

# 2SA1193(K)

Silicon PNP Epitaxial, Darlington

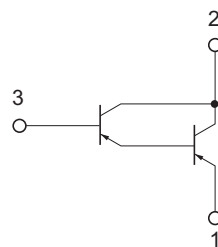
REJ03G0641-0200  
(Previous ADE-208-1013)  
Rev.2.00  
Aug.10.2005

## Application

High gain amplifier

## 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 |
|------------------------------|---------------|-------------|------|
| Collector to base voltage    | $V_{CB0}$     | -60         | V    |
| Collector to emitter voltage | $V_{CE0}$     | -60         | V    |
| Emitter to base voltage      | $V_{EB0}$     | -7          | V    |
| Collector current            | $I_C$         | -0.5        | A    |
| Collector peak current       | $i_{C(peak)}$ | -1.0        | A    |
| Collector power dissipation  | $P_C$         | 0.9         | W    |
| Junction temperature         | $T_j$         | 150         | °C   |
| Storage temperature          | $T_{stg}$     | -55 to +150 | °C   |

## Electrical Characteristics

(Ta = 25°C)

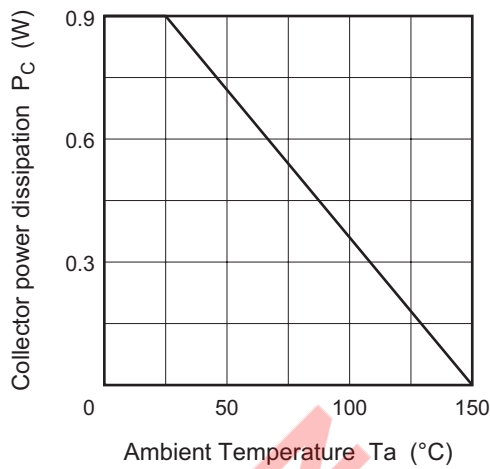
| Item                                    | Symbol        | Min  | Typ | Max  | Unit          | Test conditions  |
|---|---------------|------|-----|------|---------------|--|
| Collector to emitter breakdown voltage  | $V_{(BR)CEO}$ | -60  | —   | —    | V             | $I_C = -1 \text{ mA}$ , $R_{BE} = \infty$              |
| Collector cutoff current                | $I_{CBO}$     | —    | —   | -1.0 | $\mu\text{A}$ | $V_{CB} = -60 \text{ V}$ , $I_E = 0$                   |
| Emitter cutoff current                  | $I_{EBO}$     | —    | —   | -1.0 | $\mu\text{A}$ | $V_{EB} = -7 \text{ V}$ , $I_C = 0$                    |
| DC current transfer ratio               | $h_{FE}$      | 2000 | —   | —    |               | $V_{CE} = -3 \text{ V}$ , $I_C = -250 \text{ mA}^{*1}$ |
| Collector to emitter saturation voltage | $V_{CE(sat)}$ | —    | —   | -1.5 | V             | $I_C = -250 \text{ mA}$ , $I_B = -0.5 \text{ mA}^{*1}$ |
| Base to emitter saturation voltage      | $V_{BE(sat)}$ | —    | —   | -2.0 | V             |  |
| Turn on time                            | $t_{on}$      | —    | 0.3 | —    | $\mu\text{s}$ | $I_C = -250 \text{ mA}$                                |
| Turn off time                           | $t_{off}$     | —    | 0.9 | —    | $\mu\text{s}$ | $I_{B1} = -I_{B2} = -0.5 \text{ mA}$                   |

Note: 1. Pulse test

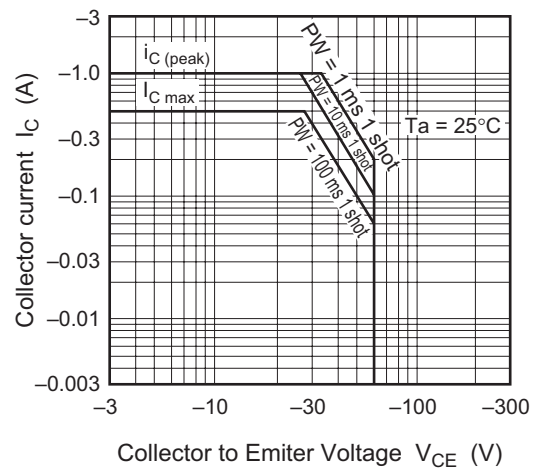
Not recommend  
for new design

## Main Characteristics

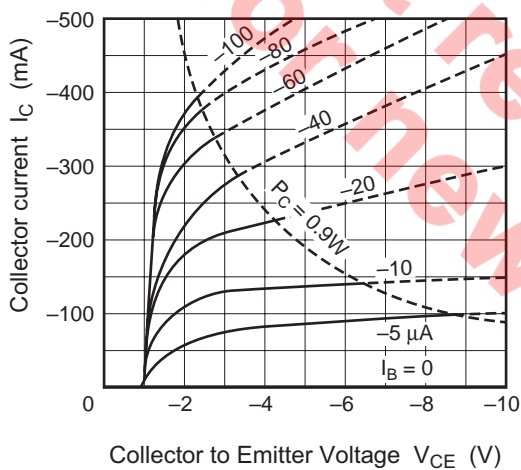
Maximum Collector Dissipation Curve



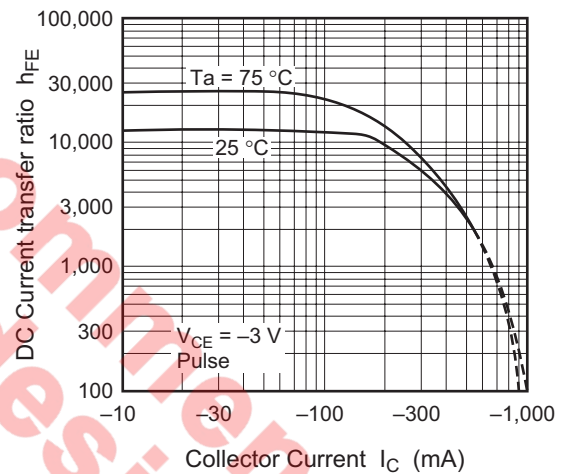
Area of Safe Operation



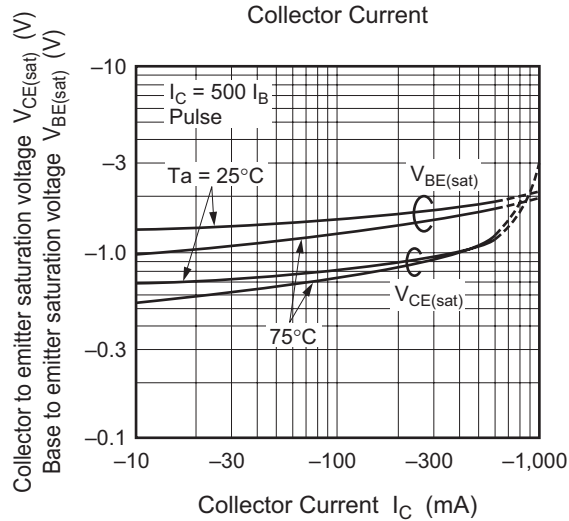
Typical Output Characteristics



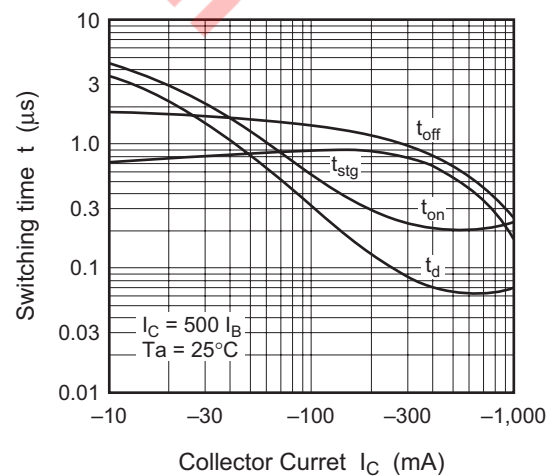
DC Current Transfer Ratio vs. Collector Current



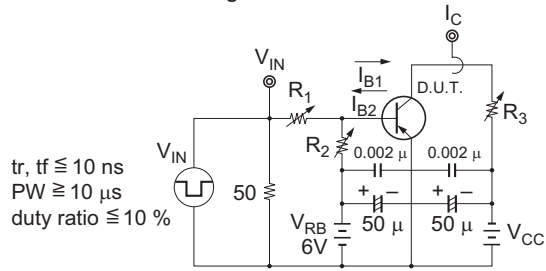
Saturation Voltage vs. Collector Current



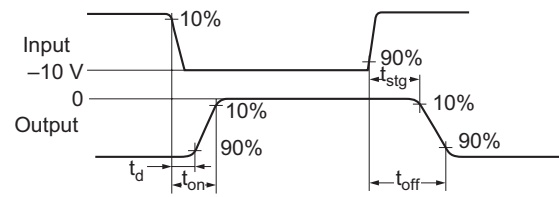
Switching Time vs. Collector Current



Switching Time Test Circuit

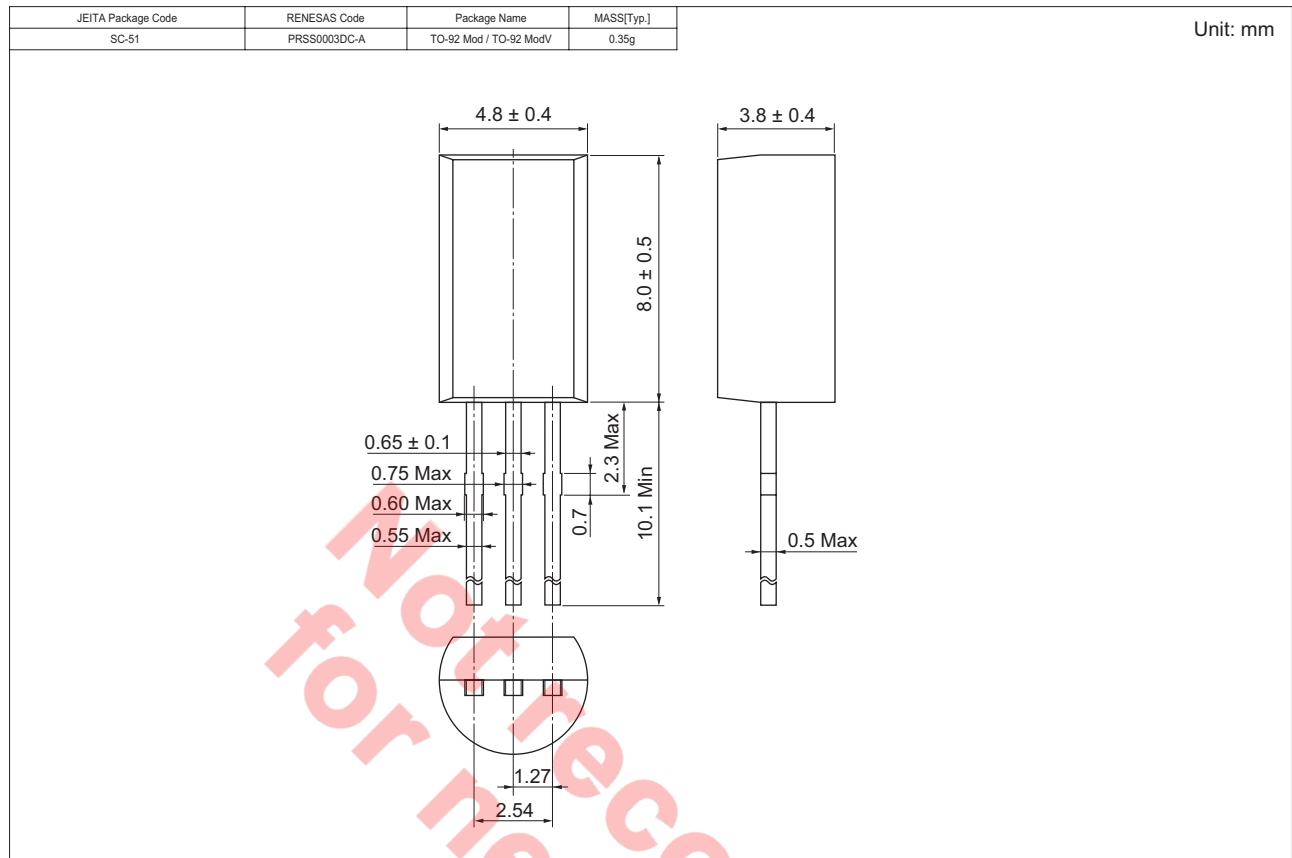


Response Waveform



Not recommend  
for new design

## Package Dimensions



## Ordering Information

| Part Name    | Quantity | Shipping Container      |
|--------------|----------|-------------------------|
| 2SA1193KTZ-E | 2500     | Hold Box, Radial Taping |

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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