

PNP SILICON TRIPLE DIFFUSED TRANSISTOR  
MP-3

DESCRIPTION

2SA1400-Z is designed for High Voltage Switching, especially in Hybrid Integrated Circuits.

FEATURES

- High Voltage :  $V_{CE0} = -400$  V
- High Speed :  $\tau_r \leq 1.0 \mu s$
- Complement to 2SC3588-Z

QUALITY GRADE

Standard

Please refer to "Quality grade on NEC Semiconductor Devices" (Document number IEI-1209) published by NEC Corporation to know the specification of quality grade on the devices and its recommended applications.

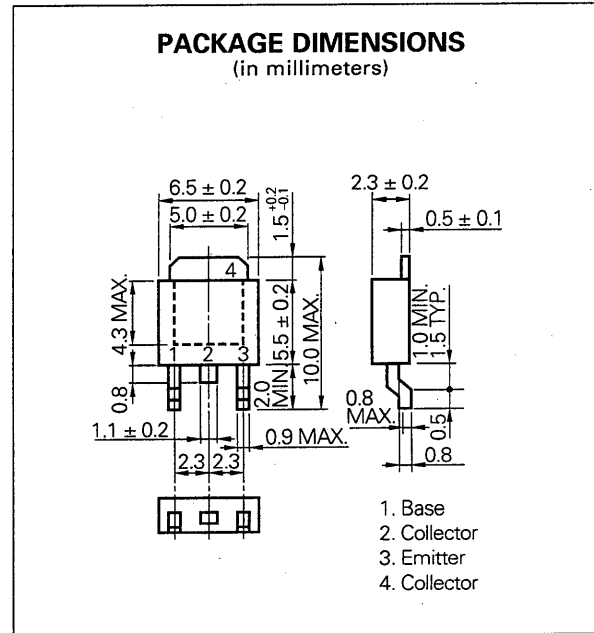
ABSOLUTE MAXIMUM RATINGS ( $T_a = 25 \text{ }^\circ\text{C}$ )

Collector to Base Voltage	$V_{CBO}$	-400	V
Collector to Emitter Voltage	$V_{CEO}$	-400	V
Emitter to Base Voltage	$V_{EBO}$	-7	V
Collector Current (DC)	$I_c$	-0.5	A
Collector Current (Pulse)*	$I_c$	-1.0	A
Total Power Dissipation ( $T_a = 25 \text{ }^\circ\text{C}$ )**	$P_T$	2.0	W
Junction Temperature	$T_j$	150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$	-55 to +150	$^\circ\text{C}$

\*  $PW \leq 300 \mu s$ , Duty Cycle  $\leq 10 \%$

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

PACKAGE DIMENSIONS  
(in millimeters)



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

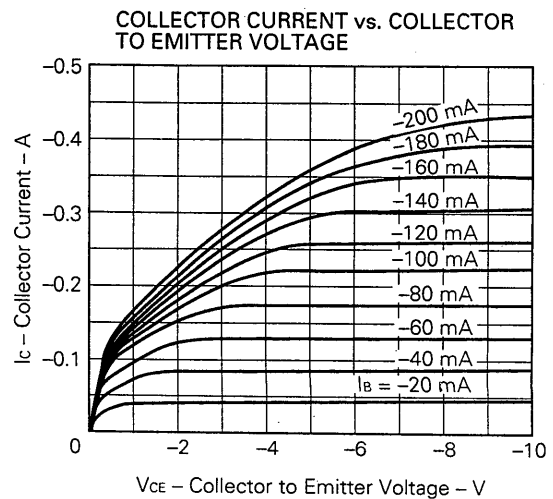
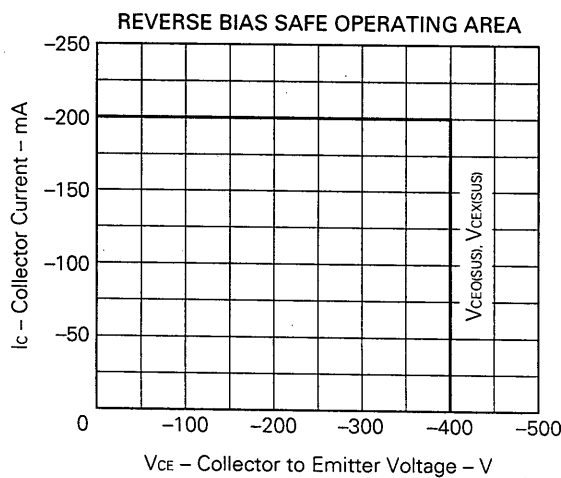
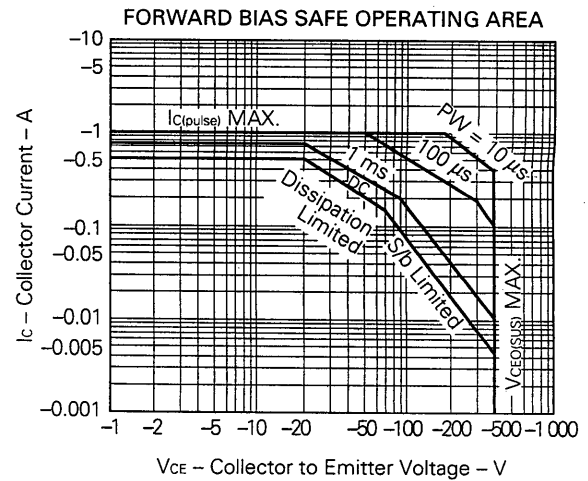
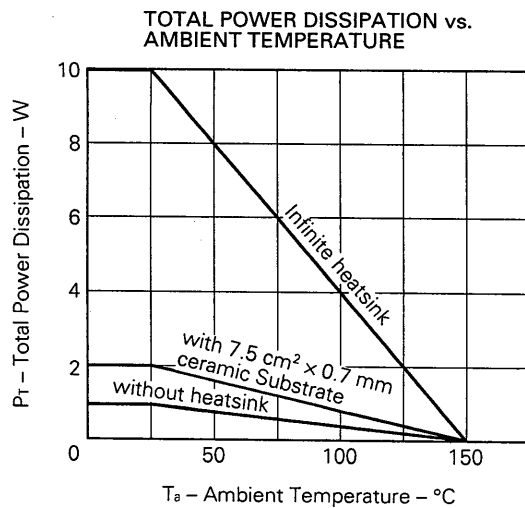
CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Collector Cutoff Current	I <sub>cBO</sub>			-100	μA	V <sub>CB</sub> = -400 V, I <sub>E</sub> = 0
Emitter Cutoff Current	I <sub>EBO</sub>			-10	μA	V <sub>EB</sub> = -5.0 V, I <sub>C</sub> = 0
DC Current Gain	h <sub>FE</sub> *	30		200		V <sub>CE</sub> = -5.0 V, I <sub>C</sub> = -50 mA
Collector Saturation Voltage	V <sub>CE(sat)</sub> *			-1.0	V	I <sub>C</sub> = -100 mA, I <sub>B</sub> = -10 mA
Base Saturation Voltage	V <sub>BE(sat)</sub> *			-1.2	V	I <sub>C</sub> = -100 mA, I <sub>B</sub> = -10 mA
Turn-on Time	t <sub>on</sub>			1.0	μs	I <sub>C</sub> = -100 mA, R <sub>L</sub> = 1.5 kΩ
Storage Time	t <sub>stg</sub>			5.0	μs	I <sub>B1</sub> = -I <sub>B2</sub> = -10 mA, V <sub>CC</sub> = -150 V
Fall time	t <sub>r</sub>			1.0	μs	PW ≤ 50 μs, Duty Cycle ≤ 2 %

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

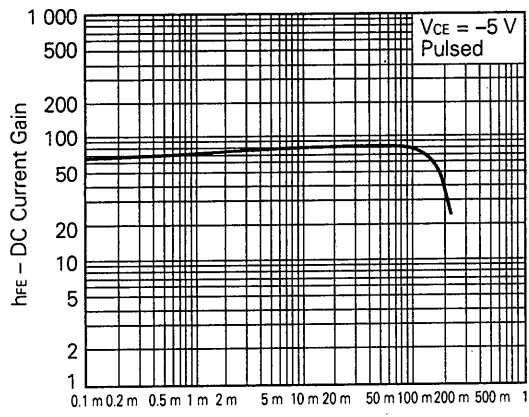
**h<sub>FE</sub> Classification**

MARKING	N	M	L	K
h <sub>FE</sub>	30 to 60	40 to 80	60 to 120	100 to 200

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

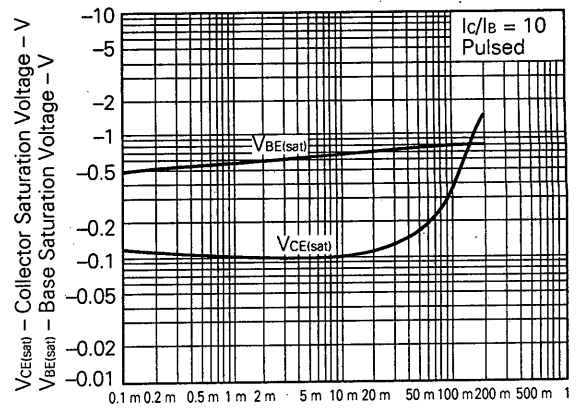


DC CURRENT GAIN vs. COLLECTOR CURRENT



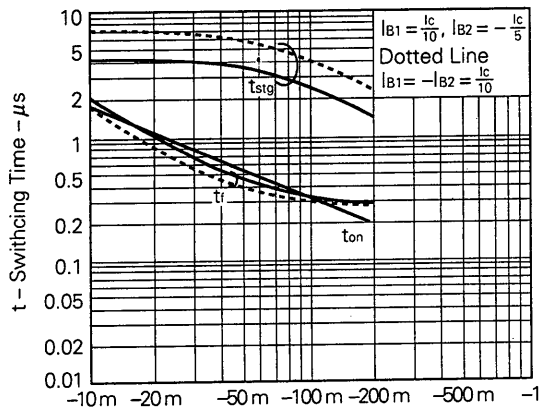
$I_c$  - Collector Current - A

BASE COLLECTOR SATURATION VOLTAGE vs. COLLECTOR CURRENT



$I_c$  - Collector Current - A

TURN ON TIME, STORAGE TIME AND FALL TIME vs. COLLECTOR CURRENT



$I_c$  - Collector Current - A

**Reference**

Application note name	No.
Quality control of NEC semiconductors devices.	TEI-1202
Quality control guide of semiconductors devices.	MEI-1202
Assembly manual of semiconductors devices.	IEI-1207
Design of Push-Pull Type Switching Regulators (Basic).	TEB-1002
Design of Push-Pull Type Switching Regulators (Applications).	TEB-1003
Optimum Base Drive Conditions of Switching Power Transistors.	TEB-1014

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Application examples recommended by NEC Corporation.

Standard: Computer, Office equipment, Communication equipment, Test and Measurement equipment, Machine tools, Industrial robots, Audio and Visual equipment, Other consumer products, etc.

Special: Automotive and Transportation equipment, Traffic control systems, Antidisaster systems, Anticrime systems, etc.

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