

**DESCRIPTION** The 2SC2001 is designed for use in output stage of portable RADIO and cassette type tape recorder, general purpose applications.

### FEATURES

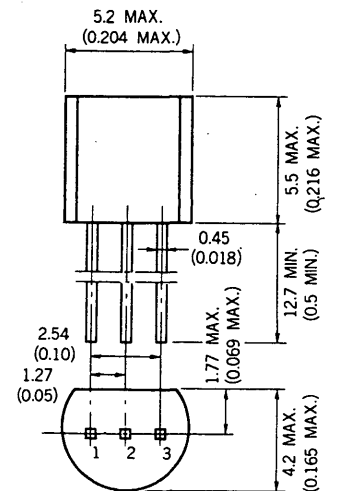
- High total power dissipation.  
 $P_T$  : 600 mW
- High  $h_{FE}$  and low  $V_{CE(sat)}$   
 $h_{FE}$  ( $I_C = 100$  mA) : 200 TYP.  
 $V_{CE(sat)}$  (700 mA) : 0.20 V TYP.

### 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            | 30 V            |
| $V_{CEO}$ Collector to Emitter Voltage         | 25 V            |
| $V_{EBO}$ Emitter to Base Voltage              | 5.0 V           |
| $I_C$ Collector Current                        | 700 mA          |
| $I_B$ Base Current                             | 150 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, $I_C = 100$ mA             |
| $h_{FE2}^*$     | DC Current Gain               | 50   | 140  |      | —    | $V_{CE} = 1.0$ V, $I_C = 700$ mA             |
| $C_{ob}$        | Collector to Base Capacitance |      | 13   | 25   | pF   | $V_{CB} = 6.0$ V, $I_E = 0$<br>$f = 1.0$ MHz |
| $f_T$           | Gain Bandwidth Product        | 50   | 170  |      | MHz  | $V_{CE} = 6.0$ V, $I_E = -10$ mA             |
| $V_{BE}^*$      | Base to Emitter Voltage       | 600  | 640  | 700  | mV   | $V_{CE} = 6.0$ V, $I_C = 10$ mA              |
| $V_{CE(sat)}^*$ | Collector Saturation Voltage  |      | 0.2  | 0.6  | V    | $I_C = 700$ mA, $I_B = 70$ mA                |
| $V_{BE(sat)}^*$ | Base Saturation Voltage       |      | 0.95 | 1.2  | V    | $I_C = 700$ mA, $I_B = 70$ mA                |
| $I_{CBO}$       | Collector Cutoff Current      |      |      | 100  | nA   | $V_{CB} = 30$ V, $I_E = 0$                   |
| $I_{EBO}$       | Emitter Cutoff Current        |      |      | 100  | nA   | $V_{EB} = 5.0$ V, $I_C = 0$                  |

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

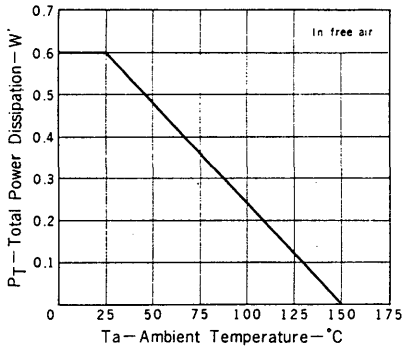
### Classification of $h_{FE1}$

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

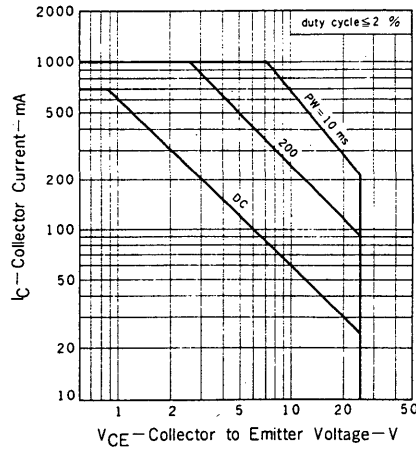
$h_{FE}$  Test Conditions :  $V_{CE} = 1.0$  V,  $I_C = 100$  mA

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

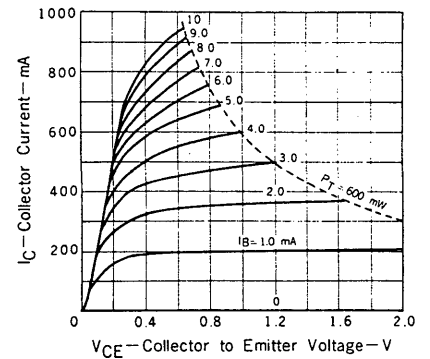
TOTAL POWER DISSIPATION  
vs. AMBIENT TEMPERATURE



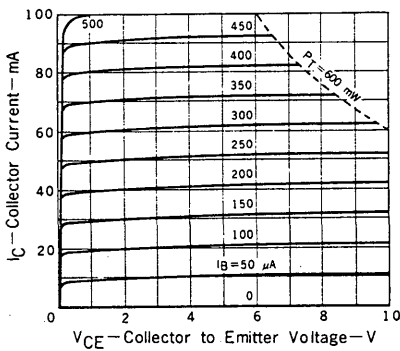
SAFE OPERATING AREAS  
(TRANSIENT THERMAL RESISTANCE)



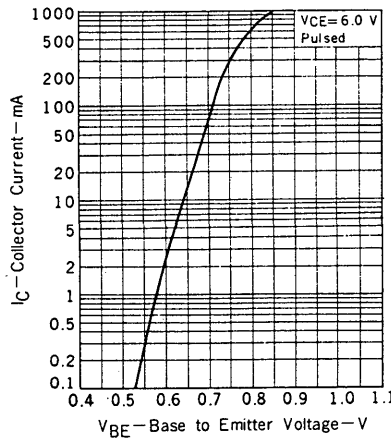
COLLECTOR CURRENT vs.  
COLLECTOR TO EMITTER VOLTAGE



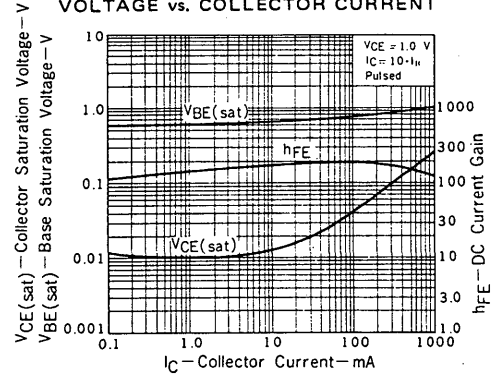
COLLECTOR CURRENT vs.  
COLLECTOR TO EMITTER VOLTAGE



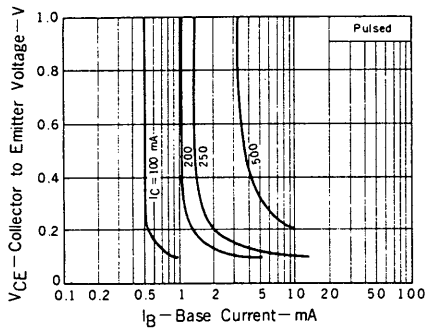
COLLECTOR CURRENT vs.  
BASE TO EMITTER VOLTAGE



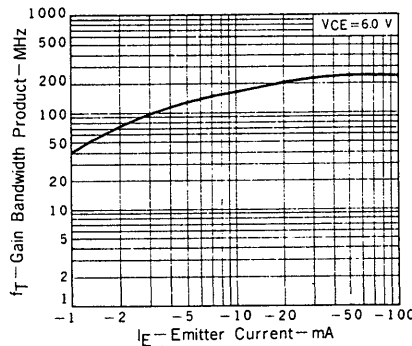
DC CURRENT GAIN,  
BASE AND COLLECTOR SATURATION  
VOLTAGE vs. COLLECTOR CURRENT



COLLECTOR TO EMITTER VOLTAGE  
vs. BASE CURRENT



GAIN BANDWIDTH PRODUCT  
vs. EMITTER CURRENT



EMITTER TO BASE AND COLLECTOR  
TO BASE CAPACITANCE vs.  
REVERSE VOLTAGE

