

PNP SILICON EPITAXIAL TRANSISTOR  
FOR HIGH-SPEED SWITCHING

The 2SB1669 is a power transistor that can be directly driven from the output of an IC. This transistor is ideal for OA and FA equipment such as motor and solenoid drivers.

## FEATURES

- High DC current amplifier rate  
 $h_{FE} \geq 100$  ( $V_{CE} = -5.0$  V,  $I_C = -0.5$  A)
- Z type available for surface mounting supported products

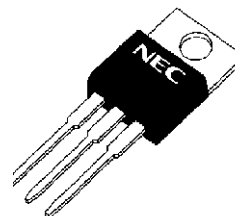
ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ )

Parameter	Symbol	Conditions	Ratings	Unit
Collector to base voltage	$V_{CBO}$		-60	V
Collector to emitter voltage	$V_{CEO}$		-60	V
Emitter to base voltage	$V_{EBO}$		-7.0	V
Collector current (DC)	$I_{C(DC)}$		-3.0	A
Collector current (pulse)	$I_{C(pulse)}$	PW $\leq$ 10 ms, duty cycle $\leq$ 50%	-6.0	A
Base current (DC)	$I_{B(DC)}$		-1.0	A
Total power dissipation	$P_T$	( $T_C = 25^\circ\text{C}$ )	25	W
		( $T_A = 25^\circ\text{C}$ )	1.5	W
Junction temperature	$T_j$		150	$^\circ\text{C}$
Storage temperature	$T_{stg}$		-55 to +150	$^\circ\text{C}$

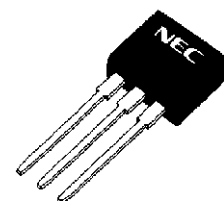
## ORDERING INFORMATION

Part No.	Package
2SB1669	TO-220AB
2SB1669-S	TO-262
2SB1669-Z	TO-220SMD

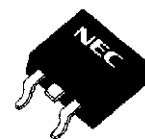
(TO-220AB)



(TO-262)



(TO-220SMD)



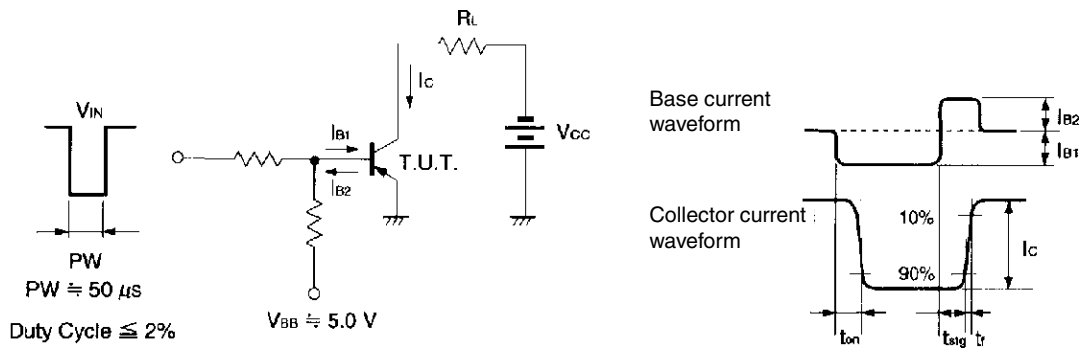
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**ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C)**

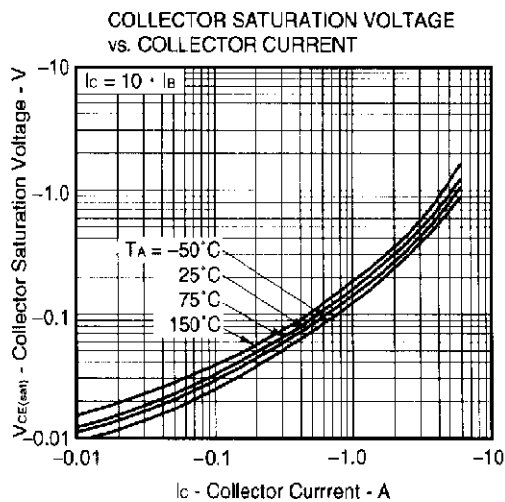
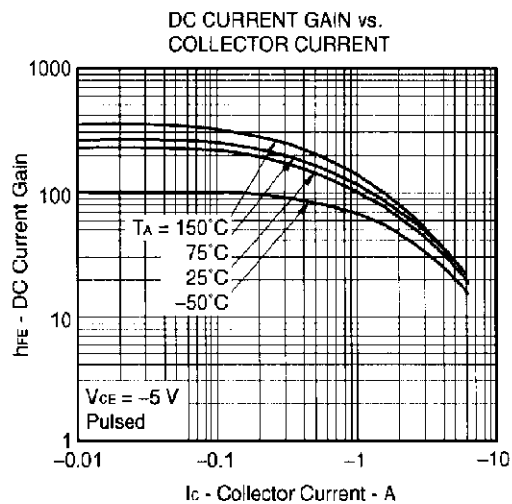
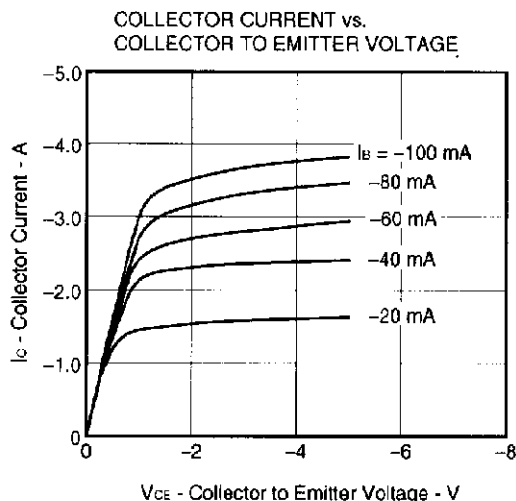
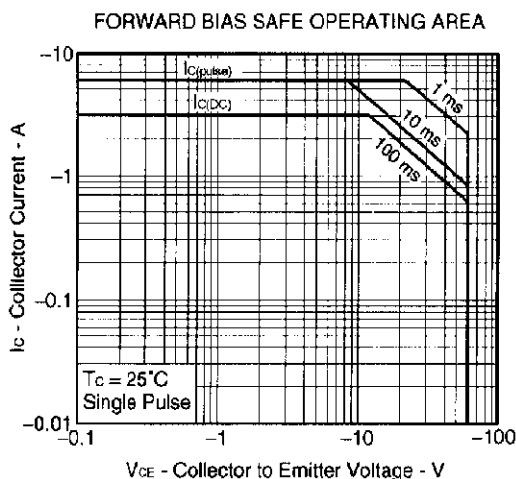
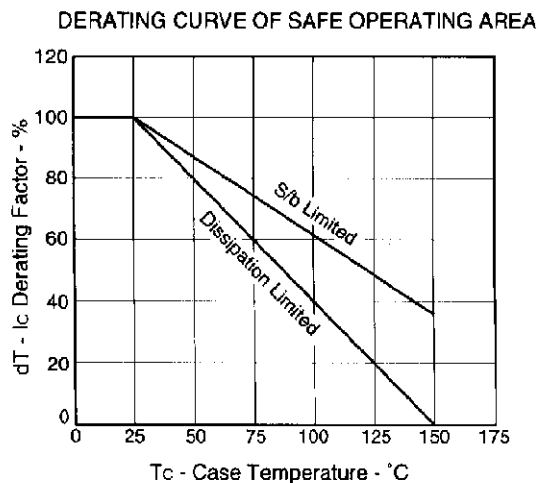
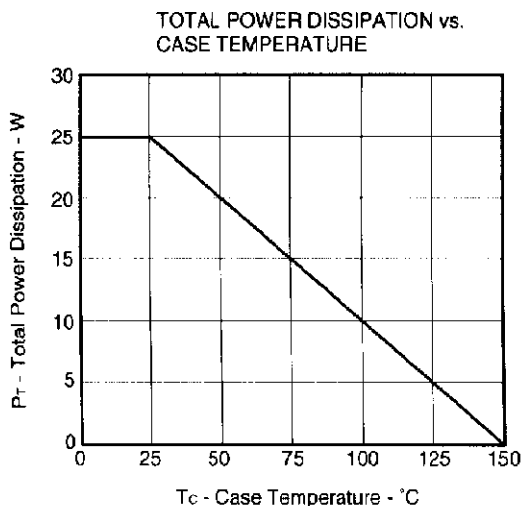
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Collector cutoff current	I <sub>CBO</sub>	V <sub>CB</sub> = -60 V, I <sub>E</sub> = 0 A			-10	μA
DC current gain	h <sub>FE1</sub>	V <sub>CE</sub> = -5.0 V, I <sub>C</sub> = -0.5 A <sup>Note</sup>	100		400	-
	h <sub>FE2</sub>	V <sub>CE</sub> = -5 V, I <sub>C</sub> = -3 A <sup>Note</sup>	20			-
Collector saturation voltage	V <sub>CE(sat)</sub>	I <sub>C</sub> = -3.0 A, I <sub>B</sub> = -300 mA <sup>Note</sup>			-1.0	V
Base saturation voltage	V <sub>BE(sat)</sub>	I <sub>C</sub> = -3.0 A, I <sub>B</sub> = -300 mA <sup>Note</sup>			-2.0	V
Gain bandwidth product	f <sub>T</sub>	V <sub>CE</sub> = -5.0 V, I <sub>C</sub> = -0.5 A		5		MHz
Collector capacitance	C <sub>ob</sub>	V <sub>CB</sub> = -10 V, I <sub>E</sub> = 0 A, f = 10 MHz		80		pF
Turn-on time	t <sub>on</sub>	I <sub>C</sub> = -2.0 A, R <sub>L</sub> = 15 Ω, I <sub>B1</sub> = -I <sub>B2</sub> = -200 mA, V <sub>CC</sub> ≅ -30 V Refer to the test circuit.		0.4		μs
Storage time	t <sub>stg</sub>			1.7		μs
Fall time	t <sub>f</sub>			0.5		μs

**Note** Pulse test PW ≤ 350 μs, duty cycle ≤ 2%

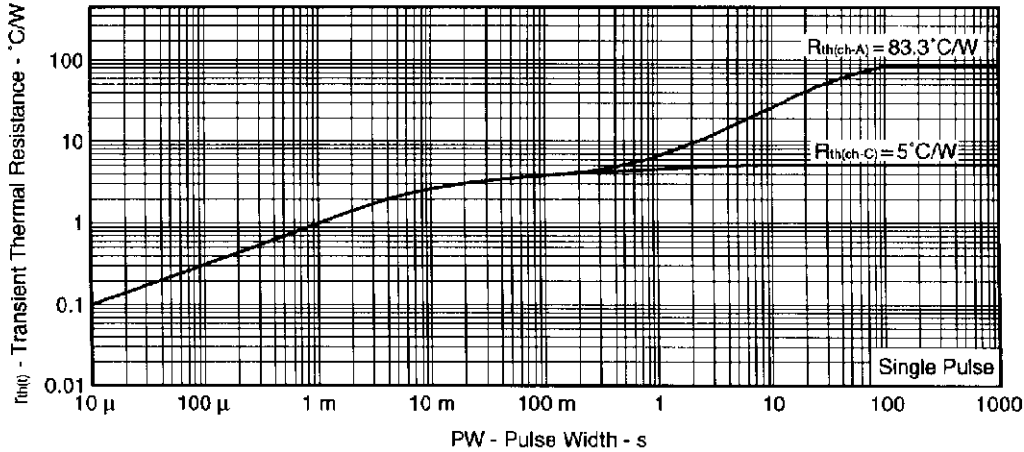
**SWITCHING TIME (t<sub>on</sub>, t<sub>stg</sub>, t<sub>f</sub>) TEST CIRCUIT**



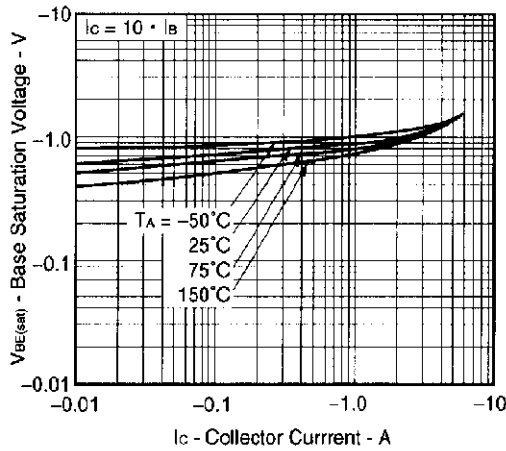
TYPICAL CHARACTERISTICS (T<sub>A</sub> = 25°C)



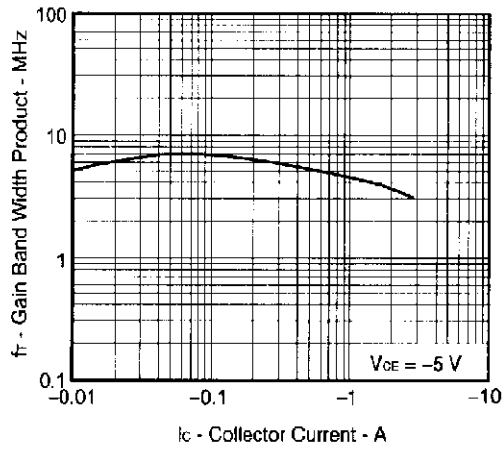
TRANSIENT THERMAL RESISTANCE vs. PULSE WIDTH



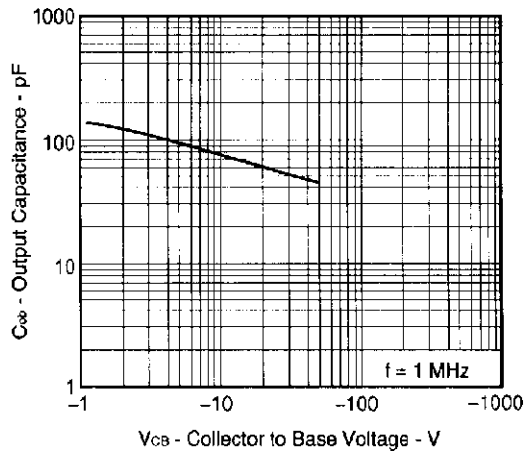
BASE SATURATION VOLTAGE vs. COLLECTOR CURRENT



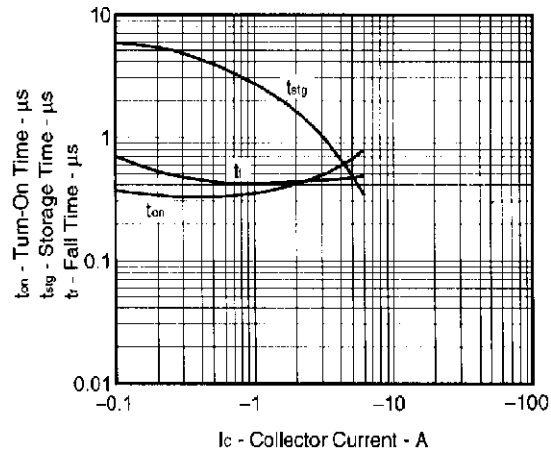
GAIN BAND WIDTH PRODUCT vs. COLLECTOR CURRENT



OUTPUT CAPACITANCE vs. COLLECTOR TO BASE VOLTAGE



SWITCHING CHARACTERISTICS





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