NEC

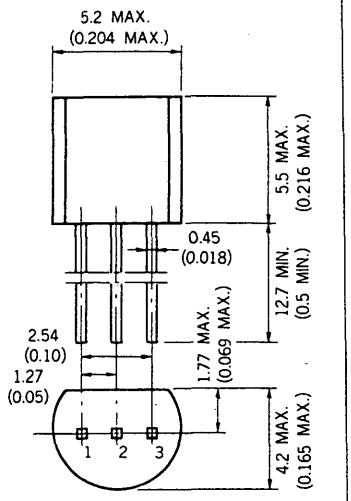
NPN SILICON TRANSISTOR
2SC2002

DESCRIPTION The 2SC2002 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} : 60 V

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 ..... 60 V

V_{CEO} Collector to Emitter Voltage ..... 60 V

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

I_C Collector Current ..... 300 mA

I_B Base Current ..... 60 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 = 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 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} = 60 V, I_E = 0
I_{EBO}	Emitter Cutoff Current			100	nA	V_{EB} = 5.0 V, I_E = 0

*Pulsed PW ≦ 350 μs, duty cycle ≦ 2.0 %.

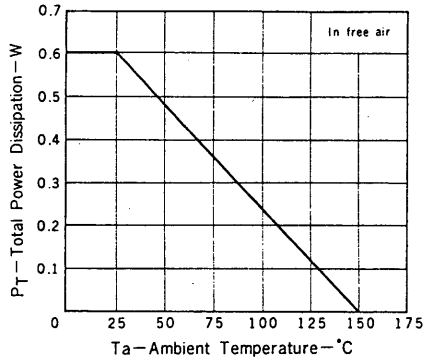
Classification of h_{FE1}

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

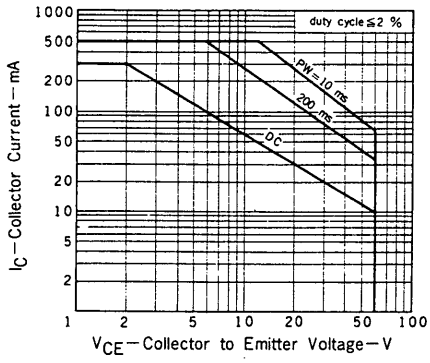
h_{FE} Test Conditions : V_{CE} = 1.0 V, I_C = 50 mA

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

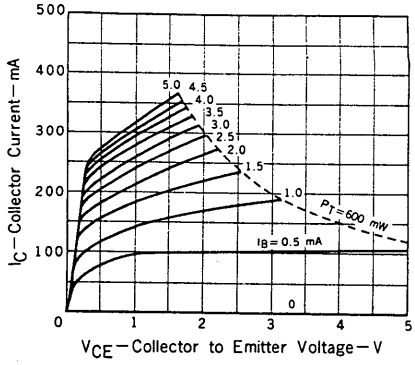
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



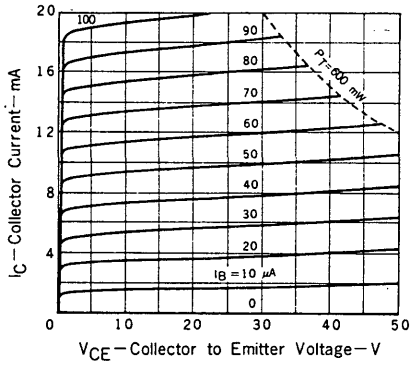
SAFE OPERATING AREAS (TRANSIENT THERMAL RESIDUANCE)



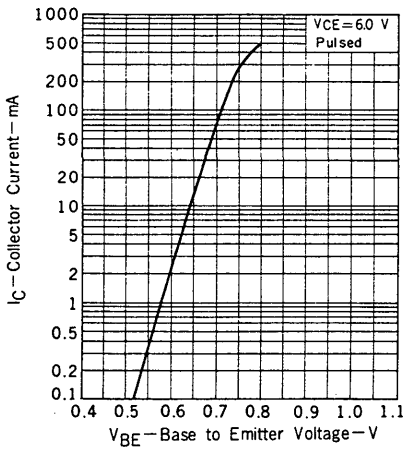
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



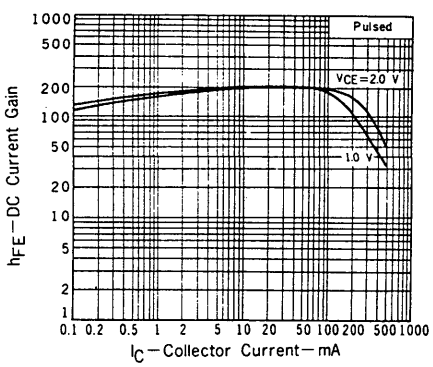
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



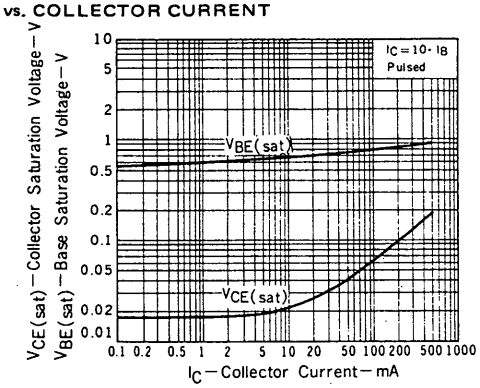
COLLECTOR CURRENT vs. BASE TO EMITTER VOLTAGE



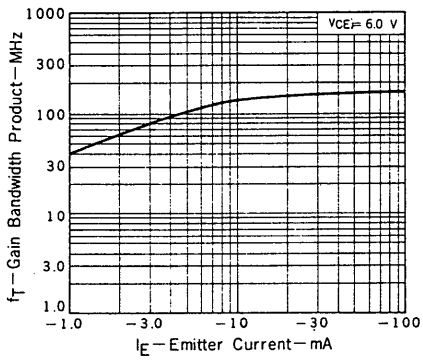
DC CURRENT GAIN vs. COLLECTOR CURRENT



BASE AND COLLECTOR SATURATION VOLTAGE vs. COLLECTOR CURRENT



GAIN BANDWIDTH PRODUCT vs. EMITTER CURRENT



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