NEC

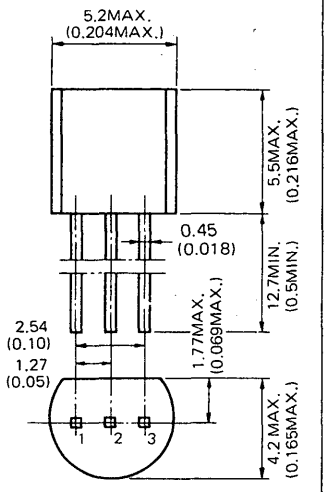
NPN SILICON TRANSISTOR
2SC1843

DESCRIPTION The 2SC1843 is designed for use in an AF amplifier of low level low noise and general purpose.

FEATURES

- High h_{FE}. h_{FE} : 400 TYP. (V_{CE} = 6.0 V, I_C = 1.0 mA)
- Low Noise Voltage. NV : 30 mV TYP. (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)

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 . . . . . 250 mW

Maximum Voltages and Currents (Ta = 25 °C)

- V_{CBO} Collector to Base Voltage . . . . . 60 V
- V_{CEO} Collector to Emitter Voltage . . . . . 50 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	150	250		MHz	V_{CE} = 6.0 V, I_E = −10 mA
C_{ob}	Output Capacitance		3.0	4.0	pF	V_{CB} = 6.0 V, I_E = 0, f = 1.0 MHz
NV	Noise Voltage		30	40	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			100	nA	V_{CB} = 60 V, I_E = 0
I_{EBO}	Emitter Cutoff Current			100	nA	V_{EB} = 5.0 V, I_C = 0
V_{BE}	Base to Emitter Voltage	0.55	0.60	0.65	V	V_{CE} = 6.0 V, I_C = 1.0 mA
$V_{CE(sat)}$	Collector Saturation Voltage		0.15	0.30	V	I_C = 100 mA, I_B = 10 mA
$V_{BE(sat)}$	Base Saturation Voltage		0.86	1.0	V	I_C = 100 mA, I_B = 10 mA

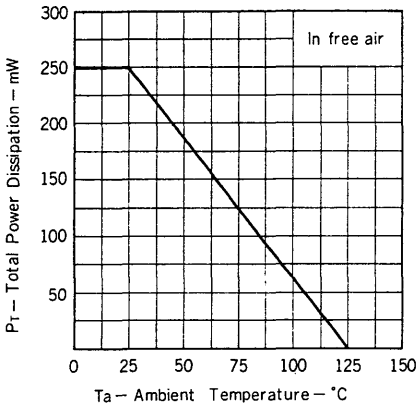
Classification of h_{FE2}

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

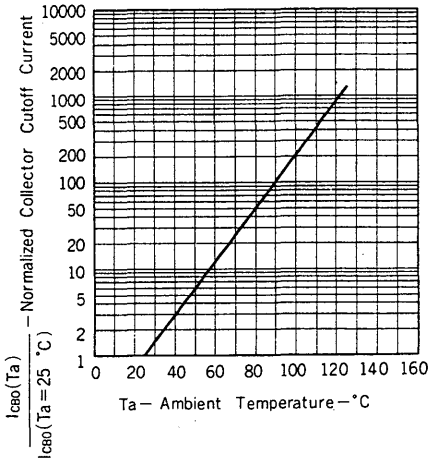
h_{FE} Test Conditions : V_{CE} = 6.0 V, I_C = 1.0 mA

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

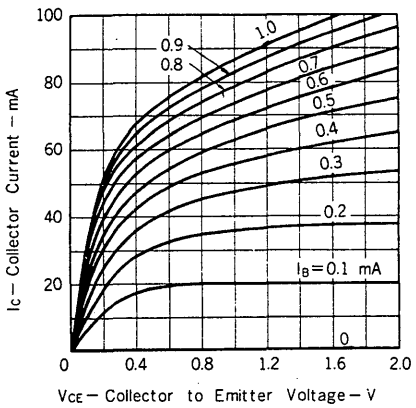
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



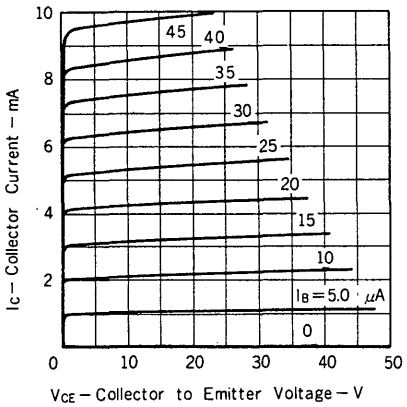
NORMALIZED COLLECTOR CUTOFF CURRENT vs. AMBIENT TEMPERATURE



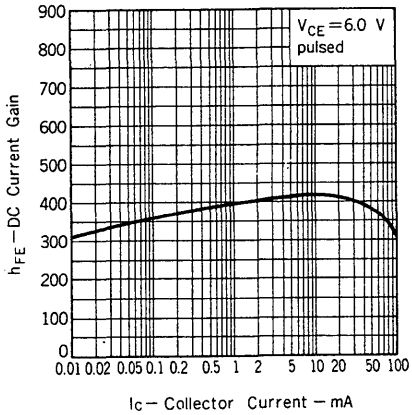
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



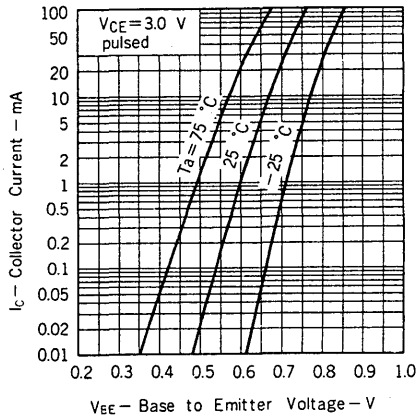
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



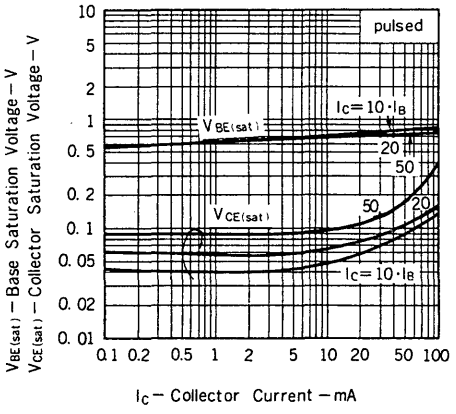
DC CURRENT GAIN vs. COLLECTOR CURRENT



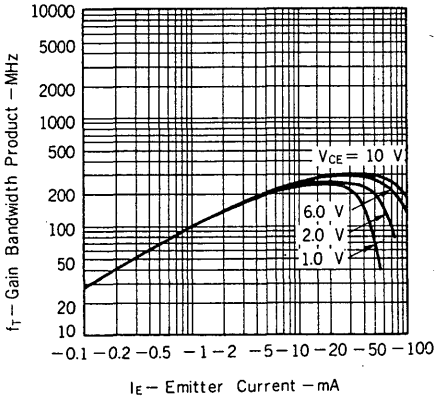
COLLECTOR CURRENT vs. BASE TO EMITTER VOLTAGE



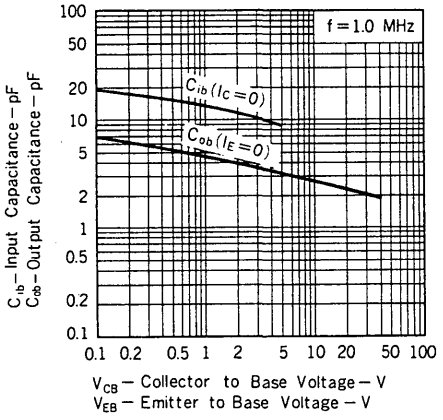
COLLECTOR AND BASE SATURATION VOLTAGE vs. COLLECTOR CURRENT



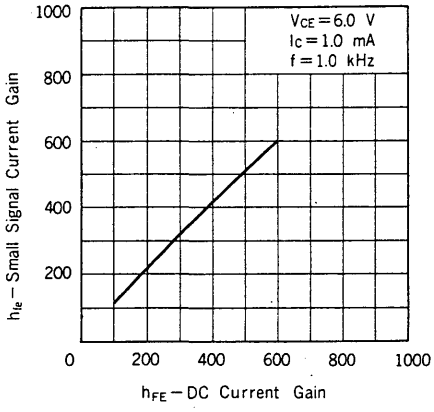
GAIN BANDWIDTH PRODUCT vs. EMITTER CURRENT



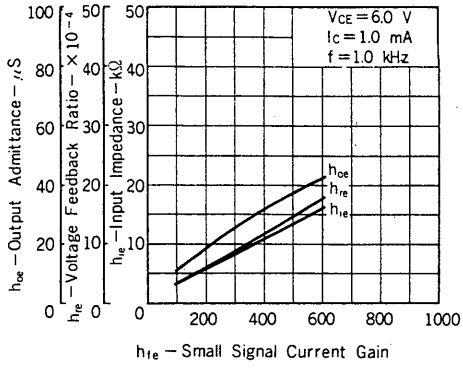
INPUT AND OUTPUT CAPACITANCE vs. REVERSE VOLTAGE



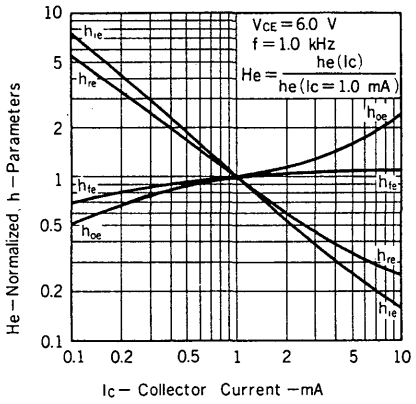
SMALL SIGNAL CURRENT GAIN vs. DC CURRENT GAIN



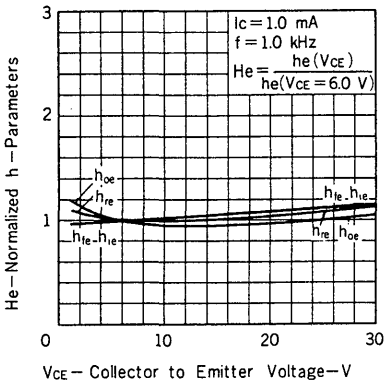
INPUT IMPEDANCE, VOLTAGE FEEDBACK RATIO AND OUTPUT ADMITTANCE vs. SMALL SIGNAL CURRENT GAIN



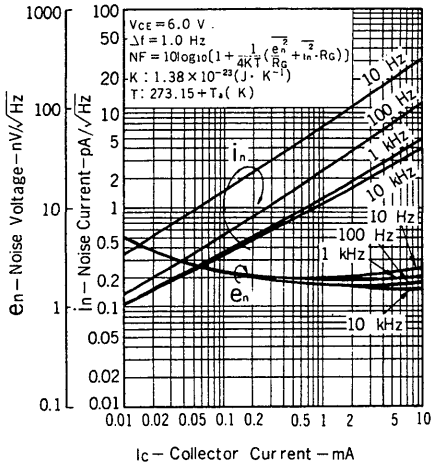
NORMALIZED h-PARAMETERS vs. COLLECTOR CURRENT



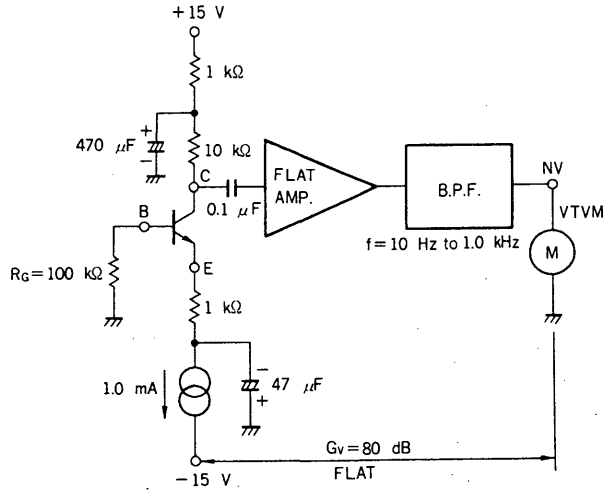
NORMALIZED h-PARAMETERS vs. COLLECTOR TO EMITTER VOLTAGE



e_n AND i_n vs. COLLECTOR CURRENT



NOISE VOLTAGE TEST CIRCUIT



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