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To our customers,

## Old Company Name in Catalogs and Other Documents

On April 1st, 2010, NEC Electronics Corporation merged with Renesas Technology Corporation, and Renesas Electronics Corporation took over all the business of both companies. Therefore, although the old company name remains in this document, it is a valid Renesas Electronics document. We appreciate your understanding.

Renesas Electronics website: http://www.renesas.com

April 1st, 2010
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (http://www.renesas.com)

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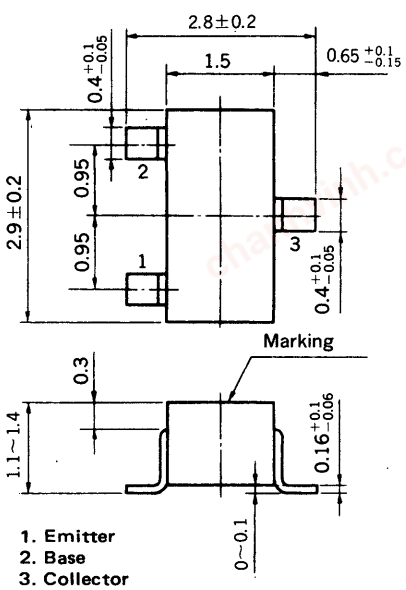
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RENESAS

# SILICON TRANSISTOR
# 2SA811A

## AUDIO FREQUENCY HIGH GAIN AMPLIFIER
## PNP SILICON EPITAXIAL TRANSISTOR
## MINI MOLD

### PACKAGE DIMENSIONS
in millimeters




### FEATURE

- High DC Current Gain: $h_{FE}$ 500 TYP. ($V_{CE}$ = −6.0 V, $I_C$ = −1.0 mA)

### ABSOLUTE MAXIMUM RATINGS

| | | | |
|---|---|---|---|
| Muximum Voltages and Current ($T_a$ = 25 °C) | | | |
| Collector to Base Voltage | $V_{CBO}$ | −120 | V |
| Collector to Emitter Voltage | $V_{CEO}$ | −120 | V |
| Emitter to Base Voltage | $V_{EBO}$ | −5.0 | V |
| Collector Current (DC) | $I_C$ | −50 | mA |
| Maximum Power Dissipation | | | |
| Total Power Dissipation at 25 °C Ambient Temperature | $P_T$ | 200 | mW |
| Maximum Temperatures | | | |
| Junction Temperature | $T_j$ | 150 | °C |
| Storage Temperature Range | $T_{stg}$ | −55 to +150 | °C |

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

| CHARACTERISTIC | SYMBOL | MIN. | TYP. | MAX. | UNIT | TEST CONDITIONS |
|---|---|---|---|---|---|---|
| Collector Cutoff Current | $I_{CBO}$ | | | −50 | nA | $V_{CB}$ = −120 V, $I_E$ = 0 |
| Emitter Cutoff Current | $I_{EBO}$ | | | −50 | nA | $V_{EB}$ = −5.0 V, $I_C$ = 0 |
| DC Current Gain | $h_{FE1}$ | 100 | 500 | | | $V_{CE}$ = −6.0 V, $I_C$ = −0.1 mA* |
| DC Current Gain | $h_{FE2}$ | 135 | 500 | 900 | | $V_{CE}$ = −6.0 V, $I_C$ = −1.0 mA |
| Collector Saturation Voltage | $V_{CE(sat)}$ | | −0.09 | −0.30 | V | $I_C$ = −10 mA, $I_B$ = −1.0 mA |
| Base to Emitter Voltage | $V_{BE}$ | −0.55 | −0.61 | −0.65 | V | $V_{CE}$ = −6.0 V, $I_C$ = −1.0 mA |
| Gain Bandwidth Product | $f_T$ | 50 | 90 | | MHz | $V_{CE}$ = −6.0 V, $I_E$ = 1.0 mA |
| Output Capacitance | $C_{ob}$ | | 2.0 | 3.0 | pF | $V_{CB}$ = −30 V, $I_E$ = 0, f = 1.0 MHz |

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

$h_{FE2}$ Classification

| Marking | C15 | C16 | C17 | C18 |
|---|---|---|---|---|
| $h_{FE2}$ | 135 to 270 | 200 to 400 | 300 to 600 | 450 to 900 |

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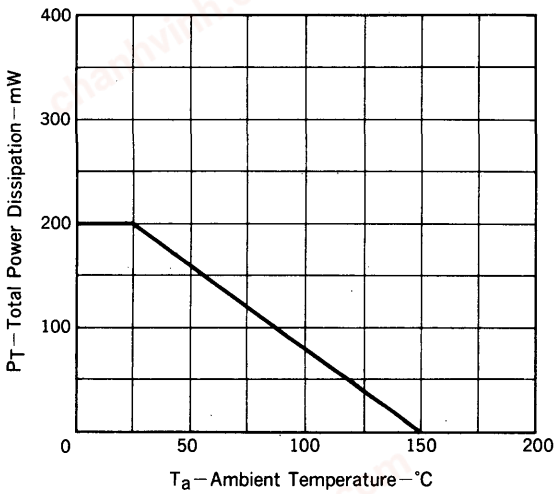
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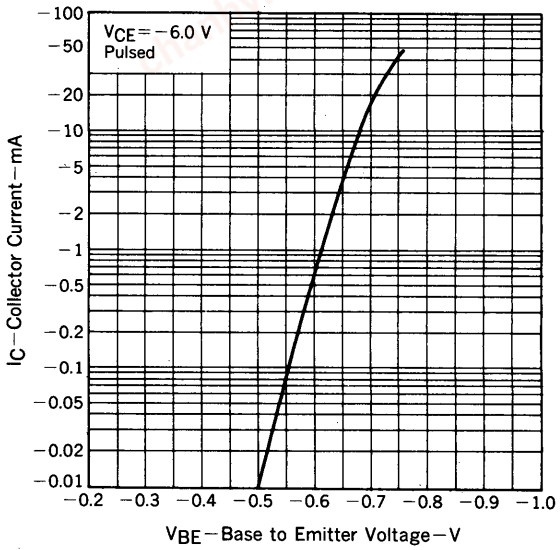


## TYPICAL CHARACTERISTICS ($T_a$ = 25 °C)

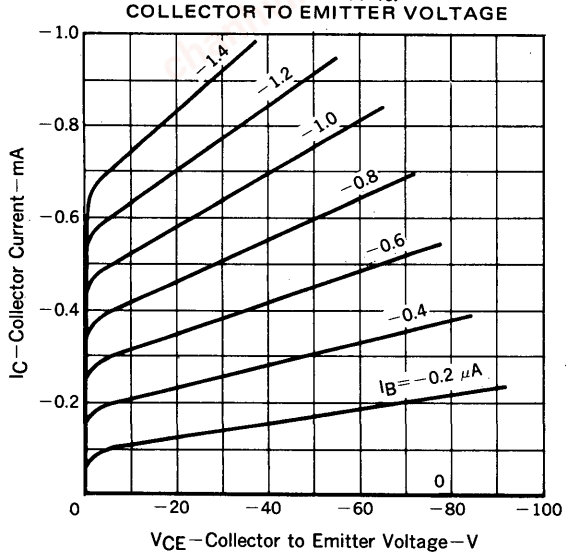
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



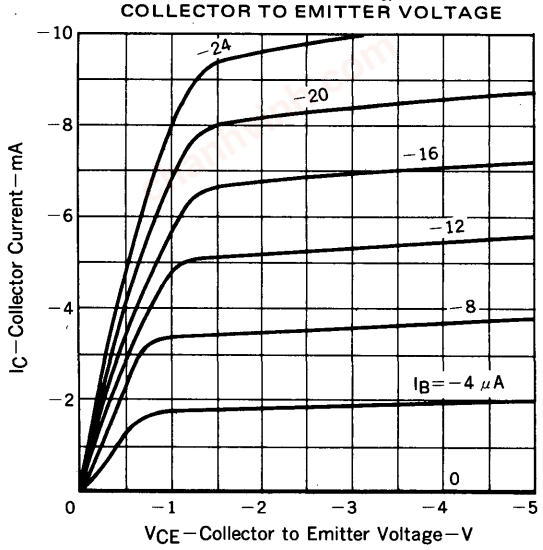

COLLECTOR CURRENT vs. BASE TO EMITTER VOLTAGE



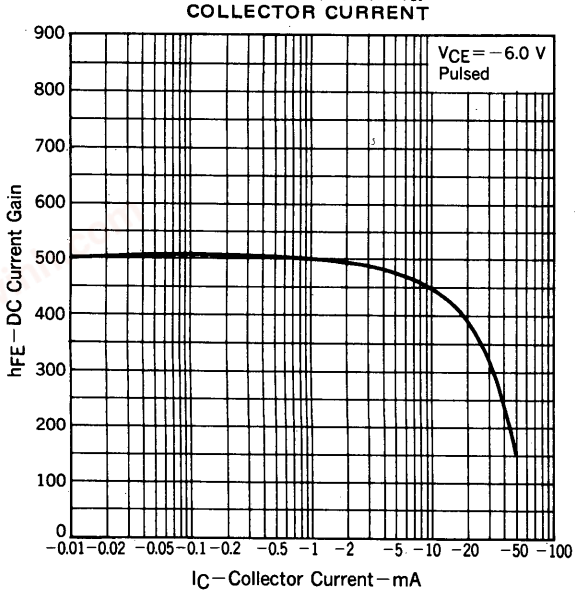

COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



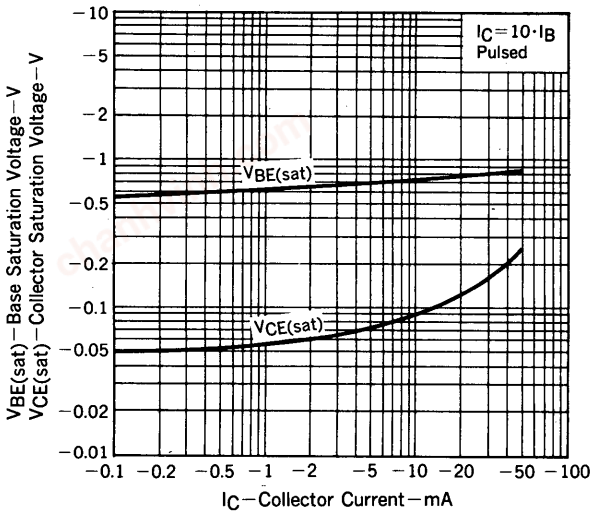

COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE




DC CURRENT GAIN vs. COLLECTOR CURRENT



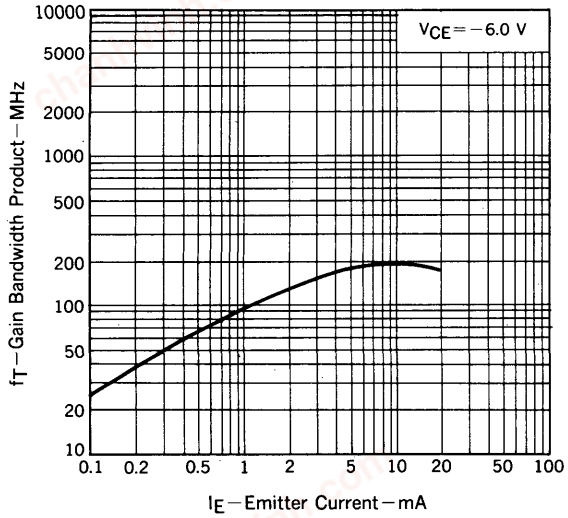

BASE AND COLLECTOR SATURATION VOLTAGE vs. COLLECTOR CURRENT



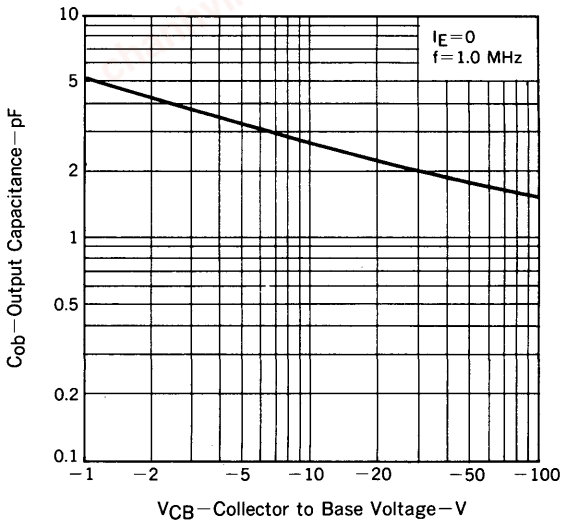
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GAIN BANDWIDTH PRODUCT vs.
EMITTER CURRENT




OUTPUT CAPACITANCE vs.
COLLECTOR TO BASE VOLTAGE



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