

# 2SD1559

Silicon NPN Triple Diffused

# HITACHI

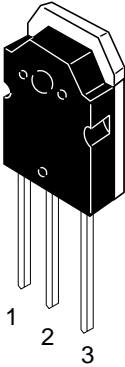
ADE-208-914 (Z)  
1st. Edition  
Sep. 2000

## Application

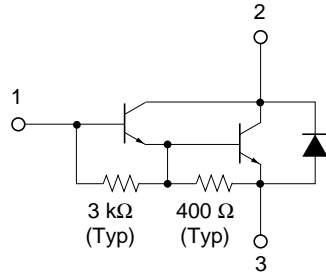
Low frequency power amplifier complementary pair with 2SB1079

## Outline

TO-3P



1. Base
2. Collector (Flange)
3. Emitter



**Absolute Maximum Ratings** ( $T_a = 25^\circ\text{C}$ )

Item	Symbol	Ratings	Unit
Collector to base voltage	$V_{\text{CBO}}$	100	V
Collector to emitter voltage	$V_{\text{CEO}}$	100	V
Emitter to base voltage	$V_{\text{EBO}}$	7	V
Collector current	$I_{\text{C}}$	20	A
Collector peak current	$I_{\text{C(peak)}}$	30	A
Base current	$I_{\text{B}}$	3	A
Collector power dissipation	$P_{\text{C}}^{*1}$	100	W
Junction temperature	$T_{\text{j}}$	150	$^\circ\text{C}$
Storage temperature	$T_{\text{stg}}$	-55 to +150	$^\circ\text{C}$

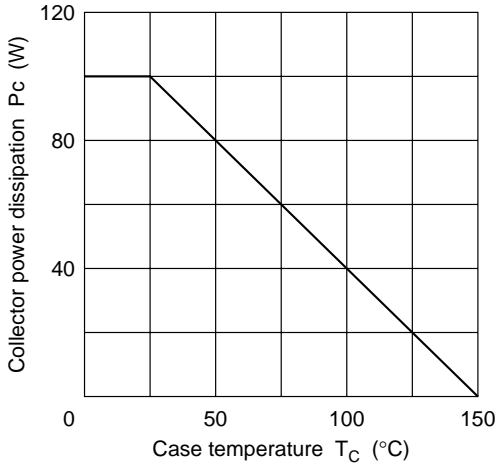
Note: 1. Value at  $T_{\text{C}} = 25^\circ\text{C}$ .

**Electrical Characteristics** ( $T_a = 25^\circ\text{C}$ )

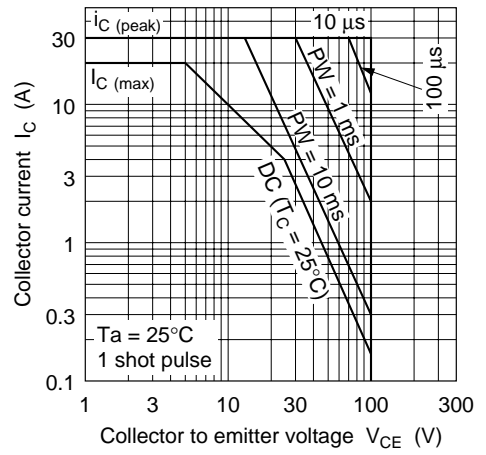
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Collector to base breakdown voltage	$V_{(\text{BR})\text{CBO}}$	100	—	—	V	$I_{\text{C}} = 0.1 \text{ mA}, I_{\text{E}} = 0$
Collector to emitter breakdown voltage	$V_{(\text{BR})\text{CEO}}$	100	—	—	V	$I_{\text{C}} = 25 \text{ mA}, R_{\text{BE}} = \infty$
Collector to emitter sustain voltage	$V_{\text{CEO(sus)}}$	100	—	—	V	$I_{\text{C}} = 200 \text{ mA}, R_{\text{BE}} = \infty^{*1}$
Emitter to base breakdown voltage	$V_{(\text{BR})\text{EBO}}$	7	—	—	V	$V_{\text{EB}} = 50 \text{ mA}, I_{\text{C}} = 0$
Collector cutoff current	$I_{\text{CBO}}$	—	—	100	$\mu\text{A}$	$V_{\text{CB}} = 100 \text{ V}, I_{\text{E}} = 0$
	$I_{\text{CEO}}$	—	—	1.0	mA	$V_{\text{CE}} = 80 \text{ V}, R_{\text{BE}} = \infty$
DC current transfer ratio	$h_{\text{FE}}$	1000	—	20000		$V_{\text{CE}} = 3 \text{ V}, I_{\text{C}} = 10 \text{ A}^{*1}$
Collector to emitter saturation voltage	$V_{\text{CE(sat)1}}$	—	—	2.0	V	$I_{\text{C}} = 10 \text{ A}, I_{\text{B}} = 20 \text{ mA}^{*1}$
Base to emitter saturation voltage	$V_{\text{BE(sat)1}}$	—	—	2.5	V	
Collector to emitter saturation voltage	$V_{\text{CE(sat)2}}$	—	—	3.0	V	$I_{\text{C}} = 20 \text{ A}, I_{\text{B}} = 200 \text{ mA}^{*1}$
Base to emitter saturation voltage	$V_{\text{BE(sat)2}}$	—	—	3.5	V	
Turn on time	$t_{\text{on}}$	—	1.0	—	$\mu\text{s}$	$I_{\text{C}} = 10 \text{ A}, I_{\text{B1}} = -I_{\text{B2}} = 20 \text{ mA}$
Storage time	$t_{\text{stg}}$	—	9.0	—	$\mu\text{s}$	
Fall time	$t_{\text{f}}$	—	3.0	—	$\mu\text{s}$	

Note: 1. Pulse test.

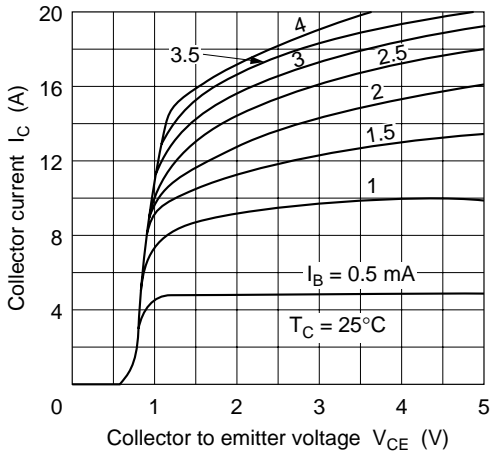
Maximum Collector Dissipation Curve



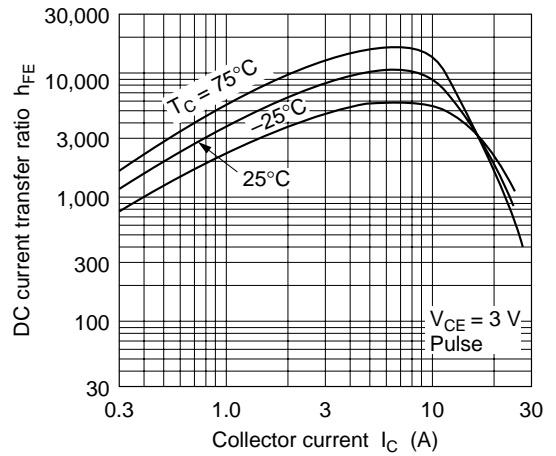
Area of Safe Operation

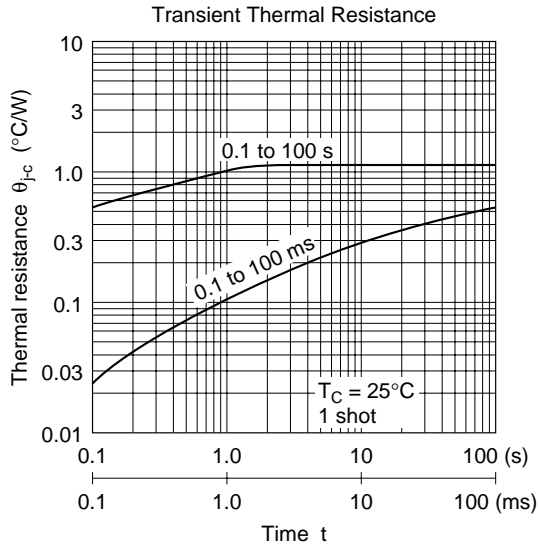
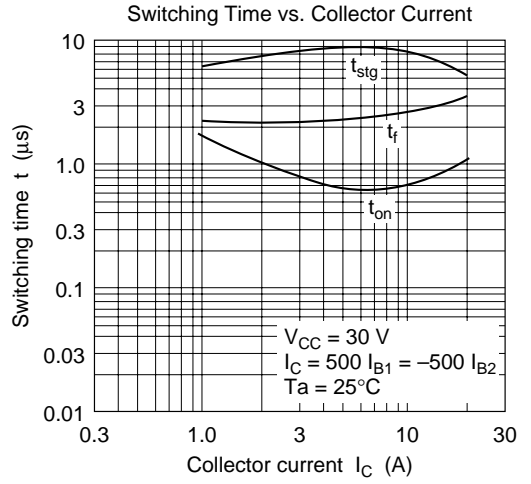
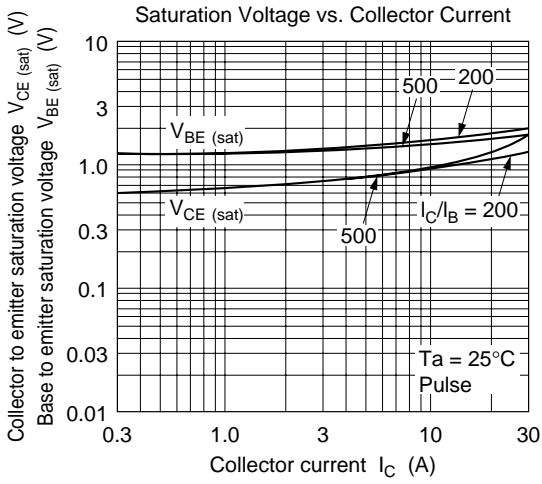


Typical Output Characteristics



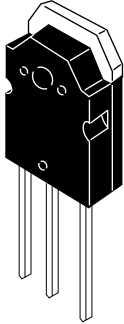
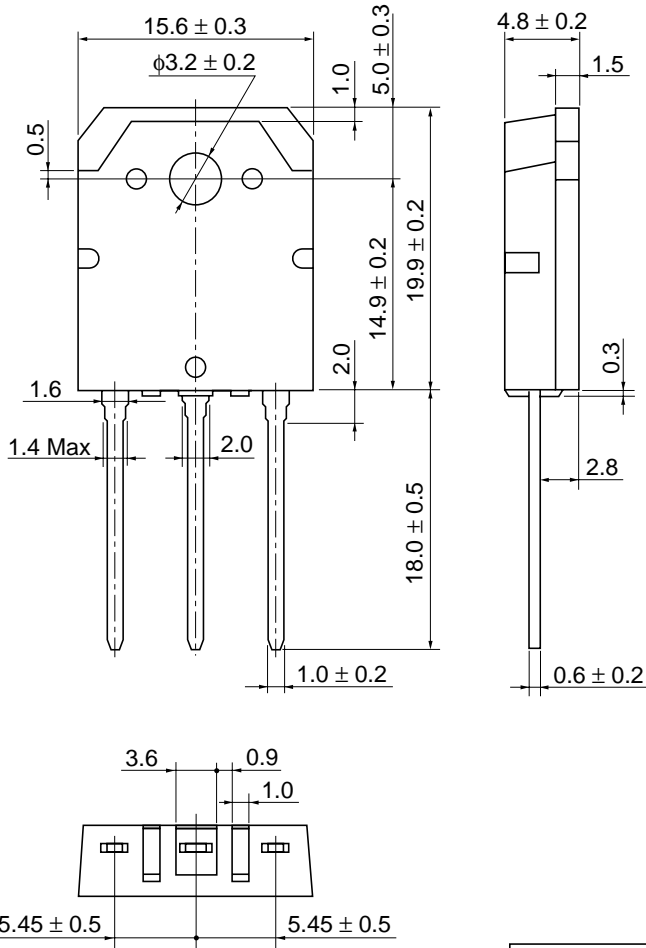
DC Current Transfer Ratio vs. Collector Current





Package Dimensions

Unit: mm



Hitachi Code	TO-3P
JEDEC	—
EIAJ	Conforms
Mass (reference value)	5.0 g

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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	North America	: <a href="http://semiconductor.hitachi.com/">http://semiconductor.hitachi.com/</a>
	Europe	: <a href="http://www.hitachi-eu.com/hel/ecg">http://www.hitachi-eu.com/hel/ecg</a>
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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  
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