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Renesas Technology Corp.
Customer Support Dept.
April 1, 2003

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2SC535

Silicon NPN Epitaxial Planar

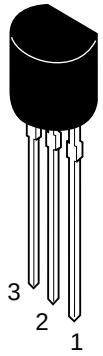
ADE-208-1047 (Z)
1st. Edition
Mar. 2001

Application

VHF amplifier, mixer, local oscillator

Outline

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	Tj	150	°C
Storage temperature	Tstg	–55 to +150	°C

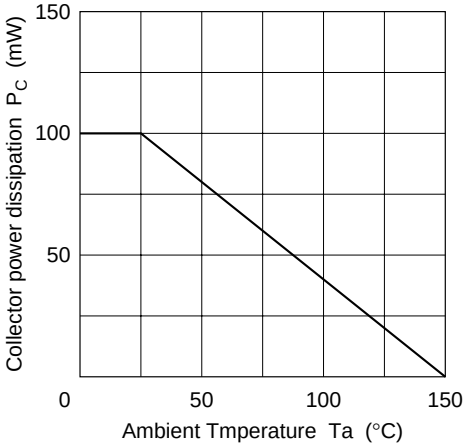
Electrical Characteristics (Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Collector to base breakdown voltage	$V_{(BR)CBO}$	30	—	—	V	I_C = 10 µA, I_E = 0
Collector to emitter breakdown voltage	$V_{(BR)CEO}$	20	—	—	V	I_C = 1 mA, R_{BE} =
Emitter to base breakdown voltage	$V_{(BR)EBO}$	4	—	—	V	I_E = 10 µA, I_C = 0
Collector cutoff current	I_{CBO}	—	—	0.5	µA	V_{CB} = 10 V, I_E = 0
DC current transfer ratio	h_{FE}*[1]	60	—	200		V_{CE} = 6 V, I_C = 1 mA
Base to emitter voltage	V_{BE}	—	0.72	—	V	V_{CE} = 6 V, I_C = 1 mA
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	0.17	—	V	I_C = 20 mA, I_B =4 mA
Gain bandwidth product	f_T	450	940	—	MHz	V_{CE} = 6 V, I_C = 5 mA
Collector output capacitance	Cob	—	0.9	1.2	pF	V_{CB} = 10 V, I_E = 0, f = 1 MHz
Power gain	PG	17	20	—	dB	V_{CE} = 6 V, I_C = 1 mA, f = 100 MHz
Noise figure	NF	—	3.5	5.5	dB	V_{CE} = 6 V, I_C = 1 mA, f = 100 MHz, R_g = 50 Ω
Input admittance (typ)	yie	1.3 + j5.3			mS	V_{CE} = 6 V, I_C = 1 mA, f = 100 MHz
Reverse transfer admittance (typ)	yre	–0.078 – j0.41			mS	
Foward transfer admittance (typ)	yfe	32 – j10			mS	
Output admittance (typ)	yoe	0.08 + j0.82			mS	

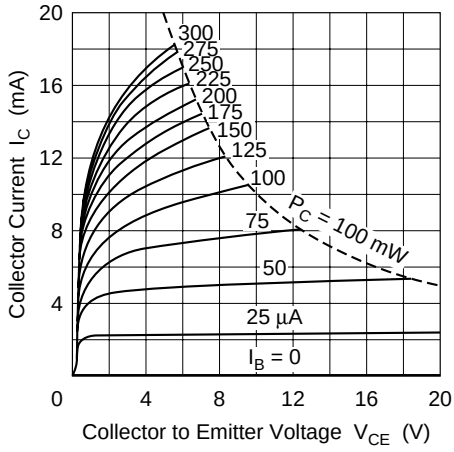
Note: 1. The 2SC535 is grouped by h_{FE} as follows.

B	C
60 to 120	100 to 200

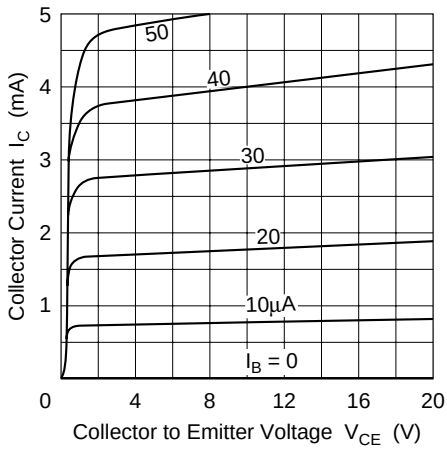
Maximum Collector Dissipation Curve



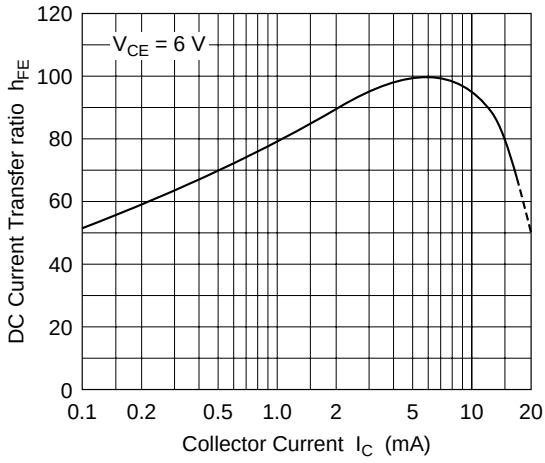
Typical Output Characteristics



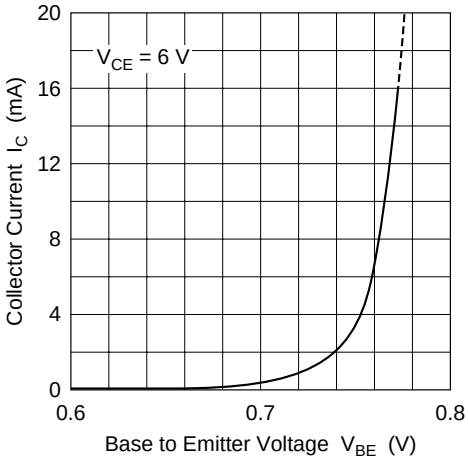
Typical Output Characteristics



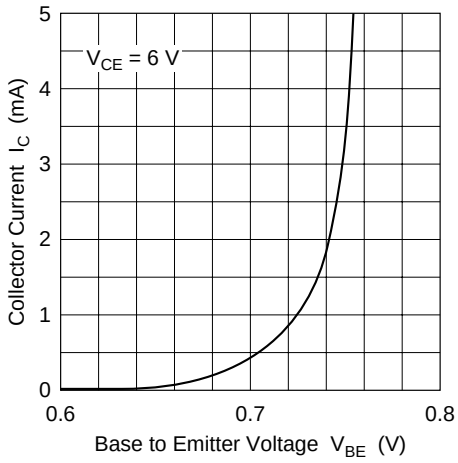
DC Current Transfer Ratio vs. Collector Current



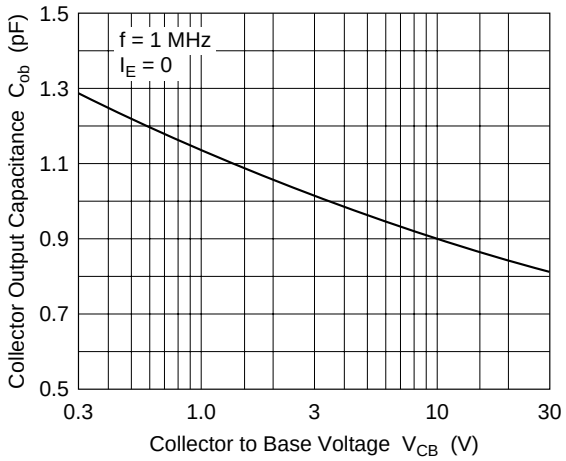
Typical Transfer Cahracteristics (1)



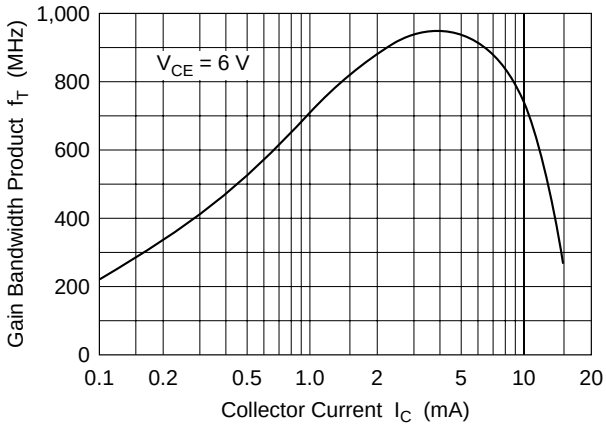
Typical Transfer Cahracteristics (2)



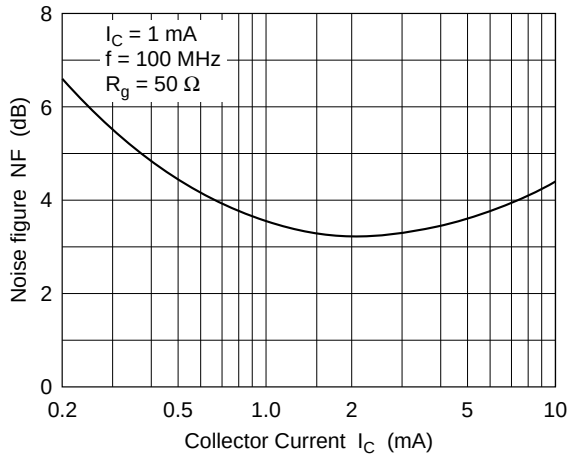
Collector Output Capacitance vs.
Collector to Base Voltage



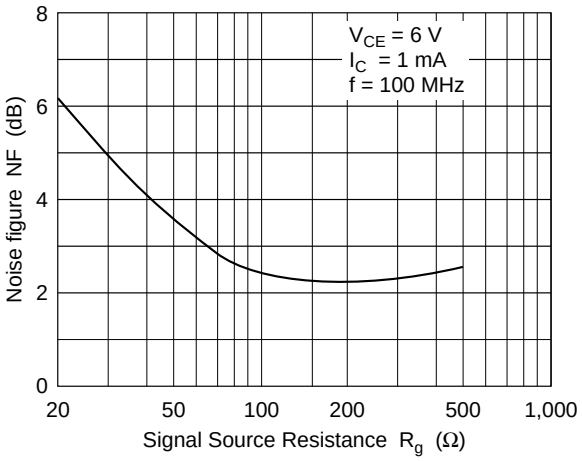
Gain Bandwidth Product vs. Collector Current



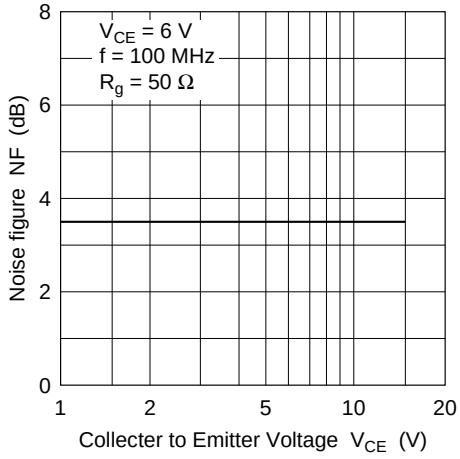
Noise Figure vs. Collector Current



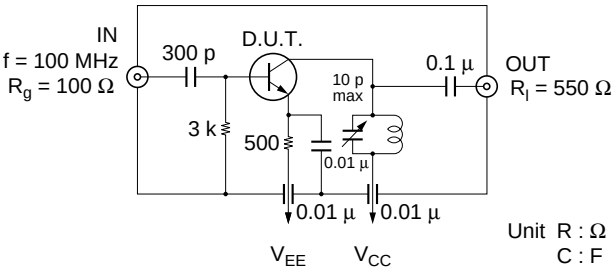
Noise Figure vs. Signal Source Resistance



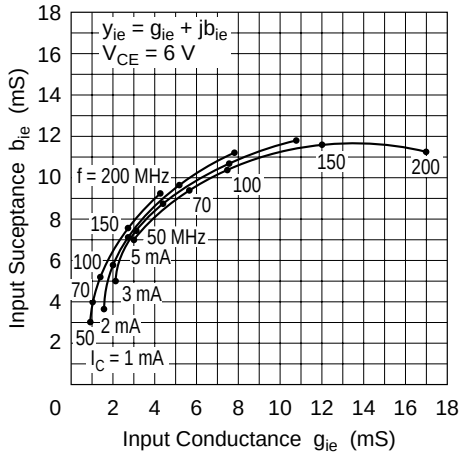
Noise Figure vs. Collector to Emitter Voltage



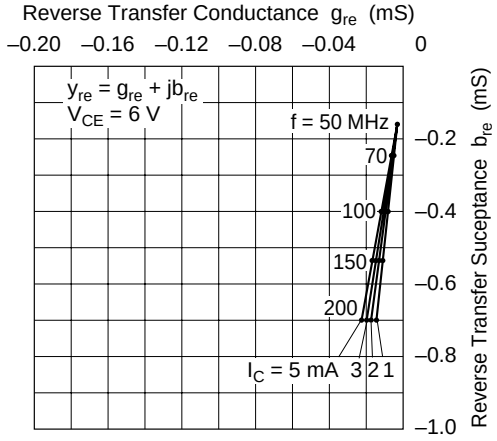
100 MHz Power Gain Test Circuit



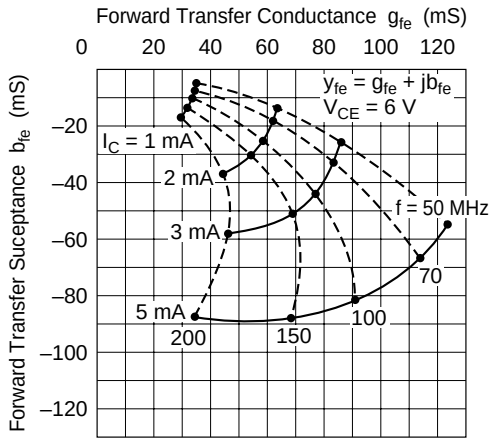
Input Admittance Characteristics



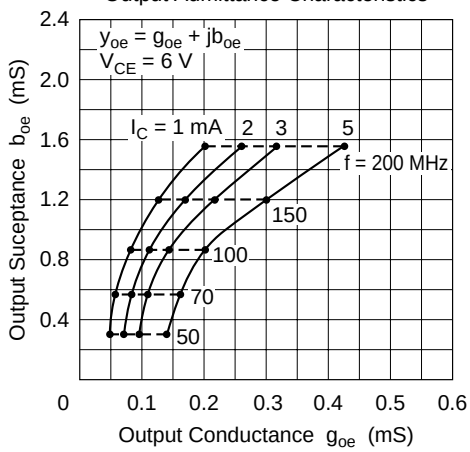
Reverse Transfer Admittance Characteristics



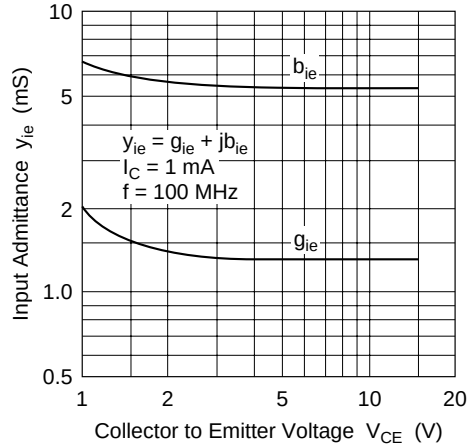
Forward Transfer Admittance Characteristics



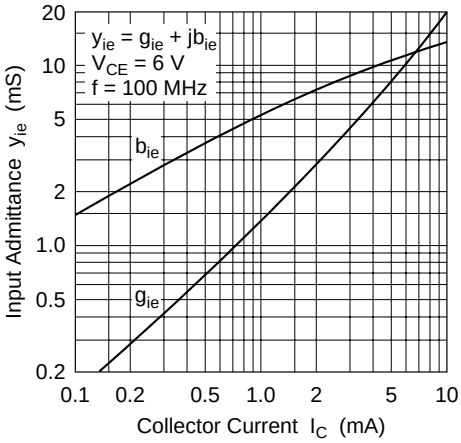
Output Admittance Characteristics



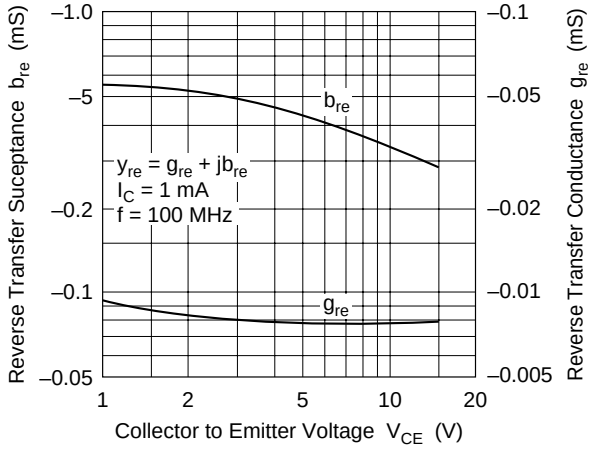
Input Admittance vs. Collector to Emitter Voltage



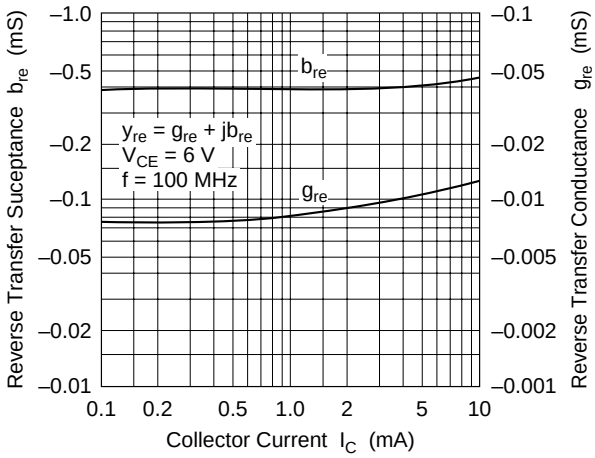
Input Admittance vs. Collector Current



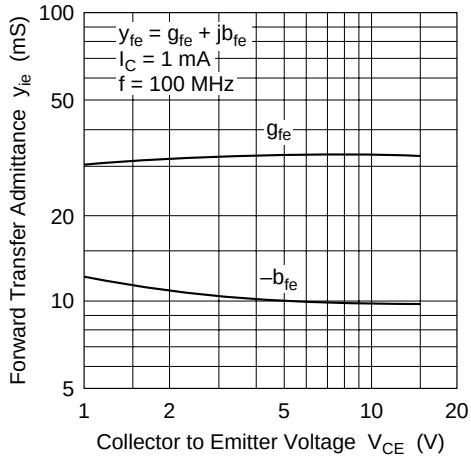
Reverse Transfer Admittance vs.
Collector to Emitter Voltage



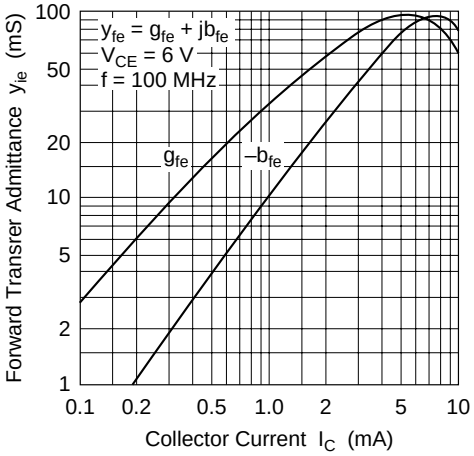
Reverse Transrer Admittance vs.
Collector Current



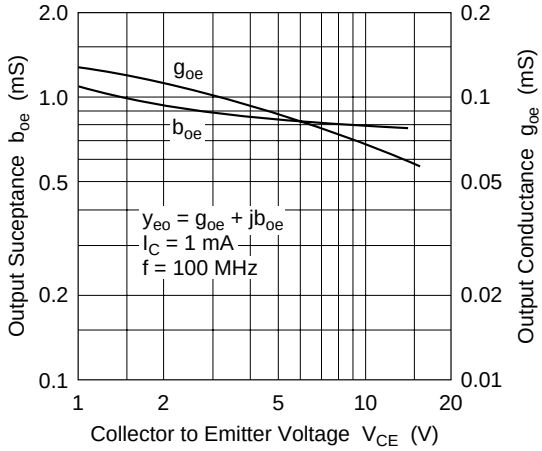
Forward Transfer Admittance vs.
Collector to Emitter Voltage



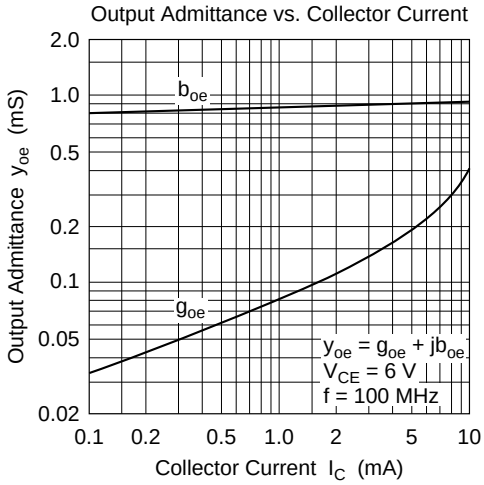
Forward Transrer Admittance vs. Collector Current



Output Admittance vs. Collector to Emitter Voltage



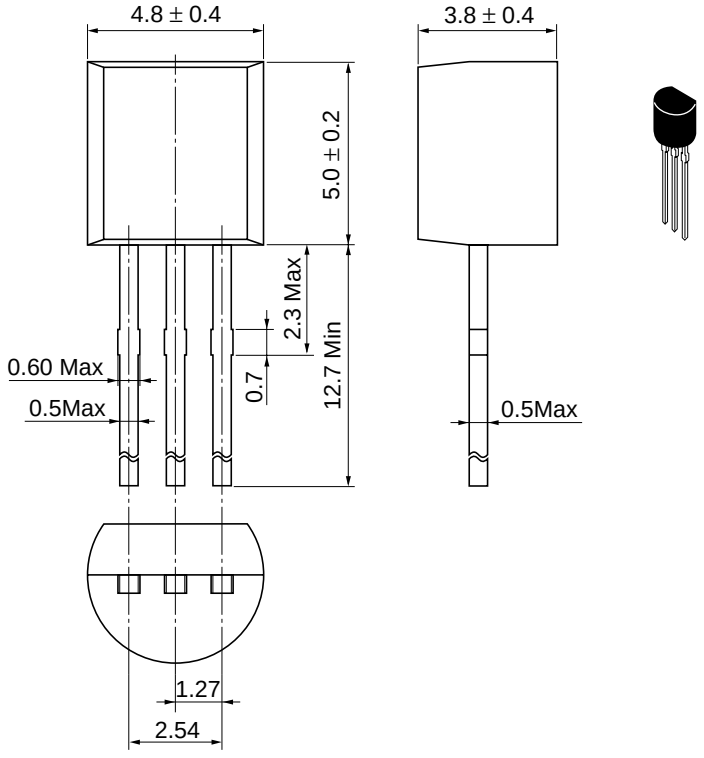
Output Admittance vs. Collector Current



Package Dimensions

As of January, 2001

Unit: mm



Hitachi Code	TO-92 (2)
JEDEC	Conforms
EIAJ	Conforms
Mass (reference value)	0.25 g

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