

**DESCRIPTION** The 2SC2003 is designed for use in driver stage of high voltage audio equipments.

### FEATURES

- High total power dissipation.  
 $P_T$  : 600 mW
- High  $h_{FE}$  and high voltage.  
 $h_{FE}$  ( $I_C = 50$  mA) : 200 TYP.  
 $V_{CEO}$  : 80 V

### ABSOLUTE MAXIMUM RATINGS

Maximum Temperatures

Storage Temperature ..... -55 to +150 °C

Junction Temperature ..... +150 °C Maximum

Maximum Power Dissipation ( $T_a = 25$  °C)

Total Power Dissipation ..... 600 mW

Maximum Voltages and Currents ( $T_a = 25$  °C)

$V_{CBO}$  Collector to Base Voltage ..... 80 V

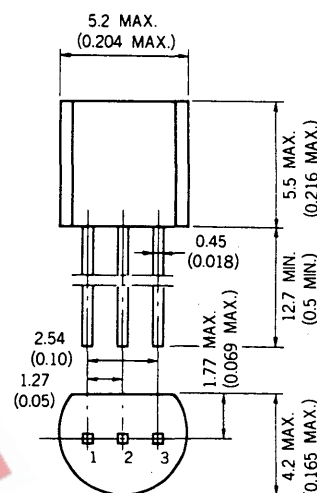
$V_{CEO}$  Collector to Emitter Voltage ..... 80 V

$V_{EBO}$  Emitter to Base Voltage ..... 5.0 V

$I_C$  Collector Current ..... 300 mA

$I_B$  Base Current ..... 60 mA

### PACKAGE DIMENSIONS in millimeters (inches)



1. EMITTER EIAJ : SC-43B  
 2. COLLECTOR JEDEC: TO-92  
 3. BASE IEC : PA33

### ELECTRICAL CHARACTERISTICS ( $T_a = 25$ °C)

| SYMBOL          | CHARACTERISTIC                | MIN. | TYP. | MAX. | UNIT | TEST CONDITIONS                              |
|-----------------|-------------------------------|------|------|------|------|----------------------------------------------|
| $h_{FE1}^*$     | DC Current Gain               | 90   | 200  | 400  | —    | $V_{CE} = 1.0$ V, $I_C = 50$ mA              |
| $h_{FE2}^*$     | DC Current Gain               | 30   | 80   |      | —    | $V_{CE} = 2.0$ V, $I_C = 300$ mA             |
| $C_{ob}$        | Collector to Base Capacitance |      | 7.0  | 15   | pF   | $V_{CB} = 6.0$ V, $I_E = 0$<br>$f = 1.0$ MHz |
| $f_T$           | Gain Bandwidth Product        | 50   | 140  |      | MHz  | $V_{CE} = 6.0$ V, $I_E = -10$ mA             |
| $V_{BE}^*$      | Base to Emitter Voltage       | 600  | 645  | 700  | mV   | $V_{CE} = 6.0$ V, $I_C = 10$ mA              |
| $V_{CE(sat)}^*$ | Collector Saturation Voltage  |      | 0.15 | 0.6  | V    | $I_C = 300$ mA, $I_B = 30$ mA                |
| $V_{BE(sat)}^*$ | Base Saturation Voltage       |      | 0.86 | 1.2  | V    | $I_C = 300$ mA, $I_B = 30$ mA                |
| $I_{CBO}$       | Collector Cutoff Current      |      |      | 100  | nA   | $V_{CB} = 80$ V, $I_E = 0$                   |
| $I_{EBO}$       | Emitter Cutoff Current        |      |      | 100  | nA   | $V_{EB} = 5.0$ V, $I_E = 0$                  |

\*Pulsed PW  $\leq 350$   $\mu$ s, duty cycle  $\leq 2.0$  %.

### Classification of $h_{FE1}$

| Rank  | M        | L         | K         |
|-------|----------|-----------|-----------|
| Range | 90 — 180 | 135 — 270 | 200 — 400 |

$h_{FE}$  Test Conditions :  $V_{CE} = 1.0$  V,  $I_C = 50$  mA

TYPICAL CHARACTERISTICS ( $T_a = 25^\circ\text{C}$  unless otherwise noted)

