To all our customers

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Renesas Technology Home Page: http://www.renesas.com

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

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Keep safety first in your circuit designs!

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   Remember to give due consideration to safety when making your circuit designs, with appropriate measures such as (i) placement of substitutive, auxiliary circuits, (ii) use of nonflammable material or (iii) prevention against any malfunction or mishap.

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2SC1906

Silicon NPN Epitaxial Planar

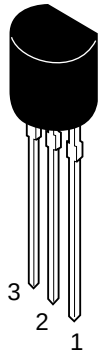
ADE-208-1058 (Z)
1st. Edition
Mar. 2001

Application

- VHF amplifier
- Mixer, Local oscillator

Outline

TO-92 (2)



1. Emitter
2. Collector
3. Base

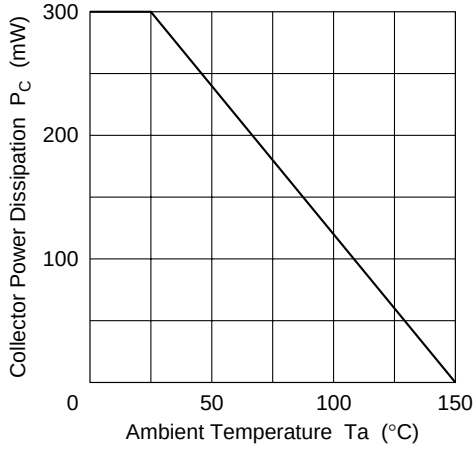
Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit
Collector to base voltage	V_{CBO}	30	V
Collector to emitter voltage	V_{CEO}	19	V
Emitter to base voltage	V_{EBO}	2	V
Collector current	I_C	50	mA
Emitter current	I_E	–50	mA
Collector power dissipation	P_C	300	mW
Junction temperature	Tj	150	°C
Storage temperature	Tstg	–55 to +150	°C

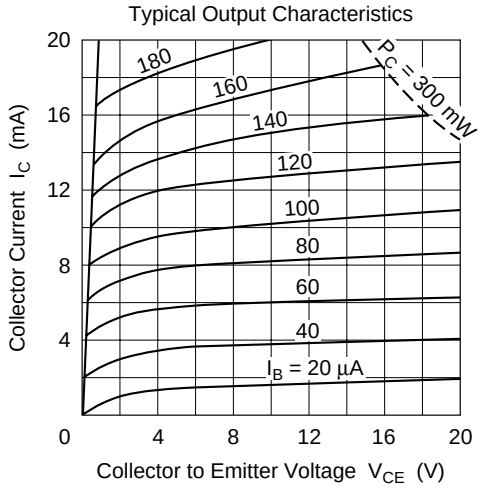
Electrical Characteristics (Ta = 25°C)

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	$V_{(BR)CEO}$	19	—	—	V	I_C = 3 mA, R_{BE} =
Emitter to base breakdown voltage	$V_{(BR)EBO}$	2	—	—	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}	40	—	—		V_{CE} = 10 V, I_C = 10 mA
Gain bandwidth product	f_T	600	1000	—	MHz	V_{CE} = 10 V, I_C = 10 mA
Collector output capacitance	Cob	—	1.0	2.0	pF	V_{CB} = 10 V, I_E = 0, f = 1 MHz
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	0.2	1.0	V	I_C = 20 mA, I_B = 4 mA
Base time constant	$r_{bb'} \cdot C_C$	—	10	25	ps	V_{CB} = 10 V, I_C = 10 mA, f = 31.8 MHz
Power gain	PG	—	33	—	dB	V_{CE} = 10 V, I_C = 5 mA f = 45 MHz
		—	18	—	dB	V_{CE} = 10 V, I_C = 5 mA f = 200 MHz

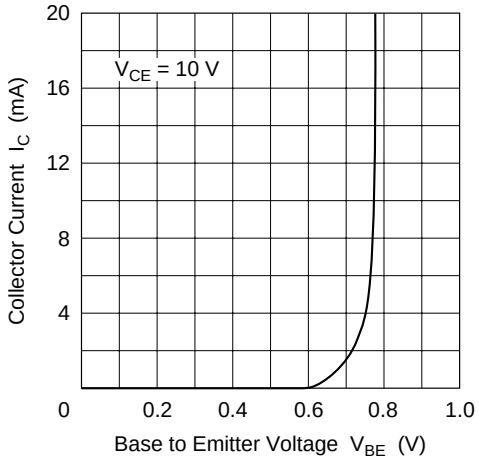
Maximum Collector Dissipation Curve



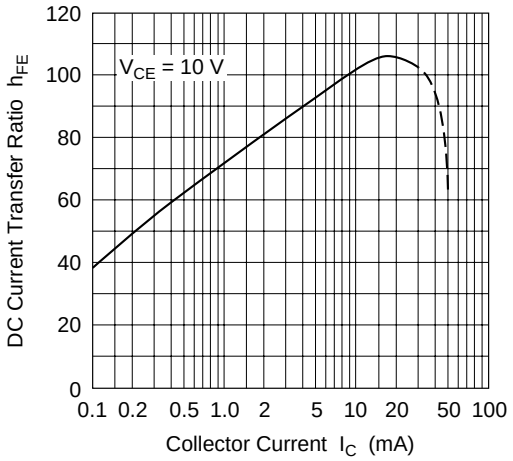
Typical Output Characteristics



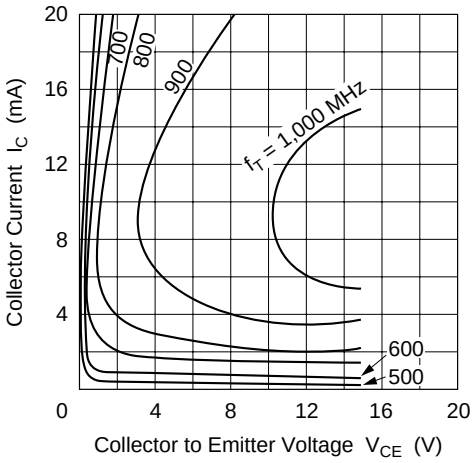
Typical Transfer Characteristics



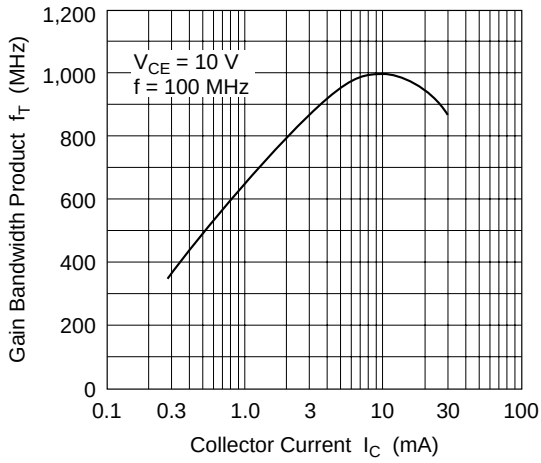
DC Current Transfer Ratio vs. Collector Current



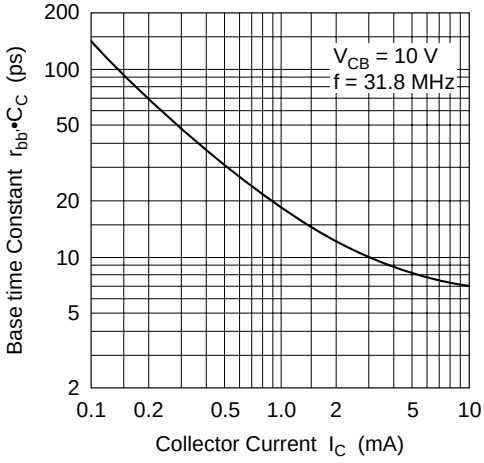
Gain Bandwidth Product Curve



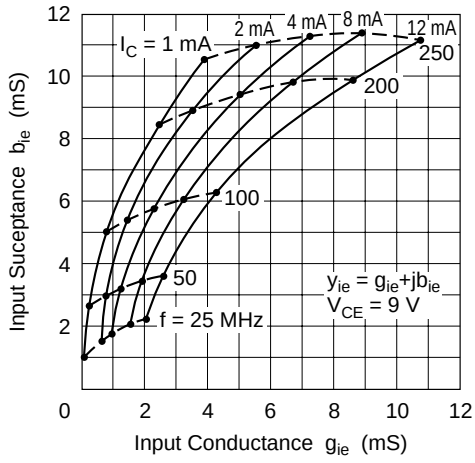
Gain Bandwidth Product vs. Collector Current



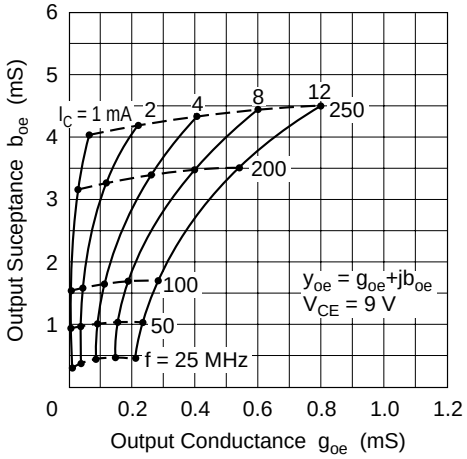
Base Time Constant vs. Collector Currnt



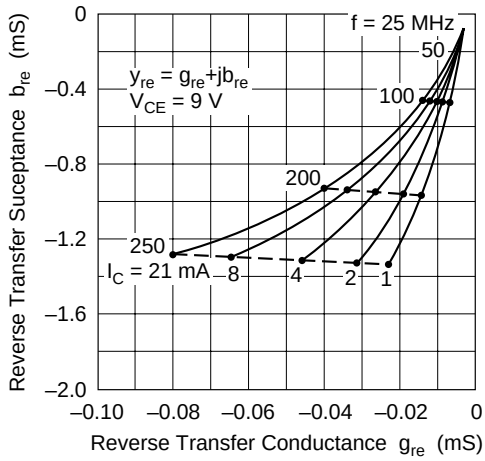
Input Admittance vs. Frequency



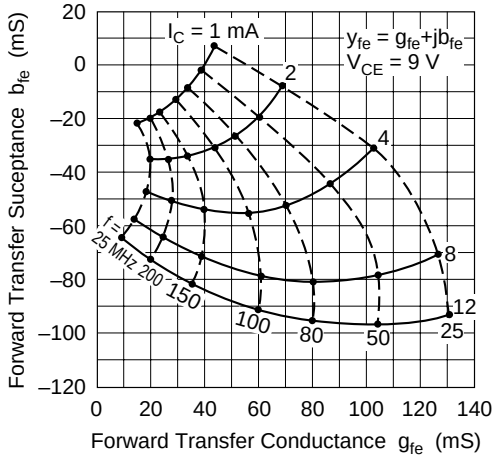
Output Admittance vs. Frequency



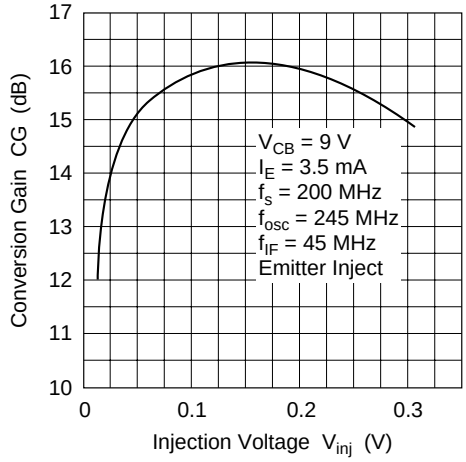
Reverse Transfer Admittance vs. Frequency

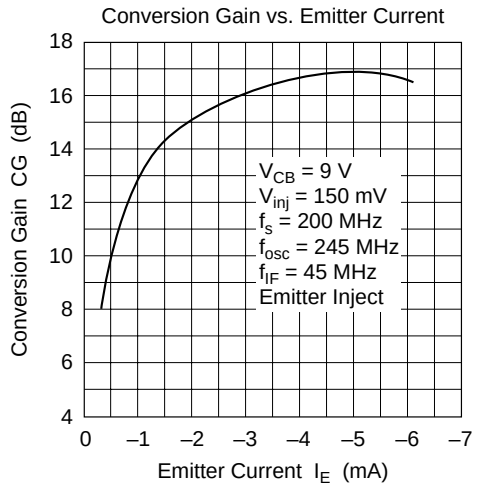


Forward Transfer Admittance vs. Frequency



Conversion Gain vs. Local Oscillating Injection Voltage

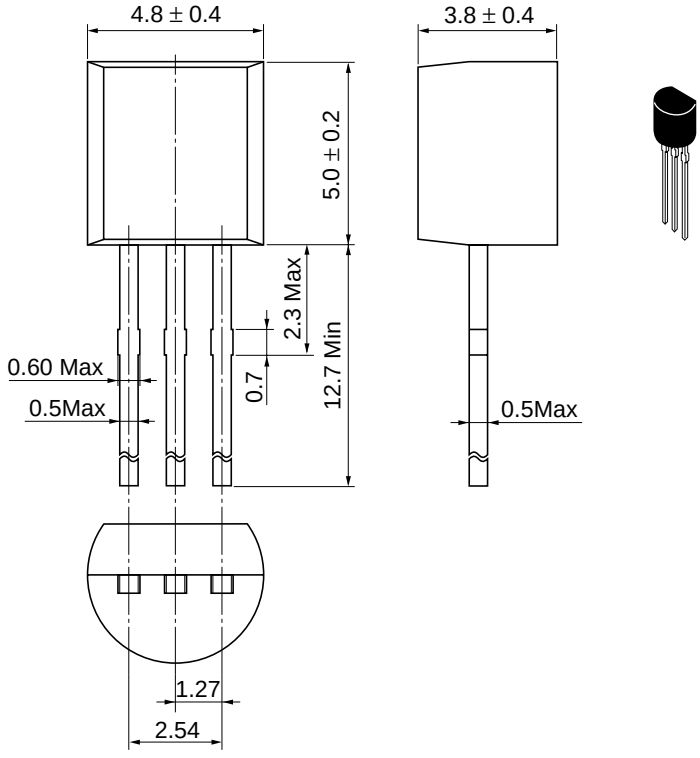



Conversion Gain vs. Emitter Current
Conversion Gain CG (dB)
18
16
14
12
10
8
6
4
0
–1
–2
–3
–4
–5
–6
–7
Emitter Current I_E (mA)
V_{CB} = 9 V
V_{inj} = 150 mV
f_s = 200 MHz
f_{osc} = 245 MHz
f_{IF} = 45 MHz
Emitter Inject

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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