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# 2SD669, 2SD669A

Silicon NPN Epitaxial

# HITACHI

ADE-208-899 (Z)  
1st. Edition  
Sep. 2000

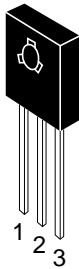
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## Application

Low frequency power amplifier complementary pair with 2SB649/A

## Outline

TO-126 MOD



1. Emitter
2. Collector
3. Base

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

Item	Symbol	Ratings		Unit
		2SD669	2SD669A	
Collector to base voltage	$V_{\text{CBO}}$	180	180	V
Collector to emitter voltage	$V_{\text{CEO}}$	120	160	V
Emitter to base voltage	$V_{\text{EBO}}$	5	5	V
Collector current	$I_{\text{C}}$	1.5	1.5	A
Collector peak current	$I_{\text{C(peak)}}$	3	3	A
Collector power dissipation	$P_{\text{C}}$	1	1	W
	$P_{\text{C}}^{*1}$	20	20	W
Junction temperature	$T_{\text{j}}$	150	150	$^\circ\text{C}$
Storage temperature	$T_{\text{stg}}$	-55 to +150	-55 to +150	$^\circ\text{C}$

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

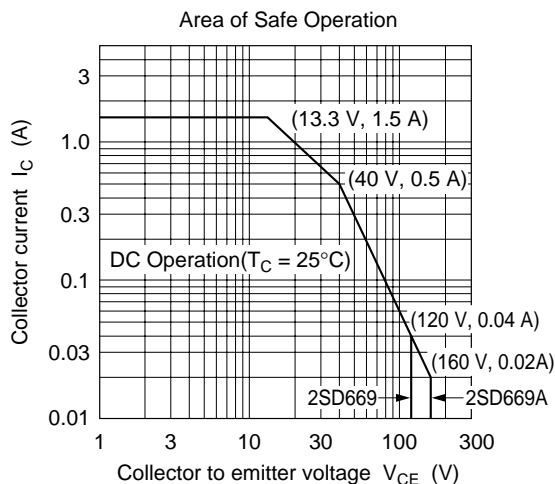
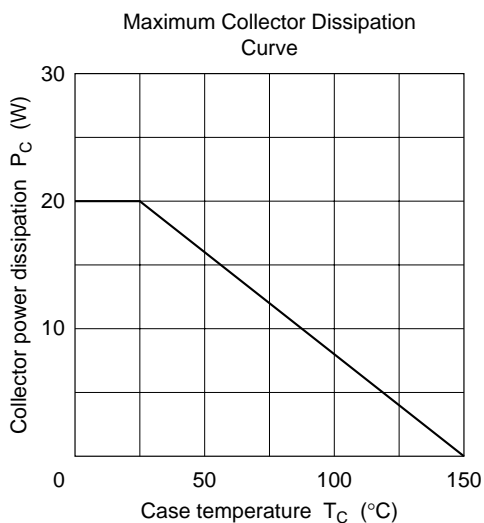
**Electrical Characteristics** (Ta = 25°C)

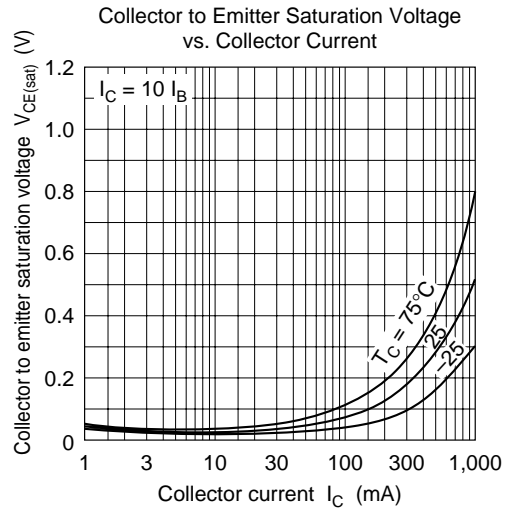
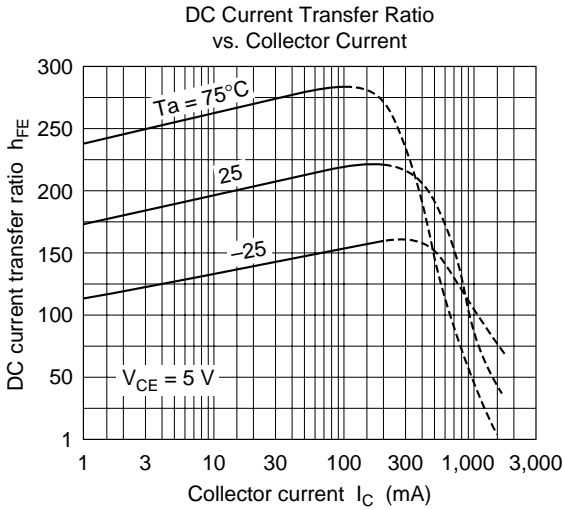
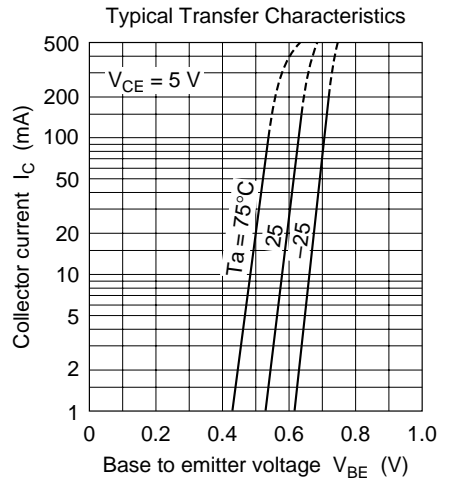
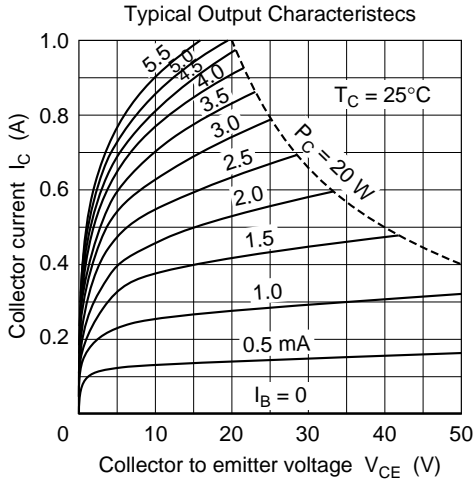
Item	Symbol	2SD669			2SD669A			Unit	Test conditions
		Min	Typ	Max	Min	Typ	Max		
Collector to base breakdown voltage	$V_{(BR)CBO}$	180	—	—	180	—	—	V	$I_C = 1 \text{ mA}, I_E = 0$
Collector to emitter breakdown voltage	$V_{(BR)CEO}$	120	—	—	160	—	—	V	$I_C = 10 \text{ mA}, R_{BE} = \infty$
Emitter to base 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	$h_{FE1}^{*1}$	60	—	320	60	—	200		$V_{CE} = 5 \text{ V}, I_C = 150 \text{ mA}^{*2}$
	$h_{FE2}$	30	—	—	30	—	—		$V_{CE} = 5 \text{ V}, I_C = 500 \text{ mA}^{*2}$
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	—	1	—	—	1	V	$I_C = 500 \text{ mA}, I_B = 50 \text{ mA}^{*2}$
Base to emitter voltage	$V_{BE}$	—	—	1.5	—	—	1.5	V	$V_{CE} = 5 \text{ V}, I_C = 150 \text{ mA}^{*2}$
Gain bandwidth product	$f_T$	—	140	—	—	140	—	MHz	$V_{CE} = 5 \text{ V}, I_C = 150 \text{ mA}^{*2}$
Collector output capacitance	$C_{ob}$	—	14	—	—	14	—	pF	$V_{CB} = 10 \text{ V}, I_E = 0, f = 1 \text{ MHz}$

Notes: 1. The 2SD669 and 2SD669A are grouped by  $h_{FE1}$  as follows.

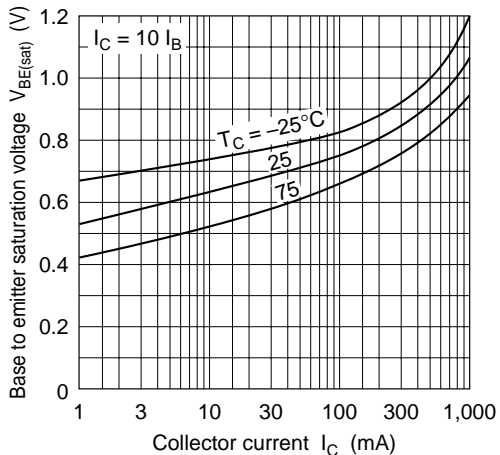
2. Pulse test.

	B	C	D
2SD669	60 to 120	100 to 200	160 to 320
2SD669A	60 to 120	100 to 200	—

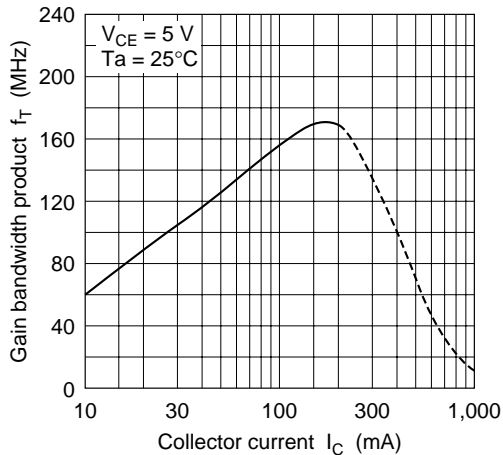




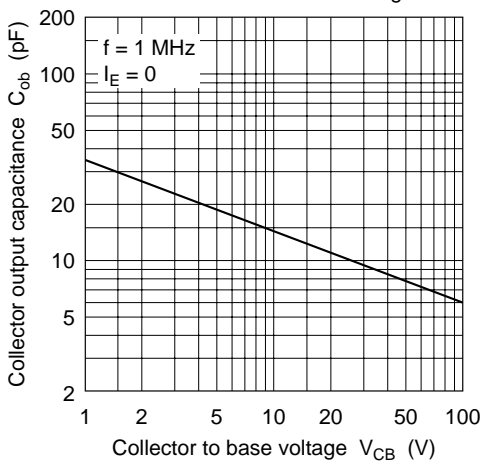
Base to Emitter Saturation Voltage vs. Collector Current



Gain Bandwidth Product vs. Collector Current

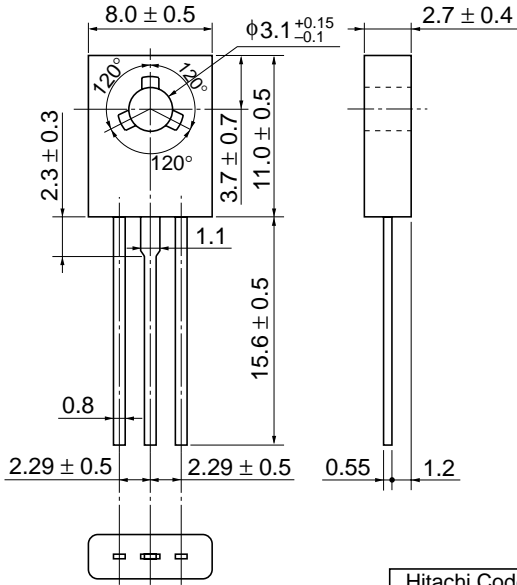


Collector Output Capacitance vs. Collector to Base Voltage



## Package Dimensions

Unit: mm



Hitachi Code	TO-126 Mod
JEDEC	—
EIAJ	—
Mass (reference value)	0.67 g

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