

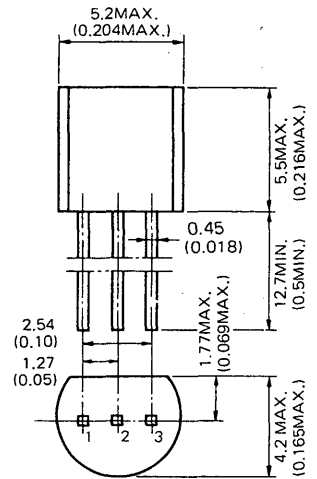
**DESCRIPTION** The 2SC1843 is designed for use in an AF amplifier of low level low noise and general purpose.

- 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 ( $T_a = 25 \text{ °C}$ )**

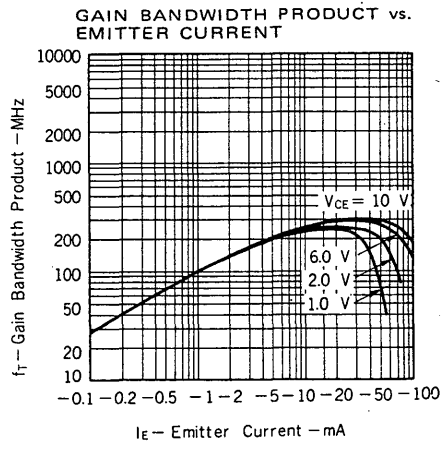
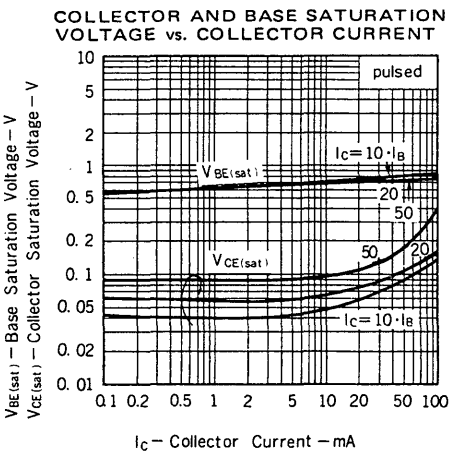
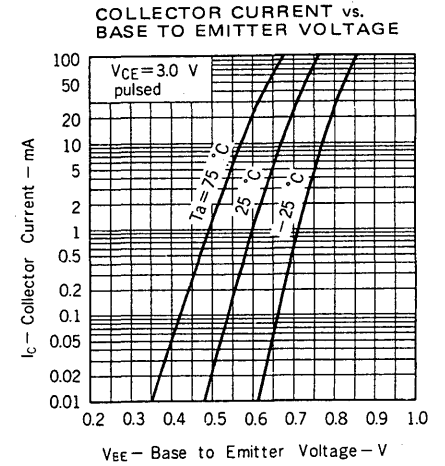
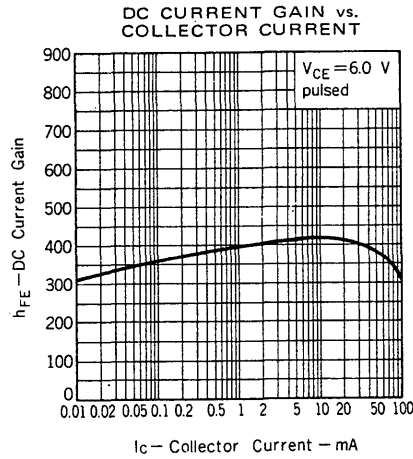
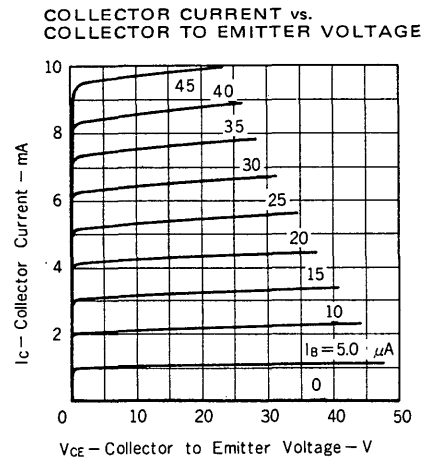
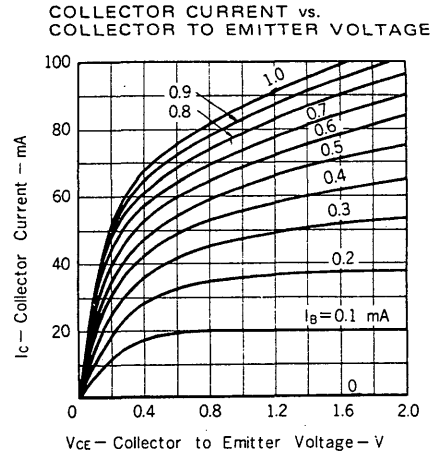
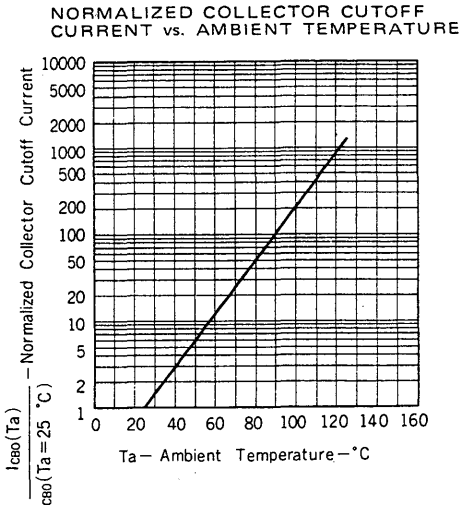
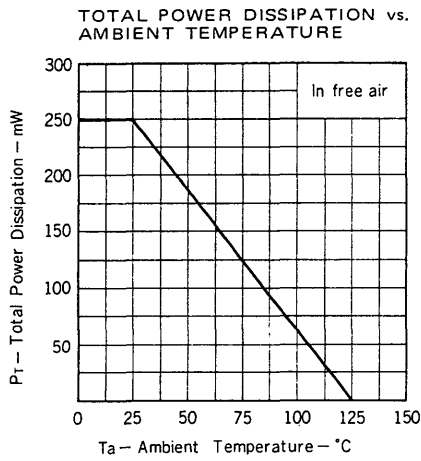
SYMBOL	CHARACTERISTIC	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
$h_{FE1}$	DC Current Gain	150	370		-	$V_{CE} = 6.0 \text{ V, } I_C = 0.1 \text{ mA}$
$h_{FE2}$	DC Current Gain	200	400	800	-	$V_{CE} = 6.0 \text{ V, } I_C = 1.0 \text{ mA}$
$f_T$	Gain Bandwidth Product	150	250		MHz	$V_{CE} = 6.0 \text{ V, } I_E = -10 \text{ mA}$
$C_{ob}$	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  $h_{FE2}$**

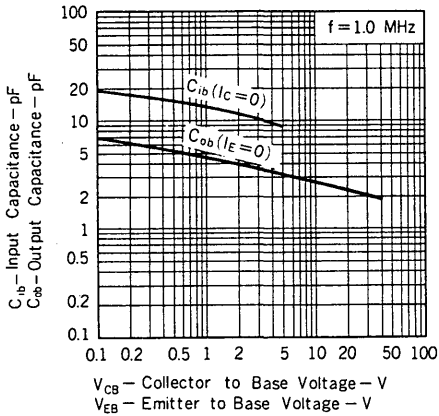
Rank	P	F	E
Range	200 - 400	300 - 600	400 - 800

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

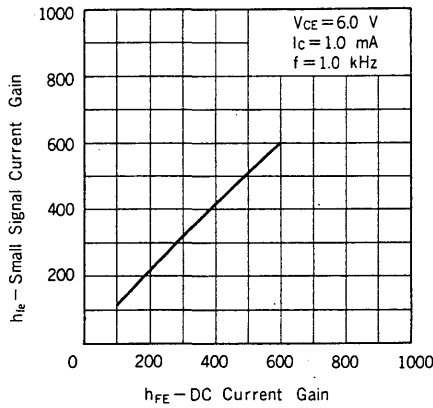
TYPICAL CHARACTERISTICS ( $T_a = 25^\circ\text{C}$  unless otherwise noted)



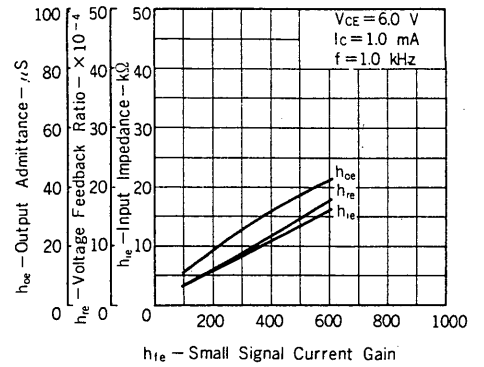
INPUT AND OUTPUT CAPACITANCE vs. REVERSE VOLTAGE



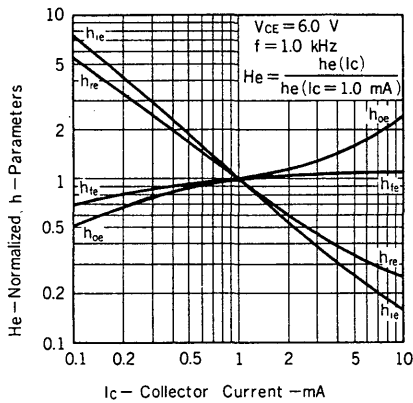
SMALL SIGNAL CURRENT GAIN vs. DC CURRENT GAIN



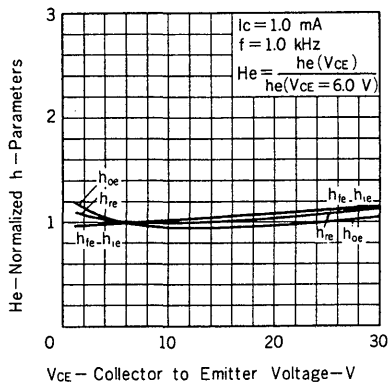
INPUT IMPEDANCE, VOLTAGE FEEDBACK RATIO AND OUTPUT ADMITTANCE vs. SMALL SIGNAL CURRENT GAIN



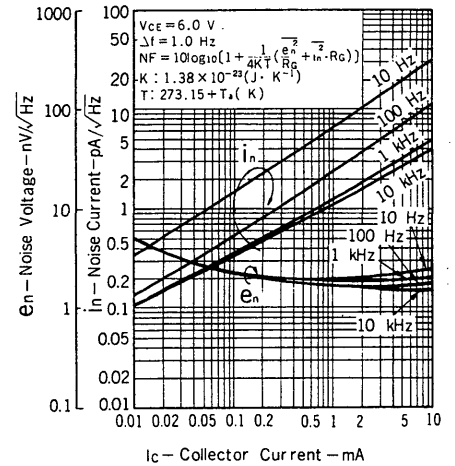
NORMALIZED h-PARAMETERS vs. COLLECTOR CURRENT



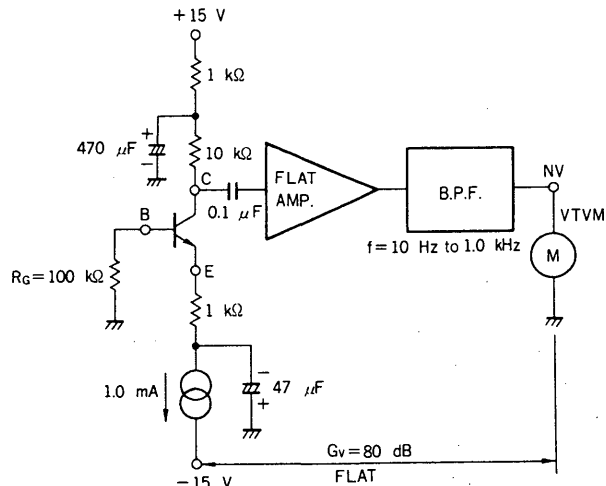
NORMALIZED h-PARAMETERS vs. COLLECTOR TO EMITTER VOLTAGE



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 ( $f = 10 \text{ Hz to } 1.0 \text{ kHz}$ )