

# 2SD788

Silicon NPN Epitaxial

REJ03G0771-0200  
(Previous ADE-208-1139)  
Rev.2.00  
Aug.10.2005

## Application

- Low frequency power amplifier
- Complementary pair with 2SB738 and 2SB739

## Outline

RENESAS Package code: PRSS0003DC-A  
(Package name: TO-92 Mod)



- 1. Emitter
- 2. Collector
- 3. Base

## Absolute Maximum Ratings

(Ta = 25°C)

| Item                         | Symbol    | Ratings     | Unit |
|------------------------------|-----------|-------------|------|
|                              | $V_{CBO}$ | 20          | V    |
| Collector to emitter voltage | $V_{CEO}$ | 20          | V    |
| Emitter to base voltage      | $V_{EBO}$ | 6           | V    |
| Collector current            | $I_C$     | 2           | A    |
| Collector power dissipation  | $P_C$     | 0.9         | W    |
| Junction temperature         | $T_j$     | 150         | °C   |
| Storage temperature          | $T_{stg}$ | -50 to +150 | °C   |

## Electrical Characteristics

(Ta = 25°C)

| Item                                    | Symbol        | Min | Typ | Max | Unit    | Test conditions                            |
|-----------------------------------------|---------------|-----|-----|-----|---------|--------------------------------------------|
| Collector to base breakdown voltage     | $V_{(BR)CBO}$ | 20  | —   | —   | V       | $I_C = 10\ \mu A, I_E = 0$                 |
| Collector to emitter breakdown voltage  | $V_{(BR)CEO}$ | 20  | —   | —   | V       | $I_C = 1\ mA, R_{BE} = \infty$             |
| Emitter to base breakdown voltage       | $V_{(BR)EBO}$ | 6   | —   | —   | V       | $I_E = 10\ \mu A, I_C = 0$                 |
| Collector cutoff current                | $I_{CBO}$     | —   | —   | 2   | $\mu A$ | $V_{CB} = 16\ V, I_E = 0$                  |
| Emitter cutoff current                  | $I_{EBO}$     | —   | —   | 0.2 | $\mu A$ | $V_{EB} = 6\ V, I_C = 0$                   |
| DC current transfer ratio               | $h_{FE}^{*1}$ | 160 | —   | 500 |         | $V_{CE} = 2\ V, I_C = 0.1\ A$              |
| Collector to emitter saturation voltage | $V_{CE(sat)}$ | —   | —   | 0.3 | V       | $I_C = 1\ A, I_B = 0.1\ A$                 |
| Gain bandwidth product                  | $f_T$         | —   | 100 | —   | MHz     | $V_{CE} = 2\ V,$<br>$I_C = 10\ mA$         |
| Collector output capacitance            | $C_{ob}$      | —   | 20  | —   | pF      | $V_{CB} = 10\ V, I_E = 0,$<br>$f = 1\ MHz$ |

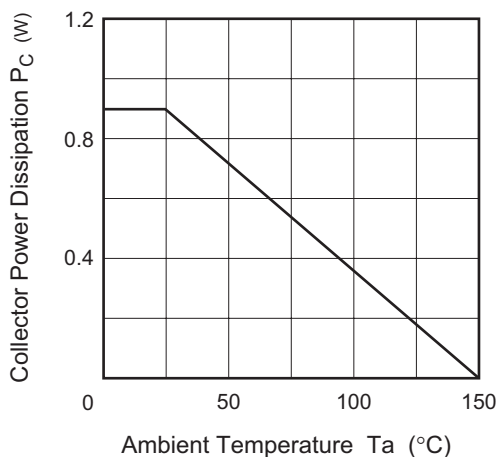
Note: 1. The 2SD788 is grouped by  $h_{FE}$  as follows.

| C          | D          |
|------------|------------|
| 160 to 320 | 250 to 500 |

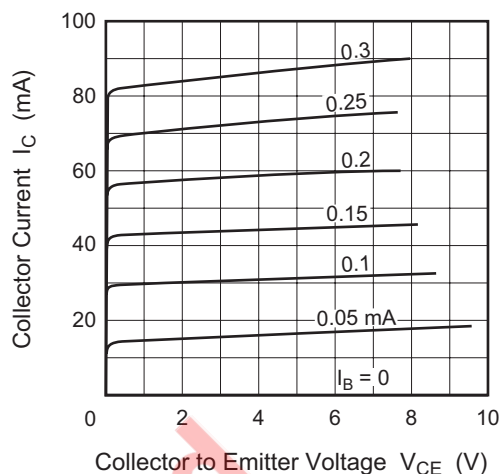
Not recommend  
for new design

## Main Characteristics

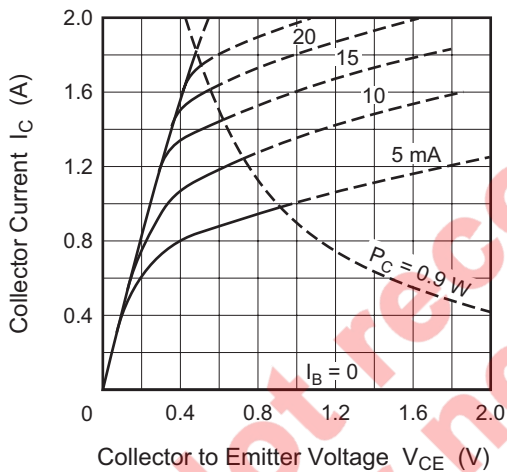
Maximum Collector Dissipation Curve



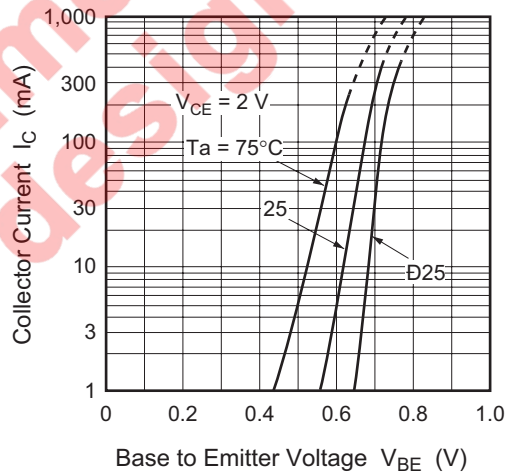
Typical Output Characteristics



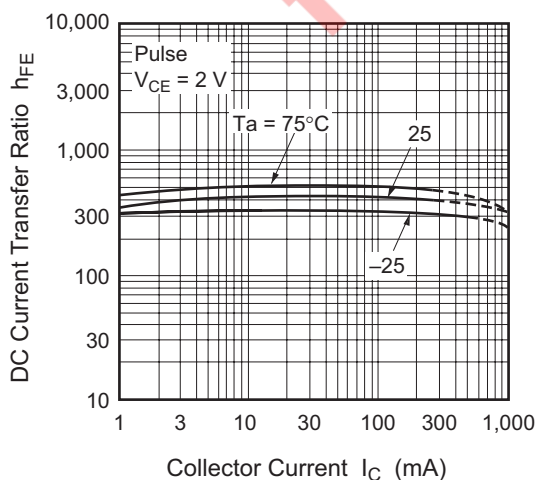
Typical Output Characteristics



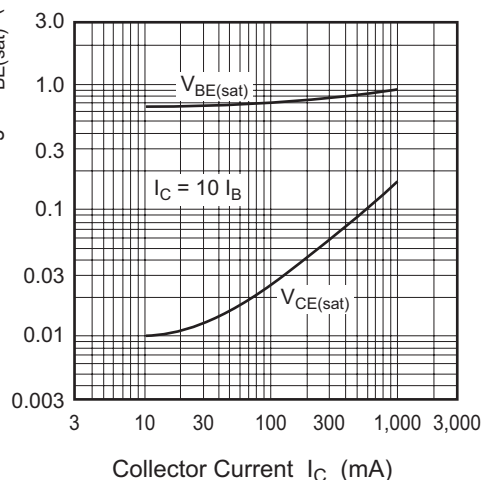
Typical Transfer Characteristics

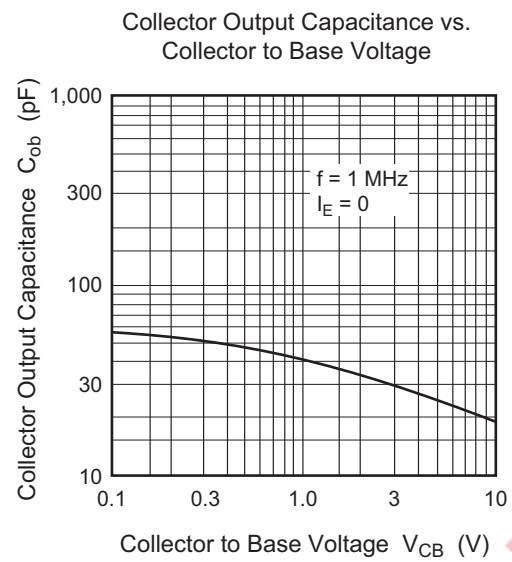


DC Current Transfer Ratio vs. Collector Current

Collector to Emitter Saturation Voltage  $V_{CE(sat)}$  (V)  
Base to Emitter Saturation Voltage  $V_{BE(sat)}$  (V)

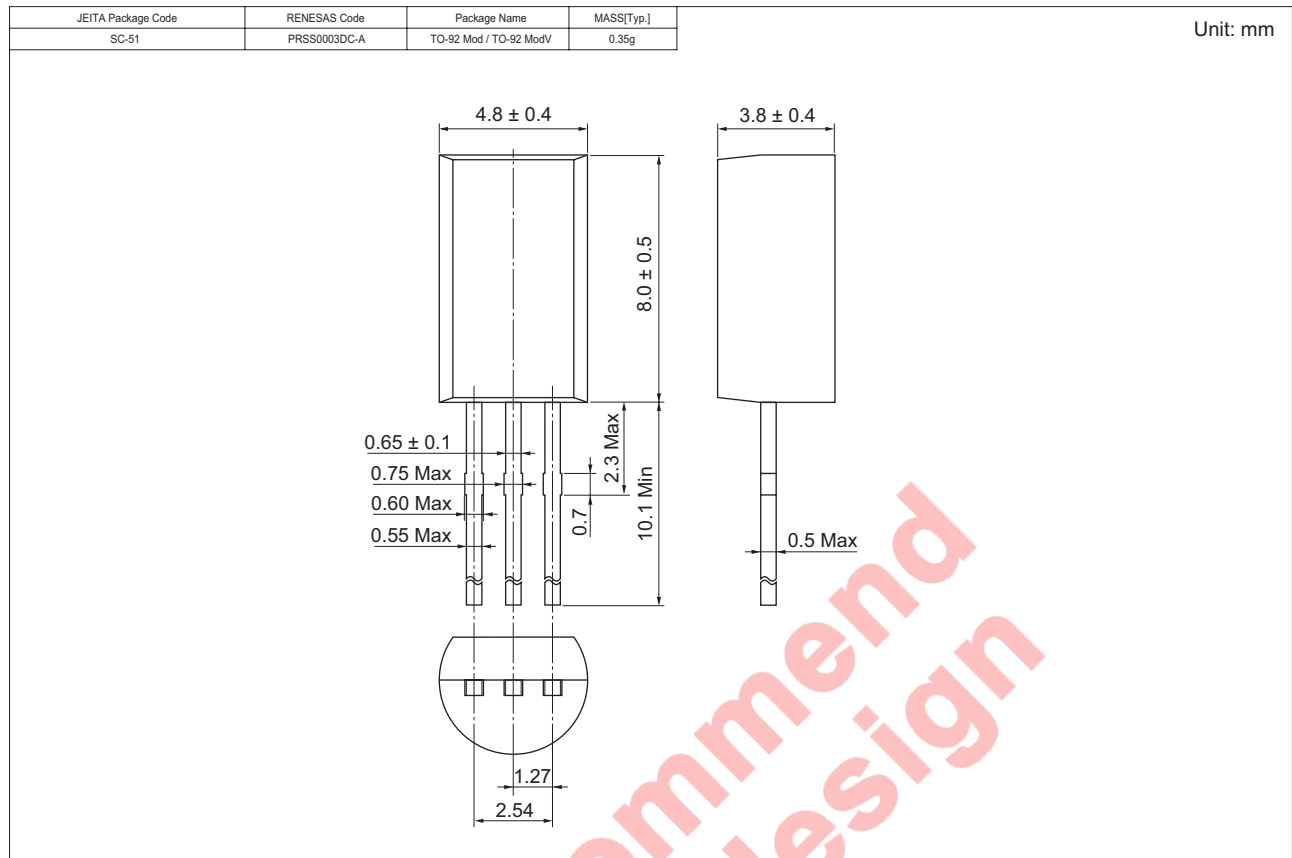
Saturation Voltage vs. Collector Current





Not recommended  
for new design

## Package Dimensions



## Ordering Information

| Part Name   | Quantity | Shipping Container      |
|-------------|----------|-------------------------|
| 2SD788CTZ-E | 2500     | Hold Box, Radial Taping |
| 2SD788DTZ-E |          |                         |

Note: For some grades, production may be terminated. Please contact the Renesas sales office to check the state of production before ordering the product.

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