

**DESCRIPTION** The 2SB605 is designed for use in driver and output stages of audio frequency amplifiers.

- FEATURES**
- High Total Power Dissipation and High Breakdown Voltage:  
1.0 W at 25 °C Ambient Temperature/ $V_{CE0} = -50$  V
  - Complementary to the NEC 2SD571 NPN Transistor.

### ABSOLUTE MAXIMUM RATINGS

Maximum Temperatures

Storage Temperature ..... -55 to +150 °C

Junction Temperature ..... +150 °C Maximum

Maximum Power Dissipation ( $T_a=25$  °C)

Total Power Dissipation ..... 1.0 W

Thermal Resistance(Junction to Ambient) . . 125 °C/W

Maximum Voltages and Currents ( $T_a=25$  °C)

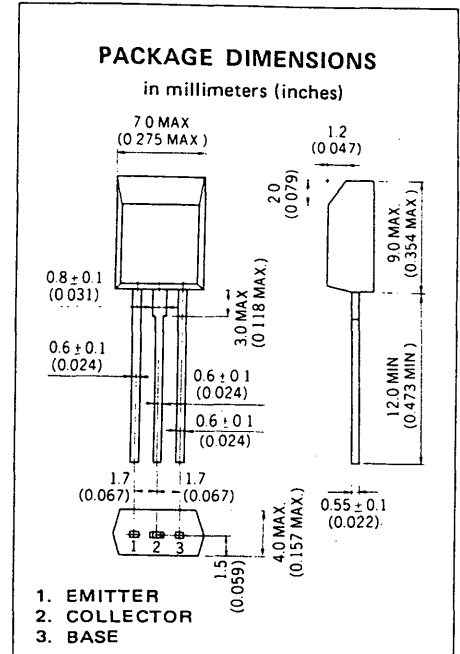
$V_{CBO}$  Collector to Base Voltage ..... -60 V

$V_{CEO}$  Collector to Emitter Voltage ..... -50 V

$V_{EBO}$  Emitter to Base Voltage ..... -5.0 V

$I_C$  Collector Current ..... -0.7 A

$I_B$  Base Current ..... -0.1 A



### ELECTRICAL CHARACTERISTICS ( $T_a = 25$ °C)

SYMBOL	CHARACTERISTIC	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
$h_{FE1}$	DC Current Gain	90	200	400	—	$V_{CE}=-1.0$ V, $I_C=-0.1$ A
$h_{FE2}$	DC Current Gain	50	120	—	—	$V_{CE}=-1.0$ V, $I_C=-0.5$ A
$f_T$	Gain Bandwidth Product	—	120	—	MHz	$V_{CE}=-6.0$ V, $I_E=-10$ mA
$C_{ob}$	Collector to Base Capacitance	—	25	—	pF	$V_{CB}=-6.0$ V, $I_E=0$ , $f=1.0$ MHz
$I_{CBO}$	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	-600	-630	-700	mV	$V_{CE}=-6.0$ V, $I_C=-10$ mA
$V_{CE(sat)}$	Collector Saturation Voltage	—	-0.16	-0.35	V	$I_C=-0.5$ A, $I_B=-0.05$ A
$V_{BE(sat)}$	Base Saturation Voltage	—	-0.90	-1.2	V	$I_C=-0.5$ A, $I_B=-0.05$ A

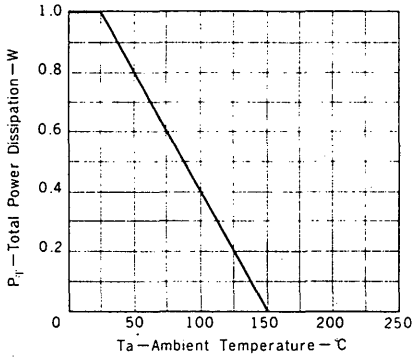
### Classification of $h_{FE1}$

Rank	M	L	K
Range	90 - 180	135 - 270	200 - 400

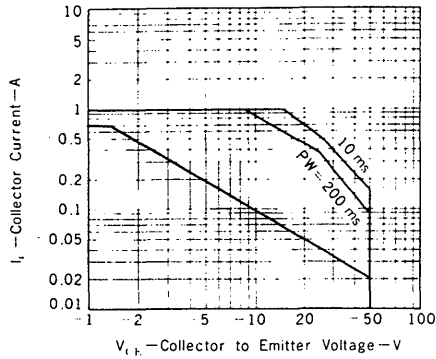
$h_{FE1}$  Test Conditions:  $V_{CE}=-1.0$  V,  $I_C=-0.1$  A

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

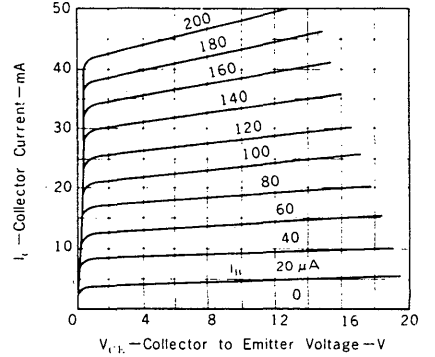
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



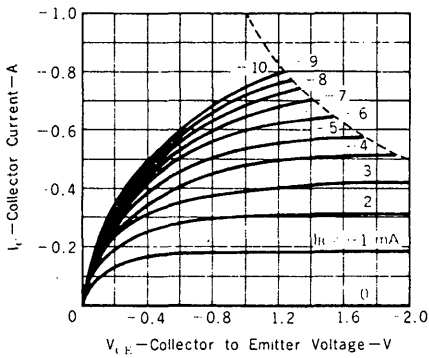
SAFE OPERATING AREAS (TRANSIENT THERMAL RESISTANCE)



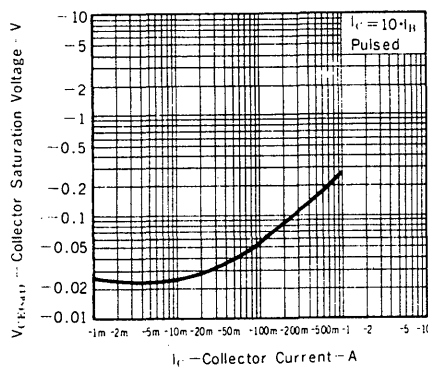
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



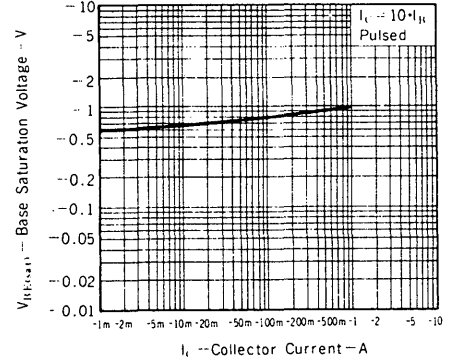
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



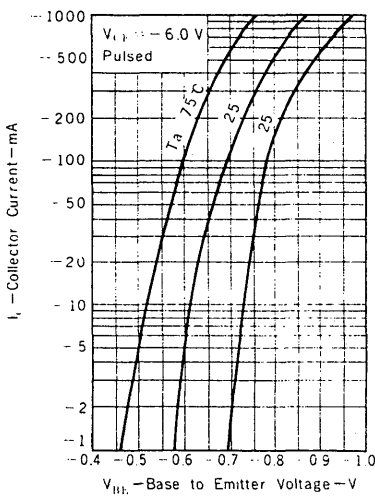
COLLECTOR SATURATION VOLTAGE vs. COLLECTOR CURRENT



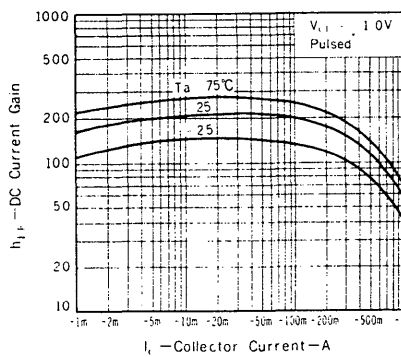
BASE SATURATION VOLTAGE vs. COLLECTOR CURRENT



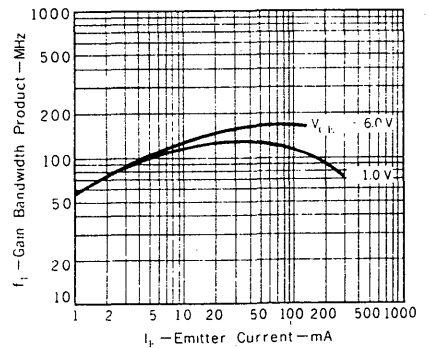
COLLECTOR CURRENT vs. BASE TO EMITTER VOLTAGE



DC CURRENT GAIN vs. COLLECTOR CURRENT



GAIN BANDWIDTH PRODUCT vs. EMITTER CURRENT



COLLECTOR TO BASE CAPACITANCE vs.  
COLLECTOR TO BASE VOLTAGE

