

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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SILICON POWER TRANSISTOR

2SA1008

PNP SILICON EPITAXIAL TRANSISTOR FOR HIGH-SPEED SWITCHING

The 2SA1008 is a mold power transistor developed for high-speed switching, and is ideal for use as a driver in devices such as switching regulators, DC/DC converters, and high-frequency power amplifiers.

ORDERING INFORMATION

Part No.	Package
2SA1008	TO-220AB

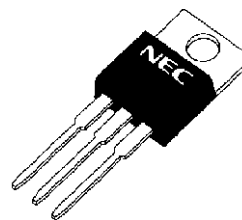
FEATURES

- Low collector saturation voltage
- Fast switching speed
- Complementary transistor: 2SC2331

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

Parameter	Symbol	Conditions	Ratings	Unit
Collector to base voltage	V_{CBO}		-100	V
Collector to emitter voltage	V_{CEO}		-100	V
Emitter to base voltage	V_{EBO}		-7.0	V
Collector current (DC)	$I_{C(DC)}$		-2.0	A
Collector current (pulse)	$I_{C(pulse)}$	$PW \leq 300 \mu s,$ $duty\ cycle \leq 10\%$	-4.0	A
Base current (DC)	$I_{B(DC)}$		-1.0	A
Total power dissipation	P_T	$T_C = 25^\circ\text{C}$	15	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	$^\circ\text{C}$

(TO-220AB)



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ELECTRICAL CHARACTERISTICS (T_A = 25°C)

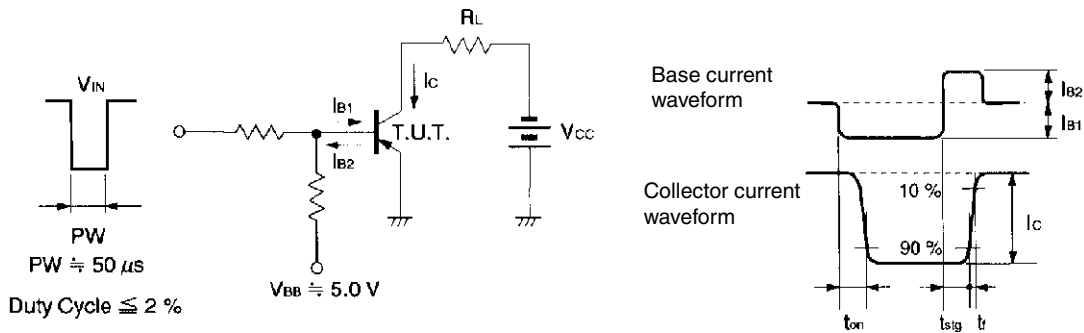
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Collector to emitter voltage	V _{CE0(SUS)}	I _C = -1.0 A, I _{B1} = -0.1 A, L = 1 mH	-100			V
Collector to emitter voltage	V _{CEx(SUS)1}	I _C = -1.0 A, I _{B1} = -I _{B2} = -0.1 A, V _{BE(OFF)} = 5.0 V, L = 180 μH, clamped	-100			V
Collector to emitter voltage	V _{CEx(SUS)2}	I _C = -2.0 A, I _{B1} = -0.2 A, I _{B2} = 0.1 A, V _{BE(OFF)} = 5.0 V, L = 180 μH, clamped	-100			V
Collector cutoff current	I _{CBO}	V _{CB} = -100 V, I _E = 0 A			-10	μA
Collector cutoff current	I _{CER}	V _{CE} = -100 V, R _{BE} = 51 Ω, T _A = 125°C			-1.0	mA
Collector cutoff current	I _{CEx1}	V _{CE} = -100 V, V _{BE(OFF)} = 1.5 V			-10	μA
Collector cutoff current	I _{CEx2}	V _{CE} = -100 V, V _{BE(OFF)} = 1.5 V, T _A = 125°C			-1.0	mA
Emitter cutoff current	I _{EBO}	V _{EB} = -5.0 V, I _C = 0 A			-10	μA
DC current gain	h _{FE1}	V _{CE} = -5.0 V, I _C = -0.1 A ^{Note}	40			
DC current gain	h _{FE2}	V _{CE} = -5.0 V, I _C = -1.0 A ^{Note}	40		200	
Collector saturation voltage	V _{CE(sat)}	I _C = -1.0 A, I _B = -0.1 A ^{Note}			-0.6	V
Base saturation voltage	V _{BE(sat)}	I _C = -1.0 A, I _B = -0.1 A ^{Note}			-1.5	V
Turn-on time	t _{on}	I _C = -1.0 A, R _L = 50 Ω, I _{B1} = -I _{B2} = -0.1 A, V _{CC} ≅ -50 V Refer to the test circuit.			0.5	μs
Storage time	t _{stg}				1.5	μs
Fall time	t _f				0.5	μs

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

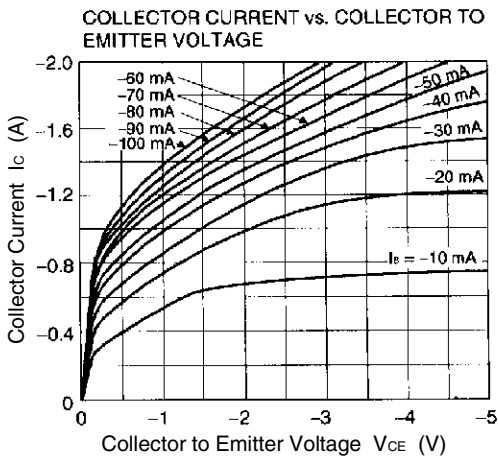
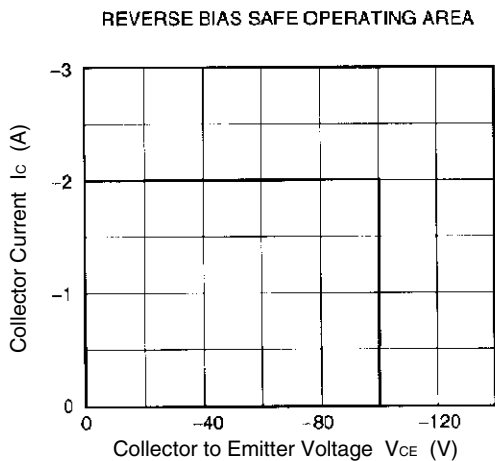
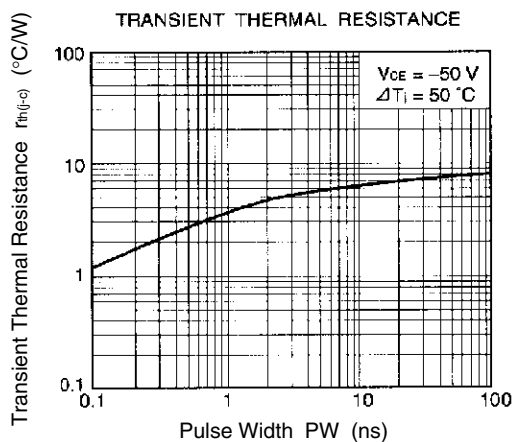
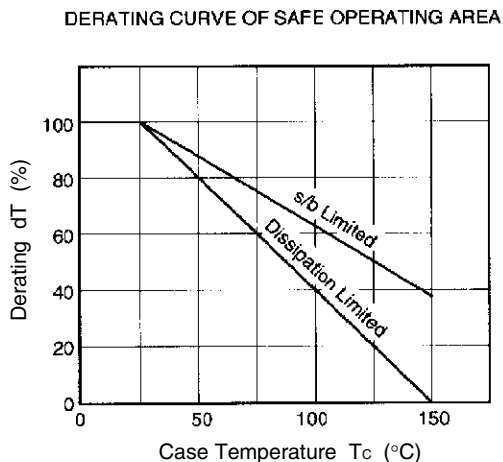
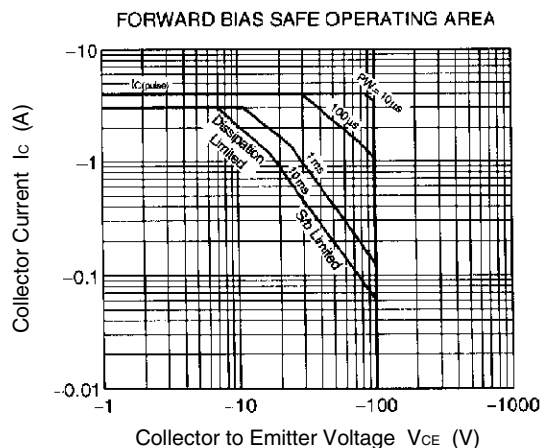
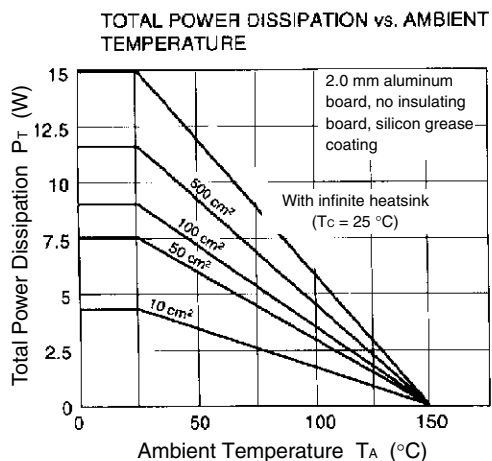
h_{FE} CLASSIFICATION

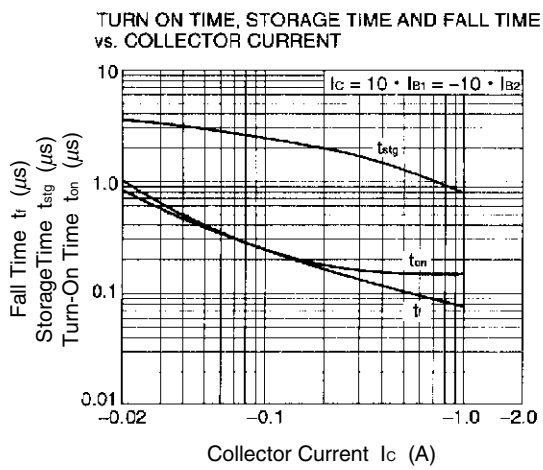
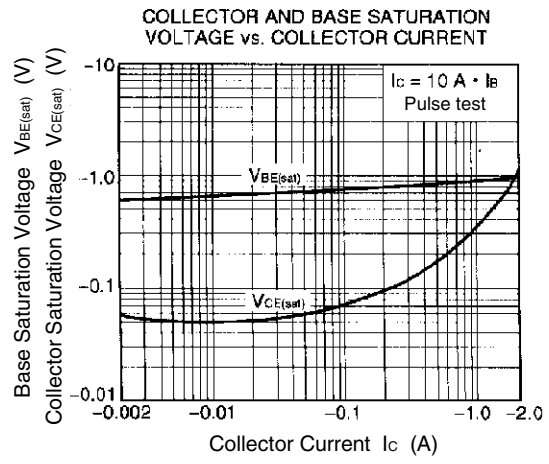
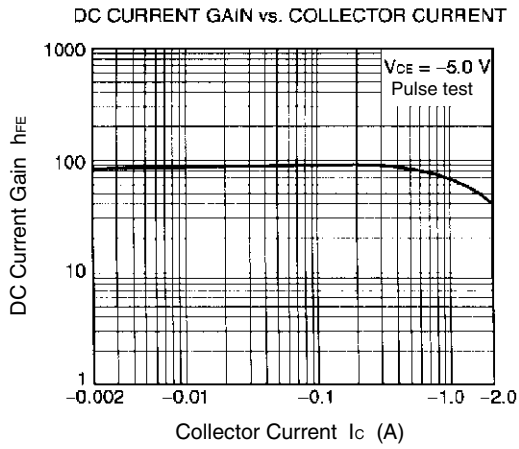
Marking	M	L	K
h _{FE2}	40 to 80	60 to 120	100 to 200

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



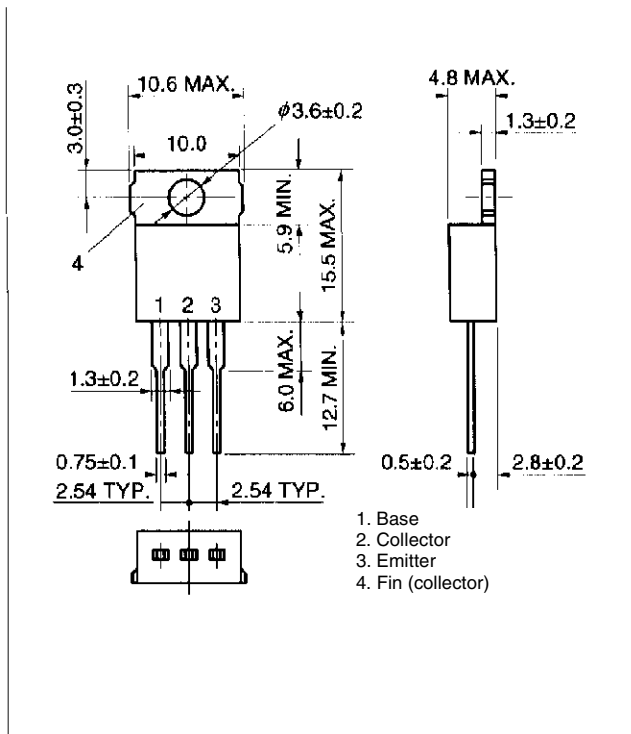
TYPICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$)





PACKAGE DRAWING (UNIT: mm)

TO-220AB (MP-25)



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