

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} : $h_{FE} : 400 \text{ TYP. } (V_{CE} = 6.0 \text{ V, } I_C = 1.0 \text{ mA})$
- Low Noise Voltage. NV : $30 \text{ mV TYP. } (V_{CE} = 5.0 \text{ V, } I_C = 1.0 \text{ mA, } R_G = 100 \text{ k}\Omega, G_v = 80 \text{ dB, } f = 10 \text{ Hz to } 1.0 \text{ kHz})$

ABSOLUTE MAXIMUM RATINGS

Maximum Temperatures

Storage Temperature $-55 \text{ to } +125^\circ\text{C}$

Junction Temperature $+125^\circ\text{C}$ Maximum

Maximum Power Dissipation ($T_a = 25^\circ\text{C}$)

Total Power Dissipation 250 mW

Maximum Voltages and Currents ($T_a = 25^\circ\text{C}$)

V_{CBO} Collector to Base Voltage 60 V

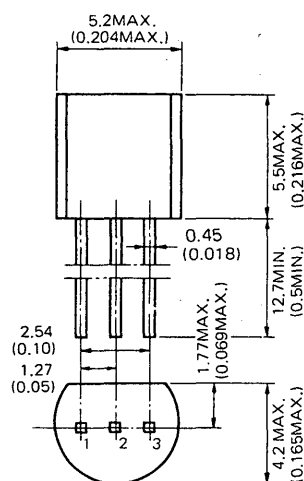
V_{CEO} Collector to Emitter Voltage 50 V

V_{EBO} Emitter to Base Voltage 5.0 V

I_C Collector Current 100 mA

I_B Base Current 20 mA

PACKAGE DIMENSIONS in millimeters (inches)



1. EMITTER EIAJ : SC-43B
2. COLLECTOR JEDEC : TO-92
3. BASE IEC : PA33

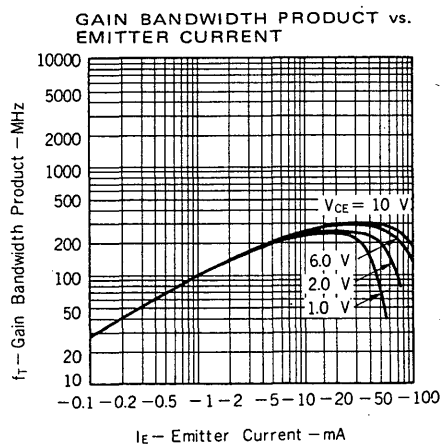
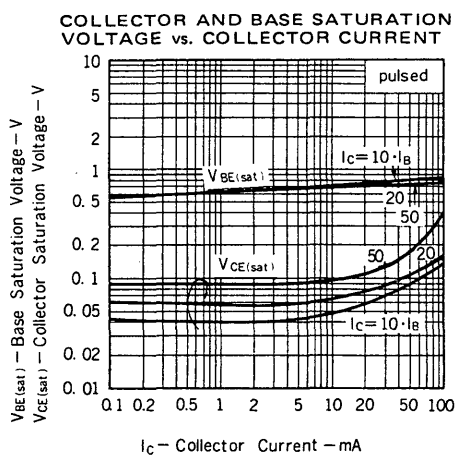
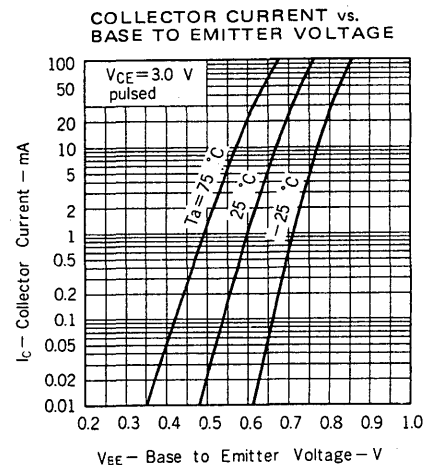
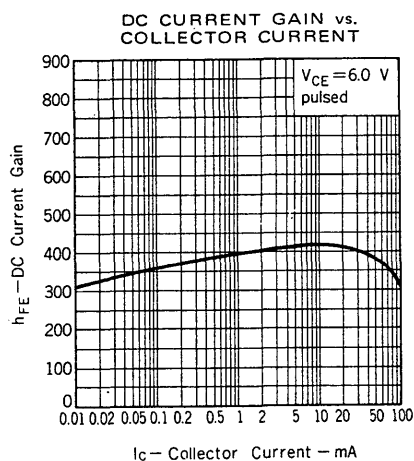
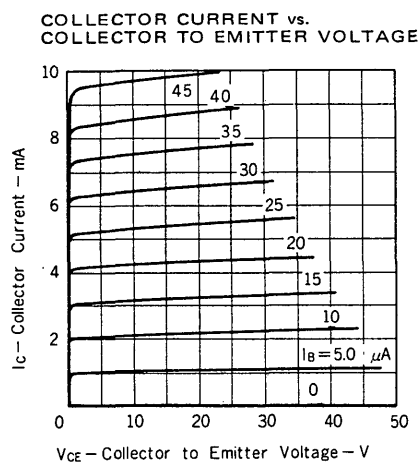
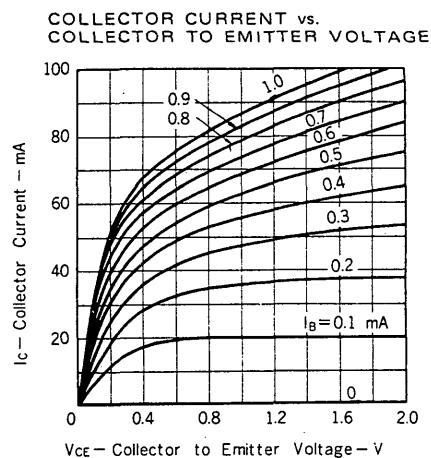
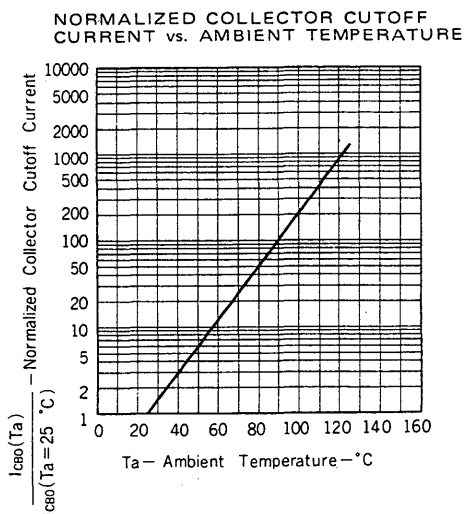
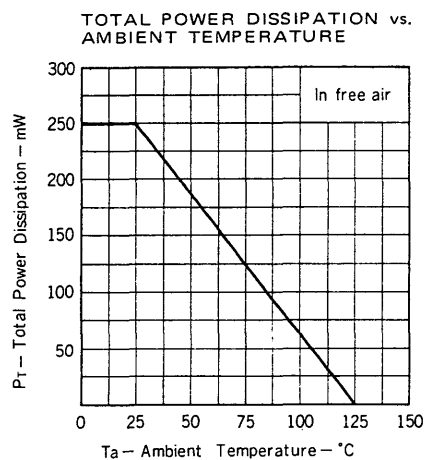
ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

SYMBOL	CHARACTERISTIC	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
h_{FE1}	DC Current Gain	150	370		—	$V_{CE} = 6.0 \text{ V, } I_C = 0.1 \text{ mA}$
h_{FE2}	DC Current Gain	200	400	800	—	$V_{CE} = 6.0 \text{ V, } I_C = 1.0 \text{ mA}$
f_T	Gain Bandwidth Product	150	250		MHz	$V_{CE} = 6.0 \text{ V, } I_E = -10 \text{ mA}$
C_{ob}	Output Capacitance		3.0	4.0	pF	$V_{CB} = 6.0 \text{ V, } I_E = 0, f = 1.0 \text{ MHz}$
NV	Noise Voltage		30	40	mV	$V_{CE} = 5.0 \text{ V, } I_C = 1.0 \text{ mA, } R_G = 100 \text{ k}\Omega, G_v = 80 \text{ dB, } f = 10 \text{ Hz to } 1.0 \text{ kHz}$
I_{CBO}	Collector Cutoff Current			100	nA	$V_{CB} = 60 \text{ V, } I_E = 0$
I_{EBO}	Emitter Cutoff Current			100	nA	$V_{EB} = 5.0 \text{ V, } I_C = 0$
V_{BE}	Base to Emitter Voltage	0.55	0.60	0.65	V	$V_{CE} = 6.0 \text{ V, } I_C = 1.0 \text{ mA}$
$V_{CE(sat)}$	Collector Saturation Voltage		0.15	0.30	V	$I_C = 100 \text{ mA, } I_B = 10 \text{ mA}$
$V_{BE(sat)}$	Base Saturation Voltage		0.86	1.0	V	$I_C = 100 \text{ mA, } I_B = 10 \text{ mA}$

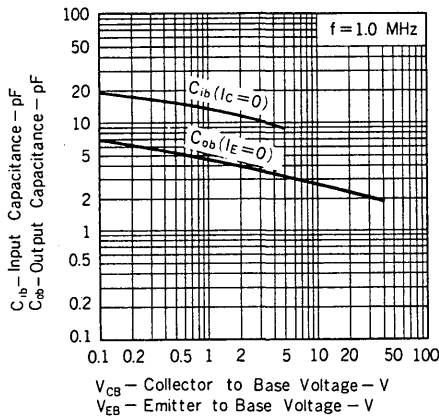
Classification of h_{FE2}

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

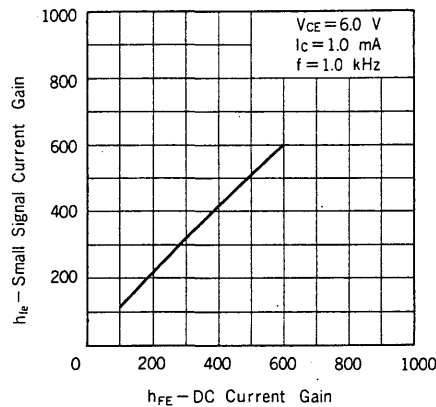
h_{FE} Test Conditions : $V_{CE} = 6.0 \text{ V, } I_C = 1.0 \text{ mA}$

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

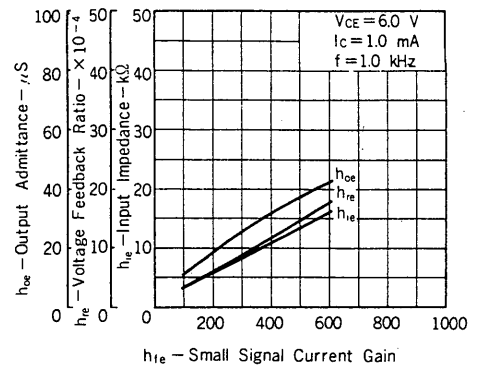
INPUT AND OUTPUT CAPACITANCE vs. REVERSE VOLTAGE



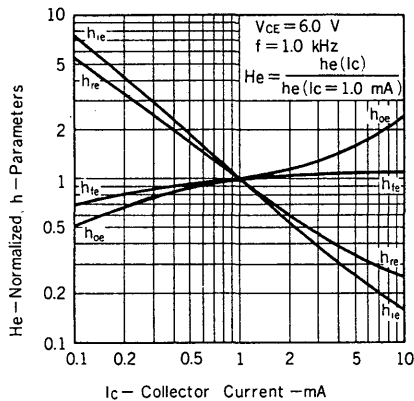
SMALL SIGNAL CURRENT GAIN vs. DC CURRENT GAIN



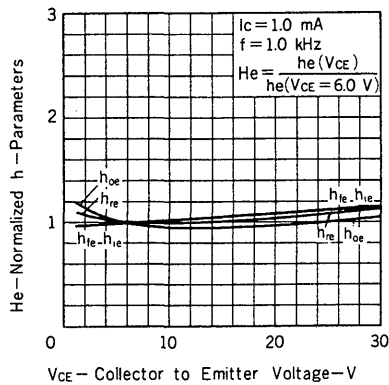
INPUT IMPEDANCE, VOLTAGE FEEDBACK RATIO AND OUTPUT ADMITTANCE vs. SMALL SIGNAL CURRENT GAIN



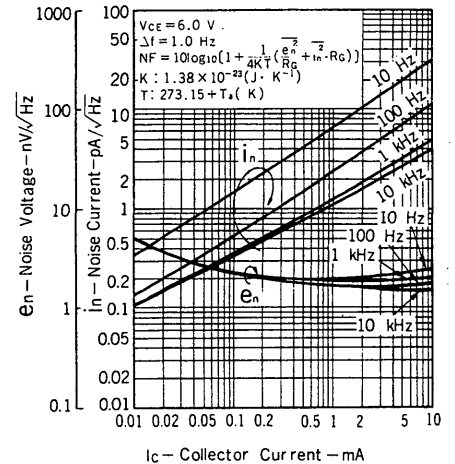
NORMALIZED h-PARAMETERS vs. COLLECTOR CURRENT



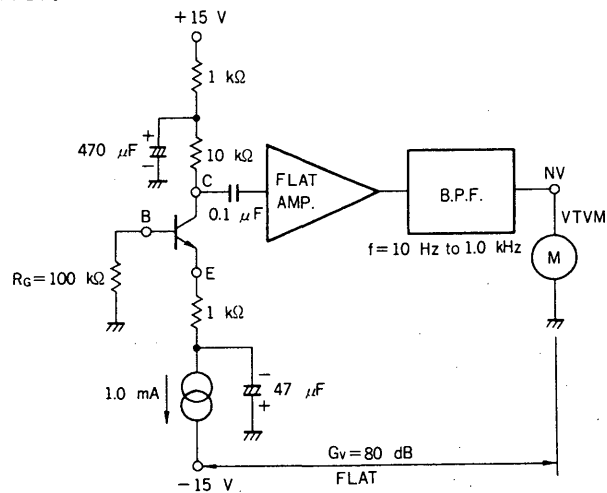
NORMALIZED h-PARAMETERS vs. COLLECTOR TO EMITTER VOLTAGE



e_n AND i_n vs. COLLECTOR CURRENT



NOISE VOLTAGE TEST CIRCUIT



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