

To all our customers

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

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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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# 2SD2122(L)/(S), 2SD2123(L)/(S)

Silicon NPN Epitaxial

**RENESAS**

ADE-208-926 (Z)  
1st. Edition  
September 2000

## Application

Low frequency power amplifier complementary pair with 2SB1409(L)/(S)

## Outline

DPAK



S Type



L Type

1. Base
2. Collector
3. Emitter
4. Collector

## 2SD2122(L)/(S), 2SD2123(L)/(S)

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

Item	Symbol	Ratings		Unit
		2SD2122(L)/(S)	2SD2123(L)/(S)	
Collector to base voltage	$V_{CBO}$	180	180	V
Collector to emitter voltage	$V_{CEO}$	120	160	V
Emitter to base voltage	$V_{EBO}$	5	5	V
Collector current	$I_C$	1.5	1.5	A
Collector peak current	$I_{C(peak)}$	3	3	A
Collector power dissipation	$P_C^{*1}$	18	18	W
Junction temperature	$T_j$	150	150	°C
Storage temperature	$T_{stg}$	-55 to +150	-55 to +150	°C

Note: 1. Value at  $T_C = 25^\circ\text{C}$ .

### Electrical Characteristics (Ta = 25°C)

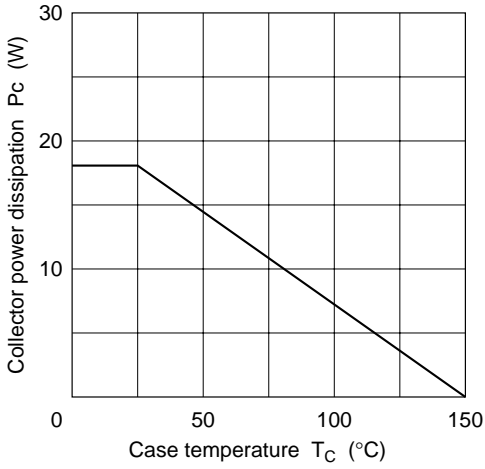
Item	Symbol	2SD2122(L)/(S)			2SD2123(L)/(S)			Unit	Test conditions
		Min	Typ	Max	Min	Typ	Max		
Collector to base breakdown voltage	$V_{(BR)CBO}$	180	—	—	180	—	—	V	$I_C = 1\text{ mA}, I_E = 0$
Collector to emitter breakdown voltage	$V_{(BR)CEO}$	120	—	—	160	—	—	V	$I_C = 10\text{ mA}, R_{BE} = \infty$
Emitter to base breakdown voltage	$V_{(BR)EBO}$	5	—	—	5	—	—	V	$I_E = 1\text{ mA}, I_C = 0$
Collector cutoff current	$I_{CBO}$	—	—	10	—	—	10	$\mu\text{A}$	$V_{CB} = 160\text{ V}, I_E = 0$
DC current transfer ratio	$h_{FE1}^{*2}$	60	—	200	60	—	200	A	$V_{CE} = 5\text{ V}, I_C = 150\text{ mA}^{*1}$
	$h_{FE2}$	30	—	—	30	—	—		$V_{CE} = 5\text{ V}, I_C = 500\text{ mA}^{*1}$
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	—	1	—	—	1	V	$I_C = 500\text{ mA}, I_B = 50\text{ mA}^{*1}$
Base to emitter voltage	$V_{BE}$	—	—	1.5	—	—	1.5	V	$V_{CE} = 5\text{ V}, I_C = 150\text{ mA}^{*1}$
Gain bandwidth product	$f_T$	—	180	—	—	180	—	MHz	$V_{CE} = 5\text{ V}, I_C = 150\text{ mA}^{*1}$
Collector output capacitance	$C_{ob}$	—	14	—	—	14	—	pF	$V_{CB} = 10\text{ V}, I_E = 0, f = 1\text{ MHz}$

Notes: 1. Pulse test

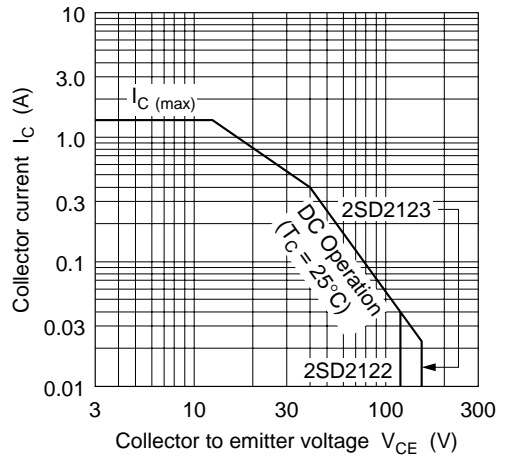
2. The 2SD2122(L)/(S) and 2SD2123(L)/(S) are grouped by  $h_{FE1}$  as follows.

B	C
60 to 120	100 to 200

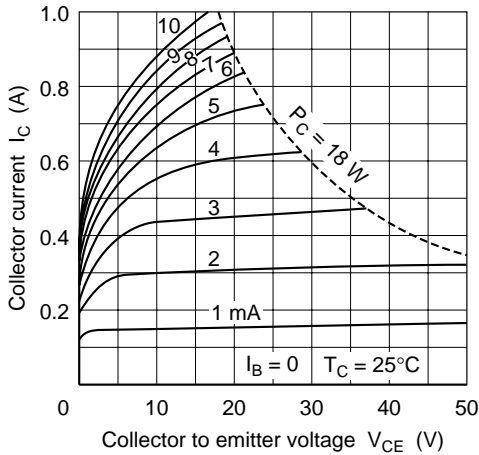
Maximum Collector Dissipation Curve



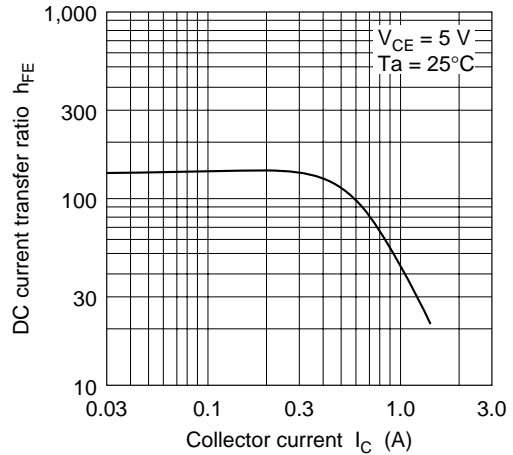
Area of Safe Operation

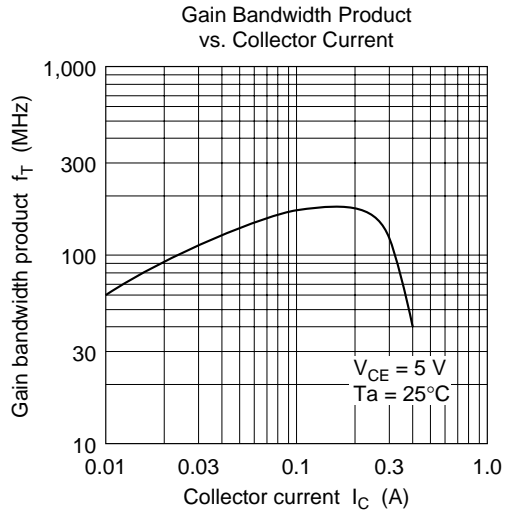
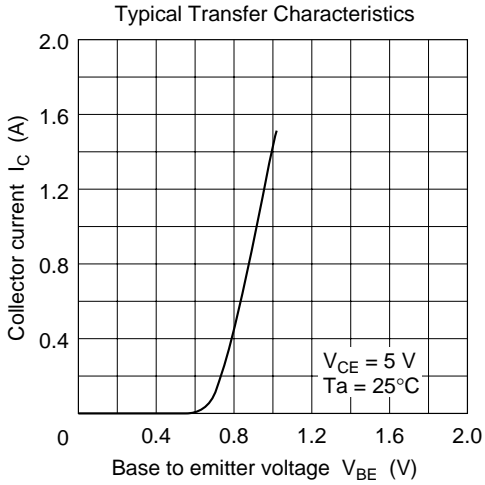
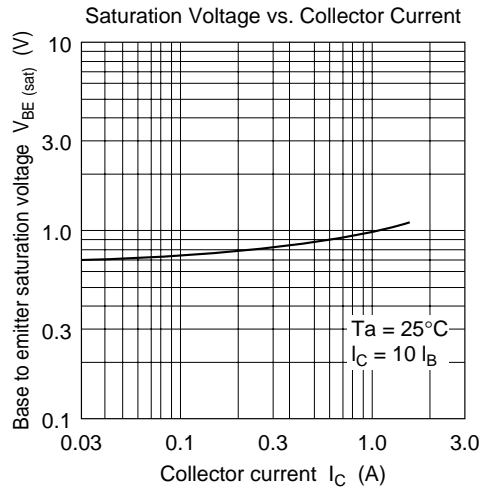
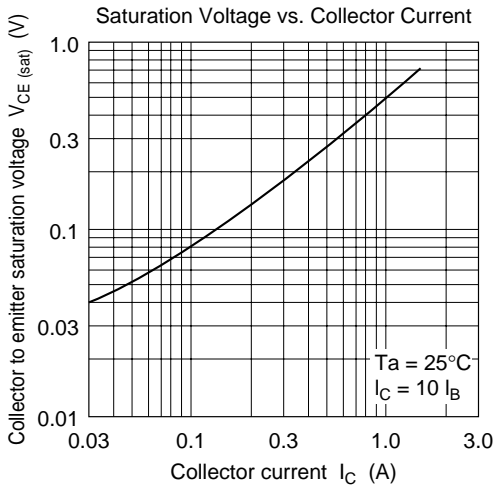


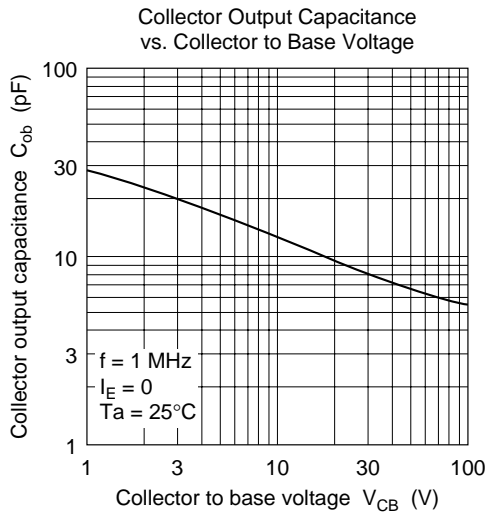
Typical Output Characteristics



DC Current Transfer Ratio vs. Collector Current







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# HITACHI

## **Hitachi, Ltd.**

Semiconductor & IC Div.  
Nippon Bldg., 2-6-2, Ohte-machi, Chiyoda-ku, Tokyo 100, Japan  
Tel: Tokyo (03) 3270-2111  
Fax: (03) 3270-5109

### **For further information write to:**

Hitachi America, Ltd.  
Semiconductor & IC Div.  
2000 Sierra Point Parkway  
Brisbane, CA. 94005-1835  
U S A  
Tel: 415-589-8300  
Fax: 415-583-4207

Hitachi Europe GmbH  
Electronic Components Group  
Continental Europe  
Domacher Straße 3  
D-85622 Feldkirchen  
München  
Tel: 089-9 91 80-0  
Fax: 089-9 29 30 00

Hitachi Europe Ltd.  
Electronic Components Div.  
Northern Europe Headquarters  
Whitebrook Park  
Lower Cookham Road  
Maidenhead  
Berkshire SL6 8YA  
United Kingdom  
Tel: 0628-585000  
Fax: 0628-778322

Hitachi Asia Pte. Ltd.  
16 Collyer Quay #20-00  
Hitachi Tower  
Singapore 0104  
Tel: 535-2100  
Fax: 535-1533

Hitachi Asia (Hong Kong) Ltd.  
Unit 706, North Tower,  
World Finance Centre,  
Harbour City, Canton Road  
Tsim Sha Tsui, Kowloon  
Hong Kong  
Tel: 27359218  
Fax: 27306071



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