

DESCRIPTION The 2SD1312 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 / $V_{CE0} = 80$ V
 - Complementary to the NEC 2SB984 PNP 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

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

V_{CBO} Collector to Base Voltage 120 V

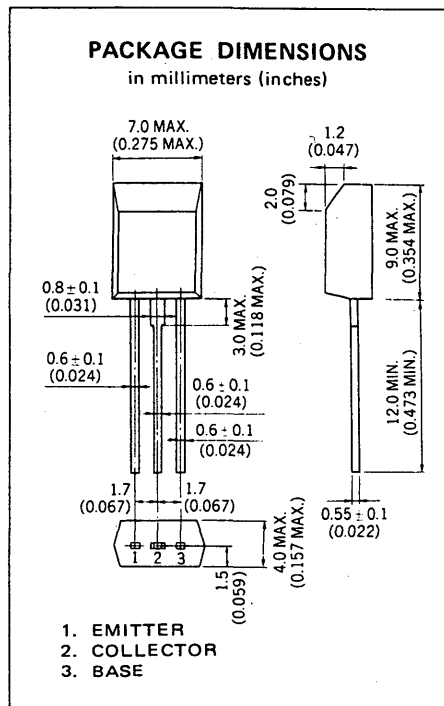
V_{CEO} Collector to Emitter Voltage 80 V

V_{EBO} Emitter to Base Voltage 5.0 V

$I_{C(DC)}$ Collector Current 1.0 A

$I_{C(pulse)}$ * Collector Current 2.0 A

* $PW \leq 10$ ms, duty cycle ≤ 50 %



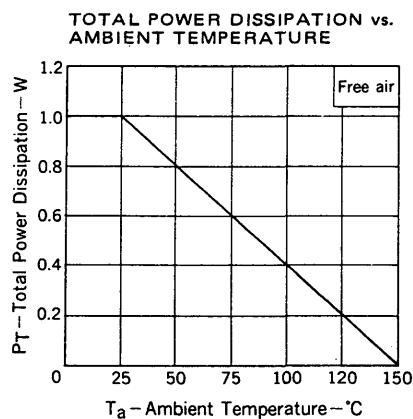
ELECTRICAL CHARACTERISTICS ($T_a = 25$ °C)

SYMBOL	CHARACTERISTIC	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
h_{FE1}	DC Current Gain	135		600		$V_{CE} = 1.0$ V, $I_C = 200$ mA
h_{FE2}	DC Current Gain	75				$V_{CE} = 1.0$ V, $I_C = 500$ mA
f_T	Gain Bandwidth Product	50	120		MHz	$V_{CE} = 6.0$ V, $I_E = -200$ mA
C_{ob}	Output Capacitance		13	30	pF	$V_{CB} = 10$ V, $I_E = 0$, $f = 1.0$ MHz
I_{CBO}	Collector Cutoff Current			100	nA	$V_{CB} = 100$ 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	550	610	650	mV	$V_{CE} = 6.0$ V, $I_C = 10$ mA
$V_{CE(sat)}$	Collector Saturation Voltage		0.25	0.5	V	$I_C = 1.0$ A, $I_B = 100$ mA
$V_{BE(sat)}$	Base Saturation Voltage		1.0	1.2	V	$I_C = 1.0$ A, $I_B = 100$ mA

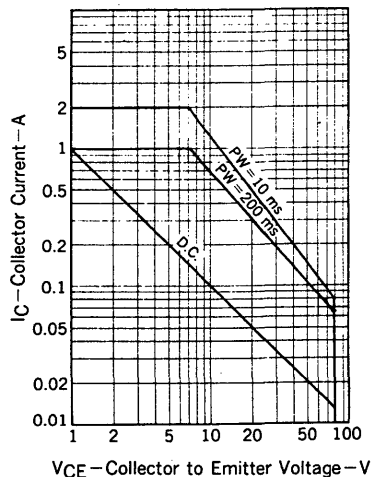
Classification of h_{FE1}

Rank	L	K	U
Range	135—270	200—400	300—600

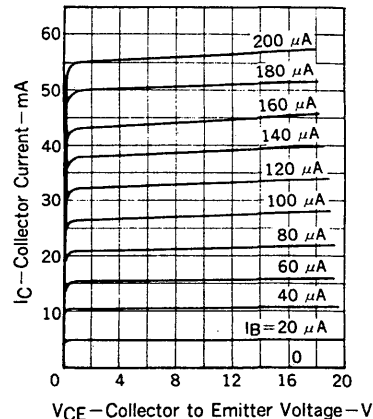
Test Conditions: $V_{CE} = 1.0$ V, $I_C = 200$ mA.

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

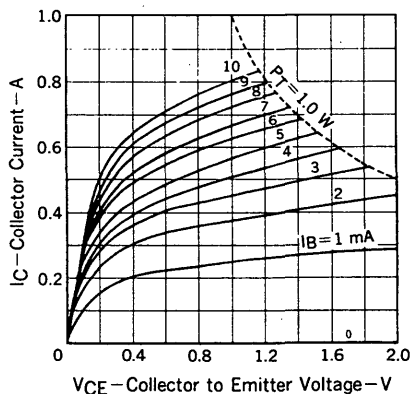
SAFE OPERATING AREAS
(TRANSIENT THERMAL RESISTANCE METHOD)



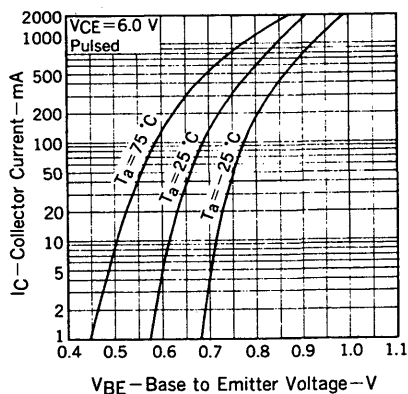
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



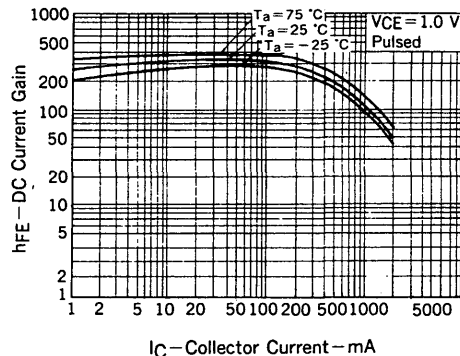
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



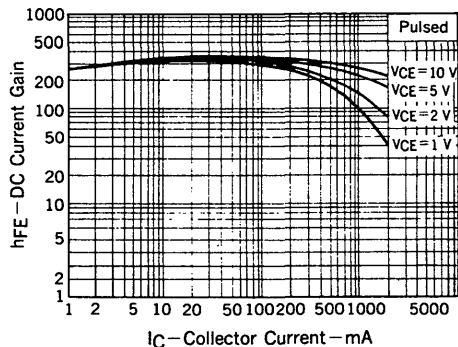
COLLECTOR CURRENT vs. BASE TO EMITTER VOLTAGE



DC CURRENT GAIN vs. COLLECTOR CURRENT



DC CURRENT GAIN vs. COLLECTOR CURRENT



BASE AND COLLECTOR SATURATION VOLTAGE vs. COLLECTOR CURRENT

