

To all our customers

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

## Cautions

Keep safety first in your circuit designs!

1. Renesas Technology Corporation puts the maximum effort into making semiconductor products better and more reliable, but there is always the possibility that trouble may occur with them. Trouble with semiconductors may lead to personal injury, fire or property damage.

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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# 2SD1974

Silicon NPN Epitaxial

# RENESAS

ADE-208-1161 (Z)

1st. Edition

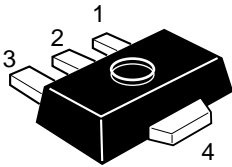
Mar. 2001

## Application

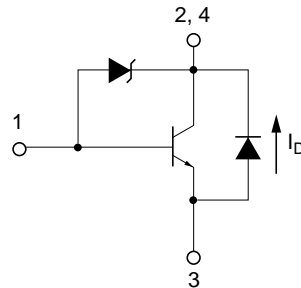
Low frequency power amplifier

## Outline

UPAK



1. Base
2. Collector
3. Emitter
4. Collector (Flange)



Note: Marking is "ES".

## Absolute Maximum Ratings (Ta = 25°C)

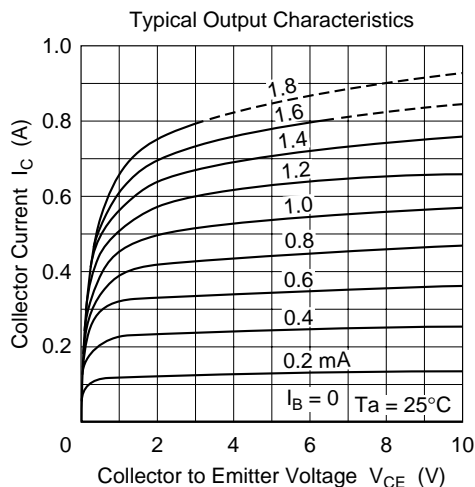
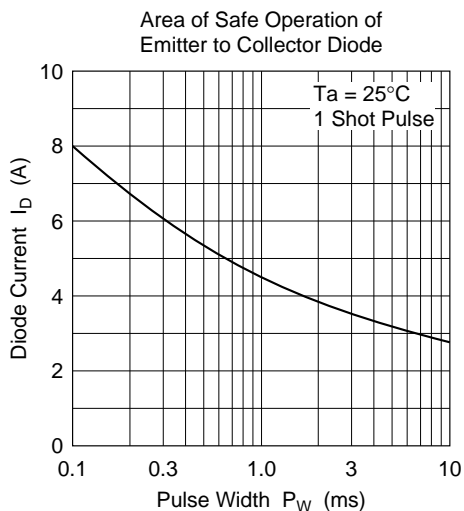
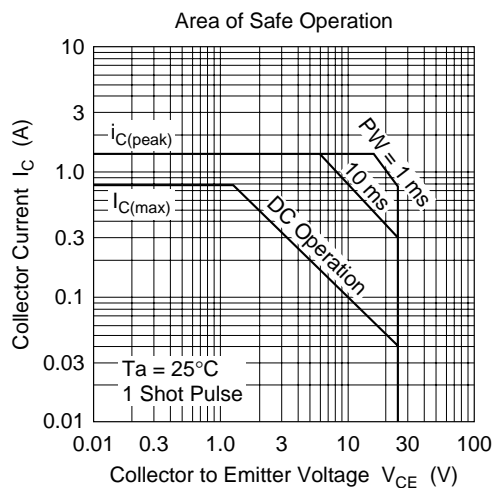
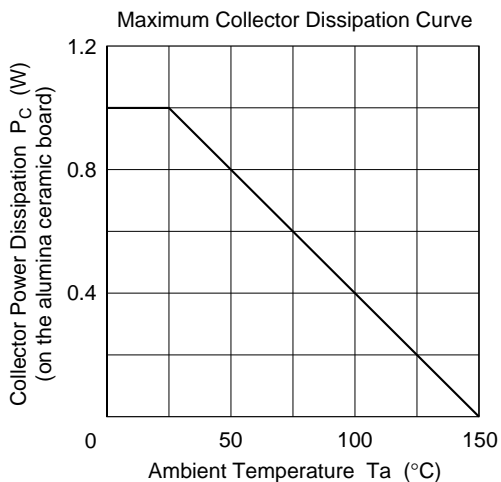
Item	Symbol	Ratings	Unit
Collector to base voltage	$V_{CBO}$	25	V
Collector to emitter voltage	$V_{CEO}$	25	V
Emitter to base voltage	$V_{EBO}$	6	V
Collector current	$I_C$	0.8	A
Collector peak current	$i_{c (peak)}$	1.5	A
E to C diode forward current	$I_D$	0.6	A
Collector power dissipation	$P_C^{*1}$	1.0	W
Junction temperature	$T_j$	150	°C
Storage temperature	$T_{stg}$	-55 to +150	°C

Note: 1. Value on the alumina ceramic board (12.5 x 20 x 0.7 mm)

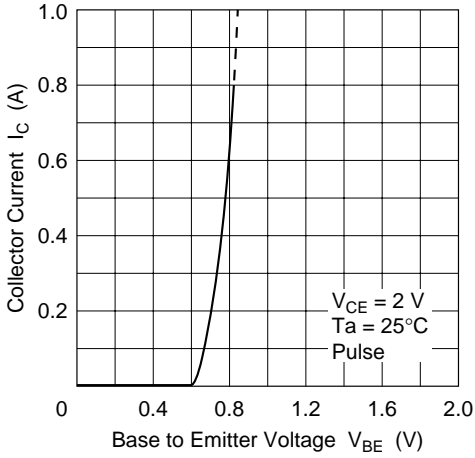
## Electrical Characteristics (Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Collector to base breakdown voltage	$V_{(BR)CBO}$	25	—	—	V	$I_C = 10 \mu A, I_E = 0$
Collector to emitter breakdown voltage	$V_{(BR)CEO}$	25	—	35	V	$I_C = 1 mA, R_{BE} = \infty$
Collector to emitter sustaining voltage	$V_{CEO(sus)}$	25	—	35	V	$I_C = 0.8 A, R_{BE} = \infty, L = 20 mH$
Emitter to base breakdown voltage	$V_{(BR)EBO}$	6	—	—	V	$I_E = 10 \mu A, I_C = 0$
Collector cutoff current	$I_{CBO}$	—	—	0.2	$\mu A$	$V_{CB} = 20 V, I_E = 0$
	$I_{CEO}$	—	—	0.5	$\mu A$	$V_{CE} = 20 V, R_{BE} = \infty$
Emitter cutoff current	$I_{EBO}$	—	—	0.2	$\mu A$	$V_{EB} = 5 V, I_C = 0$
DC current transfer ratio	$h_{FE}$	250	—	1200		$V_{CE} = 2 V, I_C = 0.1 A^{*1}$
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	—	0.4	V	$I_C = 0.8 A, I_B = 80 mA^{*1}$
E to C diode forward voltage	$V_D$	—	—	1.5	V	$I_D = 0.6 A^{*1}$

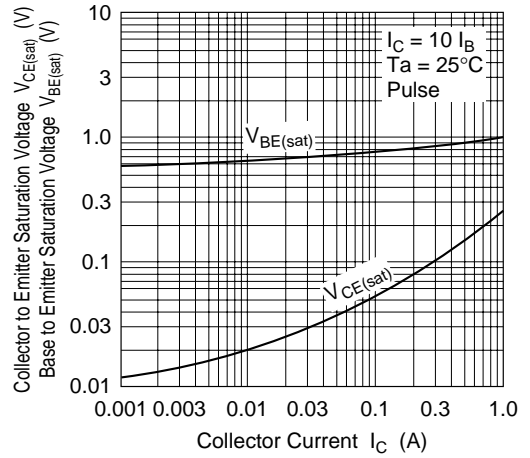
Notes: 1. Pulse test



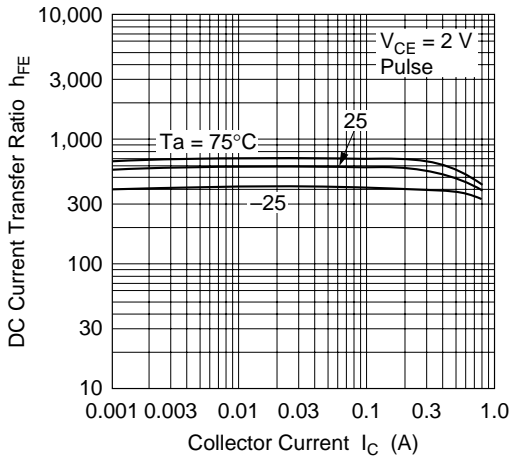
Typical Transfer Characteristics



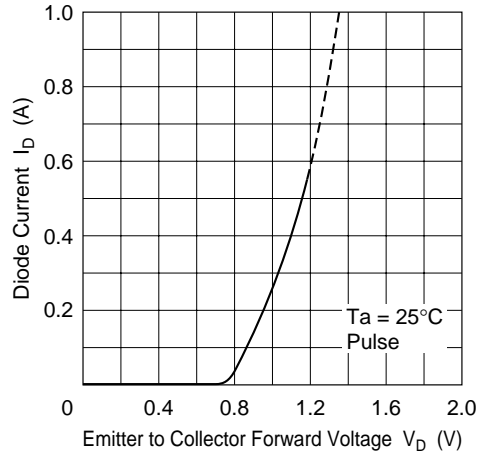
Saturation Voltage vs. Collector Current

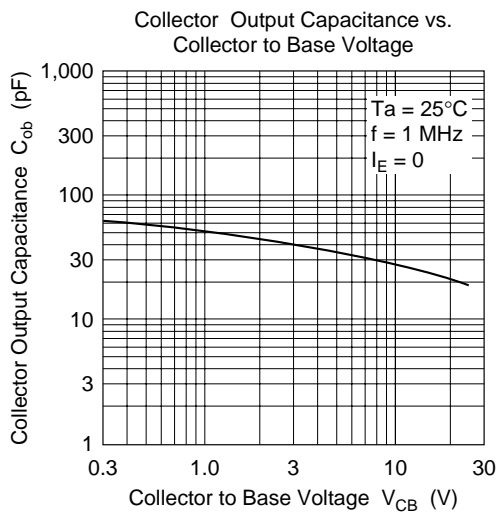


DC Current Transfer Ratio vs. Collector Current



Typical Characteristics of Emitter to Collector Diode

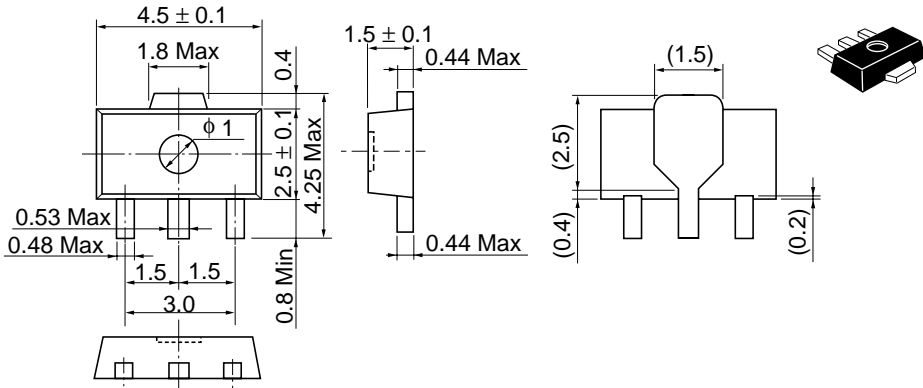




Package Dimensions

As of January, 2001

Unit: mm



Hitachi Code	UPAK
JEDEC	—
EIAJ	Conforms
Mass (reference value)	0.050 g



## Cautions

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