NEC

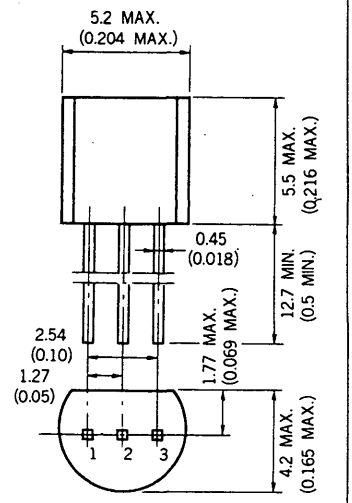
NPN SILICON TRANSISTOR
2SC2001

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.

PACKAGE DIMENSIONS
in millimeters (inches)



1. EMITTER
2. COLLECTOR
3. BASE

EIAJ : SC-43B
JEDEC: TO-92
IEC : PA33

ABSOLUTE MAXIMUM RATINGS

Maximum Temperatures

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

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

Maximum Power Dissipation (Ta = 25 °C)

Total Power Dissipation ..... 600 mW

Maximum Voltages and Currents (Ta = 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

ELECTRICAL CHARACTERISTICS (Ta = 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 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 ≦ 350 μs, duty cycle ≦ 2.0 %

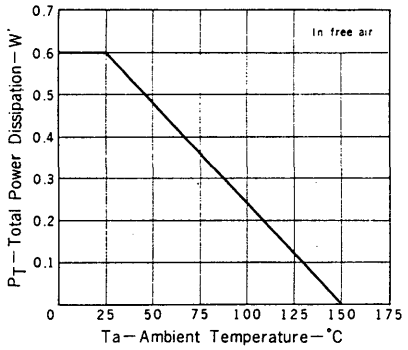
Classification of h_{FE1}

Rank	M	L	K
Range	90 – 180	135 – 270	200 – 400

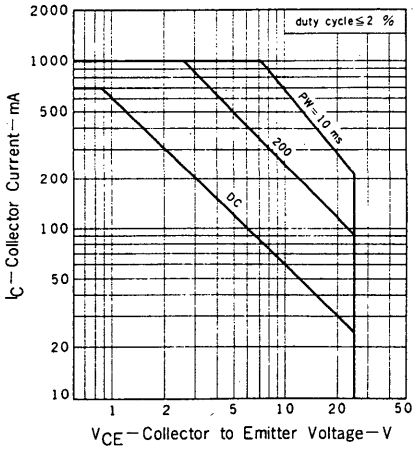
h_{FE} Test Conditions : V_{CE} = 1.0 V, I_C = 100 mA

TYPICAL CHARACTERISTICS (Ta = 25 °C unless otherwise noted)

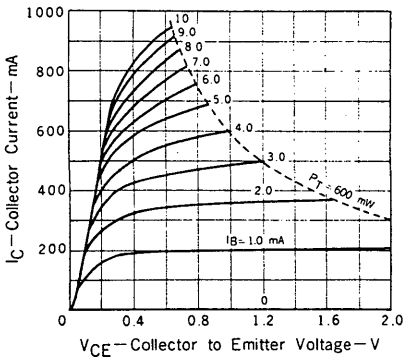
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



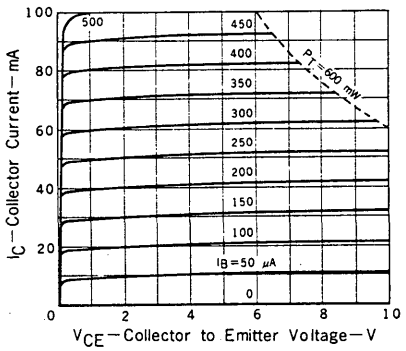
SAFE OPERATING AREAS (TRANSIENT THERMAL RESISTANCE)



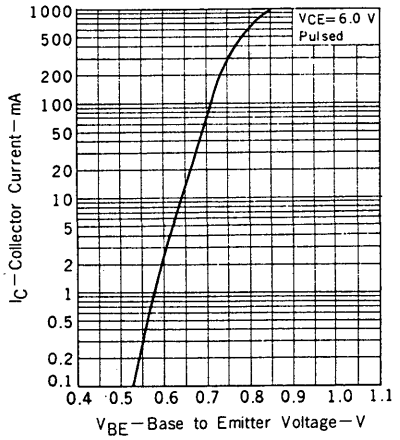
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



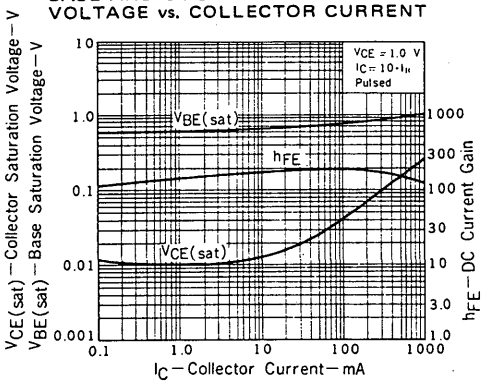
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



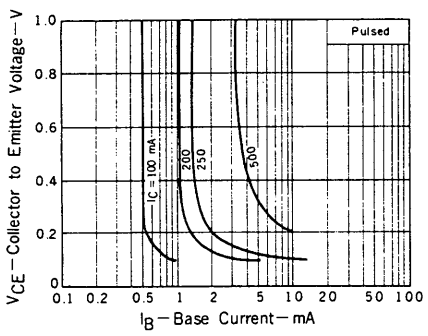
COLLECTOR CURRENT vs. BASE TO EMITTER VOLTAGE



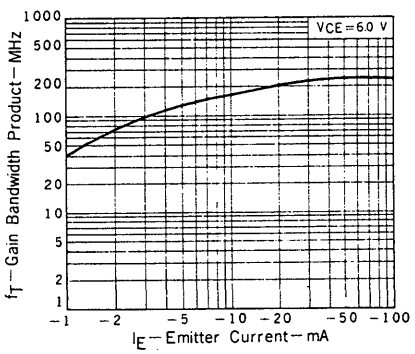
DC CURRENT GAIN, BASE AND COLLECTOR SATURATION VOLTAGE vs. COLLECTOR CURRENT



COLLECTOR TO EMITTER VOLTAGE vs. BASE CURRENT



GAIN BANDWIDTH PRODUCT vs. EMITTER CURRENT



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