

**Silicon PNP Power Transistors**

**2SB649 2SB649A**

**DESCRIPTION**

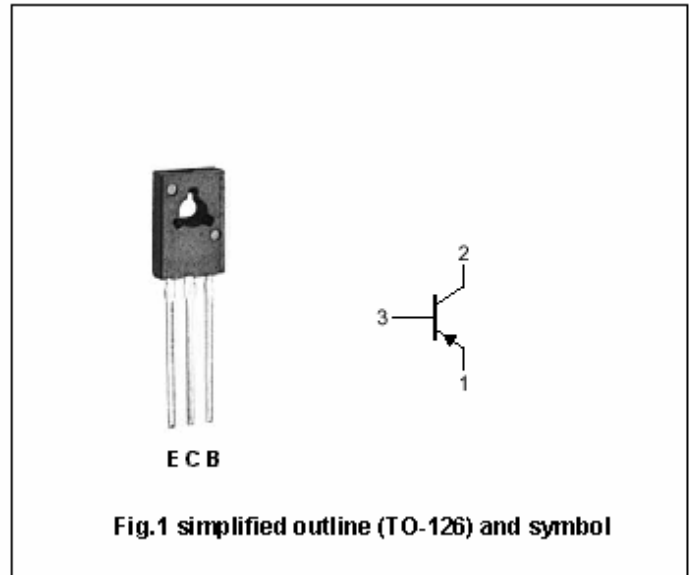
- With TO-126 package
- Complement to type 2SD669/669A
- High breakdown voltage  $V_{CEO}$ : -120/-160V
- High current -1.5A
- Low saturation voltage, excellent  $h_{FE}$  linearity

**APPLICATIONS**

- For low-frequency power amplifier applications

**PINNING**

PIN	DESCRIPTION
1	Emitter
2	Collector; connected to mounting base
3	Base



**Absolute maximum ratings(T<sub>a</sub>=25 )**

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$V_{CBO}$	Collector-base voltage	2SB649	-180	V
		2SB649A	-180	
$V_{CEO}$	Collector-emitter voltage	2SB649	-120	V
		2SB649A	-160	
$V_{EBO}$	Emitter-base voltage	Open collector	-5	V
$I_C$	Collector current (DC)		-1.5	A
$I_{CM}$	Collector current-Peak		-3	A
$P_D$	Total power dissipation	T <sub>a</sub> =25	1	W
		T <sub>C</sub> =25	20	
$T_j$	Junction temperature		150	
$T_{stg}$	Storage temperature		-55~150	

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## CHARACTERISTICS

T<sub>j</sub>=25 unless otherwise specified

SYMBOL	PARAMETER		CONDITIONS	MIN	TYP.	MAX	UNIT
V <sub>(BR)CEO</sub>	Collector-emitter breakdown voltage	2SB649	I <sub>C</sub> =-10mA; R <sub>BE</sub> =	-120			V
		2SB649A		-160			
V <sub>(BR)CBO</sub>	Collector-base breakdown voltage	2SB649	I <sub>C</sub> =-1mA; I <sub>E</sub> =0	-180			V
		2SB649A		-180			
V <sub>(BR)EBO</sub>	Emitter-base breakdown voltage		I <sub>E</sub> =-1mA; I <sub>C</sub> =0	-5			V
V <sub>CEsat</sub>	Collector-emitter saturation voltage		I <sub>C</sub> =-0.5A; I <sub>B</sub> =-50mA			-1.0	V
V <sub>BE</sub>	Base-emitter voltage		I <sub>C</sub> =-150mA; V <sub>CE</sub> =5V			-1.5	V
I <sub>CBO</sub>	Collector cut-off current		V <sub>CB</sub> =-160V; I <sub>E</sub> =0			-10	μA
h <sub>FE-1</sub>	DC current gain	2SB649	I <sub>C</sub> =-150mA; V <sub>CE</sub> =-5V	60		320	
		2SB649A		60	200		
h <sub>FE-2</sub>	DC current gain		I <sub>C</sub> =-0.5A; V <sub>CE</sub> =-5V	30			
f <sub>T</sub>	Transition frequency		I <sub>C</sub> =-150mA; V <sub>CE</sub> =-5V		140		MHz
C <sub>OB</sub>	Collector output capacitance		f=1MHz; V <sub>CB</sub> =-10V		27		pF

◆ h<sub>FE</sub> Classifications

h <sub>FE-1</sub>	B	C	D
2SB649	60-120	100-200	160-320
2SB649A	60-120	100-200	

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PACKAGE OUTLINE

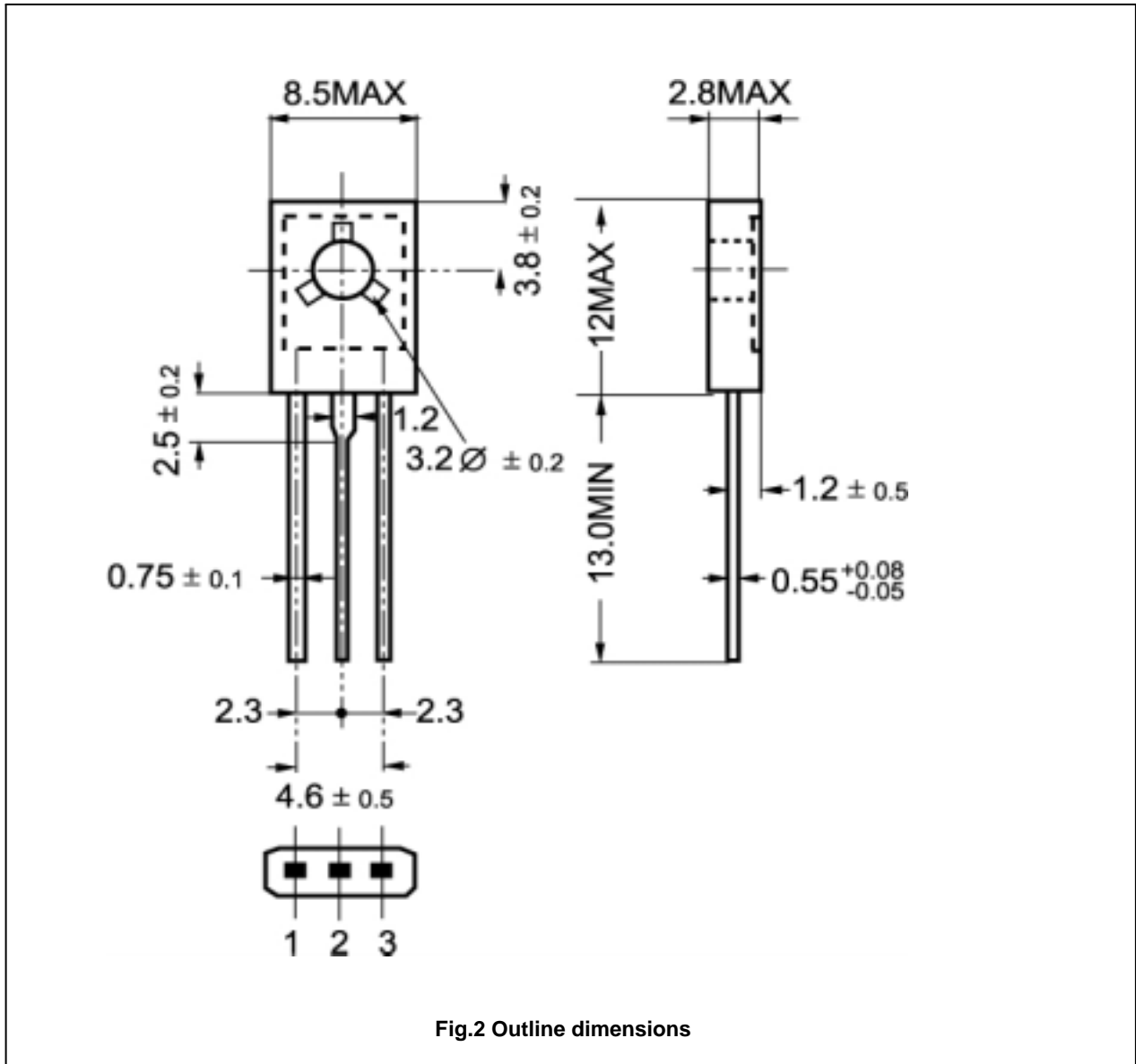


Fig.2 Outline dimensions

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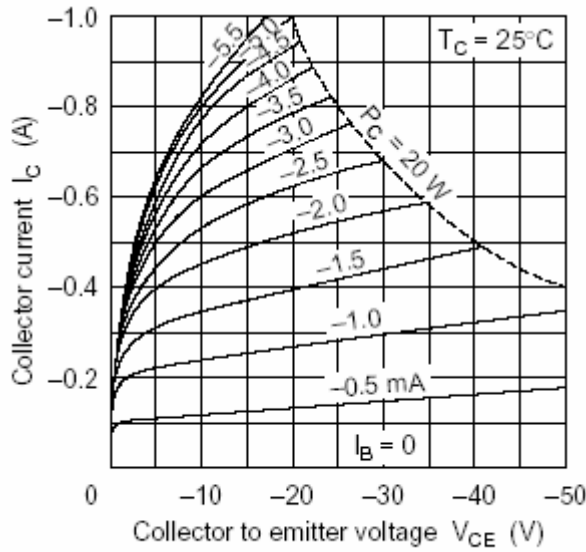


Fig.3 Static Characteristic

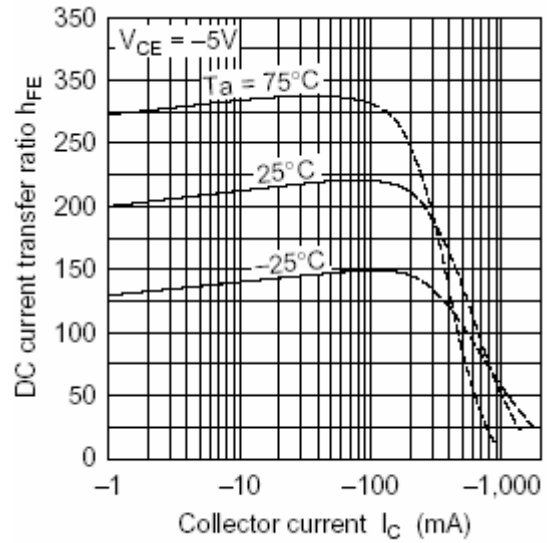


Fig.4 DC current Gain

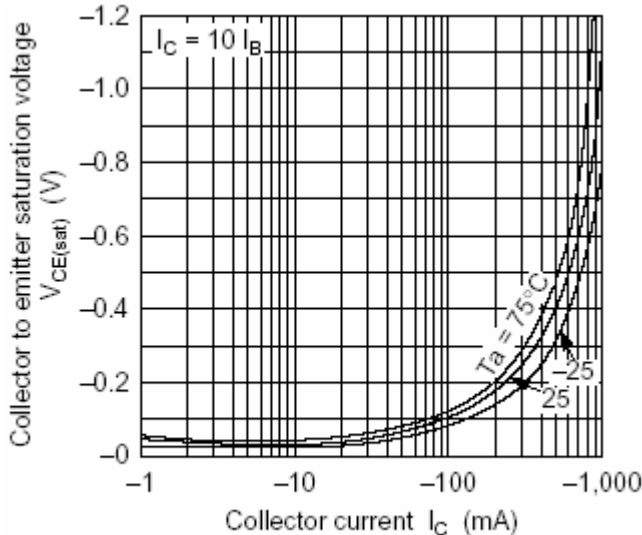


Fig.5 Collector-Emitter Saturation Voltage

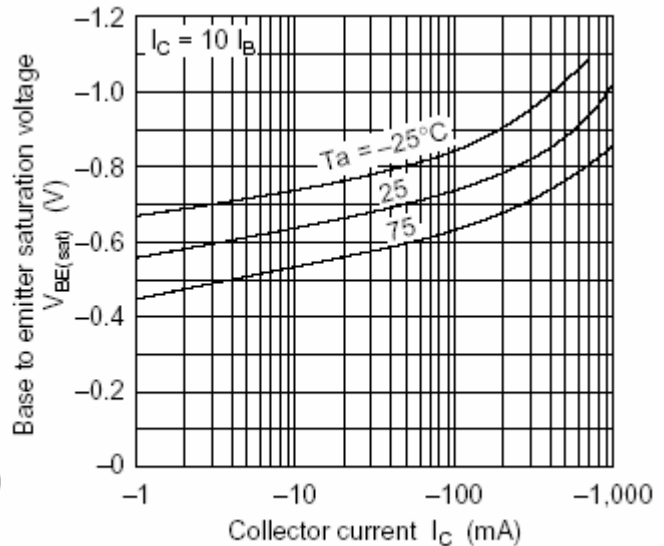


Fig.6 Base-Emitter Saturation Voltage

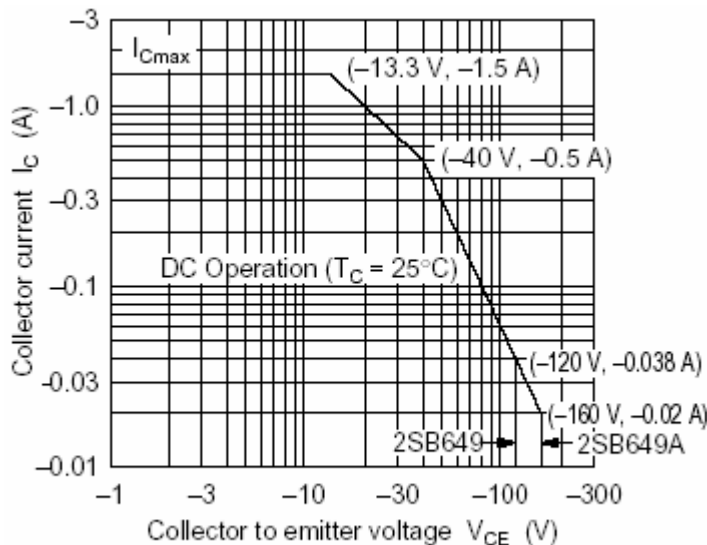


Fig.7 Safe Operating Area