NEC

NPN SILICON TRANSISTOR

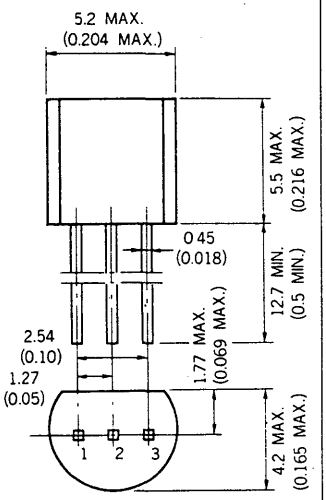
2SC1844

DESCRIPTION The 2SC1844 is the best for the head amplifier of tape recorders, the equalizer of moving coil type record players, and etc.

FEATURES

- Super Low Noise. NV : 30 mV TYP. (See test circuit.)
- High h_{FE}. h_{FE} : 400 TYP. (V_{CE} = 6.0 V, I_C = 1.0 mA)
- Complementary to 2SA991.

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 +125 °C
- Junction Temperature . . . . . +125 °C Maximum

Maximum Power Dissipation (Ta = 25 °C)

- Total Power Dissipation . . . . . 500 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 . . . . . 100 mA
- I_B Base Current . . . . . 20 mA

ELECTRICAL CHARACTERISTICS (Ta = 25 °C)

SYMBOL	CHARACTERISTIC	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
h_{FE1}	DC Current Gain	150	370		–	V_{CE} = 6.0 V, I_C = 0.1 mA
h_{FE2}	DC Current Gain	200	400	800	–	V_{CE} = 6.0 V, I_C = 1.0 mA
f_T	Gain Bandwidth Product	50	100		MHz	V_{CE} = 6.0 V, I_E = −1.0 mA
Cob	Output Capacitance		4.8	8.0	pF	V_{CB} = 10 V, I_E = 0, f = 1.0 MHz
NV	Noise Voltage		30	45	mV	V_{CE} = 5.0 V, I_C = 1.0 mA, R_G = 100 kΩ G_V = 80 dB, f = 10 Hz to 1.0 kHz
I_{CBO}	Collector Cutoff Current			50	nA	V_{CB} = 60 V, I_E = 0
I_{EBO}	Emitter Cutoff Current			50	nA	V_{EB} = 5.0 V, I_C = 0
V_{BE}	Base to Emitter Voltage	0.55	0.59	0.65	V	V_{CE} = 6.0 V, I_C = 1.0 mA
$V_{CE(sat)}$	Collector Saturation Voltage		0.13	0.30	V	I_C = 100 mA, I_B = 10 mA

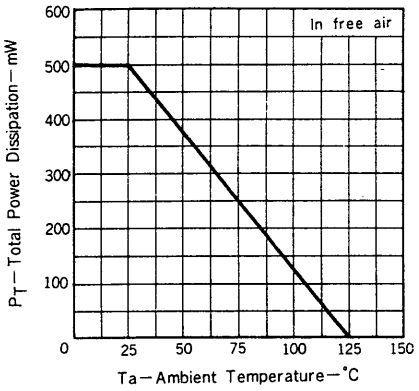
Classification of h_{FE2}

Rank	P	F	E
Range	200 – 400	300 – 600	400 – 800

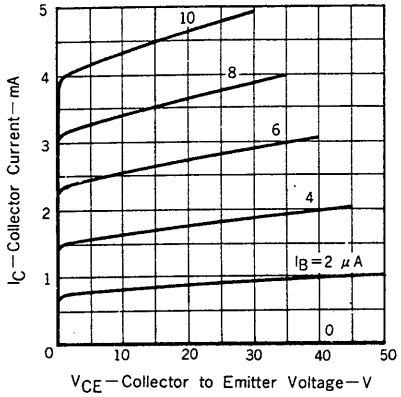
h_{FE} Test Conditions : V_{CE} = 6.0 V, I_C = 1.0 mA

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

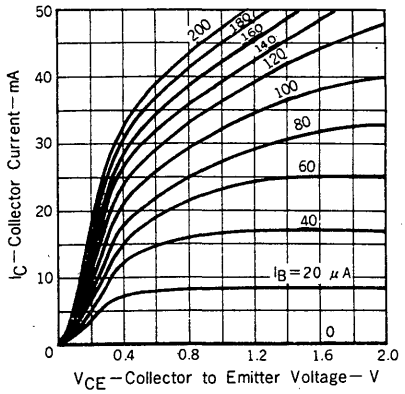
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



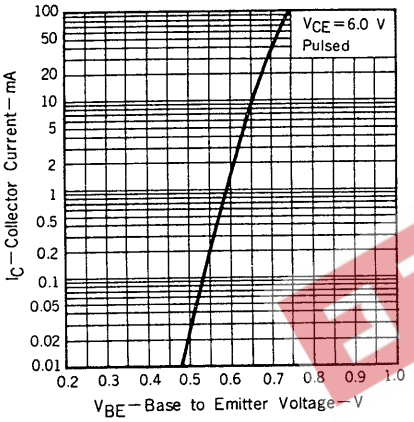
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



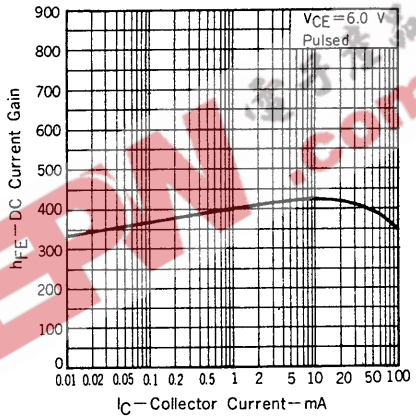
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



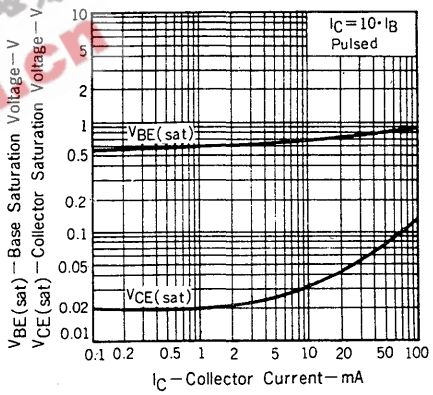
COLLECTOR CURRENT vs. BASE TO EMITTER VOLTAGE



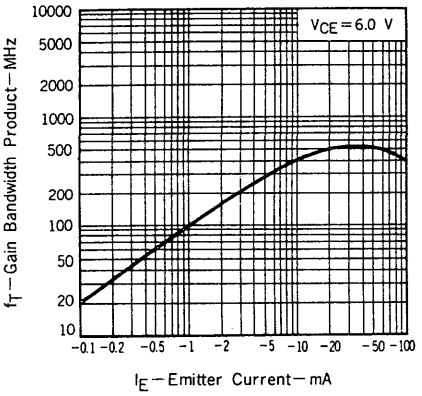
DC CURRENT GAIN vs. COLLECTOR CURRENT



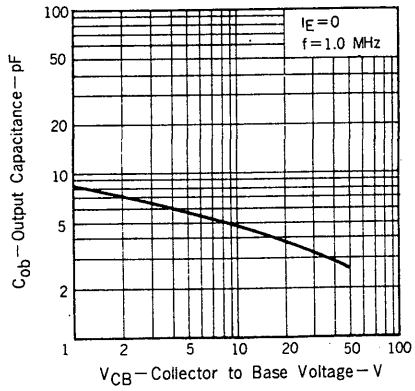
COLLECTOR AND BASE SATURATION VOLTAGE vs. COLLECTOR CURRENT



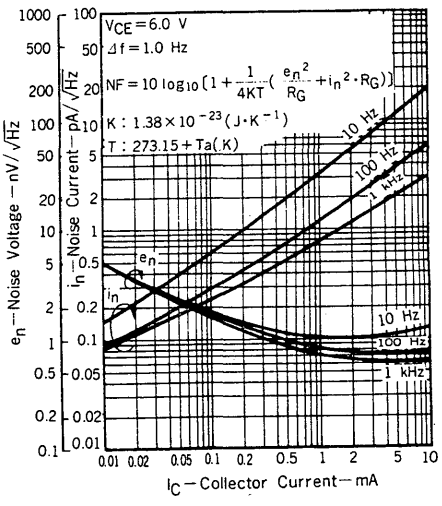
GAIN BANDWIDTH PRODUCT vs. EMITTER CURRENT



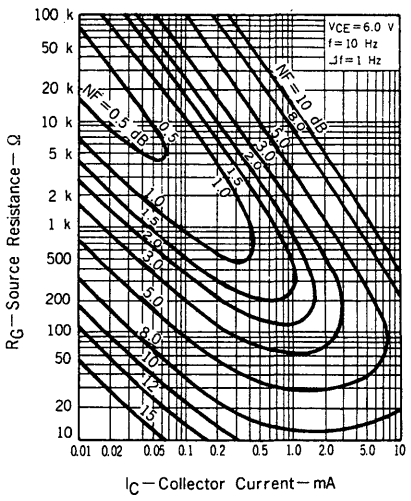
OUTPUT CAPACITANCE vs. COLLECTOR TO BASE VOLTAGE



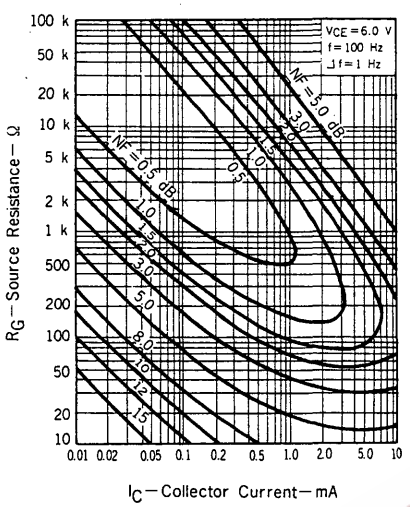
e_n AND i_n vs. COLLECTOR CURRENT



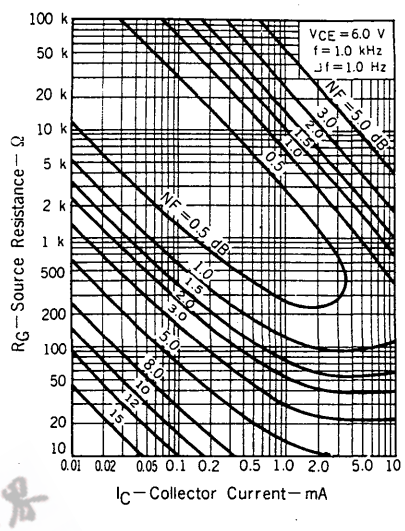
NOISE FIGURE MAP



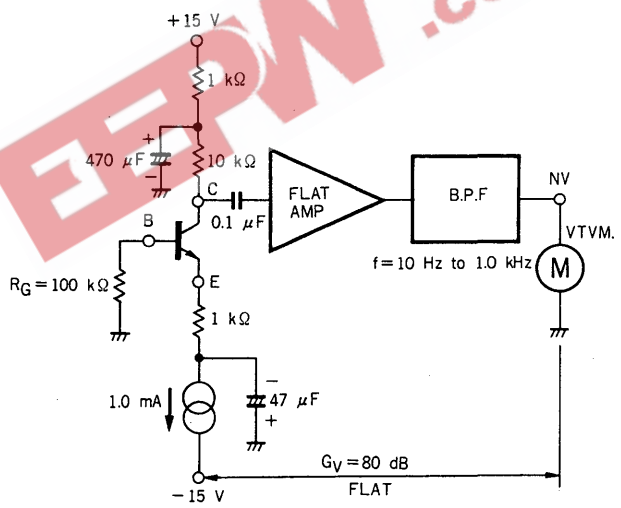
NOISE FIGURE MAP 2



NOISE FIGURE MAP 3



NOISE VOLTAGE TEST CIRCUIT



$V_{CE} \fallingdotseq 5$ V, $I_C = 1.0$ mA, $R_G = 100$ kΩ, $G_V = 80$ dB FLAT (f = 10 Hz to 1.0 kHz)