

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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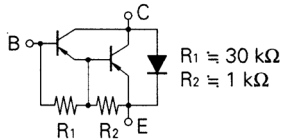
PNP SILICON EPITAXIAL TRANSISTOR
(DARLINGTON CONNECTION)

DESCRIPTION

The 2SB963-Z is designed for switching, especially in Hybrid Integrated Circuits.

FEATURES

- High Gain $h_{FE} = 2000$ to 3000
- Complement to 2SD1286-Z



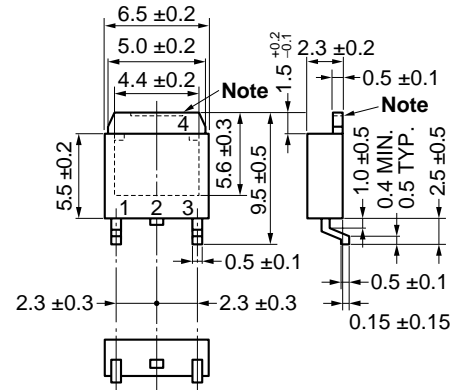
ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$)

Collector to Base voltage	V_{CBO}	-60	V
Collector to Emitter voltage	V_{CEO}	-60	V
Emitter to Base voltage	V_{EBO}	-8	V
Collector Current (DC)	$I_{C(DC)}$	∓ 1.0	A
Collector Current (pulse) ^{Note 1}	$I_{C(pulse)}$	∓ 2.0	A
Total Power Dissipation ^{Note 2}	$P_T (T_A = 25^\circ\text{C})$	2.0	W
Junction Temperature	T_j	150	$^\circ\text{C}$
Storage Temperature	T_{stg}	-55 to +150	$^\circ\text{C}$

Notes 1. $PW \leq 10$ ms, Duty Cycle $\leq 50\%$

2. When mounted on ceramic substrate of $7.5 \text{ cm}^2 \times 0.7 \text{ mm}$

<R> PACKAGE DRAWING (Unit: mm)



1. Base
2. Collector
3. Emitter
4. Collector Fin

TO-252 (MP-3Z)

Note The depth of notch at the top of the fin is from 0 to 0.2 mm.

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ELECTRICAL CHARACTERISTICS (T_a = 25 °C)

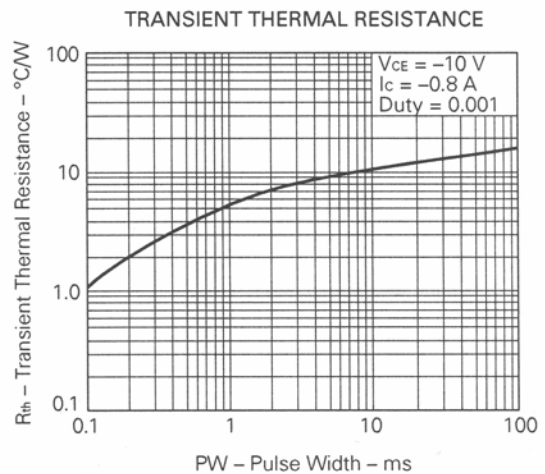
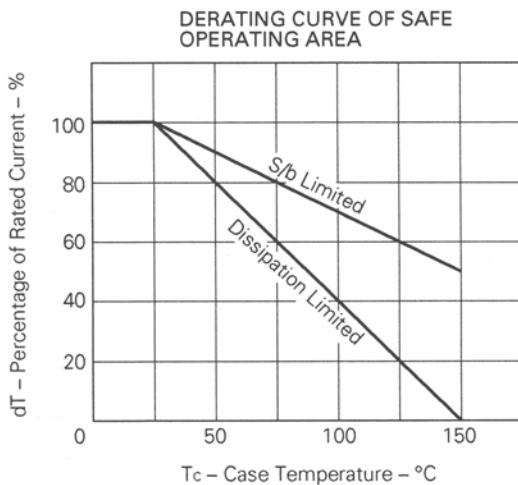
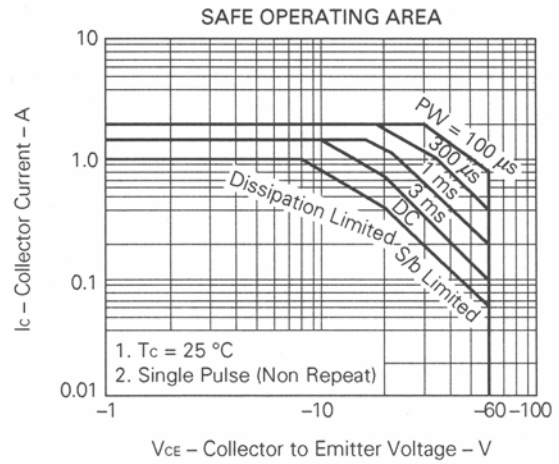
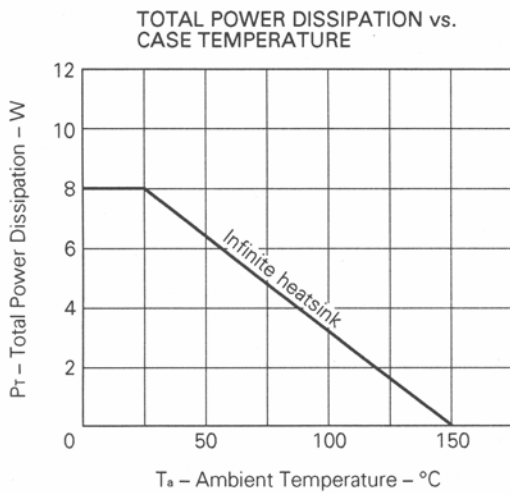
CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Collector Cutoff Current	I _{CB0}			-10	μA	V _{CB} = -60 V, I _E = 0
Emitter Cutoff Current	I _{EB0}			-1.0	μA	V _{EB} = -5.0 V, I _C = 0
DC Current Gain	h _{FE1} ***	1 000				V _{CE} = -2.0 V, I _C = -0.2 A
DC Current Gain	h _{FE2} ***	2 000		30 000		V _{CE} = -2.0 V, I _C = -0.5 A
Collector Saturation Voltage	V _{CE(sat)} ***			-1.5	V	I _C = -0.5 A, I _B = -50 mA
Base Saturation Voltage	V _{BE(sat)} ***			-2.0	V	I _C = -0.5 A, I _B = -50 mA
Turn On Time	t _{on}		0.5		μs	I _C = -0.5 A, R _L = 100 Ω
Storage Time	t _{stg}		1.0		μs	I _{B1} = -I _{B2} = -0.1 mA
Fall Time	t _r		1.0		μs	V _{CC} = -50 V

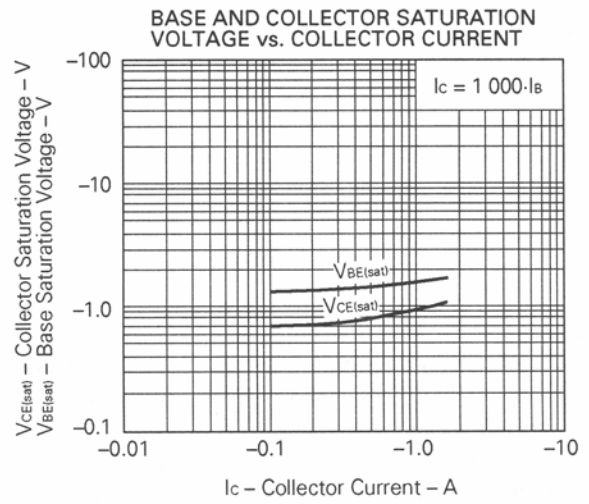
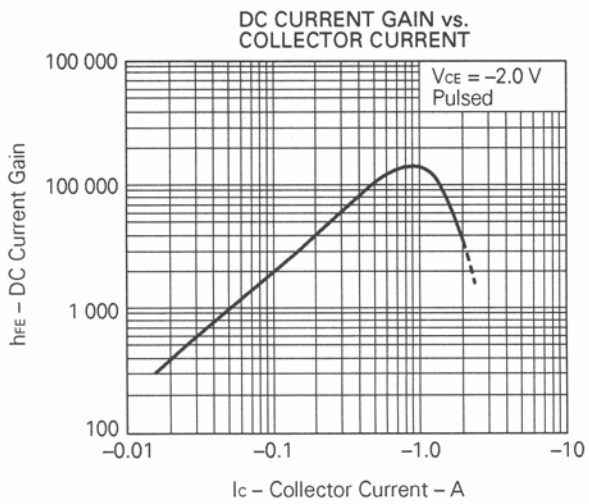
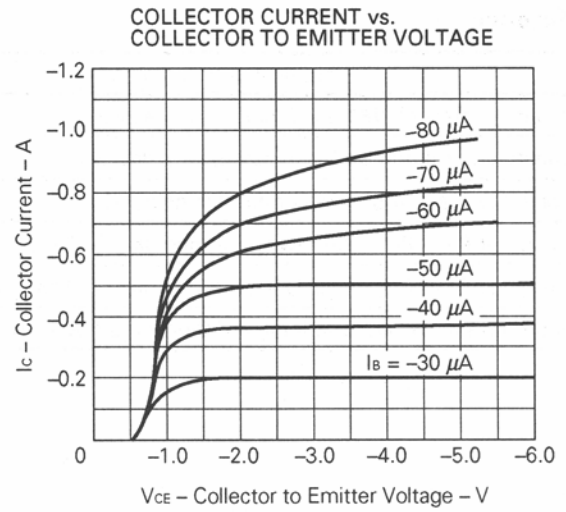
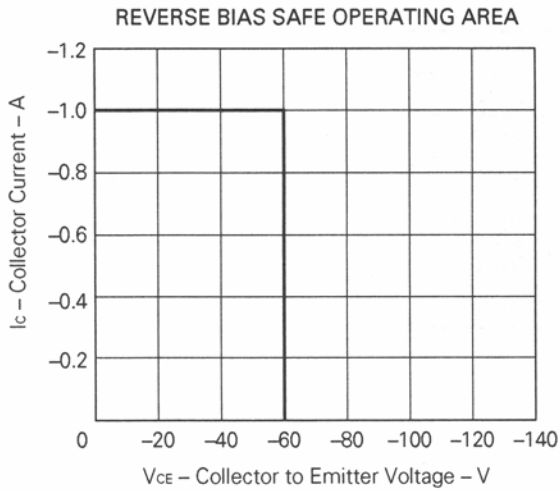
*** Pulsed: PW ≤ 350 μs, Duty Cycle ≤ 2 %

h_{FE} Classification

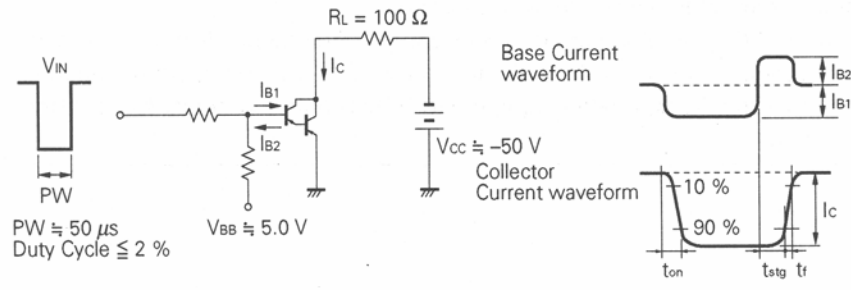
MARKING	M	L	K
h _{FE2}	2 000 to 5 000	4 000 to 10 000	8 000 to 30 000

TYPICAL CHARACTERISTICS (T_a = 25 °C)





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



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