

SILICON TRANSISTOR

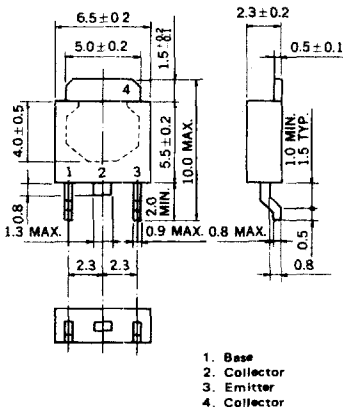
2SB963-Z

PNP SILICON EPITAXIAL DARLINGTON TRANSISTOR

MP-3

PACKAGE DIMENSIONS

in millimeters

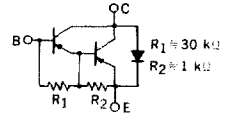


DESCRIPTION

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

FEATURES

- High Gain $h_{FE} = 2000$ to 30000
- Complement to 2SD1286



ABSOLUTE MAXIMUM RATINGS

Maximum Voltages and Currents ($T_a = 25^\circ\text{C}$)

Collector to Base Voltage	V_{CB0}	-60	V
Collector to Emitter Voltage	V_{CEO}	-60	V
Emitter to Base Voltage	V_{EBO}	-8	V
Collector Current (DC)	I_C	± 1.0	A
Collector Current (Pulse)*	I_C	± 2.0	A

Maximum Power Dissipation

Total Power Dissipation at 25°C Ambient Temperature**	P_T	2.0	W
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Maximum Temperatures

Junction Temperature	T_j	150	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-55 to +150	$^\circ\text{C}$

*PW ≤ 10 ms, Duty Cycle $\leq 50\%$

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

ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

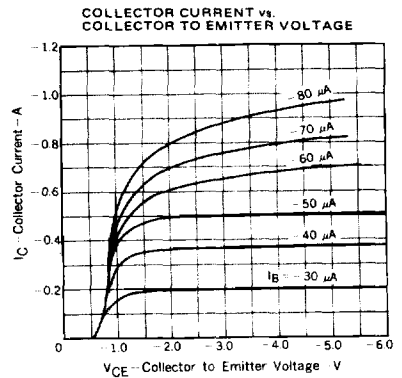
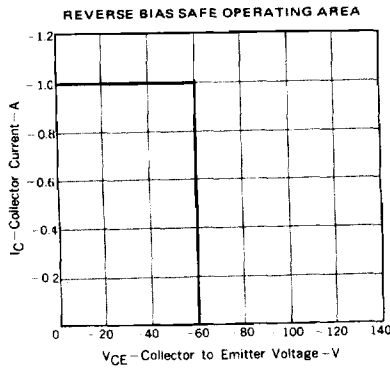
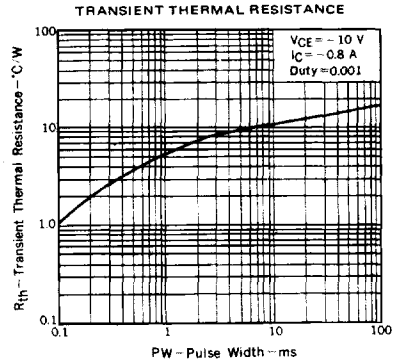
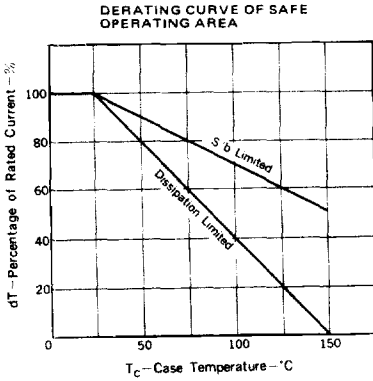
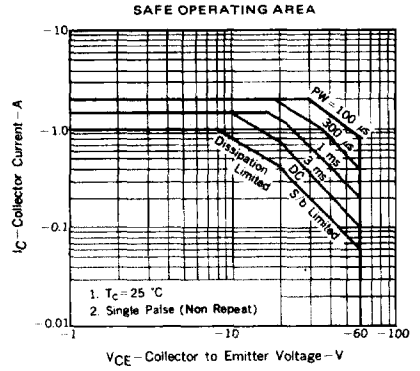
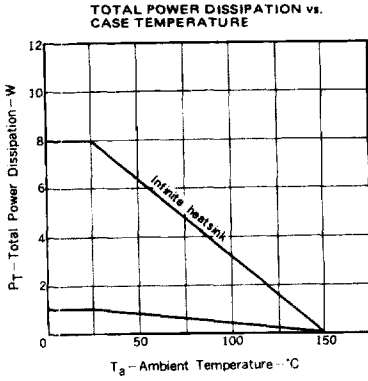
CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Collector Cutoff Current	I_{CBO}			-10	μA	$V_{CB} = -60\text{ V}, I_E = 0$
Emitter Cutoff Current	I_{EBO}			-1.0	μA	$V_{EB} = -5.0\text{ V}, I_C = 0$
DC Current Gain	h_{FE1} ***	1000				$V_{CE} = -2.0\text{ V}, I_C = -0.2\text{ A}$
DC Current Gain	h_{FE2} ***	2000	30000			$V_{CE} = -2.0\text{ V}, I_C = -0.5\text{ A}$
Collector Saturation Voltage	$V_{CE(sat)}$ ***			-1.5	V	$I_C = -0.5\text{ A}, I_B = -50\text{ mA}$
Base Saturation Voltage	$V_{BE(sat)}$ ***			-2.0	V	$I_C = -0.5\text{ A}, I_B = -50\text{ mA}$
Turn On Time	t_{on}		0.5		μs	$I_C = -0.5\text{ A}, R_L = 100\ \Omega$
Storage Time	t_{stg}		1.0		μs	$I_{B1} = -I_{B2} = -0.1\text{ mA}$
Fall Time	t_f		1.0		μs	$V_{CC} = -50\text{ V}$

***Pulsed: PW $\leq 350\ \mu\text{s}$, Duty Cycle $\leq 2\%$

h_{FE} Classification

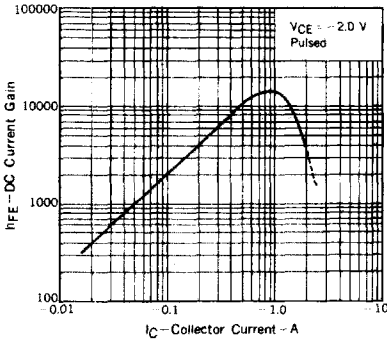
MARKING	M	L	K
h_{FE}	2000 to 5000	4000 to 10000	8000 to 30000

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

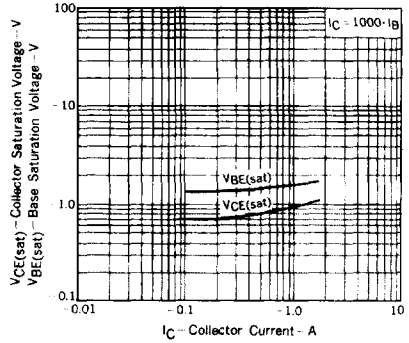


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DC CURRENT GAIN vs. COLLECTOR CURRENT



BASE AND COLLECTOR SATURATION VOLTAGE vs. COLLECTOR CURRENT



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

