

## 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

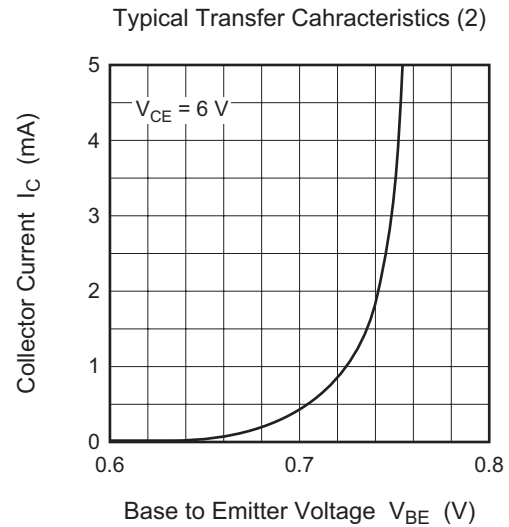
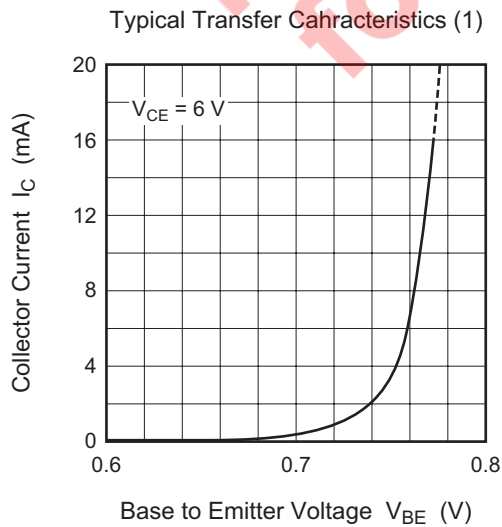
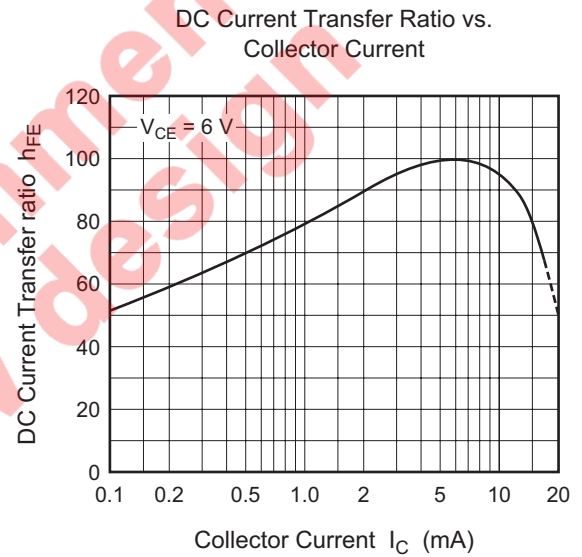
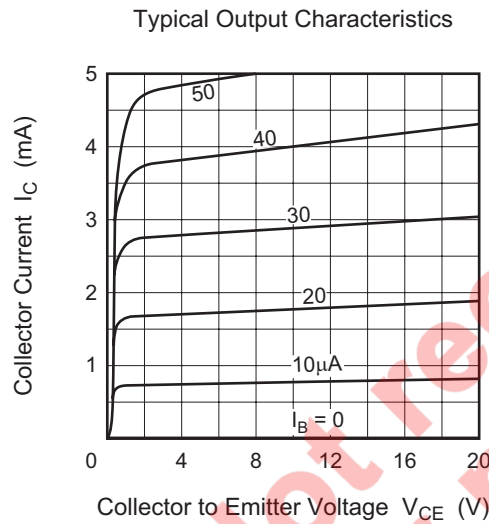
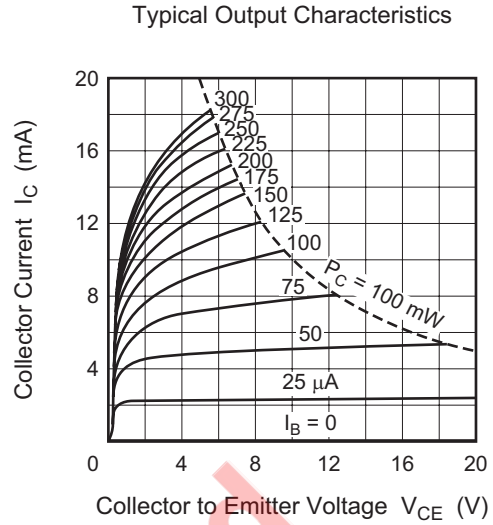
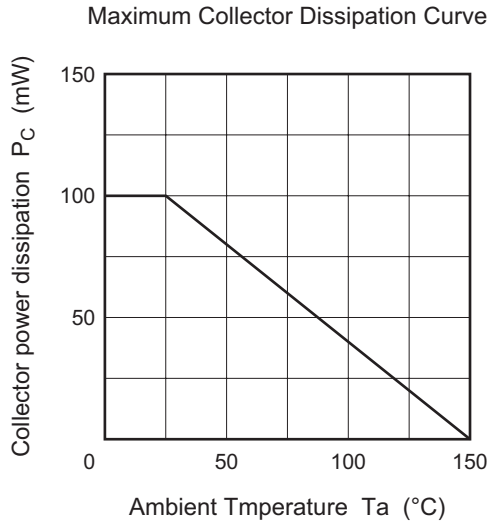
(Ta = 25°C)

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	$\mu A$	$V_{CB} = 10 \text{ V}, I_E = 0$
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	

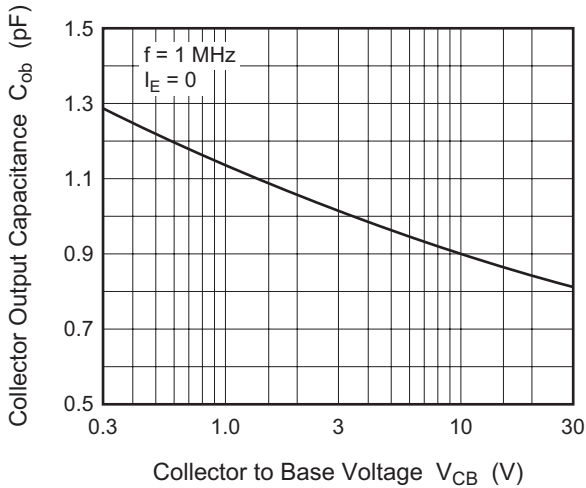
Note: 1. The 2SC535 is grouped by  $h_{FE}$  as follows.

B	C
60 to 120	100 to 200

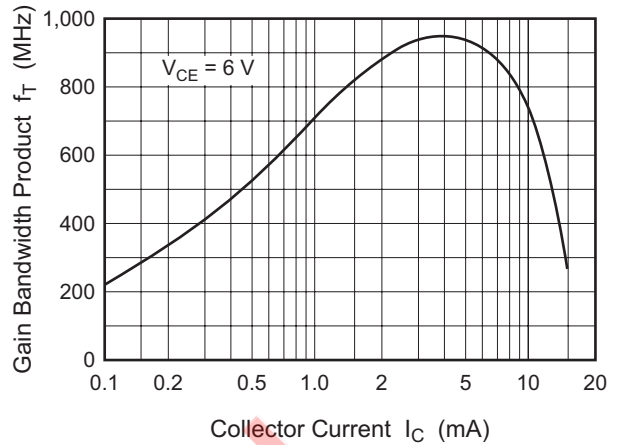
Main Characteristics



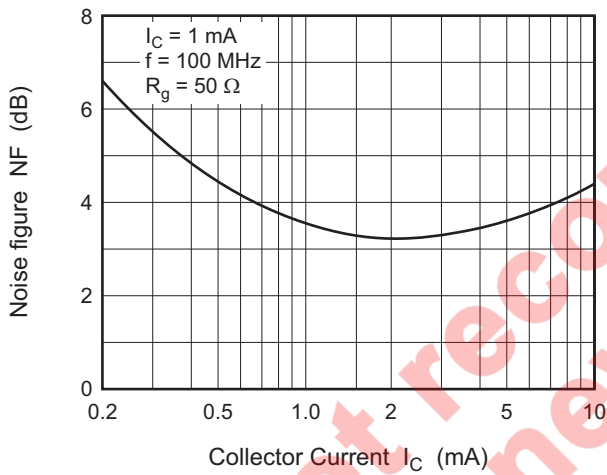
Collector Output Capacitance vs. Collector to Base Voltage



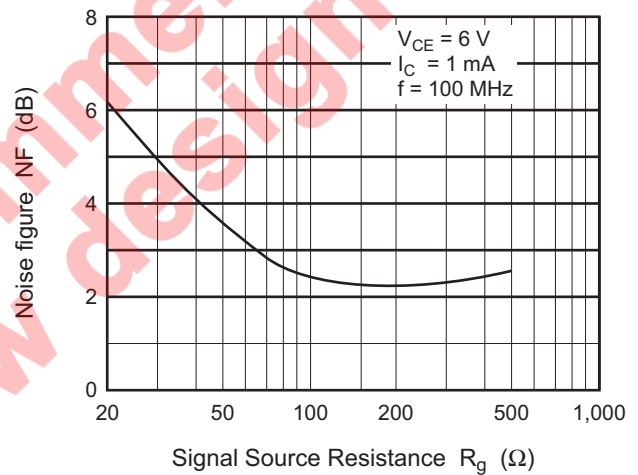
Gain Bandwidth Product vs. Collector Current



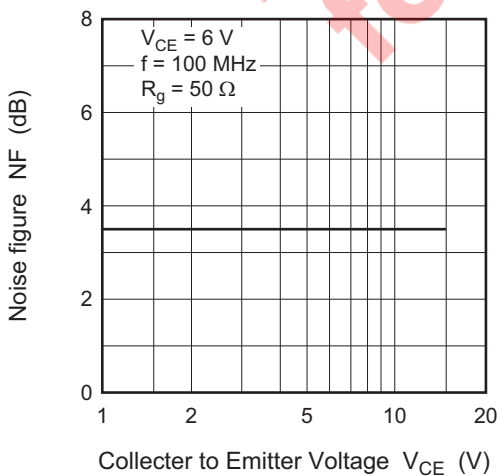
Noise Figure vs. Collector Current



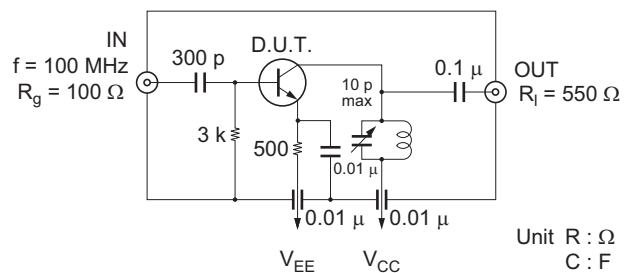
Noise Figure vs. Signal Source Resistance



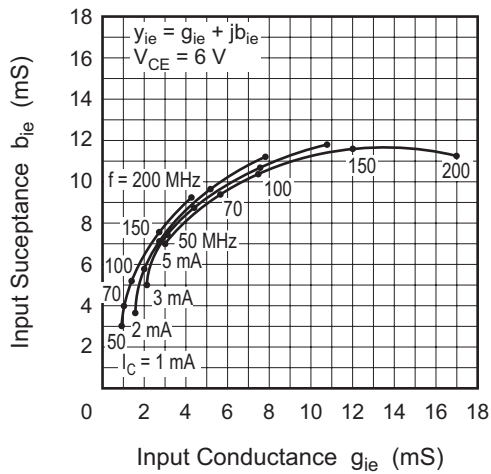
Noise Figure vs. Collector to Emitter Voltage



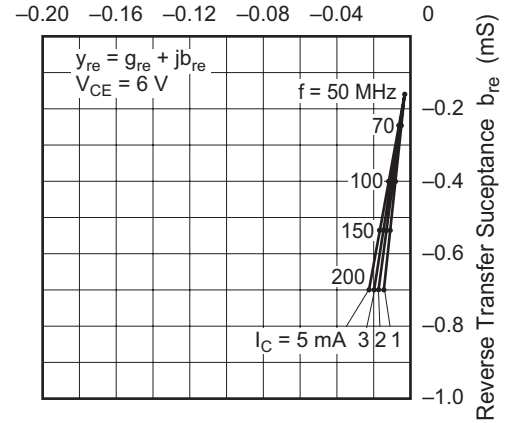
100 MHz Power Gain Test Circuit



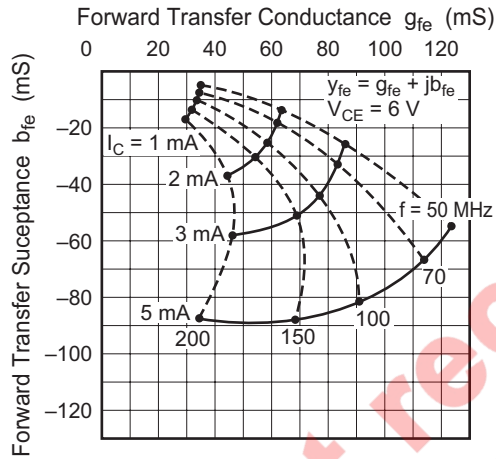
Input Admittance Characteristics



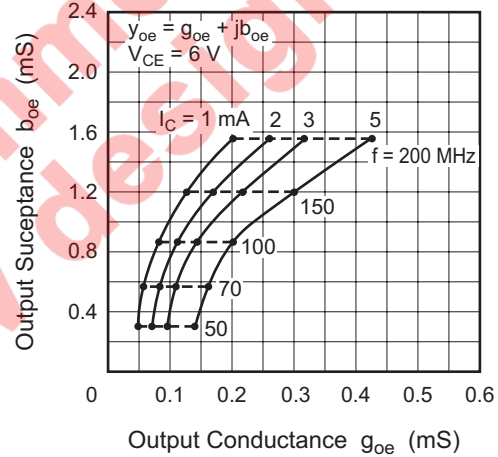
Reverse Transfer Admittance Characteristics



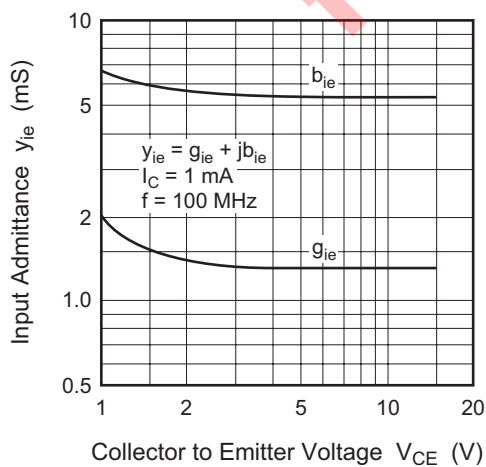
Forward Transfer Admittance Characteristics



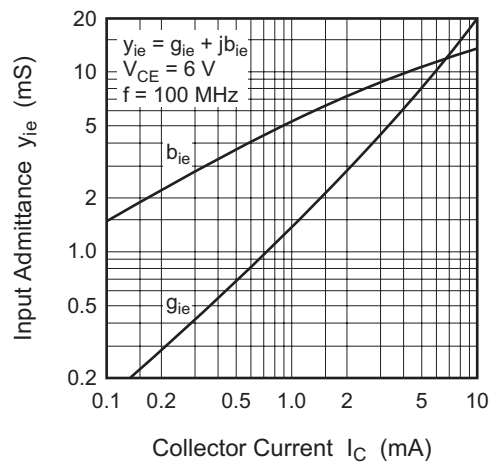
Output Admittance Characteristics

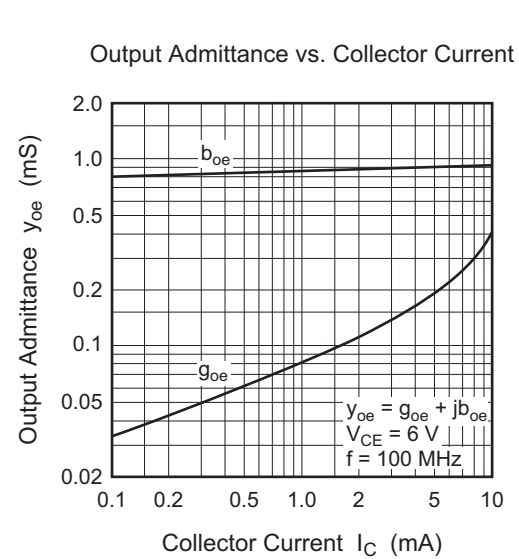
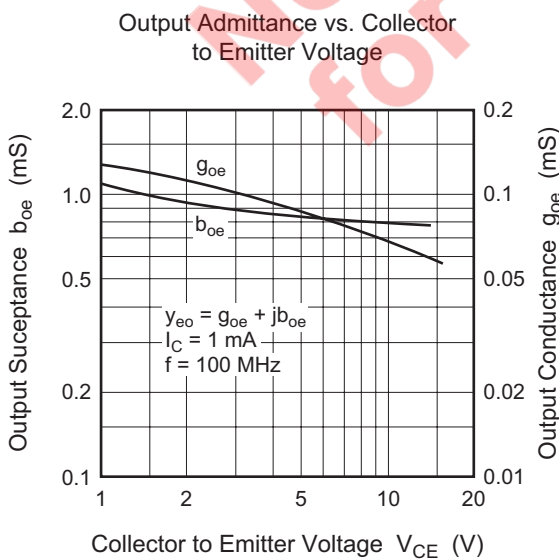
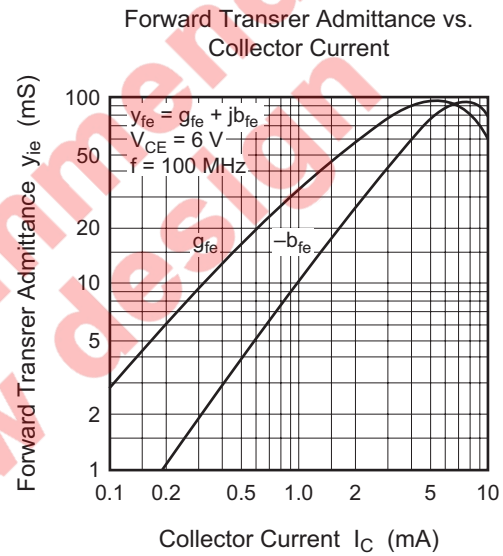
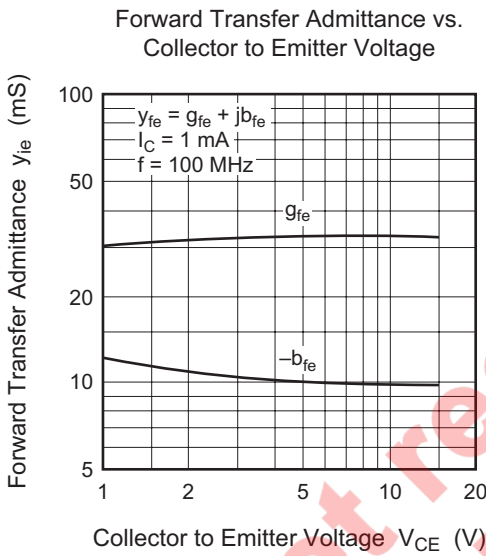
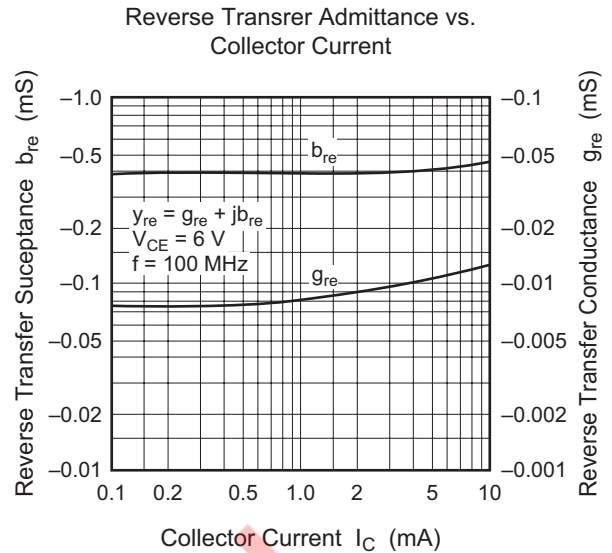
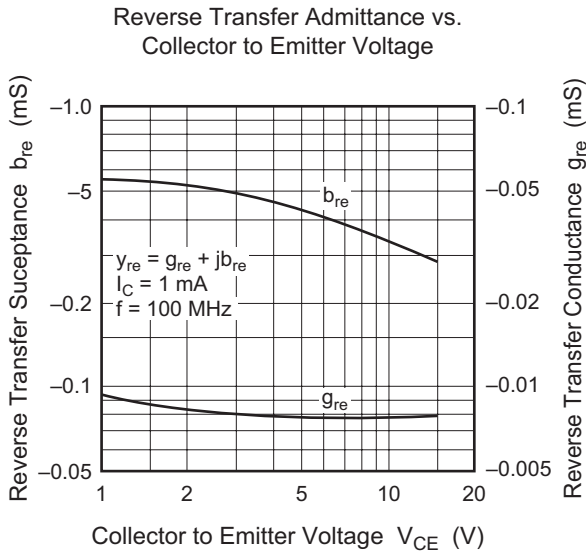


Input Admittance vs. Collector to Emitter Voltage

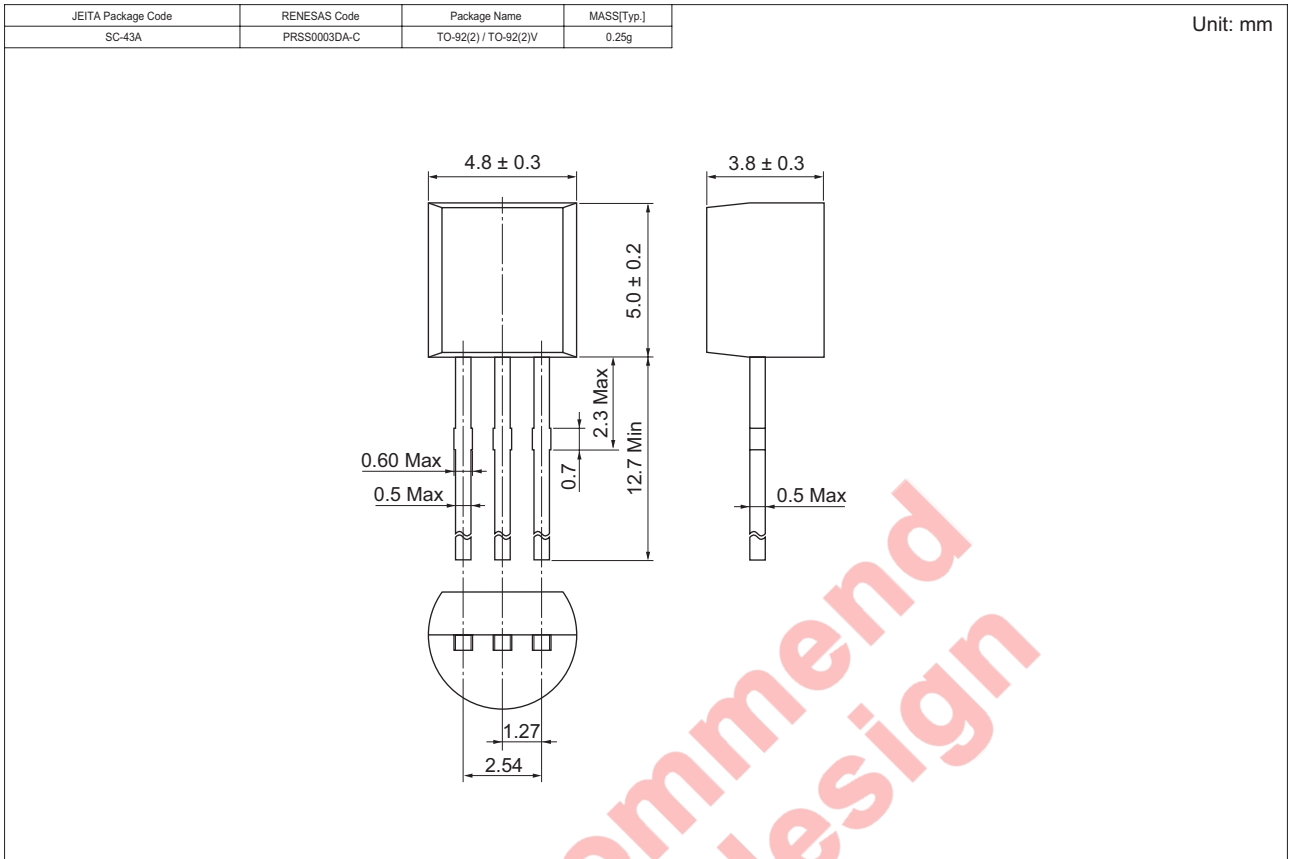


Input Admittance vs. Collector Current





### Package Dimensions



### Ordering Information

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

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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