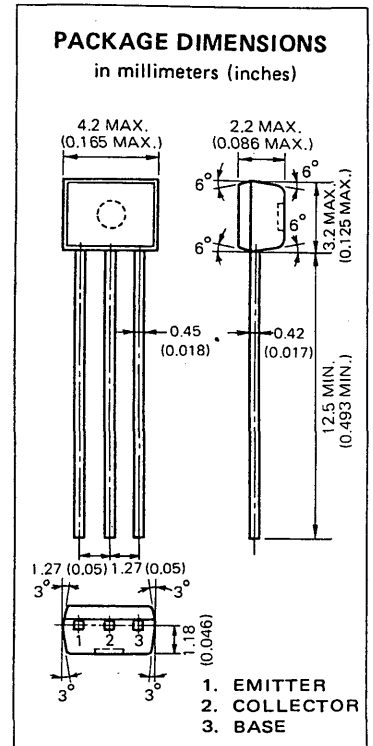


**DESCRIPTION** The 2SB810 is designed for use in output stage of portable radio and cassette type tape recorder, general purpose applications.

- FEATURES**
- High total power dissipation.  
 $P_T = 350 \text{ mW}$
  - High  $h_{FE}$  and low  $V_{CE(sat)}$ .  
 $h_{FE}(I_C = -100 \text{ mA}) : 200 \text{ TYP.}$   
 $V_{CE(sat)}(-700 \text{ mA}) : -0.25 \text{ V TYP.}$
  - Complementary to the NEC 2SD1020 NPN transistor.

**ABSOLUTE MAXIMUM RATINGS**

Maximum Temperatures	
Storage Temperature	..... -55 to +150 °C
Junction Temperature	..... +150 °C Maximum
Maximum Power Dissipation ( $T_a = 25 \text{ °C}$ )	
Total Power Dissipation	..... 350 mW
Maximum Voltages and Currents ( $T_a = 25 \text{ °C}$ )	
$V_{CBO}$ Collector to Base Voltage	..... -30 V
$V_{CEO}$ Collector to Emitter Voltage	..... -25 V
$V_{EBO}$ Emitter to Base Voltage	..... -5.0 V
$I_C$ Collector Current	..... -700 mA
$I_B$ Base Current	..... -150 mA



**ELECTRICAL CHARACTERISTICS ( $T_a = 25 \text{ °C}$ )**

SYMBOL	CHARACTERISTIC	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
$h_{FE1}^*$	DC Current Gain	110	200	400	-	$V_{CE} = -1.0 \text{ V}, I_C = -100 \text{ mA}$
$h_{FE2}^*$	DC Current Gain	50	100		-	$V_{CE} = -1.0 \text{ V}, I_C = -700 \text{ mA}$
$C_{ob}$	Collector to Base Capacitance		17	40	pF	$V_{CB} = -6.0 \text{ V}, I_E = 0, f = 1.0 \text{ MHz}$
$f_T$	Gain Bandwidth Product	50	160		MHz	$V_{CE} = -6.0 \text{ V}, I_E = -10 \text{ mA}$
$V_{BE}^*$	Base to Emitter Voltage	-600	-640	-700	mV	$V_{CE} = -6.0 \text{ V}, I_C = -10 \text{ mA}$
$V_{CE(sat)}^*$	Collector Saturation Voltage		-0.25	-0.4	V	$I_C = -700 \text{ mA}, I_B = -70 \text{ mA}$
$V_{BE(sat)}^*$	Base Saturation Voltage		-0.95	-1.2	V	$I_C = -700 \text{ mA}, I_B = -70 \text{ mA}$
$I_{CBO}$	Collector Cutoff Current			-100	nA	$V_{CB} = -30 \text{ V}, I_E = 0$
$I_{EBO}$	Emitter Cutoff Current			-100	nA	$V_{EB} = -5.0 \text{ V}, I_C = 0$

\* Pulsed  $PW \leq 350 \mu\text{s}$ , duty cycle  $\leq 2.0 \%$

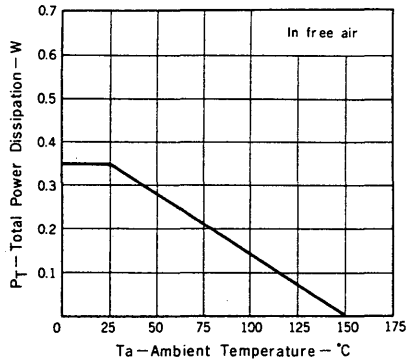
**Classification of  $h_{FE1}$**

Rank	M	J	H	F	E
Range	110 - 180	135 - 220	170 - 270	200 - 320	250 - 400

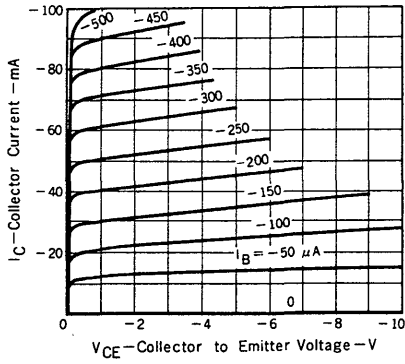
$h_{FE1}$  Test Conditions :  $V_{CE} = -1.0 \text{ V}, I_C = -100 \text{ mA}$

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

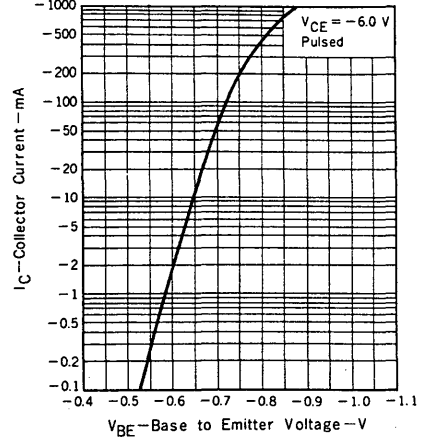
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



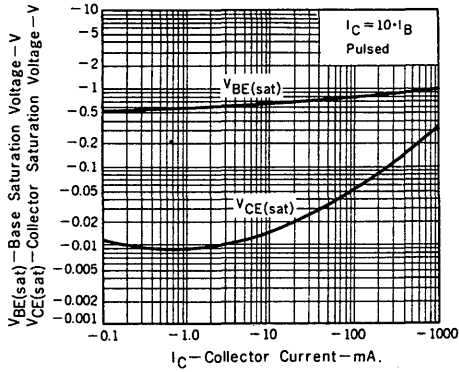
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



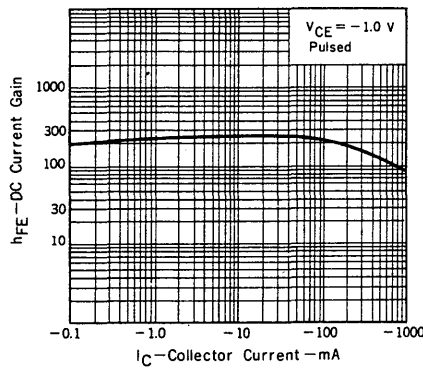
COLLECTOR CURRENT vs. BASE TO EMITTER VOLTAGE



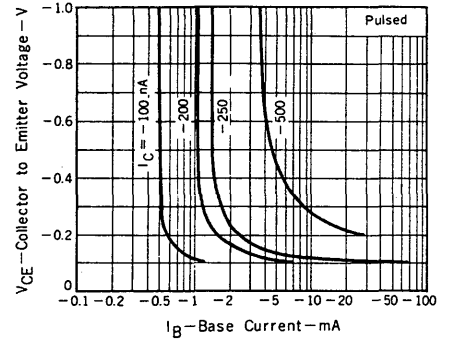
BASE AND COLLECTOR SATURATION VOLTAGE vs. COLLECTOR CURRENT



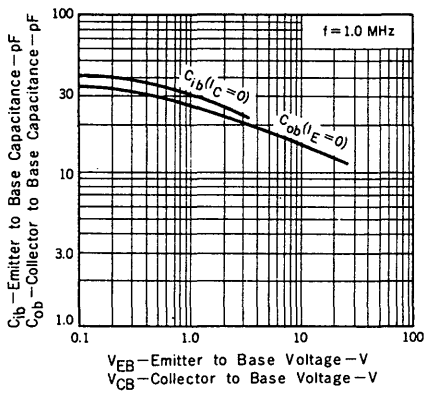
DC CURRENT GAIN vs. COLLECTOR CURRENT



COLLECTOR TO EMITTER VOLTAGE vs. BASE CURRENT



EMITTER TO BASE AND COLLECTOR TO BASE CAPACITANCE vs. REVERSE VOLTAGE



GAIN BANDWIDTH PRODUCT vs. EMITTER CURRENT

