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

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2SC5851

Silicon NPN Epitaxial

RENESAS

ADE-208-1480 (Z)

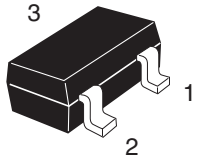
Rev.0
Feb. 2002

Features

- High frequency amplifier

Outline

CMPAK



1. Emitter
2. Base
3. Collector

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Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Ratings	Unit
Collector to base voltage	V_{CBO}	30	V
Collector to emitter voltage	V_{CEO}	30	V
Emitter to base voltage	V_{EBO}	5	V
Collector current	I_C	100	mA
Collector power dissipation	P_C*	150	mW
Junction temperature	Tj	150	°C
Storage temperature	Tstg	–55 to +125	°C

*Value on the glass epoxy board (10 mm x 10 mm x 0.7 mm)

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	$V_{(BR)CEO}$	30	—	—	V	I_C = 1 mA, R_{BE} = ∞
Emitter to base breakdown voltage	$V_{(BR)EBO}$	5	—	—	V	I_E = 10 µA, I_C = 0
Collector cutoff current	I_{CBO}	—	—	0.5	µA	V_{CB} = 20 V, I_E = 0
Emitter cutoff current	I_{EBO}	—	—	0.5	µA	V_{EB} = 2 V, I_C = 0
DC current transfer ratio	h_{FE}*[1]	35	—	200	—	V_{CE} = 12 V, I_C = 2 mA
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	—	1.1	V	I_C = 10 mA, I_B = 1 mA
Base to emitter voltage	V_{BE}	—	—	0.75	V	V_{CE} = 12 V, I_C = 2 mA
Gain bandwidth product	f_T	—	230	—	MHz	V_{CE} = 12 V, I_C = 2 mA
Collector output capacitance	C_{ob}	—	1.6	—	pF	V_{CB} = 10 V, I_E = 0, f = 1 MHz
Noise figure	NF	—	5.5	—	dB	V_{CE} = 6 V, I_C = 1 mA, f = 100 MHz, Rg = 100 Ω

Notes: 1. The 2SC5851 is grouped by h_{FE} as follows.

Grade	A	B	C
Mark	FA	FB	FC
h_{FE}	35 to 75	60 to 120	100 to 200

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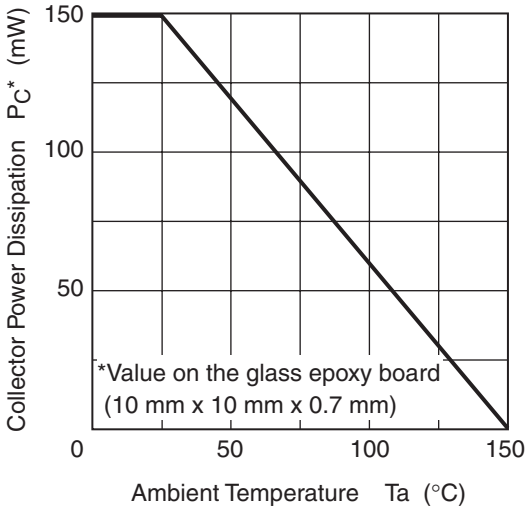
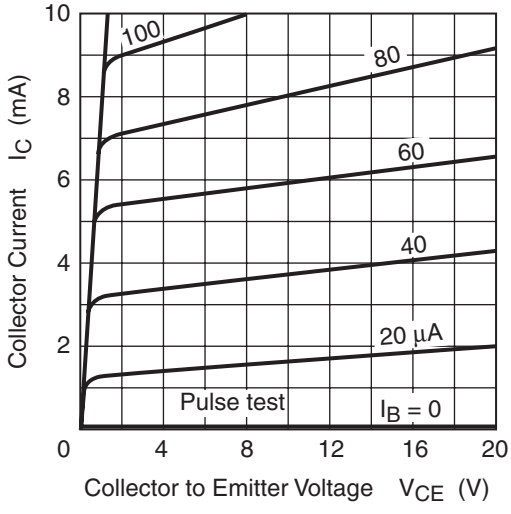
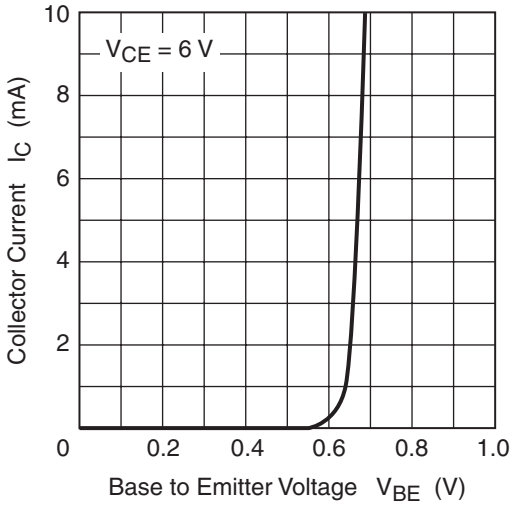
Maximum Collector Dissipation Curve



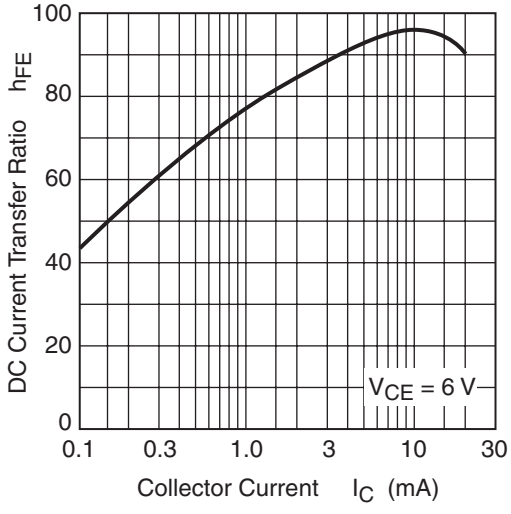
Typical Output Characteristics



Typical Transfer Characteristics



DC Current Transfer Ratio vs. Collector Current



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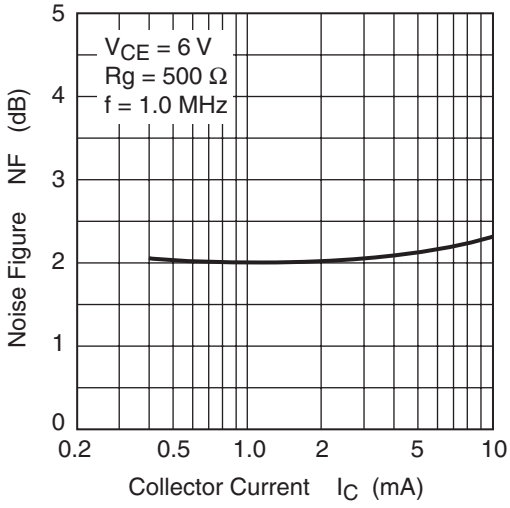
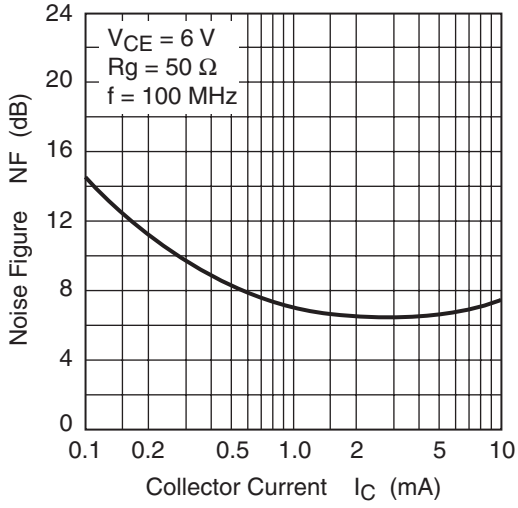
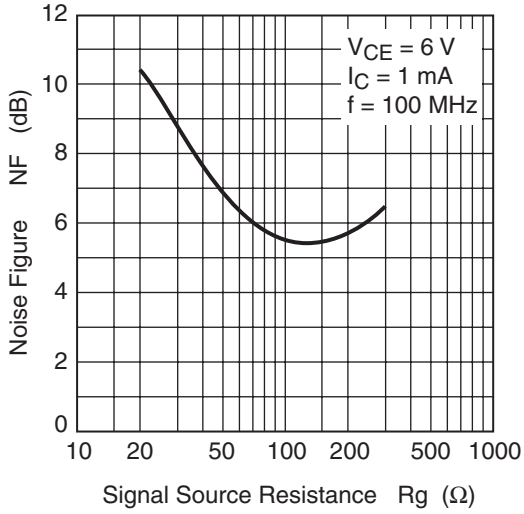
Noise Figure vs. Collector Current



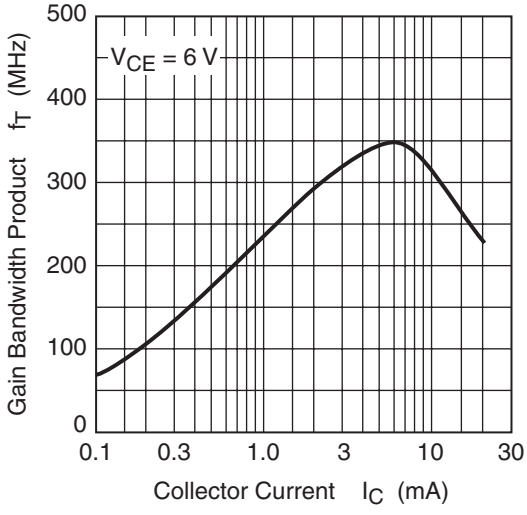
Noise Figure vs. Collector Current



Noise Figure vs.
Signal Source Resistance



Gain Bandwidth Product vs.
Collector Current



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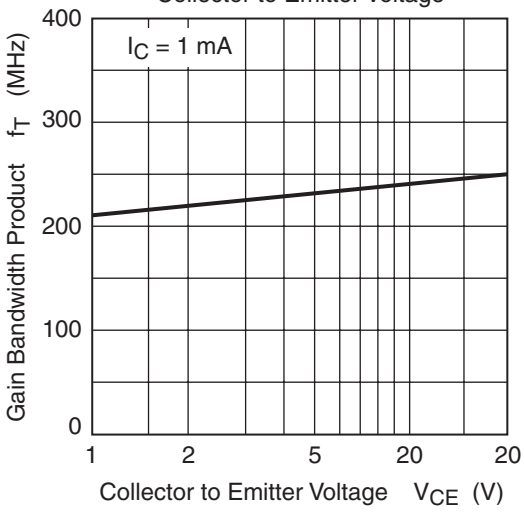
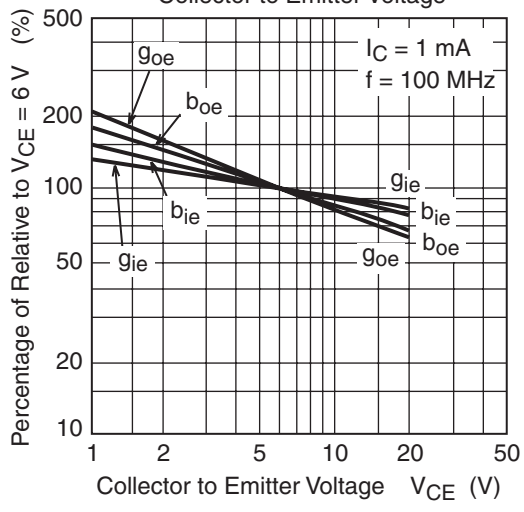
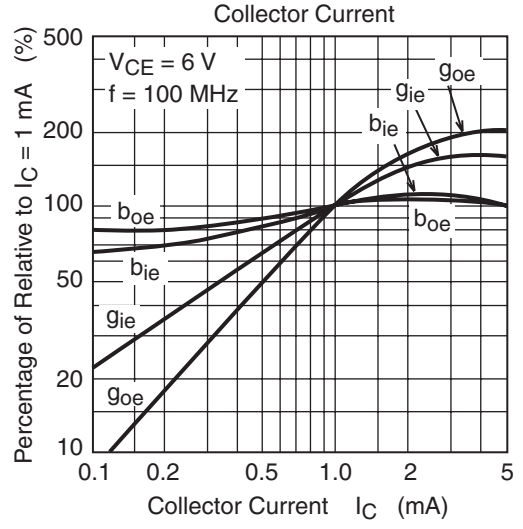
Gain Bandwidth Product vs.
Collector to Emitter Voltage



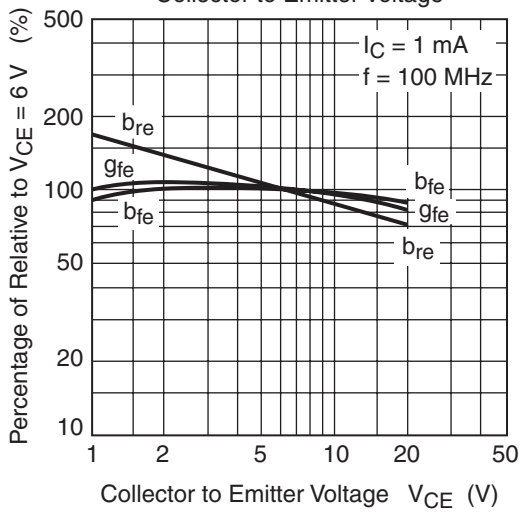
Input/Output Admittance vs.
Collector to Emitter Voltage



Input/Output Admittance vs.
Collector Current



Transfer Admittance vs.
Collector to Emitter Voltage



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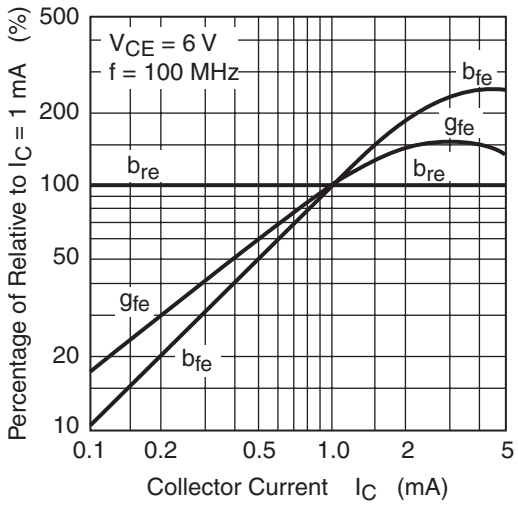
Transfer Admittance vs.
Collector Current



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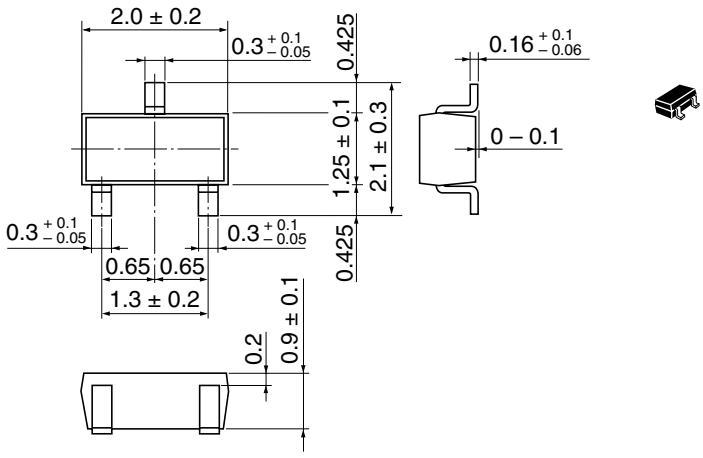
Package Dimensions

As of July, 2001

Unit: mm



Hitachi Code	CMPAK
JEDEC	—
JEITA	Conforms
Mass (reference value)	0.006 g

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