

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!

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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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2SC3413

Silicon NPN Epitaxial

RENESAS

ADE-208-1085 (Z)

1st. Edition

Mar. 2001

Application

- Low frequency low noise amplifier
- HF amplifier

Outline

SPAK



1. Emitter
2. Collector
3. Base

Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit
Collector to base voltage	V _{CBO}	40	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	300	mW
Junction temperature	T _j	150	°C
Storage temperature	T _{stg}	−55 to +150	°C

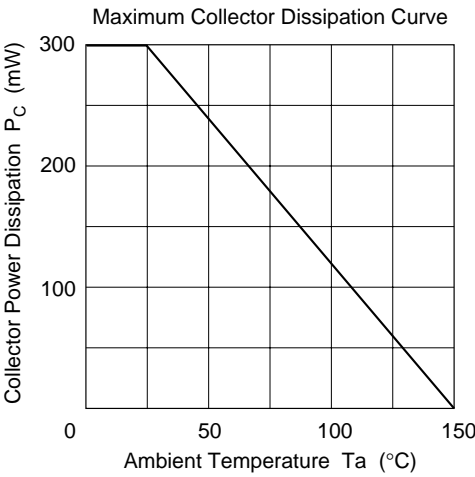
Electrical Characteristics (Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Collector to base breakdown voltage	V _{(BR)CBO}	40	—	—	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} = 18 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}	100	—	500		V _{CE} = 12 V, I _C = 2 mA
Base to emitter voltage	V _{BE}	—	—	0.75	V	V _{CE} = 12 V, I _C = 2 mA
Collector to emitter saturation voltage	V _{CE(sat)}	—	—	0.2	V	I _C = 10 mA, I _B = 1 mA
Gain bandwidth product	f _T	—	200	—	MHz	V _{CE} = 12 V, I _C = 2 mA
Collector output capacitance	Cob	—	—	3.5	pF	V _{CB} = 10 V, I _E = 0, f = 1 MHz
Noise figure	NF	—	1.0	5.0	dB	V _{CE} = 6 V, I _C = 0.1 mA, R _g = 1 kΩ, f = 1 kHz

Note: 1. The 2SC3413 is grouped by h_{FE} as follows.

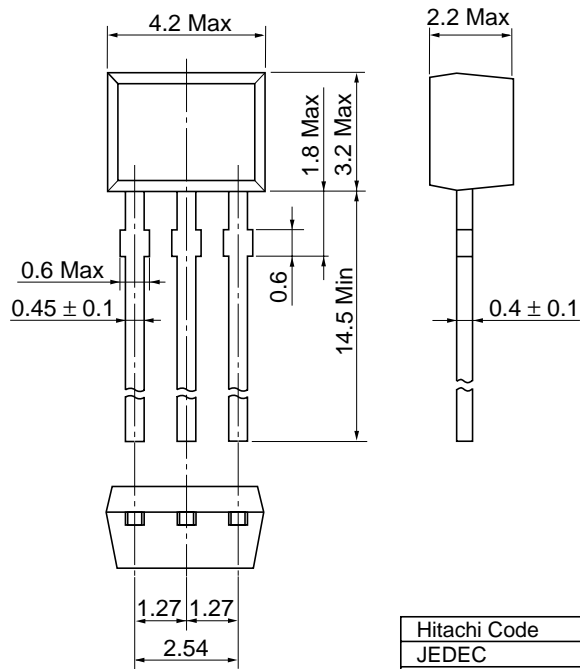
B	C	D
100 to 200	160 to 320	250 to 500

See characteristic curves of 2SC458(LG).



Package Dimensions

As of January, 2001
Unit: mm



Hitachi Code	SPAK
JEDEC	—
EIAJ	—
Mass (reference value)	0.10 g

Cautions

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