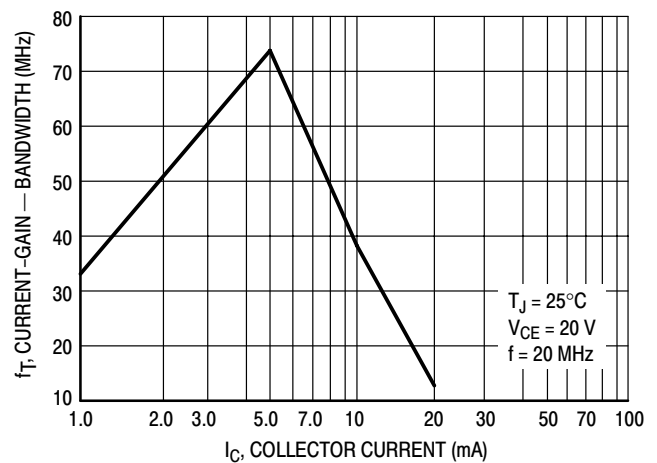
**Curve Characteristics**



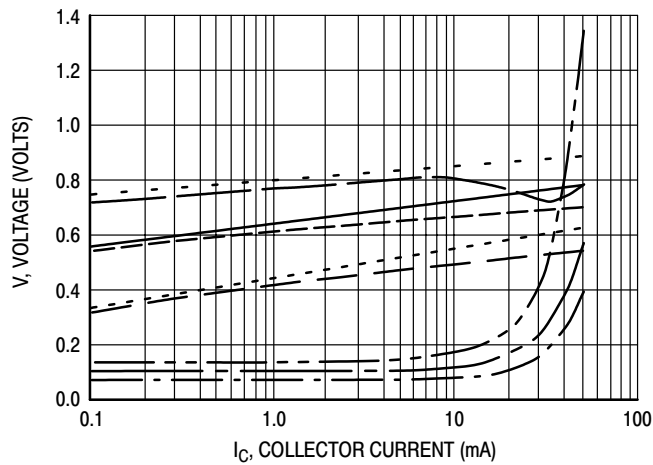
**Figure 1. DC Current Gain**



**Figure 2. Capacitance**



**Figure 3. Current-Gain - Bandwidth**



**Figure 4. "ON" Voltages**

- $V_{CE(sat)}$  @ 25°C,  $I_C/I_B = 10$
- $V_{CE(sat)}$  @ 125°C,  $I_C/I_B = 10$
- $V_{CE(sat)}$  @ -55°C,  $I_C/I_B = 10$
- $V_{BE(sat)}$  @ 25°C,  $I_C/I_B = 10$
- $V_{BE(sat)}$  @ 125°C,  $I_C/I_B = 10$
- $V_{BE(sat)}$  @ -55°C,  $I_C/I_B = 10$
- $V_{BE(on)}$  @ 25°C,  $V_{CE} = 10$  V
- $V_{BE(on)}$  @ 125°C,  $V_{CE} = 10$  V
- $V_{BE(on)}$  @ -55°C,  $V_{CE} = 10$  V

## Ordering Information

| Device         | Packing               |
|----------------|-----------------------|
| Part Number-TP | Tape&Reel: 3Kpcs/Reel |

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