NEC

SILICON TRANSISTOR
2SD1033

NPN SILICON EPITAXIAL TRANSISTOR
MP-3

DESCRIPTION

2SD1033 is designed for Color TV Vertical Deflection Output, especially in Hybrid Integrated Circuits.

FEATURES

- High Voltage V_{CEO} = 150 V
- Complement to 2SB768

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.

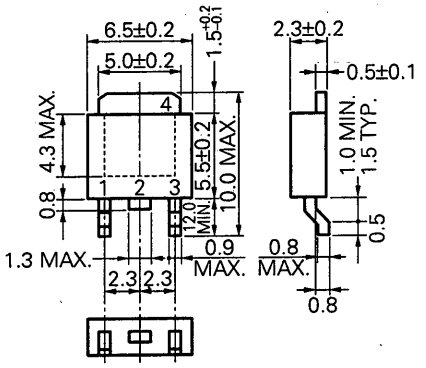
ABSOLUTE MAXIMUM RATINGS (T_a = 25 °C)

Collector to Base Voltage	V_{CBO}	200	V
Collector to Emitter Voltage	V_{CEO}	150	V
Emitter to Base Voltage	V_{EBO}	5	V
Collector Current (DC)	I_C	2	A
Collector Current (Pulse)*	I_C	3	A
Total Power Dissipation (T_a = 25 °C)**	P_T	2.0	W
Junction Temperature	T_j	150	°C
Storage Temperature	T_{stg}	−55 to +150	°C

*PW ≦ 10 ms, Duty Cycle ≦ 50 %

**When mounted on ceramic substrate of 7.5 cm² × 0.7 mm

PACKAGE DIMENSIONS
in millimeters



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

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ELECTRICAL CHARACTERISTICS (T_a = 25 °C)

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Collector Cutoff Current	I_{CBO}			50	μA	V_{CB} = 150 V, I_E = 0
Emitter Cutoff Current	I_{EBO}			50	μA	V_{EB} = 4 V, I_C = 0
DC Current Gain	h_{FE} ***	40	100	200		V_{CE} = 10 V, I_C = 0.4 A
Collector Saturation Voltage	$V_{CE(sat)}$ ***		0.2	1.0	V	I_C = 500 mA, I_B = 50 mA
Gain Bandwidth Product	f_T		10		MHz	V_{CE} = 10 V, I_E = 0.4 A

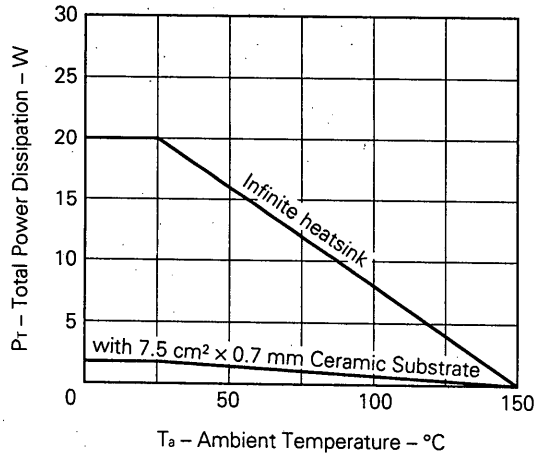
***Pulsed: PW ≦ 350 μs, Duty Cycle ≦ 2 %

h_{FE} Classification

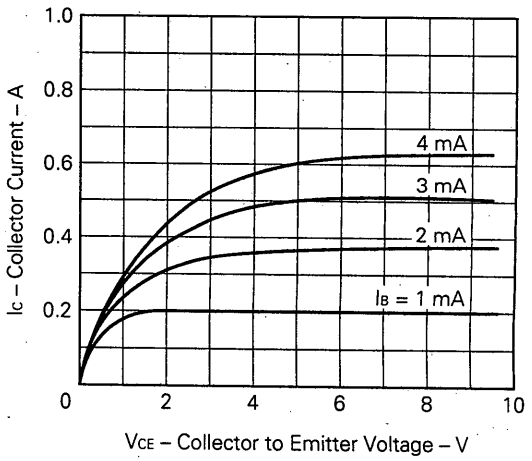
MARKING	M	L	K
h_{FE}	40 to 80	60 to 120	100 to 200

TYPICAL CHARACTERISTICS (T_a = 25 °C)

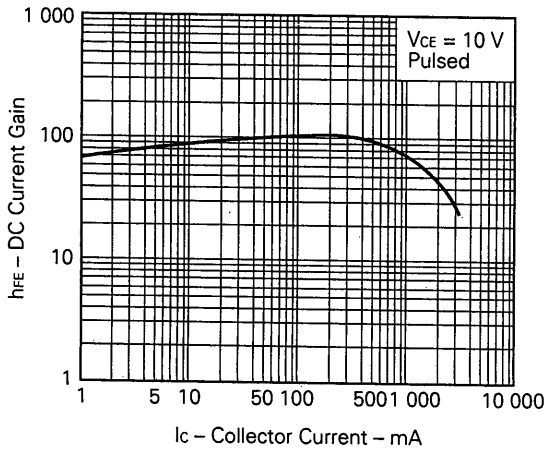
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



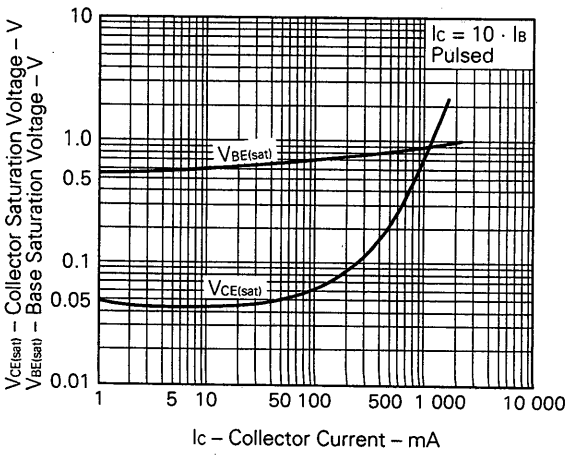
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



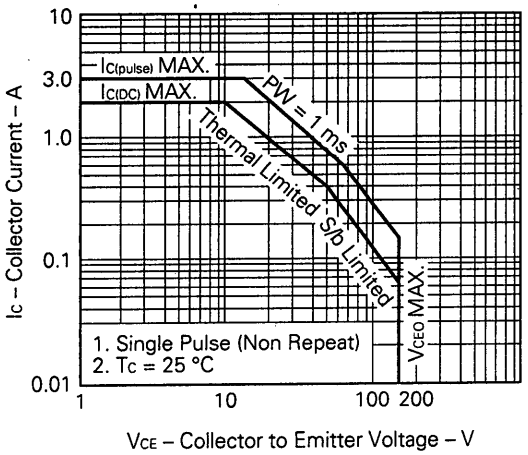
DC CURRENT GAIN vs. COLLECTOR CURRENT



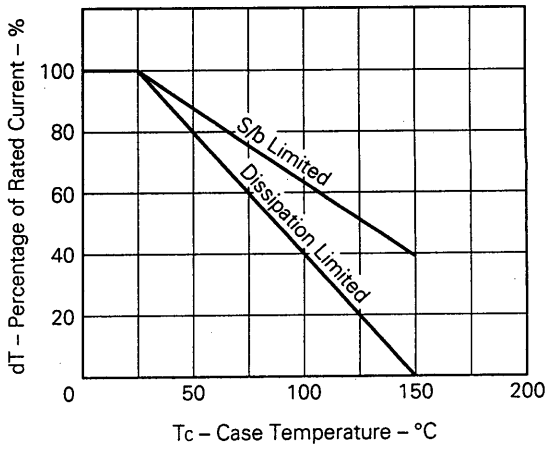
BASE AND COLLECTOR SATURATION VOLTAGE vs. COLLECTOR CURRENT



SAFE OPERATING AREA



DERATING CURVE OF SAFE OPERATING AREA



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 oif Push-Pull Type Switching Regulators (Applications)	TEB-1003
Optimum Base Drive Conditions of Switching Power Transistors	TEB-1014

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