

SILICON POWER TRANSISTOR

2SB1669

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

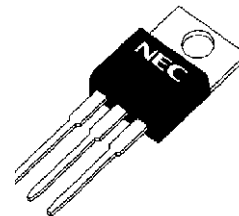
ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$)

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	$^\circ\text{C}$

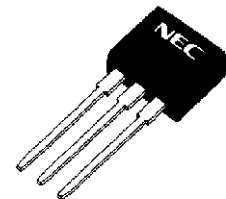
ORDERING INFORMATION

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

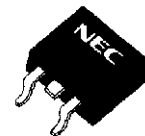
(TO-220AB)



(TO-262)



(TO-220SMD)



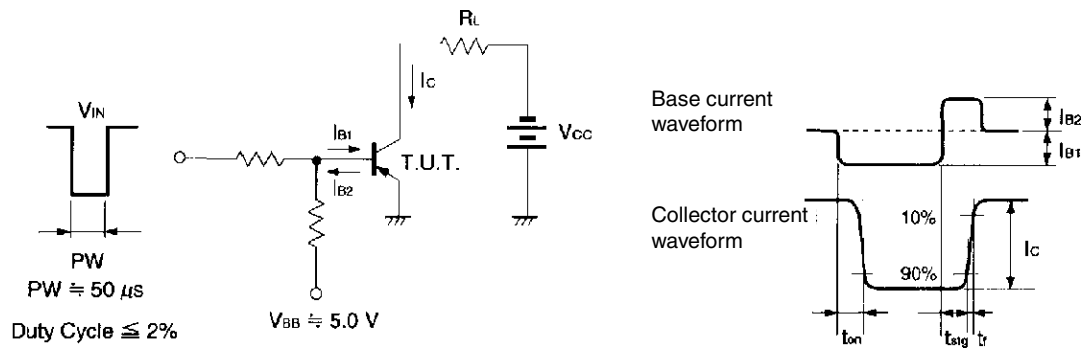
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ELECTRICAL CHARACTERISTICS (T_A = 25°C)

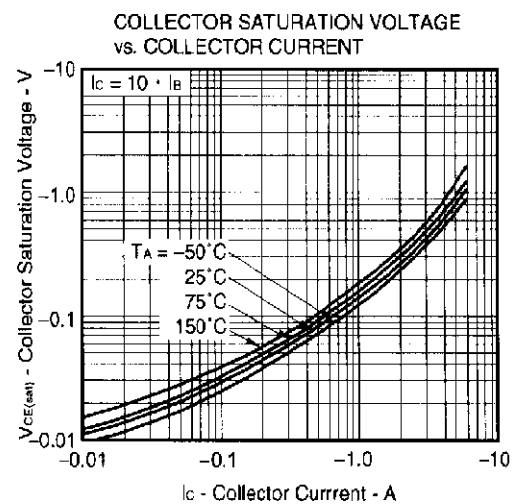
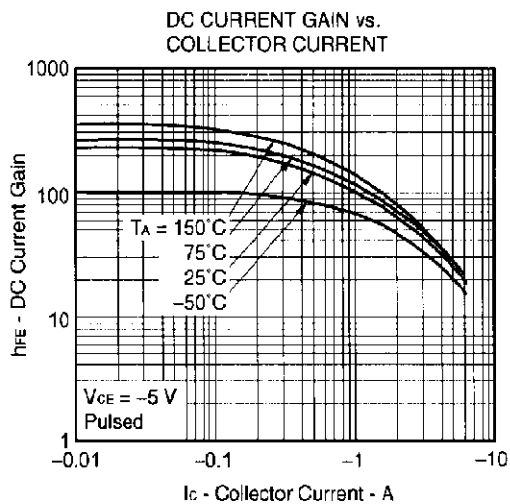
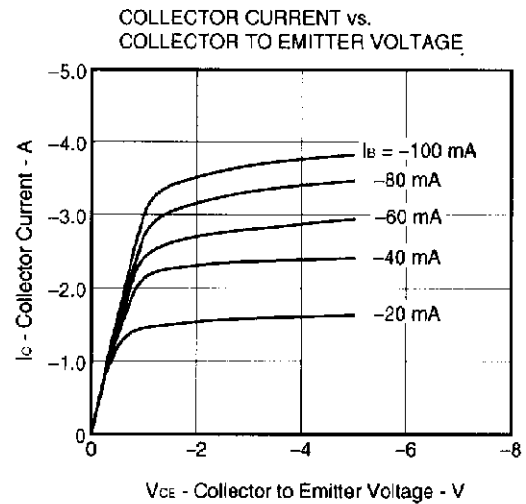
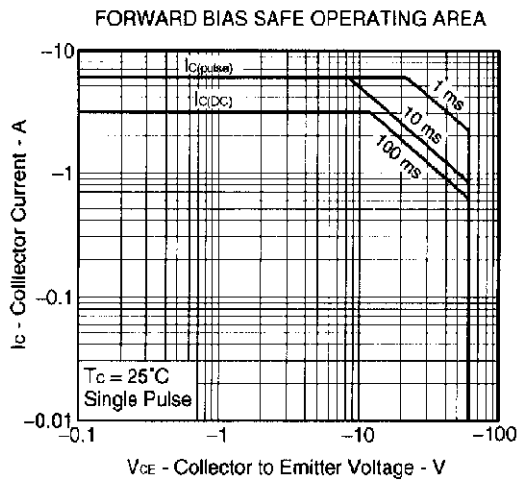
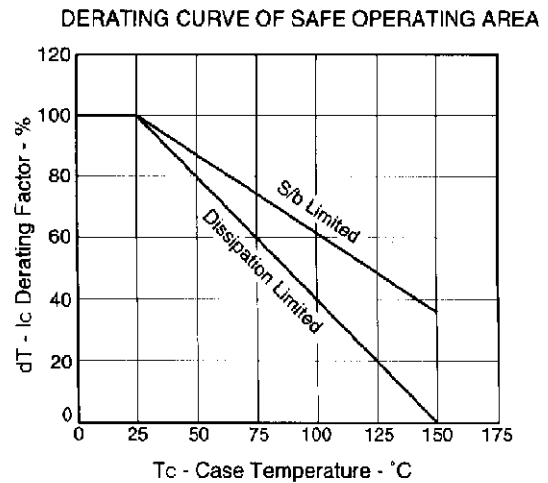
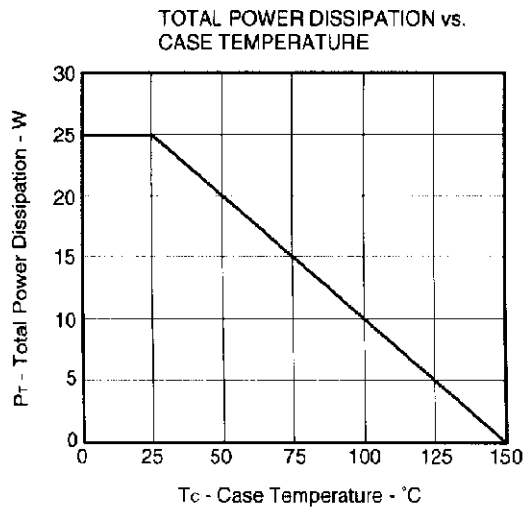
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Collector cutoff current	I _{CBO}	V _{CB} = -60 V, I _E = 0 A			-10	μA
DC current gain	h _{FE1}	V _{CE} = -5.0 V, I _C = -0.5 A ^{Note}	100		400	—
	h _{FE2}	V _{CE} = -5 V, I _C = -3 A ^{Note}	20			—
Collector saturation voltage	V _{CE(sat)}	I _C = -3.0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

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

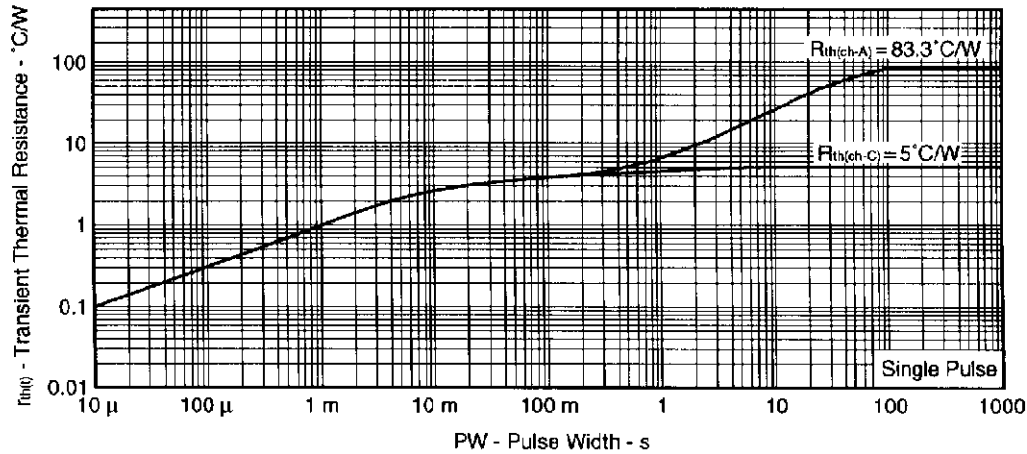
SWITCHING TIME (t_{on}, t_{stg}, t_f) TEST CIRCUIT



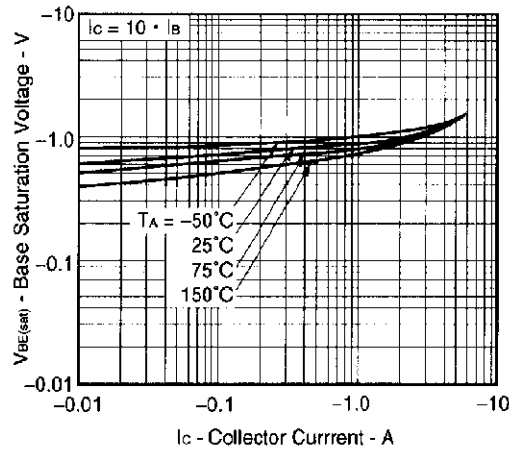
TYPICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$)



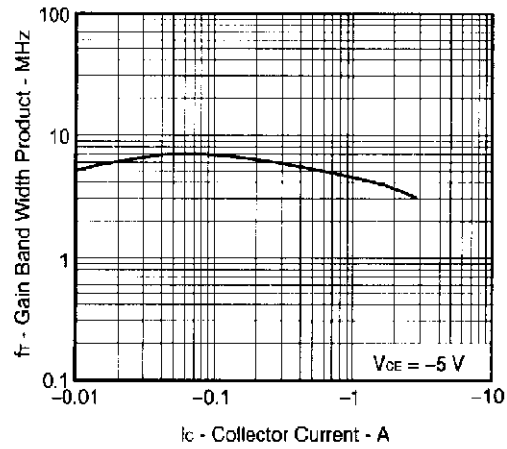
TRANSIENT THERMAL RESISTANCE vs. PULSE WIDTH



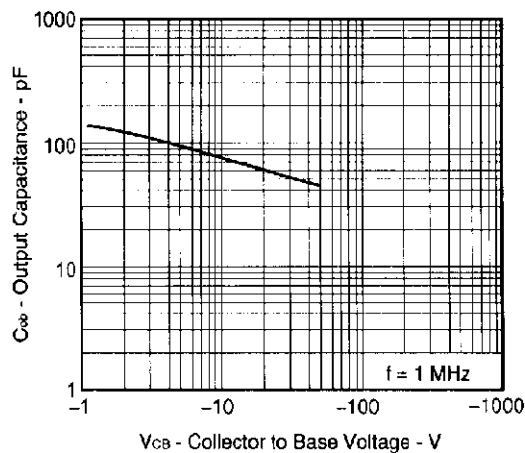
BASE SATURATION VOLTAGE vs. COLLECTOR CURRENT



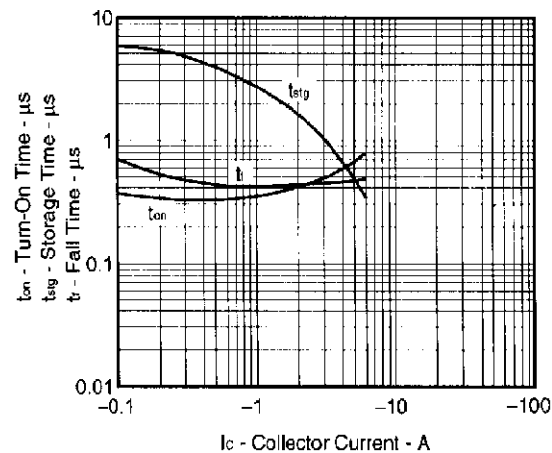
GAIN BAND WIDTH PRODUCT vs. COLLECTOR CURRENT



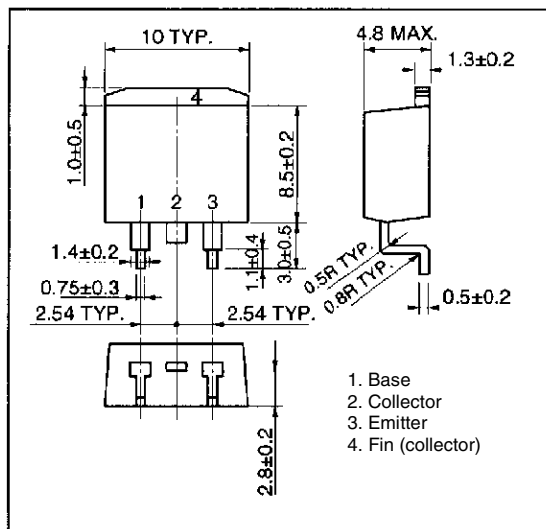
OUTPUT CAPACITANCE vs. COLLECTOR TO BASE VOLTAGE



SWITCHING CHARACTERISTICS



1) TO-220AB (MP-25)



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