To our customers,

Old Company Name in Catalogs and Other Documents

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Renesas Electronics website: http://www.renesas.com

April 1st, 2010
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (http://www.renesas.com)

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RENESAS

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 prodcuts

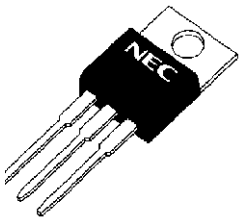
ABSOLUTE MAXIMUM RATINGS (T_A = 25°C)

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 ≤ 10 ms, duty cycle ≤ 50%	–6.0	A
Base current (DC)	$I_{B(DC)}$		–1.0	A
Total power dissipation	P_T	(T_C = 25°C)	25	W
		(T_A = 25°C)	1.5	W
Junction temperature	T_j		150	°C
Storage temperature	T_{stg}		–55 to +150	°C

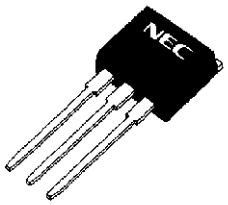
ORDERING INFORMATION

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

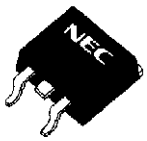
(TO-220AB)



(TO-262)



(TO-220SMD)



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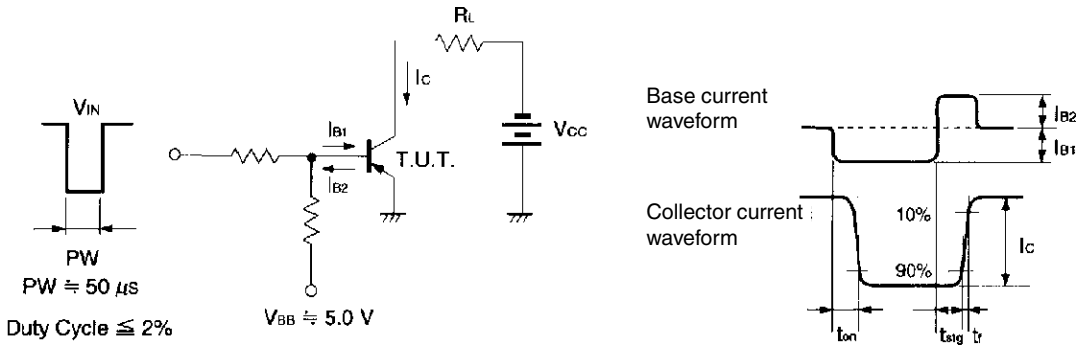
Printed in Japan

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

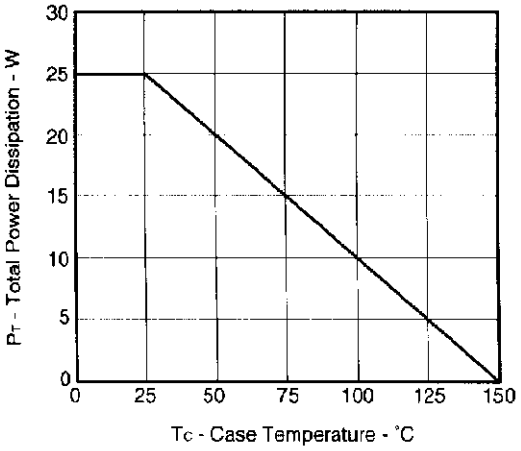
Note Pulse test PW ≤ 350 μs, duty cycle ≤ 2%

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

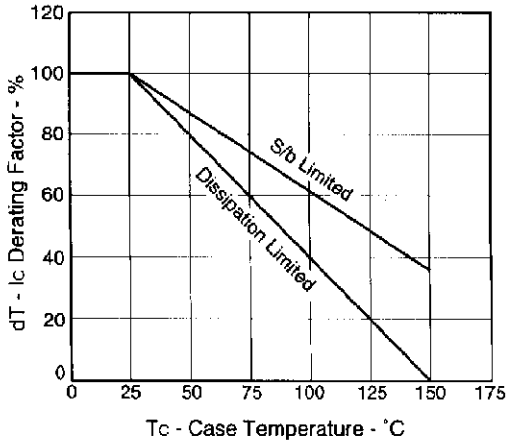


TYPICAL CHARACTERISTICS (T_A = 25°C)

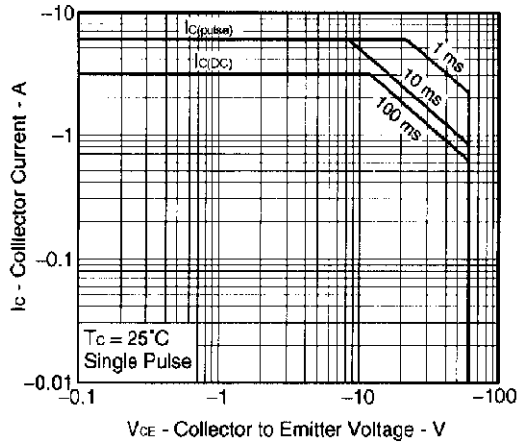
TOTAL POWER DISSIPATION vs.
CASE TEMPERATURE



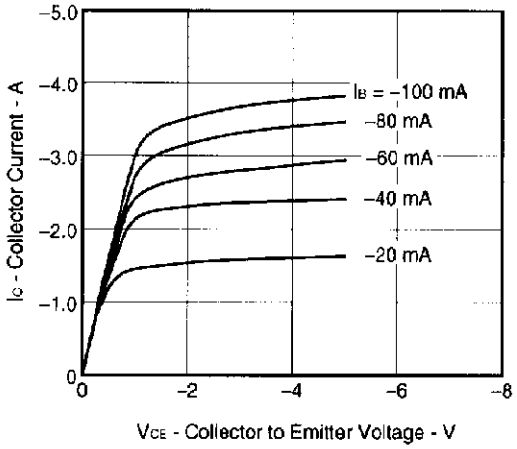
DERATING CURVE OF SAFE OPERATING AREA



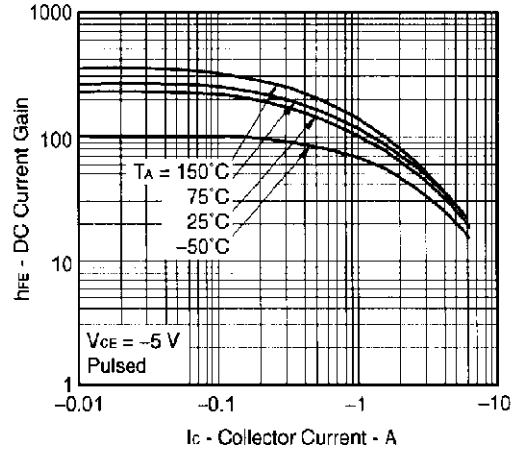
FORWARD BIAS SAFE OPERATING AREA



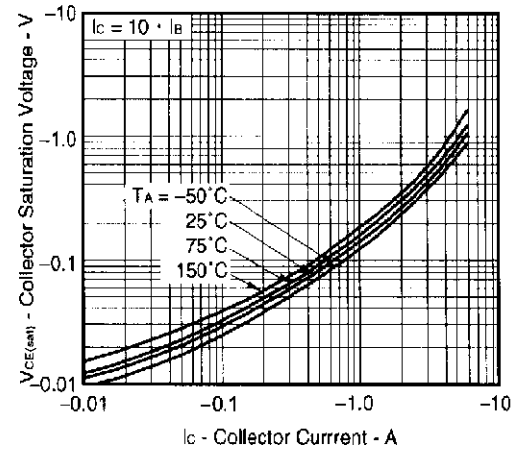
COLLECTOR CURRENT vs.
COLLECTOR TO EMITTER VOLTAGE



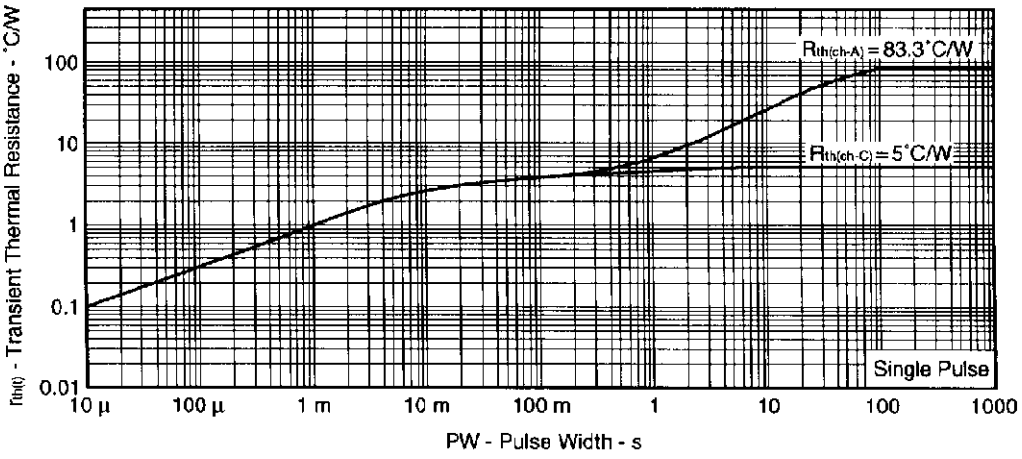
DC CURRENT GAIN vs.
COLLECTOR CURRENT



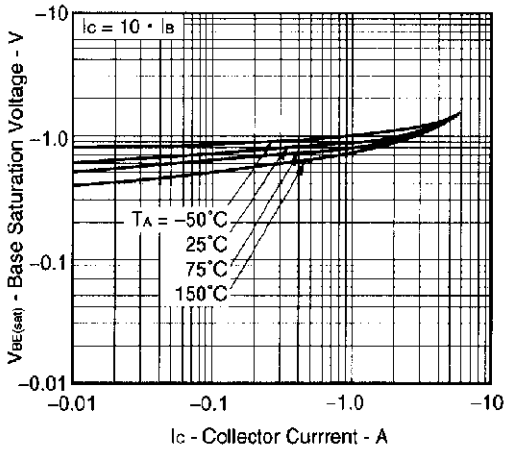
COLLECTOR SATURATION VOLTAGE
vs. COLLECTOR CURRENT



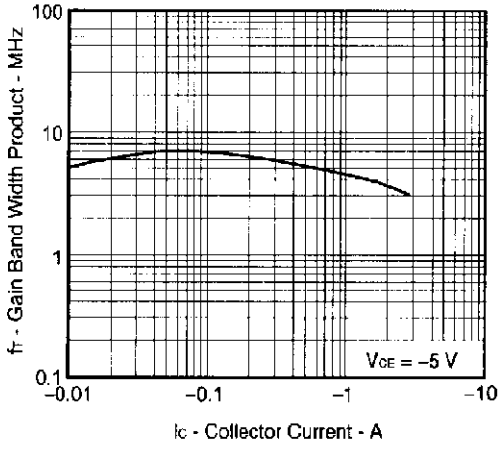
TRANSIENT THERMAL RESISTANCE vs. PULSE WIDTH



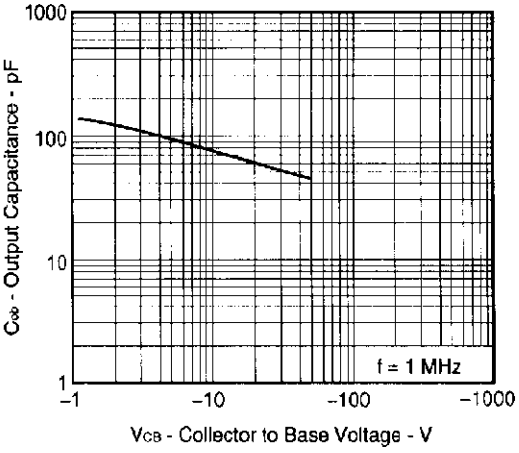
BASE SATURATION VOLTAGE vs. COLLECTOR CURRENT



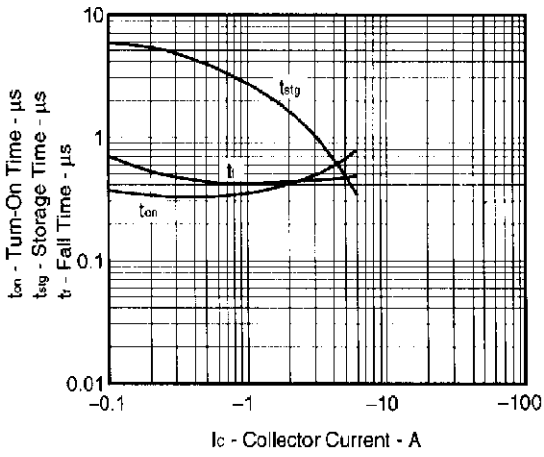
GAIN BAND WIDTH PRODUCT vs. COLLECTOR CURRENT



OUTPUT CAPACITANCE vs. COLLECTOR TO BASE VOLTAGE

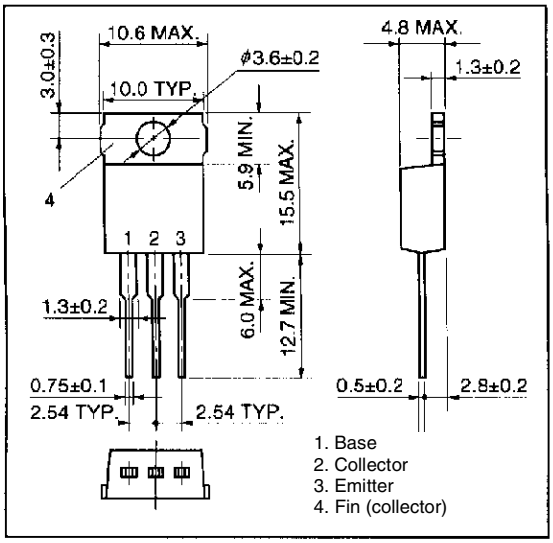


SWITCHING CHARACTERISTICS

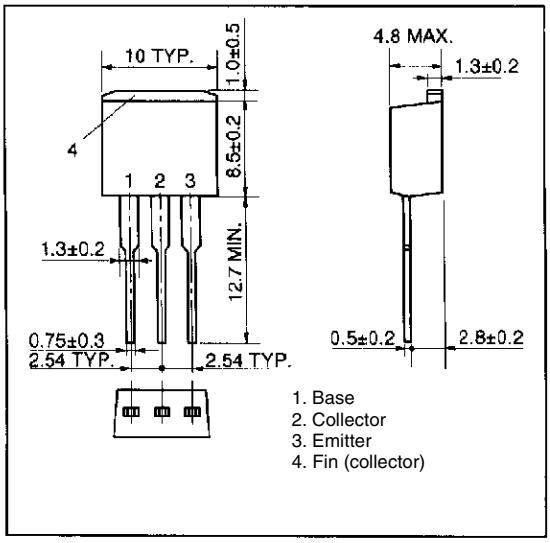


PACKAGE DRAWING (UNIT: mm)

1) TO-220AB (MP-25)



2) TO-262 (MP-25 Fin Cut)



3) TO-220SMD (MP-25Z)