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# 2SD1868, 2SD1869

Silicon NPN Epitaxial

# HITACHI

ADE-208-1159 (Z)  
1st. Edition  
Mar. 2001

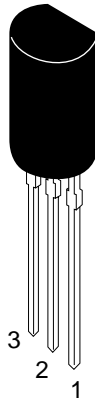
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## Application

Low frequency high voltage amplifier

## Outline

TO-92MOD



1. Emitter
2. Collector
3. Base

## 2SD1868, 2SD1869

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

Item	Symbol	2SA1868	2SA1869	Unit
Collector to base voltage	$V_{CBO}$	160	200	V
Collector to emitter voltage	$V_{CEO}$	160	200	V
Emitter to base voltage	$V_{EBO}$	5	5	V
Collector current	$I_C$	100	100	mA
Collector power dissipation	$P_C$	0.9	0.9	W
Junction temperature	$T_j$	150	150	°C
Storage temperature	$T_{stg}$	-55 to +150	-55 to +150	°C

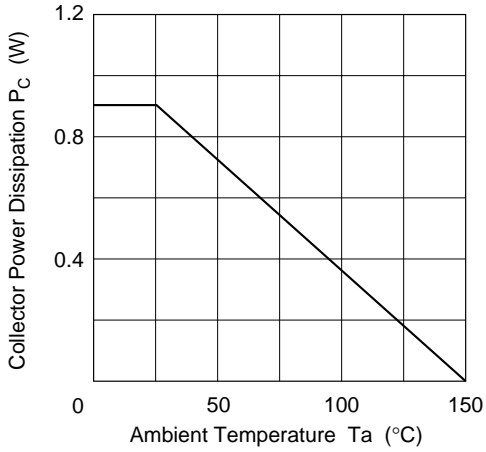
### Electrical Characteristics (Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Collector to base breakdown voltage	2SD1868 $V_{(BR)CBO}$	160	—	—	V	$I_C = 10 \mu A, I_E = 0$
	2SD1869	200	—	—	V	
Collector to emitter breakdown voltage	2SD1868 $V_{(BR)CEO}$	160	—	—	V	$I_C = 1 \text{ mA}, R_{BE} = \infty$
	2SD1869	200	—	—	V	
Emitter to base breakdown voltage	$V_{(BR)EBO}$	5	—	—	V	$I_E = 10 \mu A, I_C = 0$
Collector cutoff current	2SD1868 $I_{CBO}$	—	—	10	$\mu A$	$V_{CB} = 140 \text{ V}, I_E = 0$
	2SD1869	—	—	—	$\mu A$	$V_{CB} = 160 \text{ V}, I_E = 0$
DC current transfer ratio	$h_{FE1}^{*1}$	60	—	320		$V_{CE} = 5 \text{ V}, I_C = 10 \text{ mA}$
	$h_{FE2}$	30	—	—		$V_{CE} = 5 \text{ V}, I_C = 1 \text{ mA}$
Base to emitter voltage	$V_{BE}$	—	—	1.5	V	$V_{CE} = 5 \text{ V}, I_C = 10 \text{ mA}$
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	—	2	V	$I_C = 30 \text{ mA}, I_B = 3 \text{ mA}$
Gain bandwidth product	$f_T$	—	140	—	MHz	$V_{CE} = 5 \text{ V}, I_C = 10 \text{ mA}$
Collector output capacitance	$C_{ob}$	—	3.8	—	pF	$V_{CB} = 10 \text{ V}, I_E = 0, f = 1 \text{ MHz}$

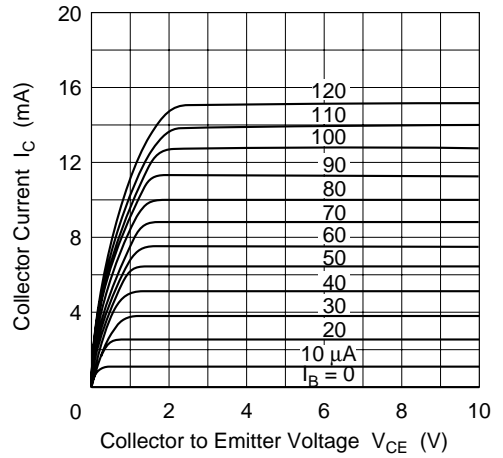
Note: 1. The 2SD1868 and 2SD1869 are grouped by  $h_{FE1}$  as follows.

Grade	B	C	D
$h_{FE1}$	60 to 120	100 to 200	160 to 320

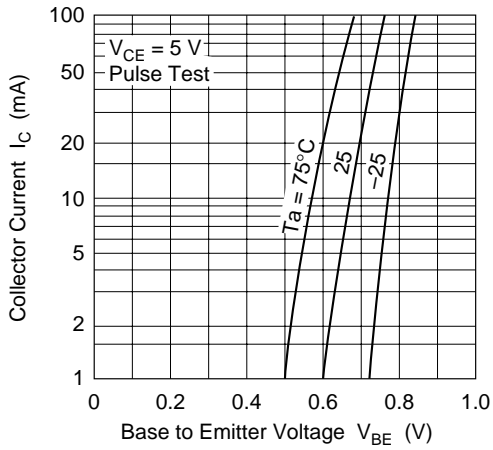
Maximum Collector Dissipation Curve



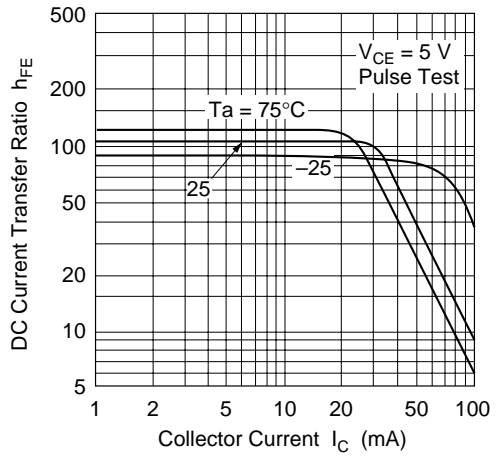
Typical Output Characteristics

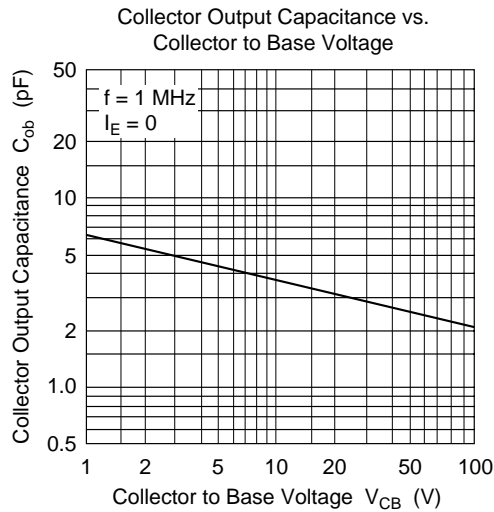
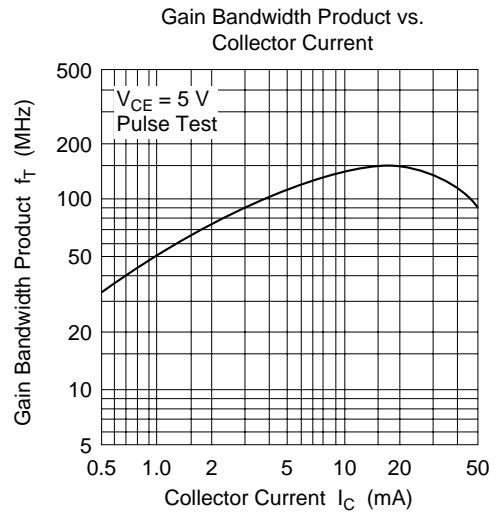
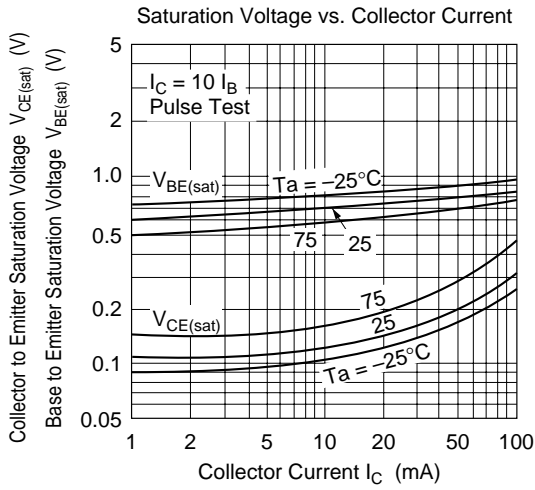


Typical Transfer Characteristics



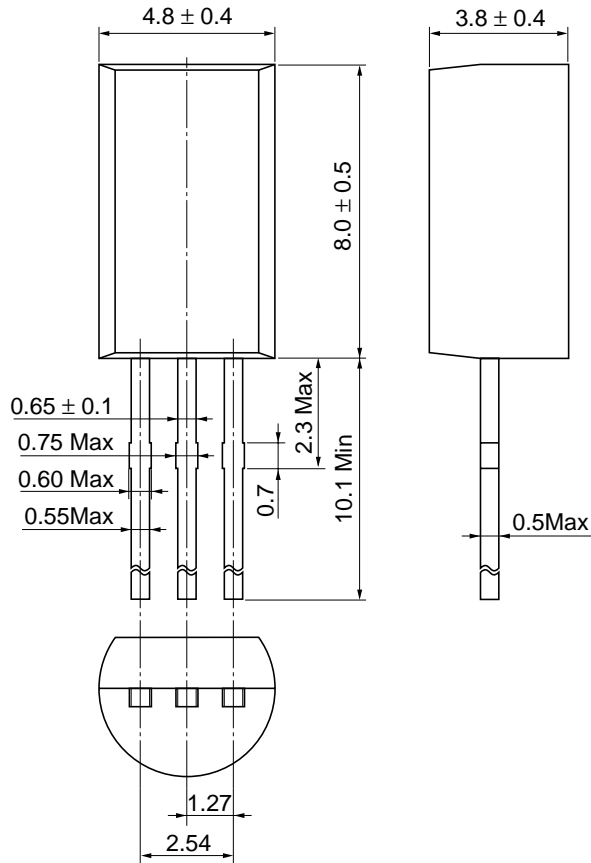
DC Current Transfer Ratio vs. Collector Current





Package Dimensions

As of January, 2001  
Unit: mm



Hitachi Code	TO-92 Mod
JEDEC	—
EIAJ	Conforms
Mass (reference value)	0.35 g

## Cautions

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# HITACHI

## Hitachi, Ltd.

Semiconductor & Integrated Circuits.  
Nippon Bldg., 2-6-2, Ohte-machi, Chiyoda-ku, Tokyo 100-0004, Japan  
Tel: Tokyo (03) 3270-2111 Fax: (03) 3270-5109

URL NorthAmerica : <http://semiconductor.hitachi.com/>  
Europe : <http://www.hitachi-eu.com/hel/ecg>  
Asia : <http://sicapac.hitachi-asia.com>  
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### For further information write to:

Hitachi Semiconductor  
(America) Inc.  
179 East Tasman Drive,  
San Jose, CA 95134  
Tel: <1> (408) 433-1990  
Fax: <1> (408) 433-0223

Hitachi Europe GmbH  
Electronic Components Group  
Dornacher Straße 3  
D-85622 Feldkirchen, Munich  
Germany  
Tel: <49> (89) 9 9180-0  
Fax: <49> (89) 9 29 30 00

Hitachi Europe Ltd.  
Electronic Components Group.  
Whitebrook Park  
Lower Cookham Road  
Maidenhead  
Berkshire SL6 8YA, United Kingdom  
Tel: <44> (1628) 585000  
Fax: <44> (1628) 585160

Hitachi Asia Ltd.  
Hitachi Tower  
16 Collyer Quay #20-00,  
Singapore 049318  
Tel: <65>-538-6533/538-8577  
Fax: <65>-538-6933/538-3877  
URL: <http://www.hitachi.com.sg>

Hitachi Asia Ltd.  
(Taipei Branch Office)  
4/F, No. 167, Tun Hwa North Road,  
Hung-Kuo Building,  
Taipei (105), Taiwan  
Tel: <886>-(2)-2718-3666  
Fax: <886>-(2)-2718-8180  
Telex: 23222 HAS-TP  
URL: <http://www.hitachi.com.tw>

Hitachi Asia (Hong Kong) Ltd.  
Group III (Electronic Components)  
7/F., North Tower,  
World Finance Centre,  
Harbour City, Canton Road  
Tsim Sha Tsui, Kowloon,  
Hong Kong  
Tel: <852>-(2)-735-9218  
Fax: <852>-(2)-730-0281  
URL: <http://www.hitachi.com.hk>

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