

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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2SA1188

Silicon PNP Epitaxial

RENESAS

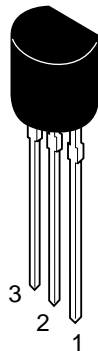
ADE-208-1011A (Z)
2nd. Edition
Mar. 2001

Application

- Low frequency amplifier

Outline

TO-92 (1)



1. Emitter
2. Collector
3. Base

Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Rating	Unit
Collector to base voltage	V _{CBO}	−90	V
Collector to emitter voltage	V _{CEO}	−90	V
Emitter to base voltage	V _{EBO}	−5	V
Collector current	I _C	−100	mA
Emitter current	I _E	100	mA
Collector power dissipation	P _C	400	mW
Junction temperature	T _j	150	°C
Storage temperature	T _{stg}	−55 to +150	°C

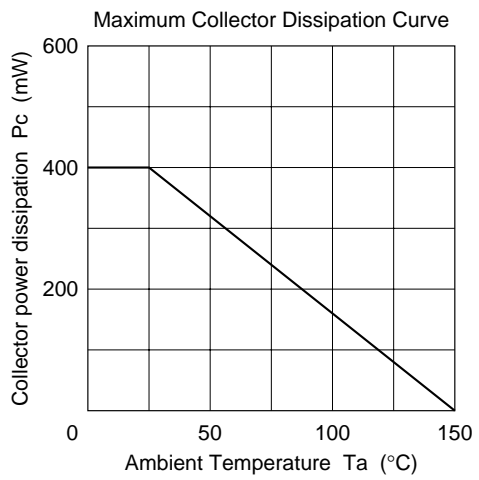
Electrical Characteristics (Ta = 25°C)

2SA1189						
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Collector to base breakdown voltage	V _{(BR)CBO}	−90	—	—	V	I _C = −10 μA, I _E = 0
Collector to emitter breakdown voltage	V _{(BR)CEO}	−90	—	—	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}	—	—	−0.1	μA	V _{CB} = −70 V, I _E = 0
Emitter cutoff current	I _{EBO}	—	—	−0.1	μA	V _{EB} = −2 V, I _C = 0
DC current trnsfer ratio	h _{FE} ^{*1}	250	—	800		V _{CE} = −12 V, I _C = −2 mA ^{*2}
Collector to emitter saturation voltage	V _{CE(sat)}	—	−0.05	−0.15	V	I _C = −10 mA, I _B = −1 mA ^{*2}
Base to emitter saturation voltage	V _{BE(sat)}	—	−0.7	−1.0	V	
Gain bandwidth product	f _T	—	130	—	MHz	V _{CE} = −6 V, I _C = −10 mA
Collector output capacitance	Cob	—	3.2	—	pF	V _{CB} = −10 V, I _E = 0, f = 1 MHz

Notes: 1. The 2SA1188 is grouped by h_{FE} as follows.
2. Pulse test

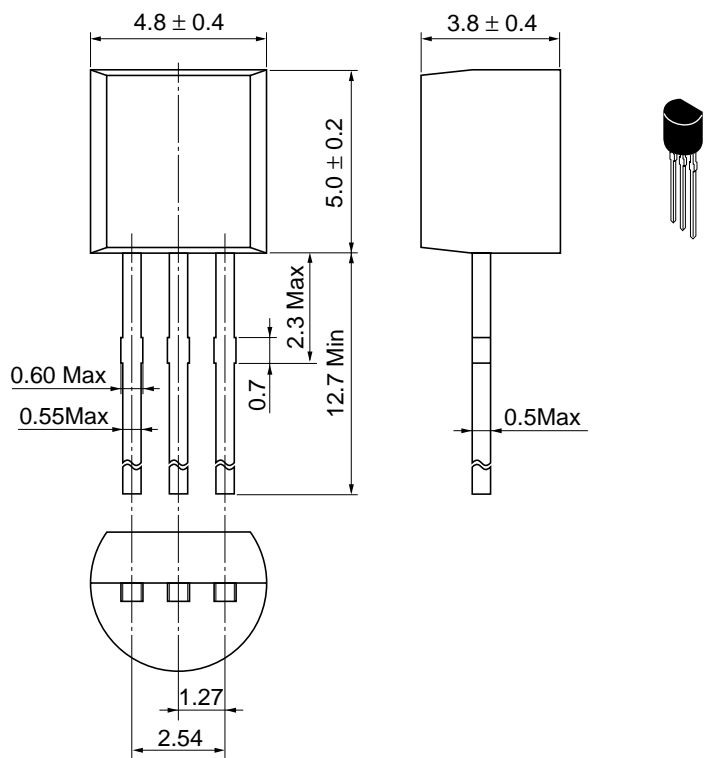
D	E
250 to 500	400 to 800

See characteristic curves of 2SA1190 and 2SA1191.



Package Dimensions

As of January, 2001
Unit: mm



Hitachi Code	TO-92 (1)
JEDEC	Conforms
EIAJ	Conforms
Mass (reference value)	0.25 g

Cautions

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