RENESAS

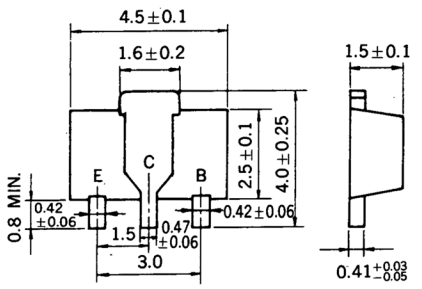
SILICON TRANSISTOR
2SB1114

PNP SILICON EPITAXIAL TRANSISTOR
POWER MINI MOLD

DESCRIPTION

2SB1114 is designed for audio frequency power amplifier and switching application, especially in Hybrid Integrated Circuits.

PACKAGE DIMENSIONS
in millimeters



E. Emitter
C. Collector
B. Base

FEATURES

- High DC Current Gain h_{FE} = 135 to 600
- Low $V_{CE(sat)}$. $V_{CE(sat)}$ = −0.3 V at 1.5 A
- Complement to 2SD1614

ABSOLUTE MAXIMUM RATINGS (T_A = 25 °C)

Collector to Base Voltage	V_{CBO}	−20	V
Collector to Emitter Voltage	V_{CEO}	−20	V
Emitter to Base Voltage	V_{EBO}	−6.0	V
Collector Current (DC)	$I_{C(DC)}$	−2.0	A
Collector Current (Pulse)*	$I_{C(Pulse)}$	−3.0	A
Total Power Dissipation **	P_T	2.0	W
Junction Temperature	T_j	150	°C
Storage Temperature Range	T_{stg}	−55 to +150	°C

*PW ≦ 10 ms, Duty Cycle ≦ 50 %
**When mounted on ceramic substrate of 16 cm² x 0.7 mm

ELECTRICAL CHARACTERISTICS (T_A = 25 °C)

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Collector Cutoff Current	I_{CBO}			−100	nA	V_{CB} = 16 V, I_E = 0
Emitter Cutoff Current	I_{EBO}			−100	nA	V_{EB} = −6.0 V, I_C = 0
DC Current Gain	h_{FE1} ***	135	350	600		V_{CE} = −2.0 V, I_C = −100 mA
DC Current Gain	h_{FE2} ***	40				V_{CE} = −2.0 V, I_C = −2.0 A
Collector Saturation Voltage	$V_{CE(sat)}$***		−0.3	−0.5	V	I_C = −1.5 A, I_B = −50 mA
Base Saturation Voltage	$V_{BE(sat)}$***		−1.05	−1.2	V	I_C = −1.5 A, I_B = −50 mA
Base to Emitter Voltage	V_{BE} ***	−0.65	−0.68	−0.75	V	V_{CE} = −6.0 V, I_C = −100 mA
Gain Bandwidth Product	f_T		180		MHz	V_{CE} = −10 V, I_E = 50 mA
Output Capacitance	C_{ob}		60		pF	V_{CB} = −10 V, I_E = 0, f = 1.0 MHz

***Pulsed: PW ≦ 350 μs, Duty Cycle ≦ 2 %

h_{FE} Classification

MARKING	ZM	ZL	ZK
h_{FE1}	135 to 270	200 to 400	300 to 600

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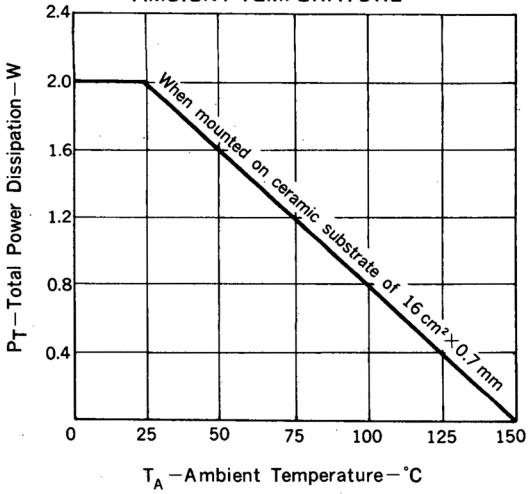
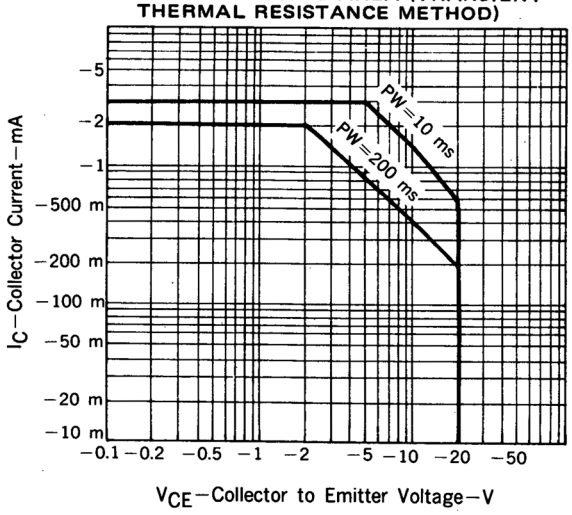
TYPICAL CHARACTERISTICS (T_A = 25°C)

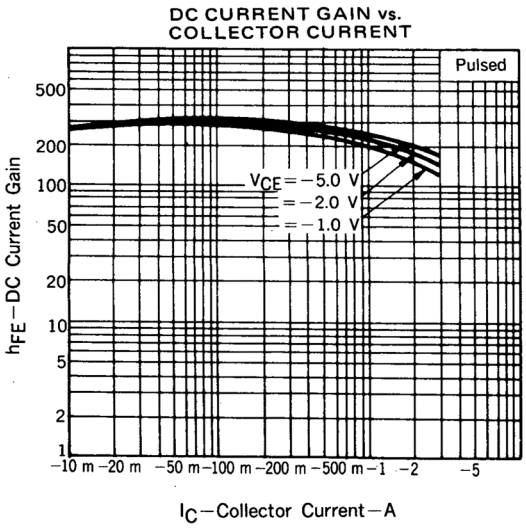
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



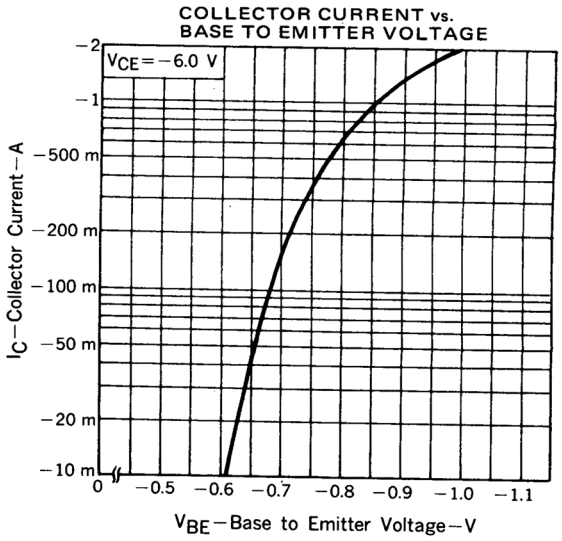
SAFE OPERATING AREA (TRANSIENT THERMAL RESISTANCE METHOD)



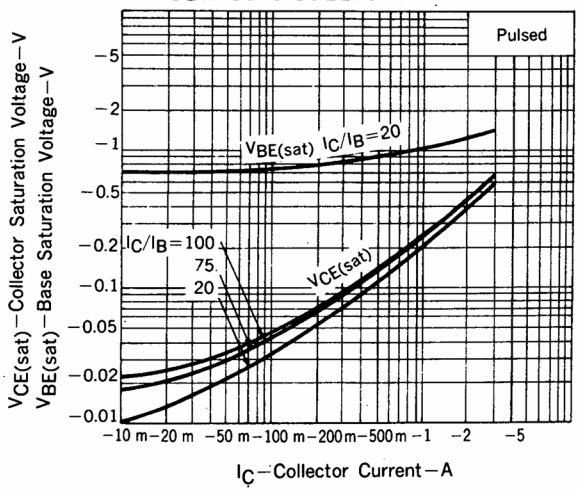
DC CURRENT GAIN vs. COLLECTOR CURRENT



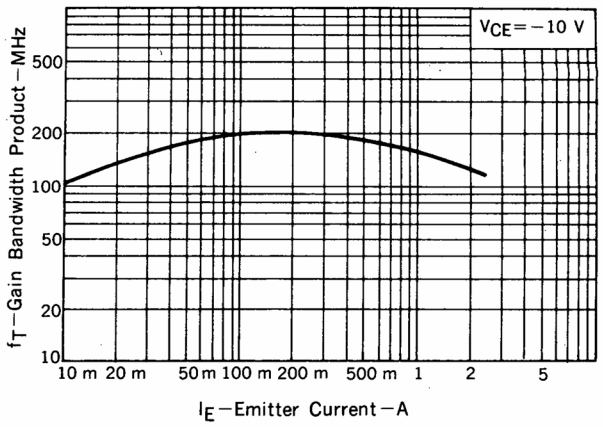
COLLECTOR CURRENT vs. BASE TO EMITTER VOLTAGE



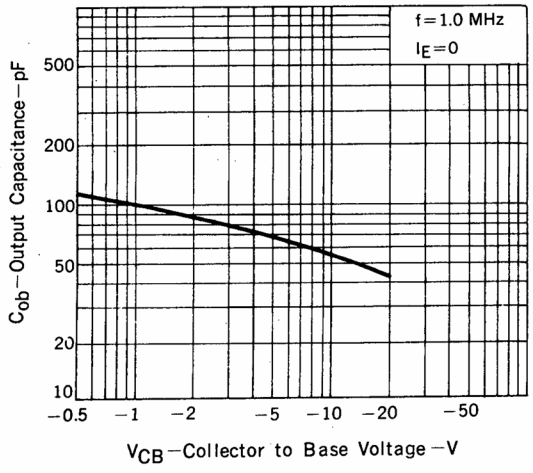
BASE AND COLLECTOR SATURATION VOLTAGE vs. COLLECTOR CURRENT



GAIN BANDWIDTH PRODUCT vs. EMITTER CURRENT GAIN



OUTPUT CAPACITANCE vs. COLLECTOR TO BASE VOLTAGE



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