NEC

PNP SILICON TRANSISTOR
2SB1068

DESCRIPTION The 2SB1068 is designed for use in driver and output stages of audio frequency amplifiers.

FEATURES

- Low Collector Saturation Voltage
  $V_{CE(sat)}$: −0.25 V TYP. (I_C = −1.0 A, I_B = −10 mA)
- High DC Current Gain
  h_{FE} : 350 TYP. (V_{CE} = −2.0 V, I_C = −100 mA)
- High Total Power Dissipation P_T : 0.75 W (T_a = 25 °C)
- Complementary to The NEC 2SD1513 NPN Transistor

ABSOLUTE MAXIMUM RATINGS

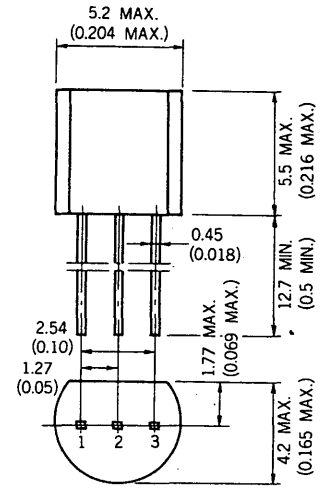
Maximum Temperatures
- Storage Temperature . . . . . −55 to +150 °C
- Junction Temperature . . . . . +150 °C Maximum

Maximum Power Dissipation (T_a = 25 °C)
- Total Power Dissipation . . . . . 0.75 W

Maximum Voltages and Currents (T_a = 25 °C)
- V_{CBO} Collector to Base Voltage . . . . . −20 V
- V_{CEO} Collector to Emitter Voltage . . . . . −16 V
- V_{EBO} Emitter to Base Voltage . . . . . −6.0 V
- $I_{C(DC)}$ Collector Current . . . . . −2.0 A
- $I_{C(pulse)}$* Collector Current . . . . . −3.0 A

* PW ≦ 10 ms, Duty Cycle ≦ 50 %

PACKAGE DIMENSIONS
in millimeters (inches)



1. EMITTER
2. COLLECTOR
3. BASE

EIAJ : SC-43B
JEDEC : TO-92
IEC : PA33

ELECTRICAL CHARACTERISTICS (T_a = 25 °C)

SYMBOL	CHARACTERISTIC	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
h_{FE1}	DC Current Gain	135	350	650	–	V_{CE} = −2.0 V, I_C = −100 mA
h_{FE2}	DC Current Gain	100			–	V_{CE} = −2.0 V, I_C = −1.5 A
f_T	Gain Bandwidth Product	100	180		MHz	V_{CE} = −10 V, I_E = 50 mA
C_{ob}	Output Capacitance		60		pF	V_{CB} = −10 V, I_E = 0, f = 1.0 MHz
I_{CBO}	Collector Cutoff Current			−100	nA	V_{CB} = −16 V, I_E = 0
I_{EBO}	Emitter Cutoff Current			−100	nA	V_{EB} = −6.0 V, I_C = 0
V_{BE}	Base to Emitter Voltage	−550	−600	−650	mV	V_{CE} = −6.0 V, I_C = −5.0 mA
$V_{CE(sat)1}$	Collector Saturation Voltage		−0.25	−0.40	V	I_C = −1.0 A, I_B = −10 mA
$V_{CE(sat)2}$	Collector Saturation Voltage		−0.31	−0.50	V	I_C = −1.5 A, I_B = −75 mA
$V_{CE(sat)3}$	Collector Saturation Voltage		−0.33	−0.50	V	I_C = −1.5 A, I_B = −20 mA
$V_{BE(sat)}$	Base Saturation Voltage		−1.05	−1.2	V	I_C = −1.5 A, I_B = −75 mA

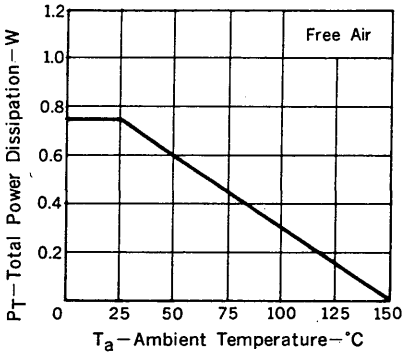
Classification of h_{FE}

Rank	L	K	U
Range	135 – 270	200 – 400	300 – 650

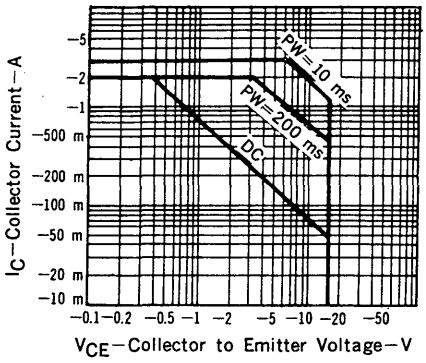
Test Conditions : V_{CE} = −2.0 V, I_C = −100 mA

TYPICAL CHARACTERISTICS (T_a = 25 °C)

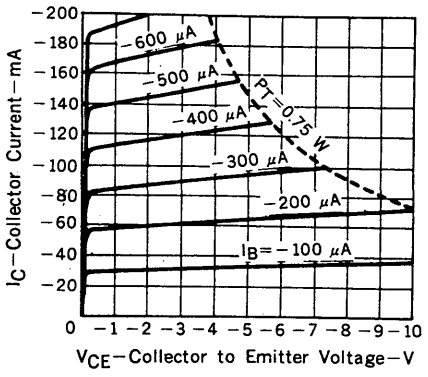
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



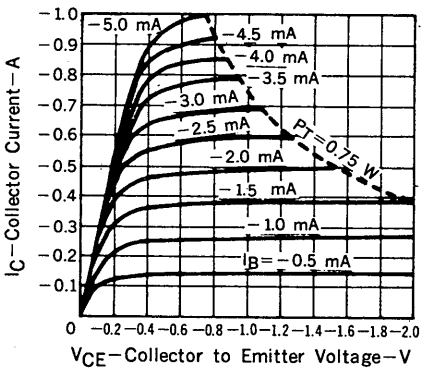
SAFE OPERATING AREAS (TRANSIENT THERMAL RESISTANCE METHOD)



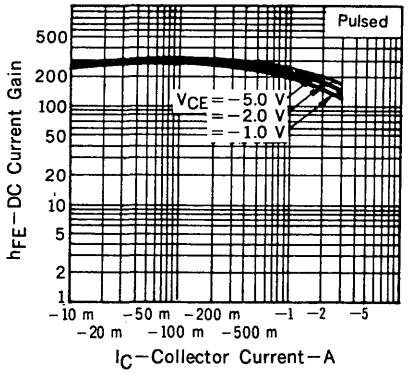
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



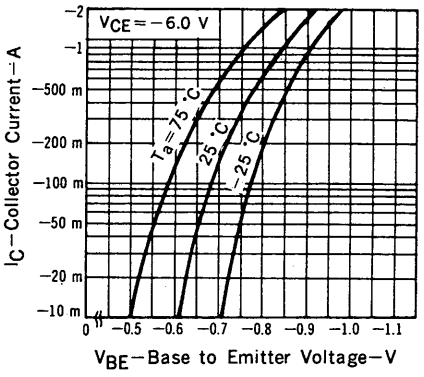
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



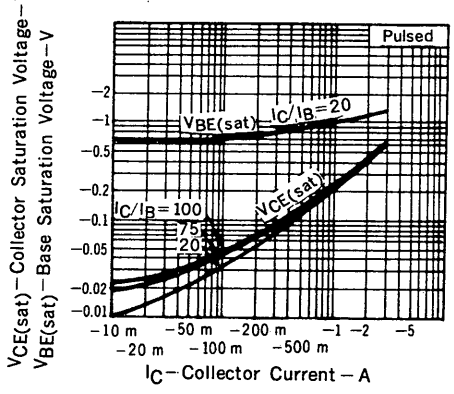
DC CURRENT GAIN vs. COLLECTOR CURRENT



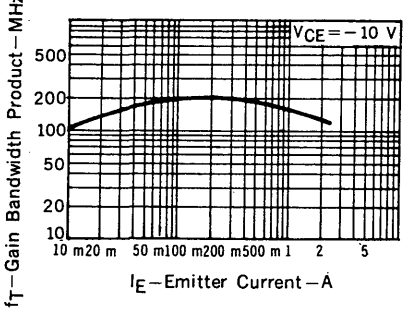
COLLECTOR CURRENT vs. BASE TO EMITTER VOLTAGE



BASE AND COLLECTOR SATURATION VOLTAGE vs. COLLECTOR CURRENT



GAIN BANDWIDTH PRODUCT vs. EMITTER CURRENT



OUTPUT CAPACITANCE vs. COLLECTOR TO BASE VOLTAGE