

2SC535

Silicon NPN Epitaxial Planar

REJ03G0683-0200
(Previous ADE-208-1047)
Rev.2.00
Aug.10.2005

Application

VHF amplifier, mixer, local oscillator

Outline

RENESAS Package code: PRSS0003DA-C
(Package name: TO-92 (2))



1. Emitter
2. Collector
3. Base

Absolute Maximum Ratings

(Ta = 25°C)

| Item | Symbol | Ratings | Unit |
|------------------------------|-----------|-------------|------|
| Collector to base voltage | V_{CBO} | 30 | V |
| Collector to emitter voltage | V_{CEO} | 20 | V |
| Emitter to base voltage | V_{EBO} | 4 | V |
| Collector current | I_C | 20 | mA |
| Collector power dissipation | P_C | 100 | mW |
| Junction temperature | T_j | 150 | °C |
| Storage temperature | T_{stg} | -55 to +150 | °C |

Electrical Characteristics

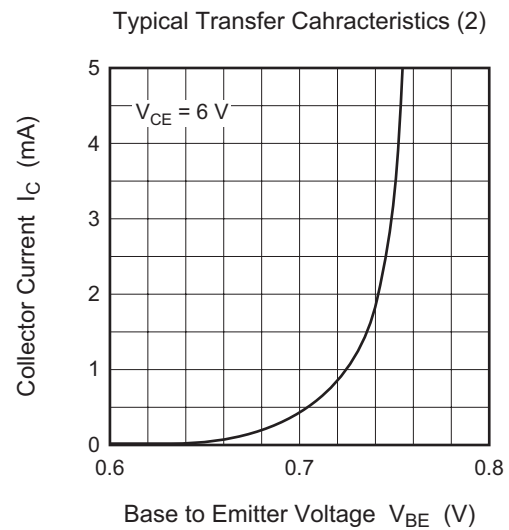
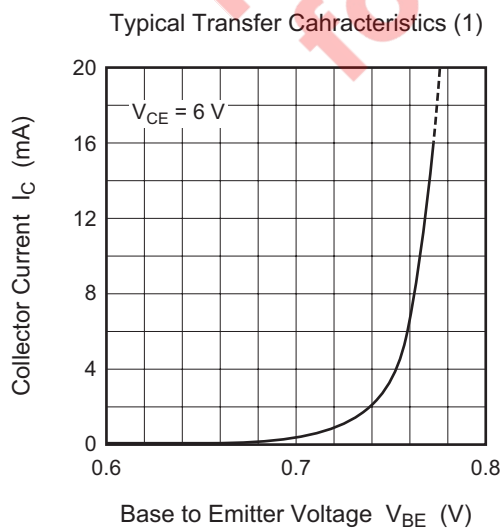
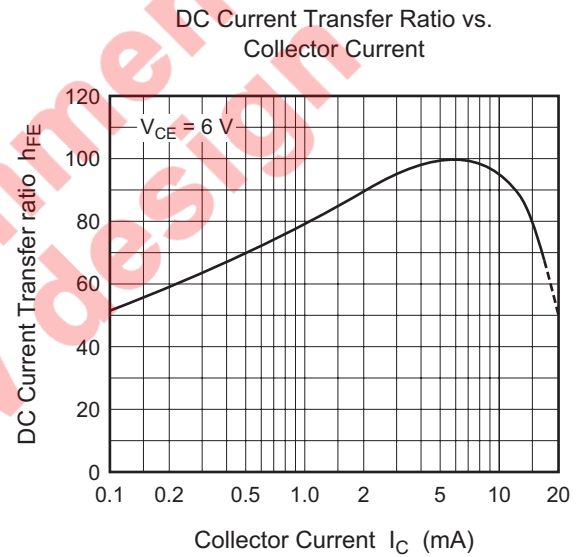
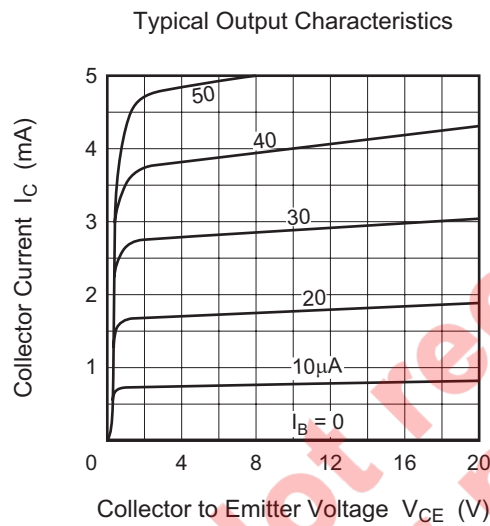
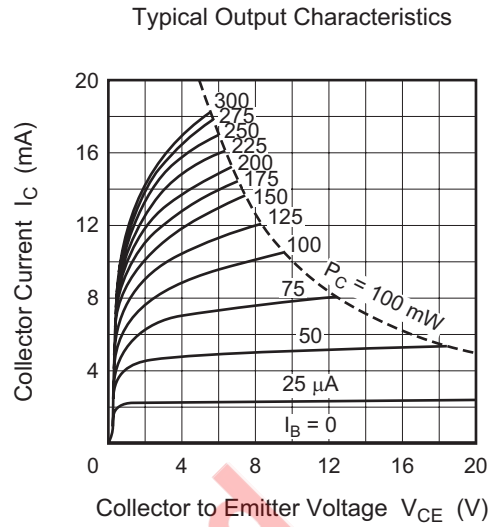
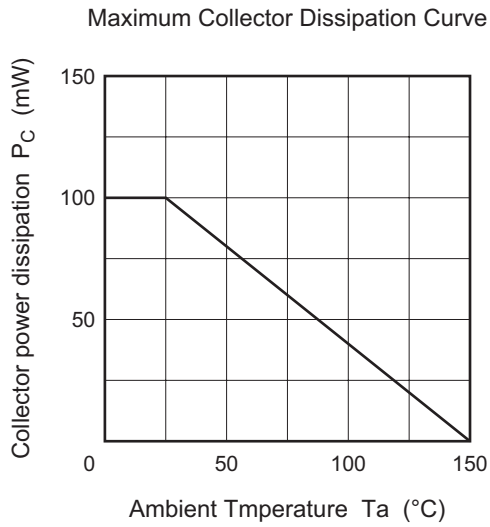
(Ta = 25°C)

| Item | Symbol | Min | Typ | Max | Unit | Test conditions |
|---|---------------|----------------|------|-----|---------|--|
| Collector to base breakdown voltage | $V_{(BR)CBO}$ | 30 | — | — | V | $I_C = 10 \mu A, I_E = 0$ |
| Collector to emitter breakdown voltage | $V_{(BR)CEO}$ | 20 | — | — | V | $I_C = 1 \text{ mA}, R_{BE} = \infty$ |
| Emitter to base breakdown voltage | $V_{(BR)EBO}$ | 4 | — | — | V | $I_E = 10 \mu A, I_C = 0$ |
| Collector cutoff current | I_{CBO} | — | — | 0.5 | μA | $V_{CB} = 10 \text{ V}, I_E = 0$ |
| DC current transfer ratio | h_{FE}^{*1} | 60 | — | 200 | | $V_{CE} = 6 \text{ V}, I_C = 1 \text{ mA}$ |
| Base to emitter voltage | V_{BE} | — | 0.72 | — | V | $V_{CE} = 6 \text{ V}, I_C = 1 \text{ mA}$ |
| Collector to emitter saturation voltage | $V_{CE(sat)}$ | — | 0.17 | — | V | $I_C = 20 \text{ mA}, I_B = 4 \text{ mA}$ |
| Gain bandwidth product | f_T | 450 | 940 | — | MHz | $V_{CE} = 6 \text{ V}, I_C = 5 \text{ mA}$ |
| Collector output capacitance | C_{ob} | — | 0.9 | 1.2 | pF | $V_{CB} = 10 \text{ V}, I_E = 0, f = 1 \text{ MHz}$ |
| Power gain | PG | 17 | 20 | — | dB | $V_{CE} = 6 \text{ V}, I_C = 1 \text{ mA}, f = 100 \text{ MHz}$ |
| Noise figure | NF | — | 3.5 | 5.5 | dB | $V_{CE} = 6 \text{ V}, I_C = 1 \text{ mA}, f = 100 \text{ MHz}, R_g = 50 \Omega$ |
| Input admittance (typ) | y_{ie} | 1.3 + j5.3 | | | mS | $V_{CE} = 6 \text{ V}, I_C = 1 \text{ mA}, f = 100 \text{ MHz}$ |
| Reverse transfer admittance (typ) | y_{re} | -0.078 - j0.41 | | | mS | |
| Forward transfer admittance (typ) | y_{fe} | 32 - j10 | | | mS | |
| Output admittance (typ) | y_{oe} | 0.08 + j0.82 | | | mS | |
| | | | | | | |

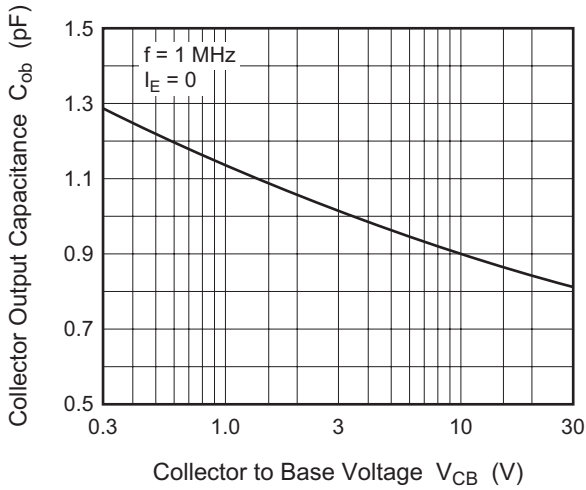
Note: 1. The 2SC535 is grouped by h_{FE} as follows.

| B | C |
|-----------|------------|
| 60 to 120 | 100 to 200 |

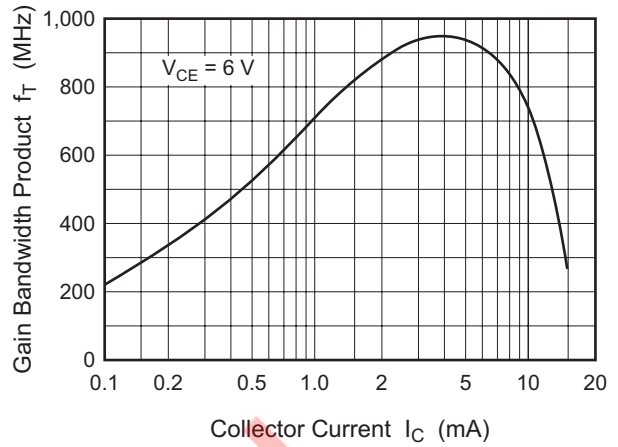
Main Characteristics



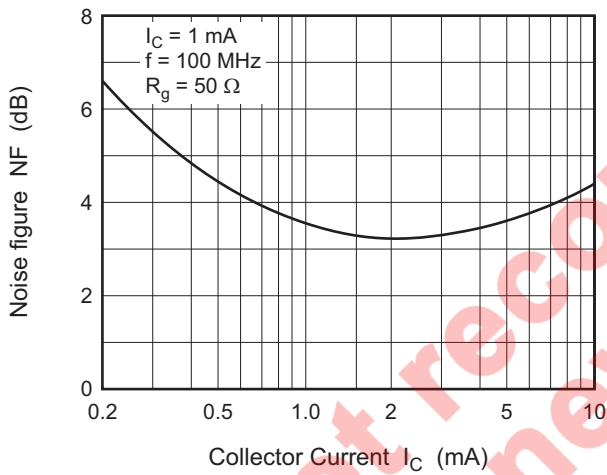
Collector Output Capacitance vs. Collector to Base Voltage



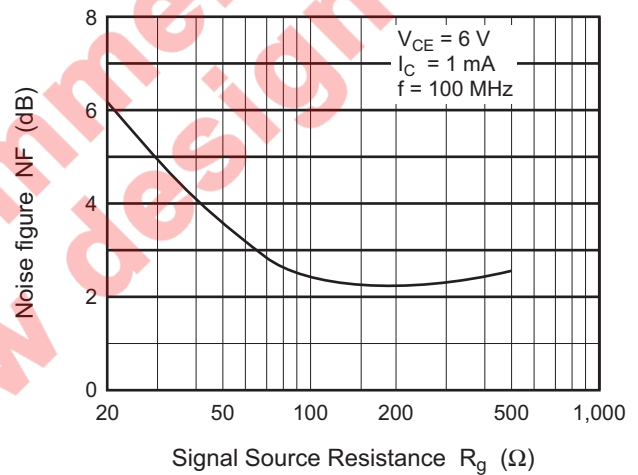
Gain Bandwidth Product vs. Collector Current



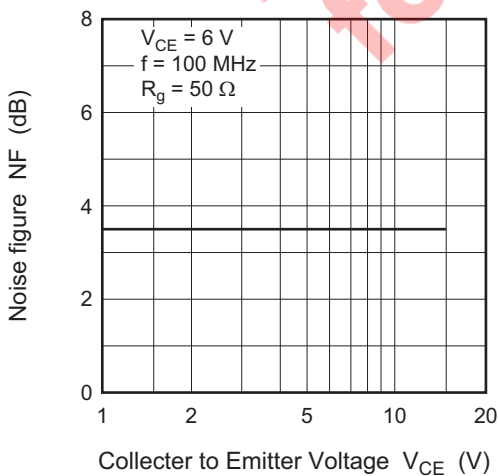
Noise Figure vs. Collector Current



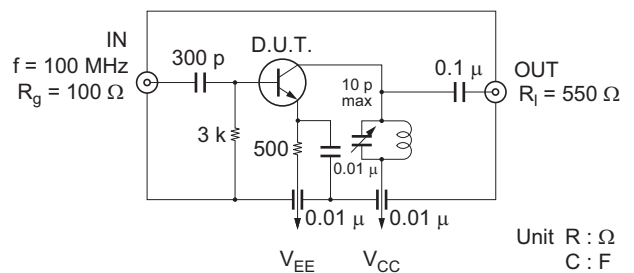
Noise Figure vs. Signal Source Resistance



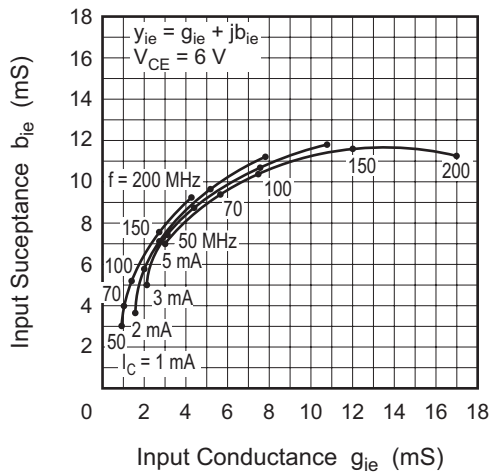
Noise Figure vs. Collector to Emitter Voltage



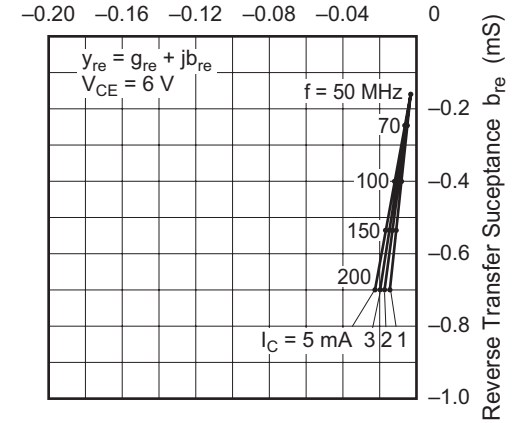
100 MHz Power Gain Test Circuit



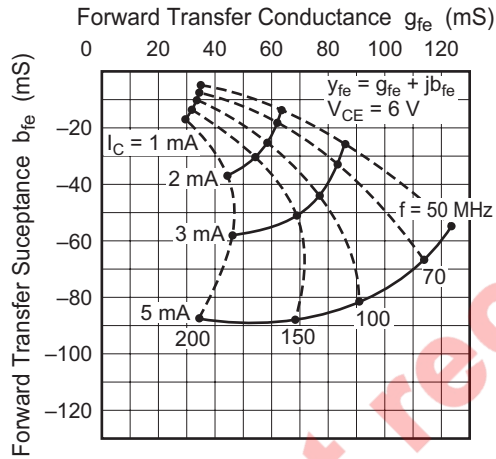
Input Admittance Characteristics



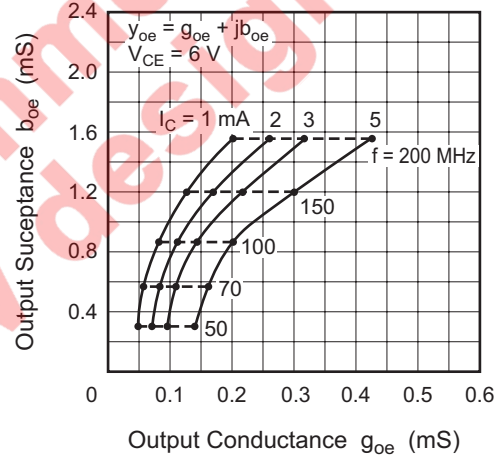
Reverse Transfer Admittance Characteristics



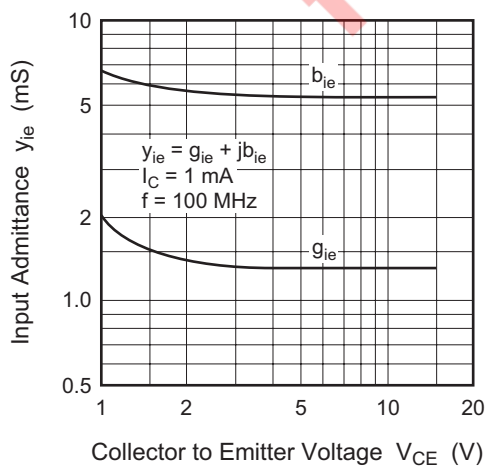
Forward Transfer Admittance Characteristics



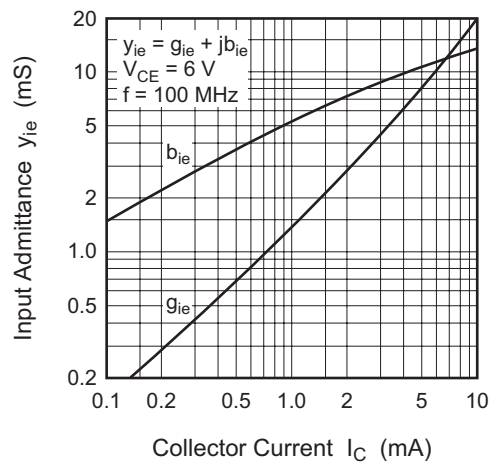
Output Admittance Characteristics

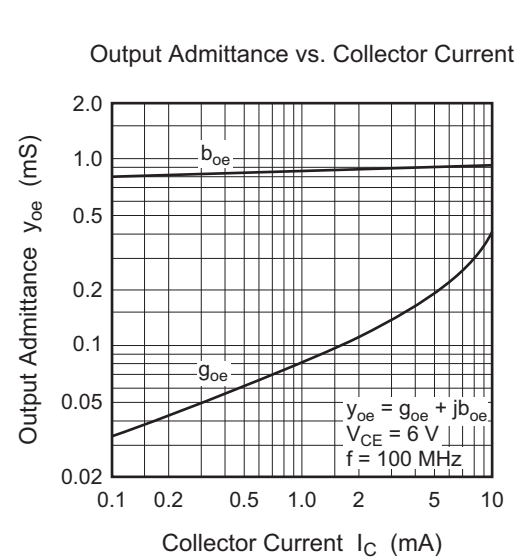
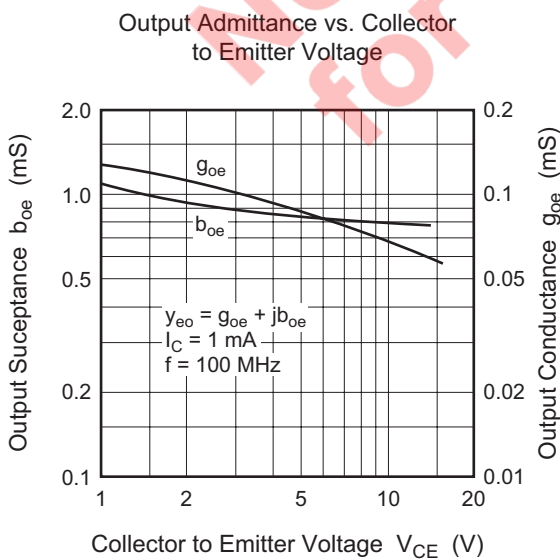
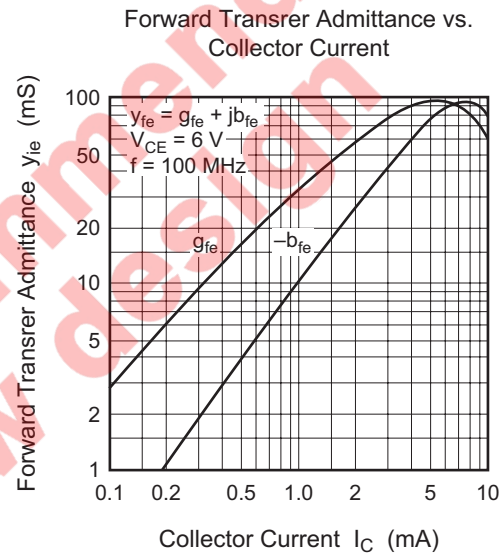
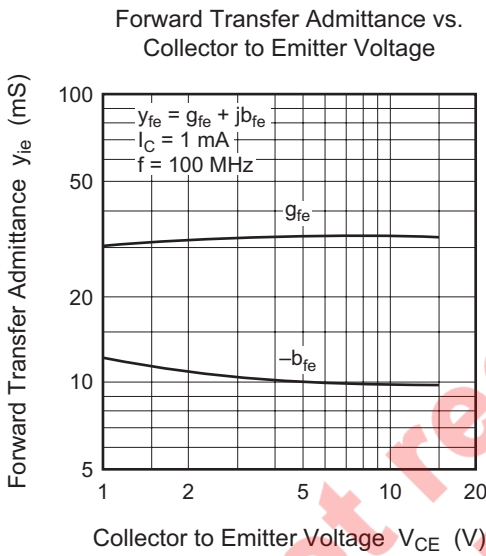
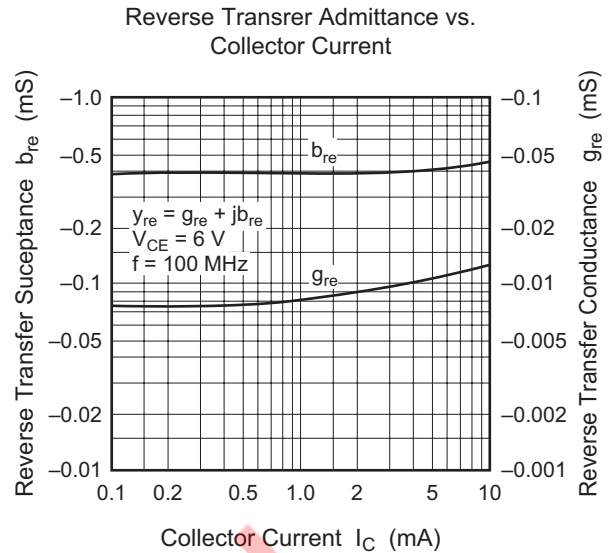
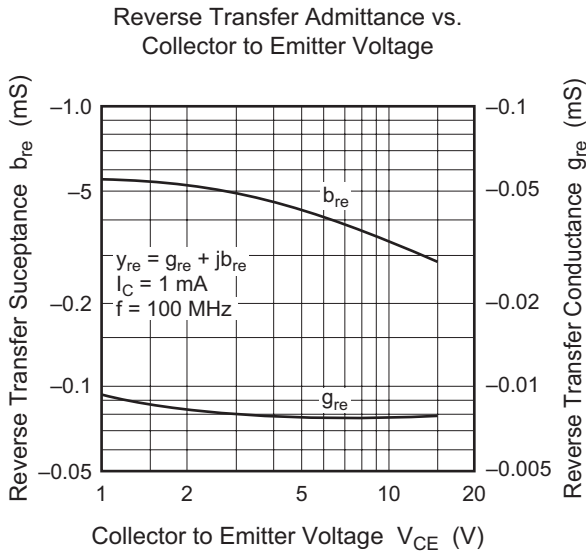


Input Admittance vs. Collector to Emitter Voltage

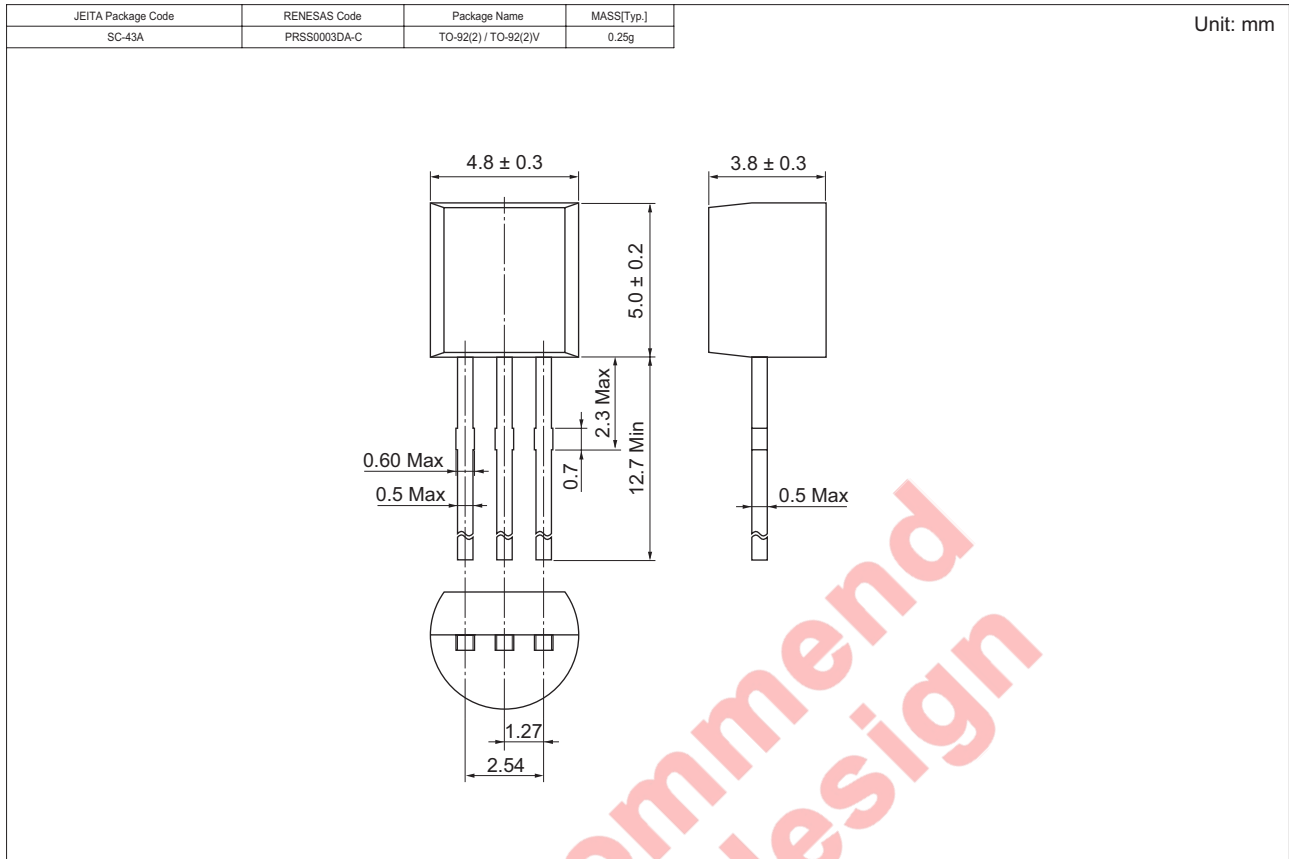


Input Admittance vs. Collector Current





Package Dimensions



Ordering Information

| Part Name | Quantity | Shipping Container |
|-----------|----------|-------------------------|
| 2SC535BTZ | 2500 | Hold Box, Radial Taping |
| 2SC535CTZ | | |

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