

To all our customers

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Renesas Technology Home Page: <http://www.renesas.com>

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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2SD1504

Silicon NPN Epitaxial

RENESAS

ADE-208-1158A (Z)
2nd. Edition
Mar. 2001

Application

Low frequency amplifier, Muting

Outline

SPAK



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

Absolute Maximum Ratings (Ta = 25°C)

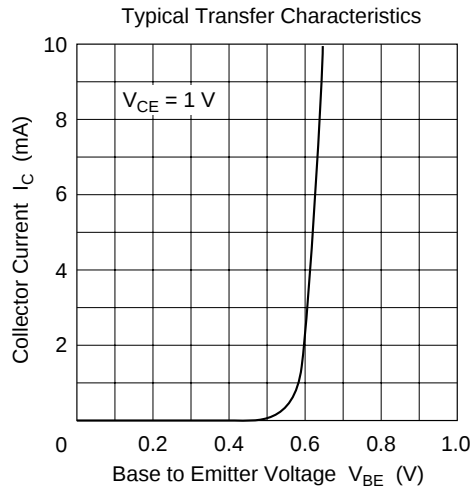
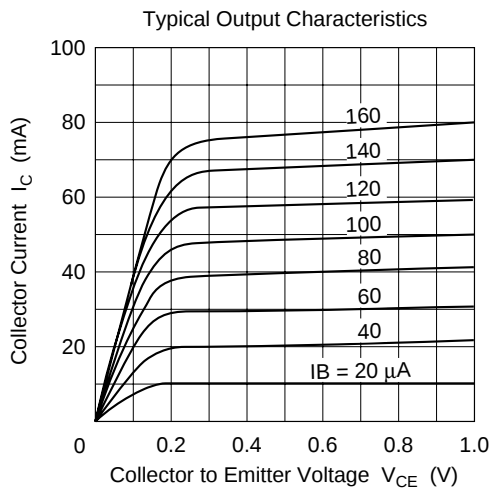
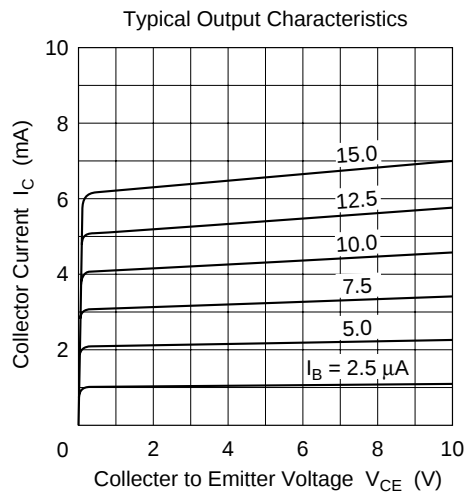
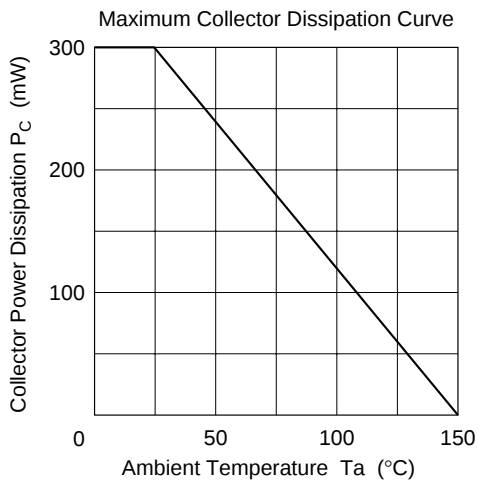
Item	Symbol	Ratings	Unit
Collector to base voltage	V_{CBO}	30	V
Collector to emitter voltage	V_{CEO}	15	V
Emitter to base voltage	V_{EBO}	5	V
Collector current	I_C	0.5	A
Collector peak current	$i_{c_{(peak)}}$	1.0	A
Collector power dissipation	P_C	300	mW
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	-55 to +150	°C

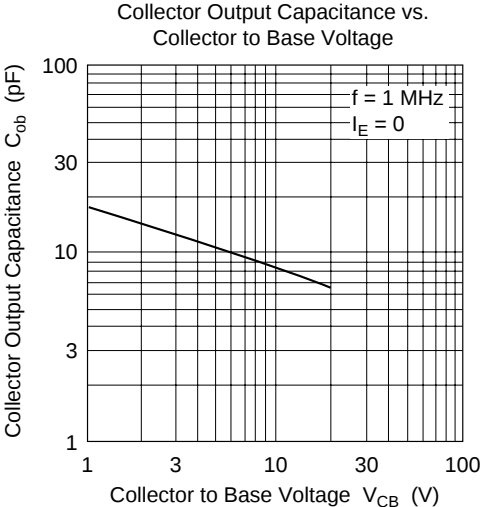
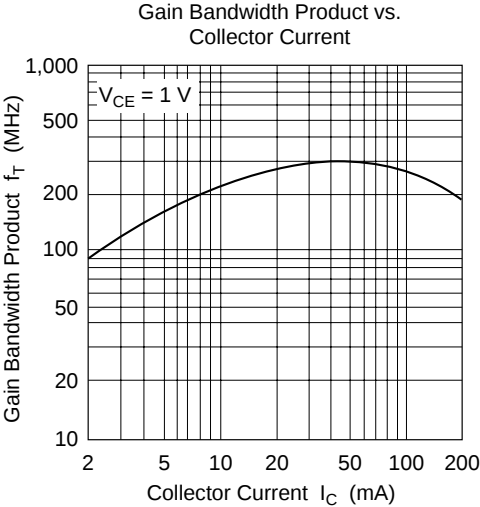
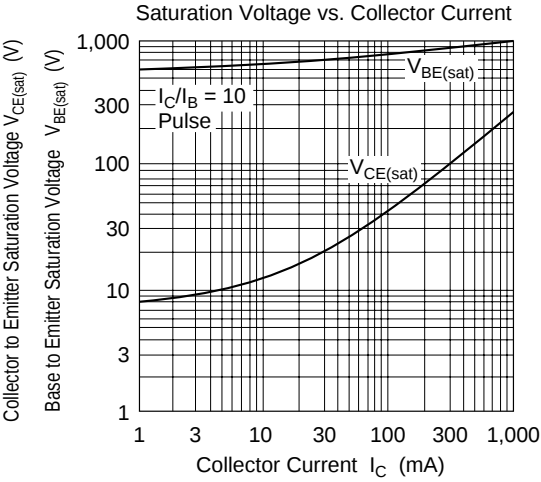
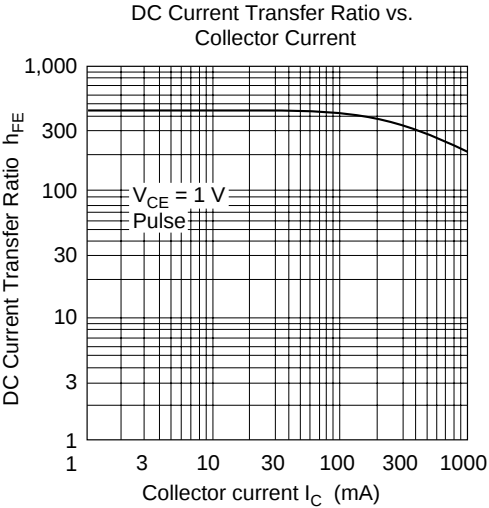
Electrical Characteristics (Ta = 25°C)

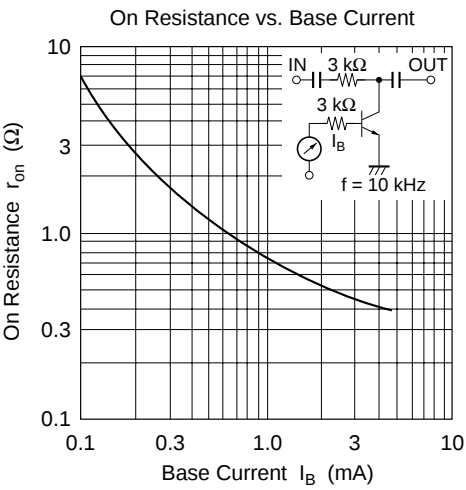
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Collector to base breakdown voltage	$V_{(BR)CBO}$	30	—	—	V	$I_C = 10\text{ }\mu\text{A}$, $I_E = 0$
Collector to emitter breakdown voltage	$V_{(BR)CEO}$	15	—	—	V	$I_C = 1\text{ mA}$, $R_{BE} = \infty$
Emitter to base breakdown voltage	$V_{(BR)EBO}$	5	—	—	V	$I_E = 10\text{ }\mu\text{A}$, $I_C = 0$
Collector cutoff current	I_{CBO}	—	—	10	μA	$V_{CB} = 20\text{ V}$, $I_E = 0$
DC current transfer ratio	h_{FE}^{*1}	250	—	1200		$V_{CE} = 1\text{ V}$, $I_C = 150\text{ mA}^{*2}$
Base to emitter voltage	V_{BE}	—	0.65	—	V	$V_{CE} = 1\text{ V}$, $I_C = 150\text{ mA}$
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	0.15	0.5	V	$I_C = 500\text{ mA}$, $I_B = 50\text{ mA}^{*2}$
	$V_{CE(sat)}$	—	0.018	—	V	$I_C = 30\text{ mA}$, $I_B = 3\text{ mA}$
Gain bandwidth product	f_T	—	300	—	MHz	$V_{CE} = 1\text{ V}$, $I_C = 50\text{ mA}$
On resistance	r_{on}	—	0.5	—	Ω	$I_B = 2\text{ mA}$

Notes: 1. The 2SD1504 is grouped by h_{FE} as follows.
2. Pulse test

D	E	F
250 to 500	400 to 800	600 to 1200

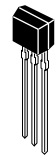
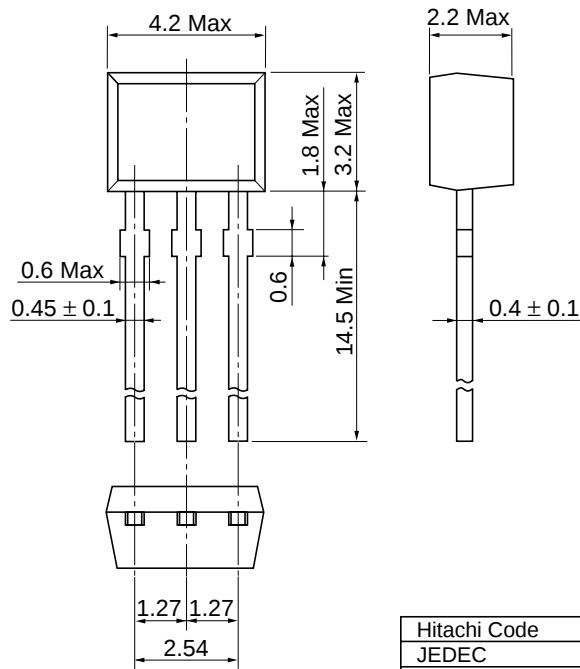






Package Dimensions

As of January, 2001
Unit: mm



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

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