DATA SHEET

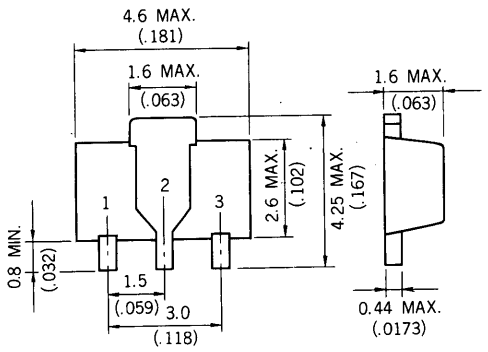
NEC

SILICON TRANSISTOR
2SB804

PNP SILICON EPITAXIAL TRANSISTOR
POWER MINI MOLD

DESCRIPTION
The 2SB804 is designed for audio frequency power amplifier application, especially in Hybrid Integrated Circuits.

PACKAGE DIMENSIONS
in millimeters (inches)



1. Emitter
2. Collector
3. Base

FEATURES
- World Standard Miniature Package
  : SOT−89
- High Collector to Base Voltage
  : $V_{CBO} > -100$ V
- Excellent DC Current Gain Linearity
  : $h_{FE} = 80$ TYP. ($V_{CE} = -2.0$ V, $I_C = -500$ mA)
- Complements to NPN type 2SD1005

ABSOLUTE MAXIMUM RATINGS ($T_a = 25$ °C)

Maximum Voltages and Currents			
Collector to Base Voltage	V_{CBO}	−100	V
Collector to Emitter Voltage	V_{CEO}	−80	V
Emitter to Base Voltage	V_{EBO}	−5.0	V
Collector Current (DC)	I_C	−1.0	A
Collector Current (Pulse)*	I_C	−1.5	A
Maximum Power Dissipation			
Total Power Dissipation at 25 °C Ambient Temperature**	P_T	2.0	W
Maximum Temperatures			
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	$V_{CB}=-100$ V, $I_E=0$
Emitter Cutoff Current	I_{EBO}			−100	nA	$V_{EB}=-5.0$ V, $I_C=0$
DC Current Gain	h_{FE1}	90	200	400		$V_{CE}=-2.0$ V, $I_C=-100$ mA ***
DC Current Gain	h_{FE2}	25	80			$V_{CE}=-2.0$ V, $I_C=-500$ mA ***
Collector Saturation Voltage	$V_{CE(sat)}$		−0.29	−0.50	V	$I_C=-500$ mA, $I_B=-50$ mA ***
Base Saturation Voltage	$V_{BE(sat)}$		−0.9	−1.5	V	$I_C=-500$ mA, $I_B=-50$ mA ***
Base to Emitter Voltage	V_{BE}	−600	−640	−700	mV	$V_{CE}=-10$ V, $I_C=-10$ mA ***
Gain Bandwidth Product	f_T		80		MHz	$V_{CE}=-5.0$ V, $I_E=10$ mA
Output Capacitance	C_{ob}		26		pF	$V_{CB}=-10$ V, $I_E=0$, f=1.0 MHz

***Pulsed: PW ≦ 350 μs, duty cycle ≦ 2 %

h_{FE} Classification

MARKING	AW	AV	AU
h_{FE1}	90 − 180	135 − 270	200 − 400

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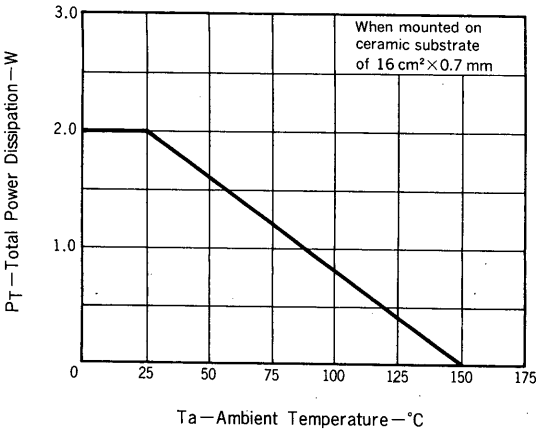
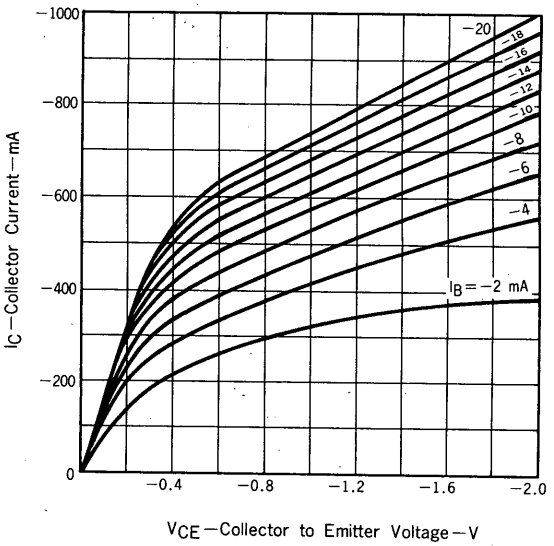
TYPICAL CHARACTERISTICS (Ta = 25 °C)

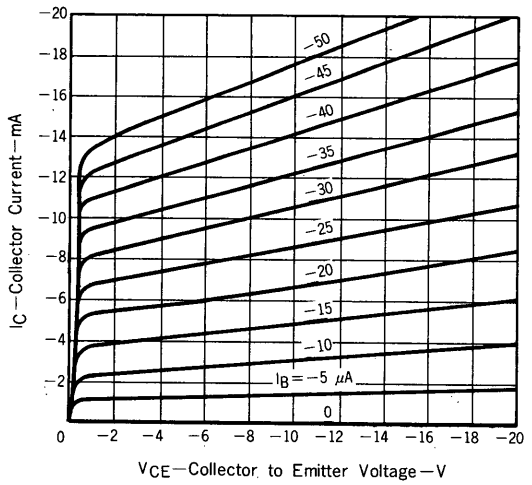
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



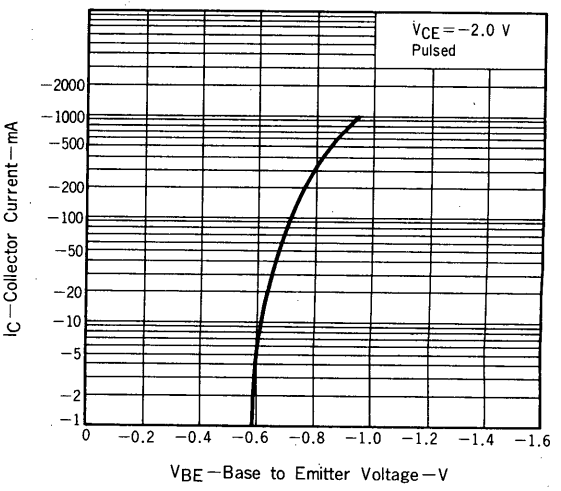
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



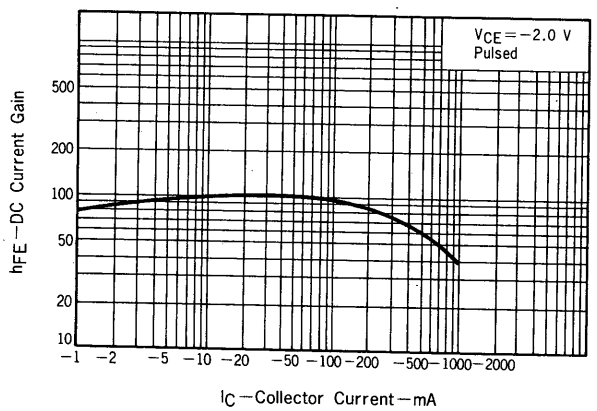
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



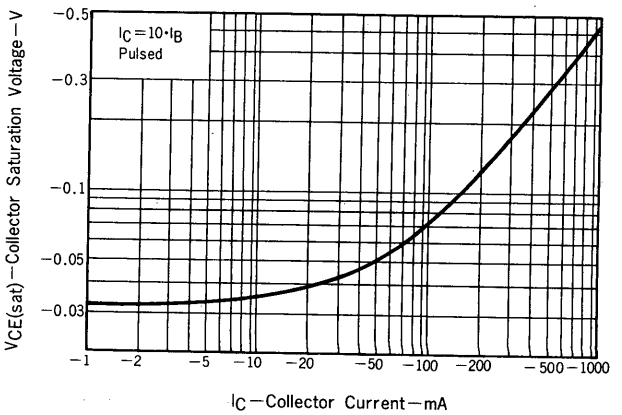
COLLECTOR CURRENT vs. BASE TO EMITTER VOLTAGE



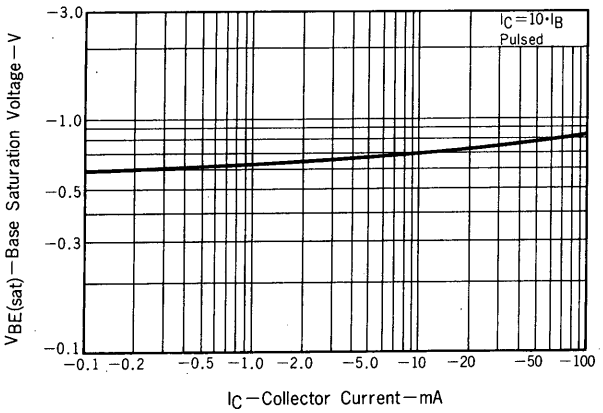
DC CURRENT GAIN vs. COLLECTOR CURRENT



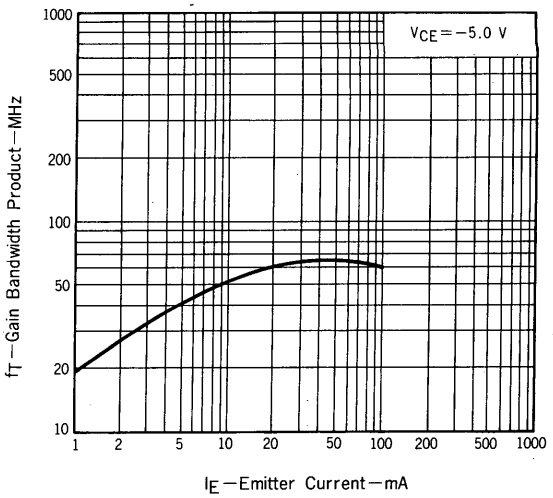
COLLECTOR SATURATION VOLTAGE vs. COLLECTOR CURRENT



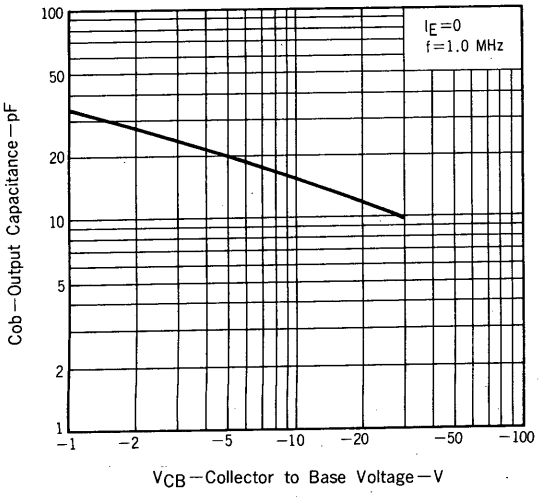
BASE SATURATION VOLTAGE vs.
COLLECTOR CURRENT



GAIN BANDWIDTH PRODUCT vs.
EMITTER CURRENT



OUTPUT CAPACITANCE vs.
REVERSE VOLTAGE



REFERENCE

Document Name	Document No.
NEC semiconductor device reliability/quality control system.	TEI-1202
Quality grade on NEC semiconductor devices.	IEI-1209
Semiconductor device mounting technology manual.	IEI-1207
Semiconductor device package manual.	IEI-1213
Guide to quality assurance for semiconductor devices.	MEI-1202
Semiconductor selection guide.	MF-1134

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