

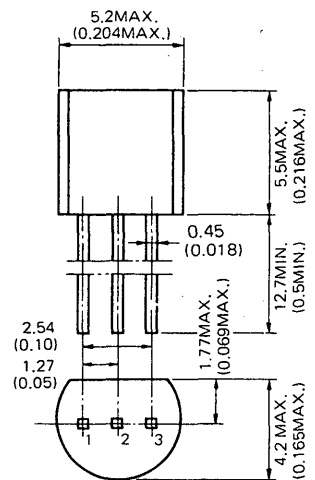
**DESCRIPTION** The 2SC1843 is designed for use in an AF amplifier of low level low noise and general purpose.

- 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 to +125 °C  |
| Junction Temperature                                    | +125 °C Maximum |
| Maximum Power Dissipation ( $T_a = 25 \text{ °C}$ )     |                 |
| Total Power Dissipation                                 | 250 mW          |
| Maximum Voltages and Currents ( $T_a = 25 \text{ °C}$ ) |                 |
| $V_{CBO}$ 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 ( $T_a = 25 \text{ °C}$ )**

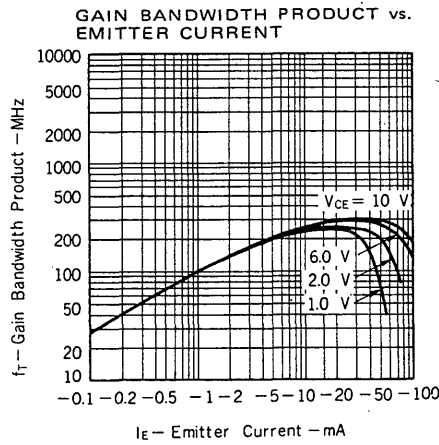
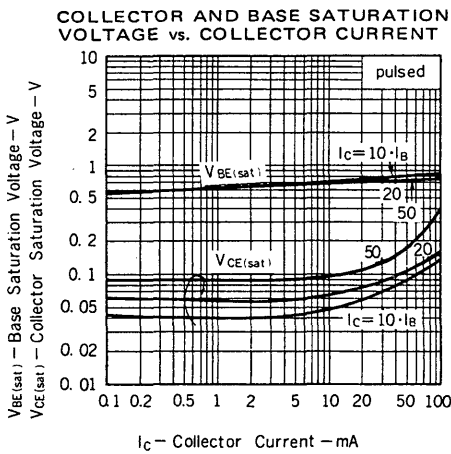
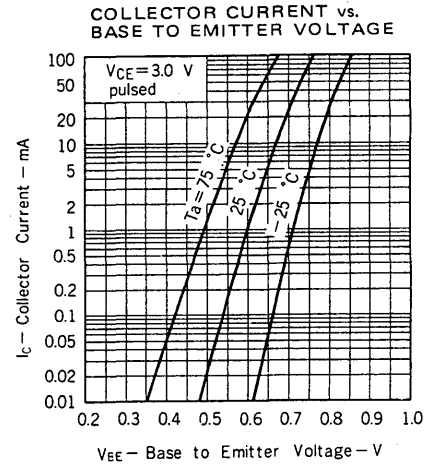
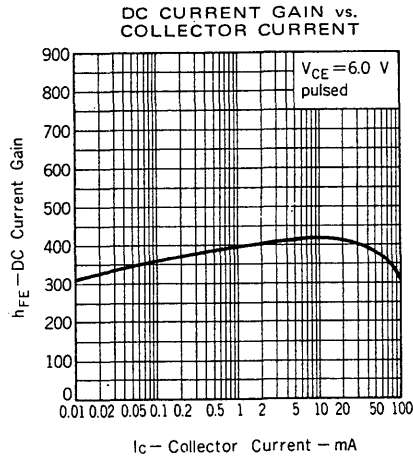
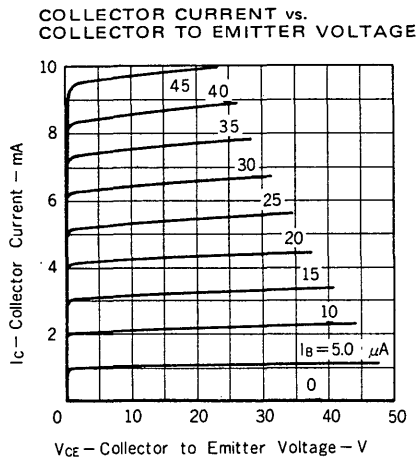
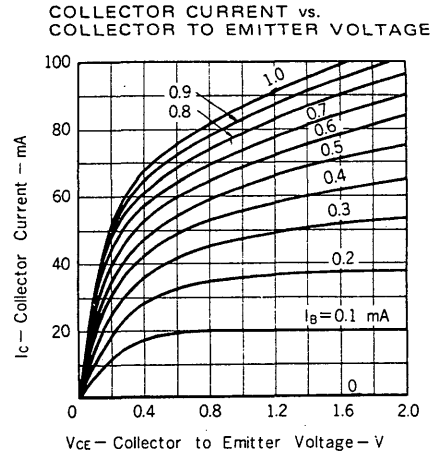
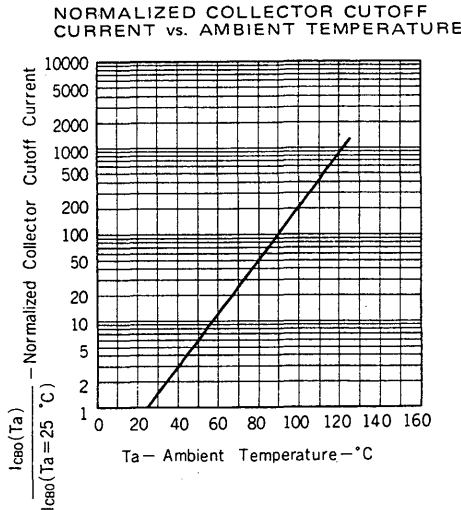
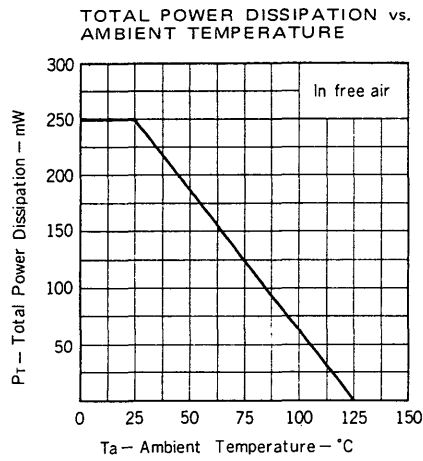
| SYMBOL        | CHARACTERISTIC               | MIN. | TYP. | MAX. | UNIT | TEST CONDITIONS  |
|---------------|------------------------------|------|------|------|------|--|
| $h_{FE1}$     | DC Current Gain              | 150  | 370  |      | -    | $V_{CE} = 6.0 \text{ V, } I_C = 0.1 \text{ mA}$  |
| $h_{FE2}$     | 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  $h_{FE2}$**

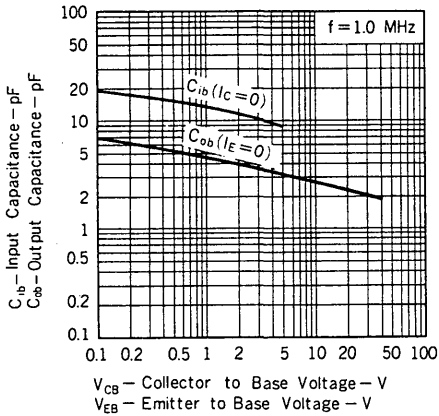
| Rank  | P         | F         | E         |
|-------|-----------|-----------|-----------|
| Range | 200 - 400 | 300 - 600 | 400 - 800 |

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

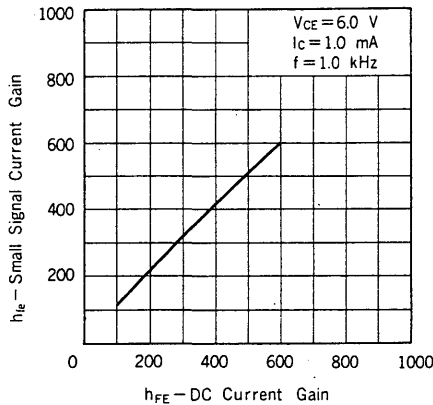
TYPICAL CHARACTERISTICS ( $T_a = 25^\circ\text{C}$  unless otherwise noted)



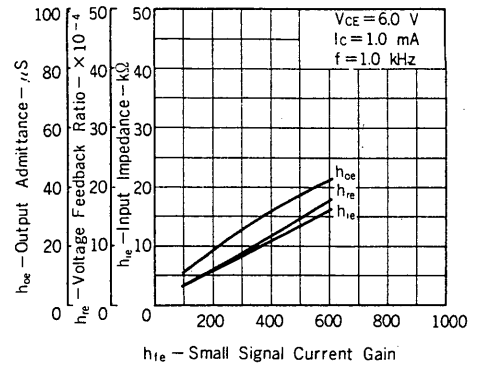
INPUT AND OUTPUT CAPACITANCE vs. REVERSE VOLTAGE



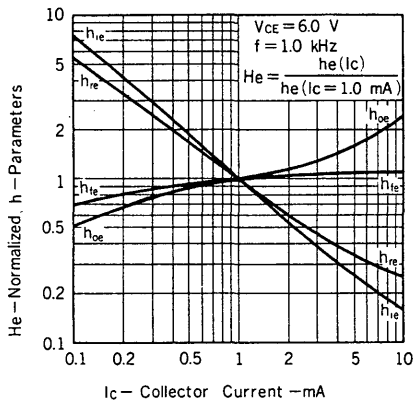
SMALL SIGNAL CURRENT GAIN vs. DC CURRENT GAIN



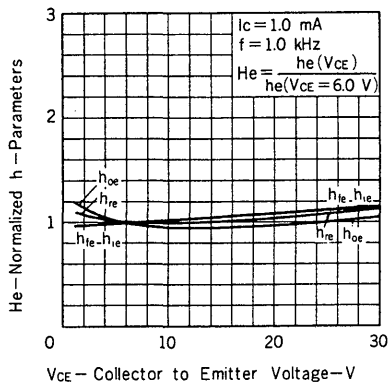
INPUT IMPEDANCE, VOLTAGE FEEDBACK RATIO AND OUTPUT ADMITTANCE vs. SMALL SIGNAL CURRENT GAIN



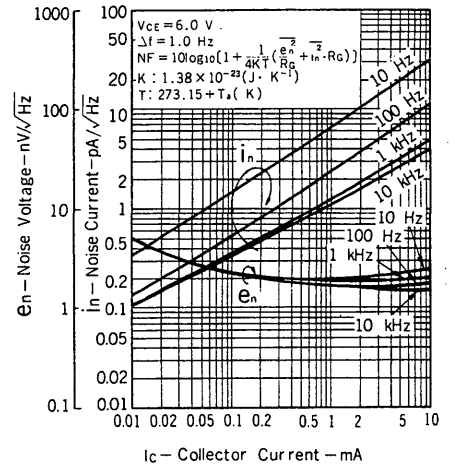
NORMALIZED h-PARAMETERS vs. COLLECTOR CURRENT



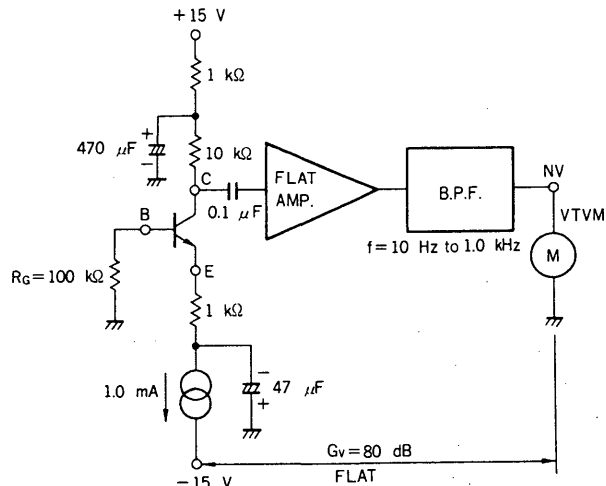
NORMALIZED h-PARAMETERS vs. COLLECTOR TO EMITTER VOLTAGE



e\_n AND i\_n vs. COLLECTOR CURRENT



NOISE VOLTAGE TEST CIRCUIT



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