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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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2SC535

Silicon NPN Epitaxial Planar

RENESAS

ADE-208-1047 (Z)

1st. Edition

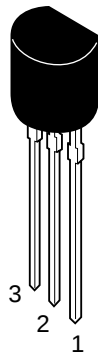
Mar. 2001

Application

VHF amplifier, mixer, local oscillator

Outline

TO-92 (2)



- 1. Emitter
- 2. Collector
- 3. Base

Absolute Maximum Ratings (Ta = 25°C)

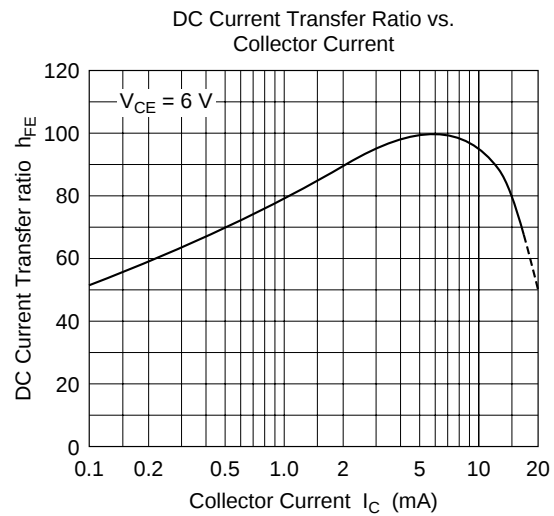
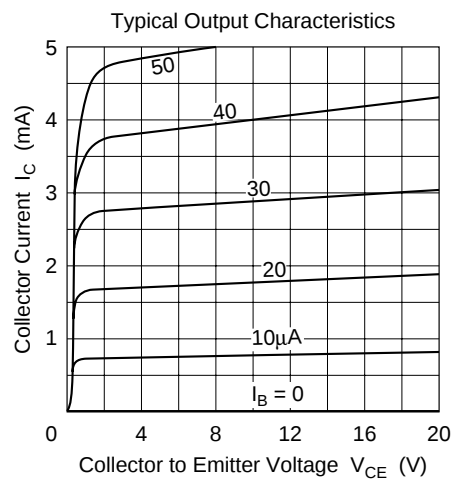
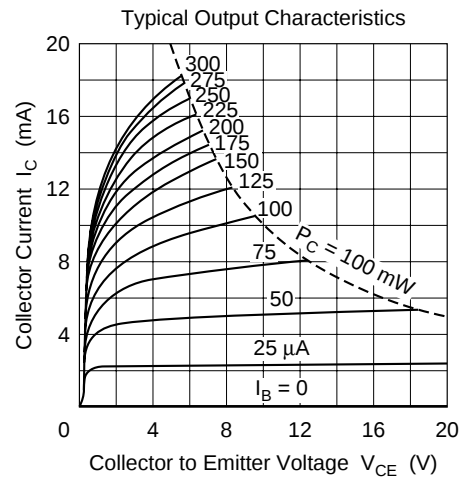
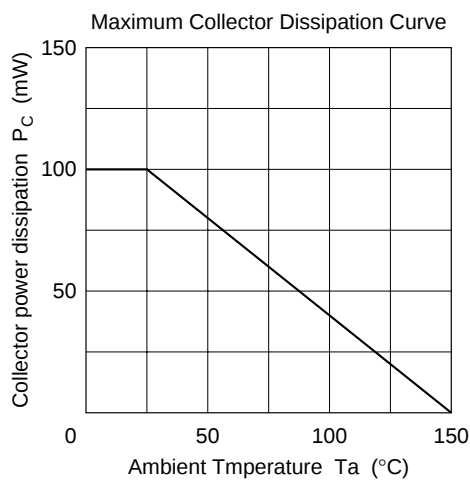
Item	Symbol	Ratings	Unit
Collector to base voltage	V _{CBO}	30	V
Collector to emitter voltage	V _{CEO}	20	V
Emitter to base voltage	V _{EBO}	4	V
Collector current	I _C	20	mA
Collector power dissipation	P _C	100	mW
Junction temperature	T _J	150	°C
Storage temperature	T _{stg}	−55 to +150	°C

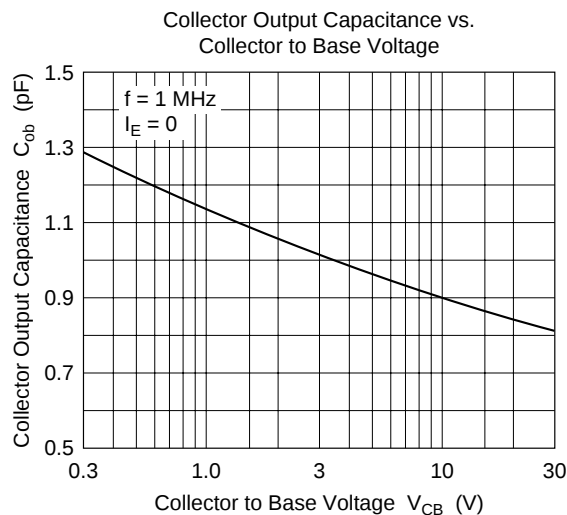
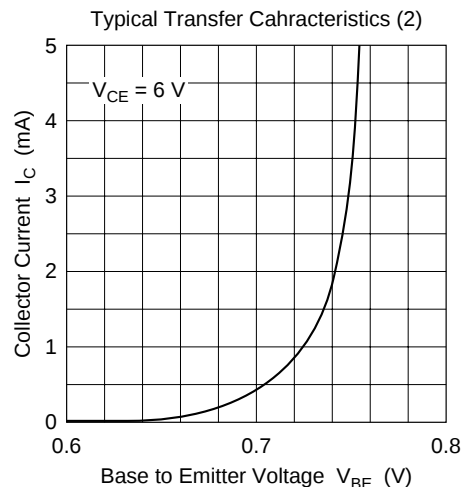
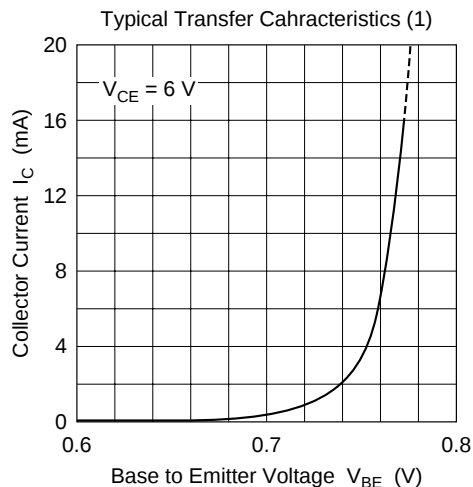
Electrical Characteristics (Ta = 25°C)

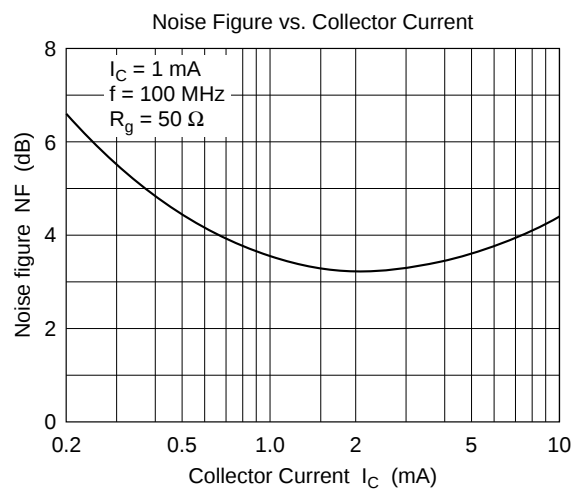
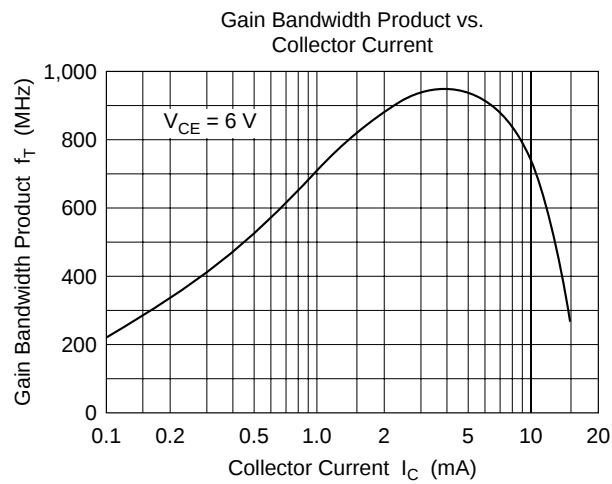
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Collector to base breakdown voltage	$V_{(BR)CBO}$	30	—	—	V	$I_C = 10\ \mu A, I_E = 0$
Collector to emitter breakdown voltage	$V_{(BR)CEO}$	20	—	—	V	$I_C = 1\ mA, R_{BE} =$
Emitter to base breakdown voltage	$V_{(BR)EBO}$	4	—	—	V	$I_E = 10\ \mu A, I_C = 0$
Collector cutoff current	I_{CBO}	—	—	0.5	μA	$V_{CB} = 10\ V, I_E = 0$
DC current transfer ratio	h_{FE}^{*1}	60	—	200		$V_{CE} = 6\ V, I_C = 1\ mA$
Base to emitter voltage	V_{BE}	—	0.72	—	V	$V_{CE} = 6\ V, I_C = 1\ mA$
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	0.17	—	V	$I_C = 20\ mA, I_B = 4\ mA$
Gain bandwidth product	f_T	450	940	—	MHz	$V_{CE} = 6\ V, I_C = 5\ mA$
Collector output capacitance	C_{ob}	—	0.9	1.2	pF	$V_{CB} = 10\ V, I_E = 0, f = 1\ MHz$
Power gain	PG	17	20	—	dB	$V_{CE} = 6\ V, I_C = 1\ mA, f = 100\ MHz$
Noise figure	NF	—	3.5	5.5	dB	$V_{CE} = 6\ V, I_C = 1\ mA, f = 100\ MHz, R_g = 50\ \Omega$
Input admittance (typ)	y_{ie}	1.3 + j5.3			mS	$V_{CE} = 6\ V, I_C = 1\ mA, f = 100\ MHz$
Reverse transfer admittance (typ)	y_{re}	−0.078 − j0.41			mS	
Foward transfer admittance (typ)	y_{fe}	32 − j10			mS	
Output admittance (typ)	y_{oe}	0.08 + j0.82			mS	

Note: 1. The 2SC535 is grouped by h_{FE} as follows.

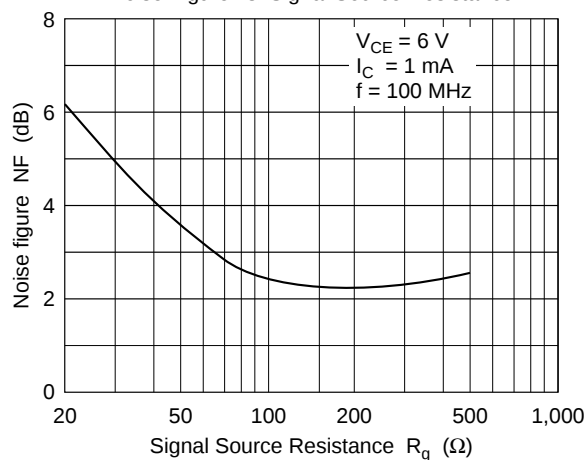
B	C
60 to 120	100 to 200



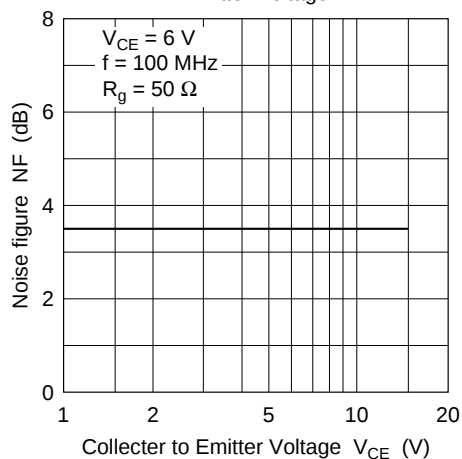




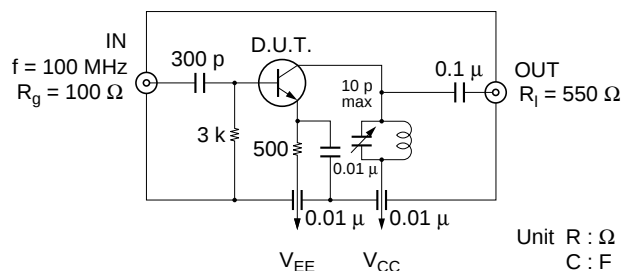
Noise Figure vs. Signal Source Resistance



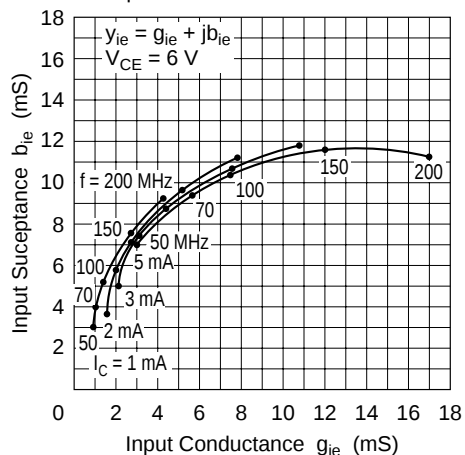
Noise Figure vs. Collector to Emitter Voltage



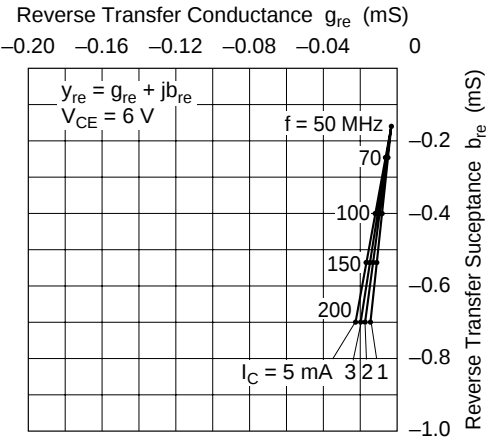
100 MHz Power Gain Test Circuit



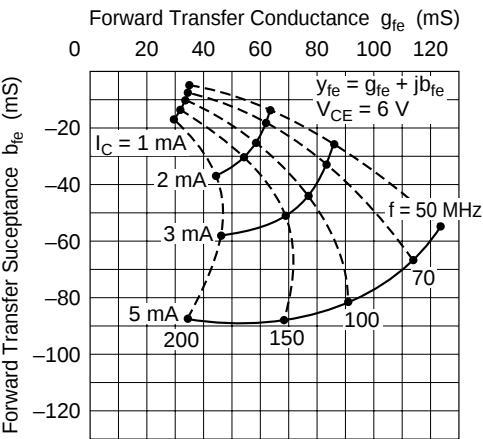
Input Admittance Characteristics



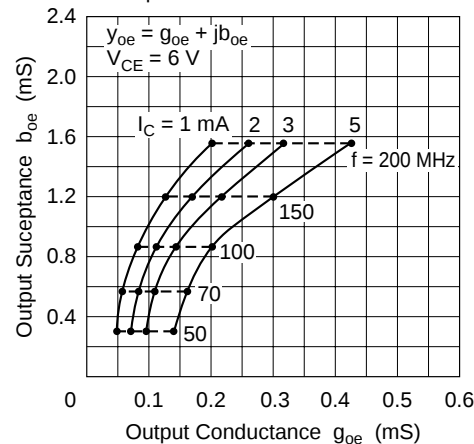
Reverse Transfer Admittance
Characteristics



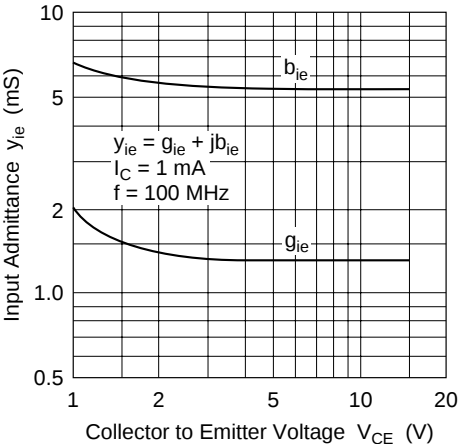
Forward Transfer Admittance
Characteristics



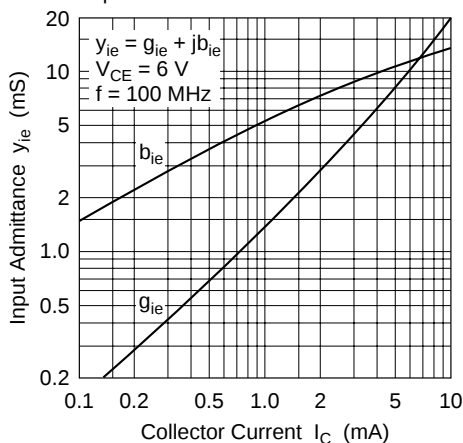
Output Admittance Characteristics



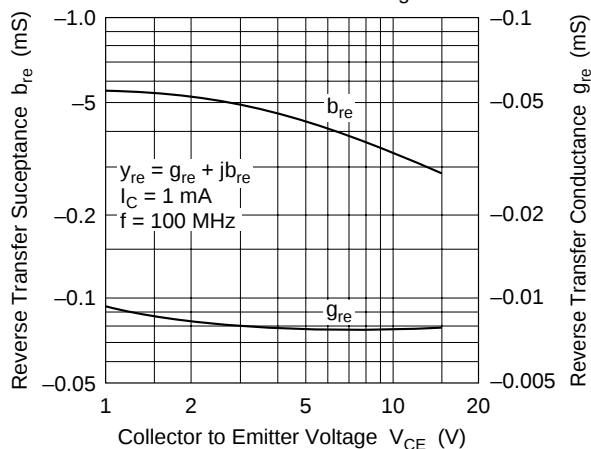
Input Admittance vs. Collector
to Emitter Voltage



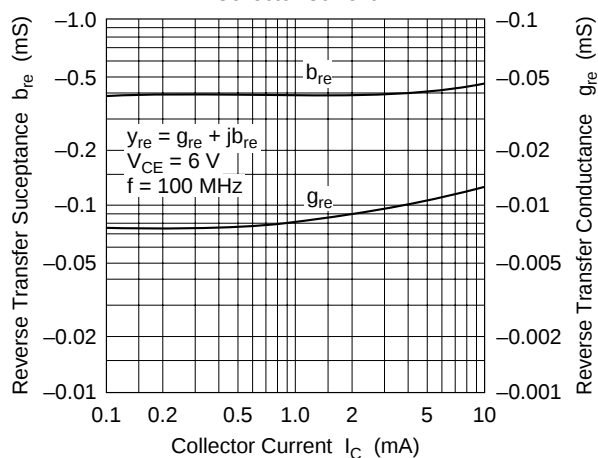
Input Admittance vs. Collector Current



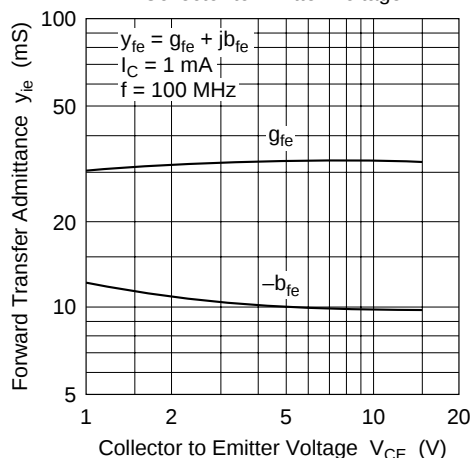
Reverse Transfer Admittance vs. Collector to Emitter Voltage



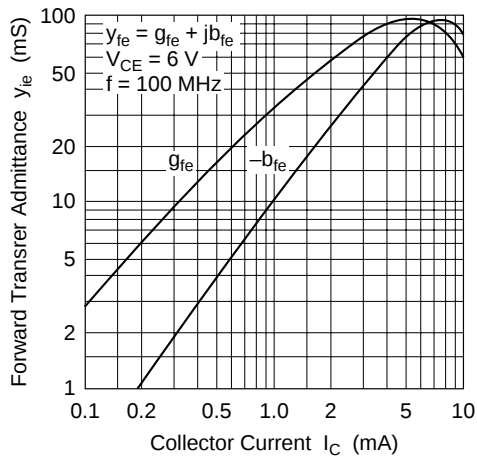
Reverse Transfer Admittance vs. Collector Current



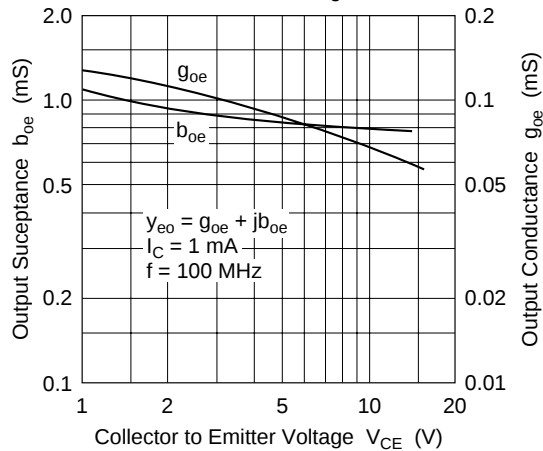
Forward Transfer Admittance vs. Collector to Emitter Voltage



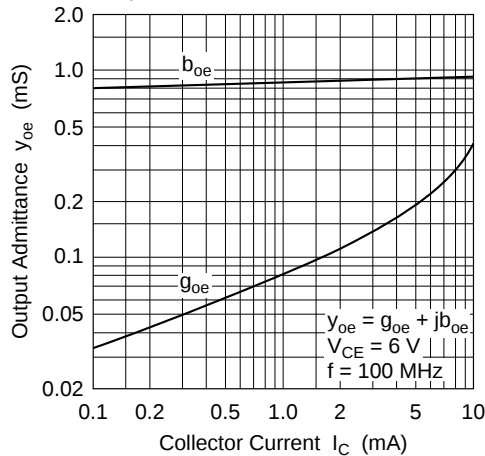
Forward Transer Admittance vs.
Collector Current



Output Admittance vs. Collector
to Emitter Voltage



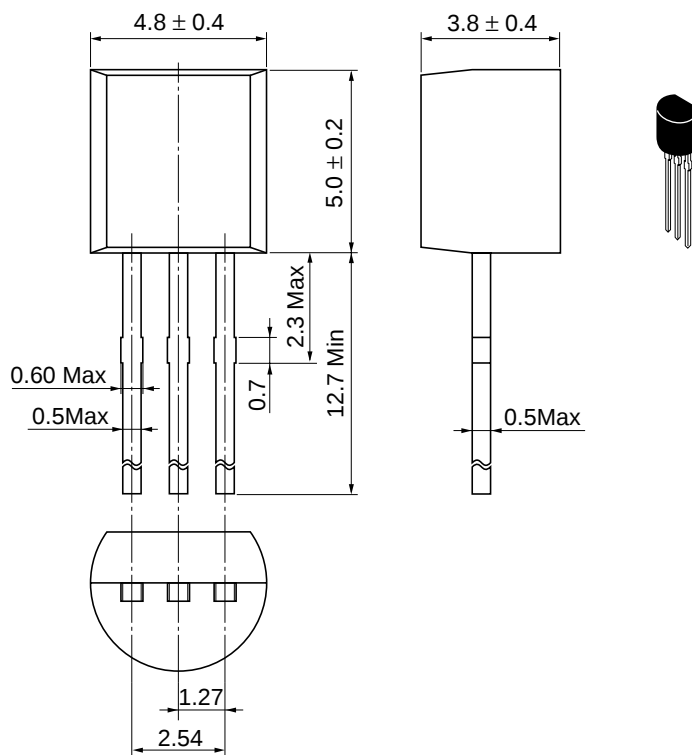
Output Admittance vs. Collector Current



Package Dimensions

As of January, 2001

Unit: mm



Hitachi Code	TO-92 (2)
JEDEC	Conforms
EIAJ	Conforms
Mass (reference value)	0.25 g

Cautions

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