

NPN SILICON EPITAXIAL TRANSISTOR  
MP-3

## DESCRIPTION

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

## FEATURES

- High Voltage  $V_{CE0} = 150$  V
- Complement to 2SB768

## QUALITY GRADE

Standard

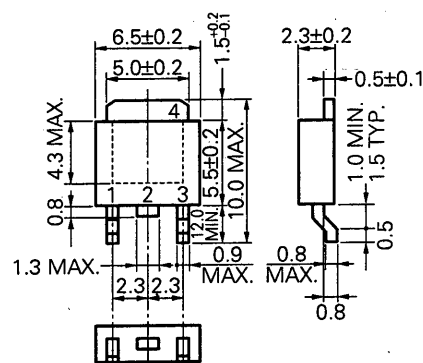
Please refer to "Quality grade on NEC Semiconductor Devices" (Document number IEI-1209) published by NEC Corporation to know the specification of quality grade on the devices and its recommended applications.

ABSOLUTE MAXIMUM RATINGS ( $T_a = 25$  °C)

Collector to Base Voltage	$V_{CB0}$	200	V
Collector to Emitter Voltage	$V_{CE0}$	150	V
Emitter to Base Voltage	$V_{EB0}$	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  $\leq$  10 ms, Duty Cycle  $\leq$  50 %

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

PACKAGE DIMENSIONS  
in millimeters

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

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

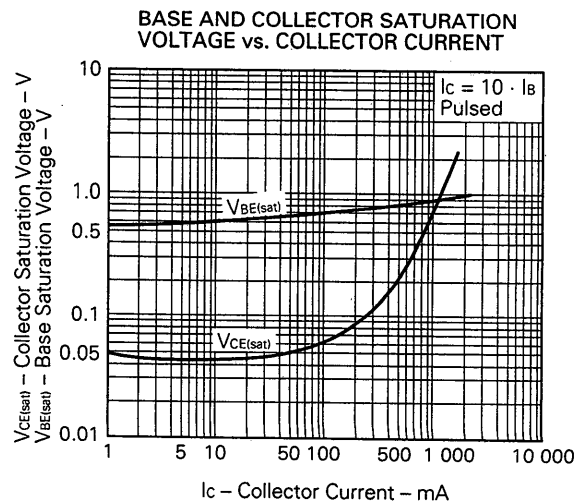
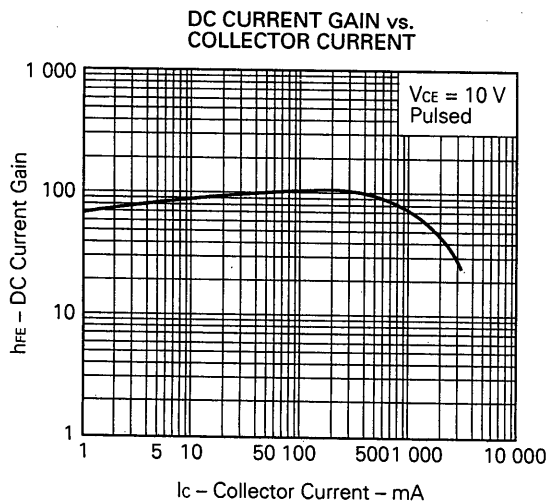
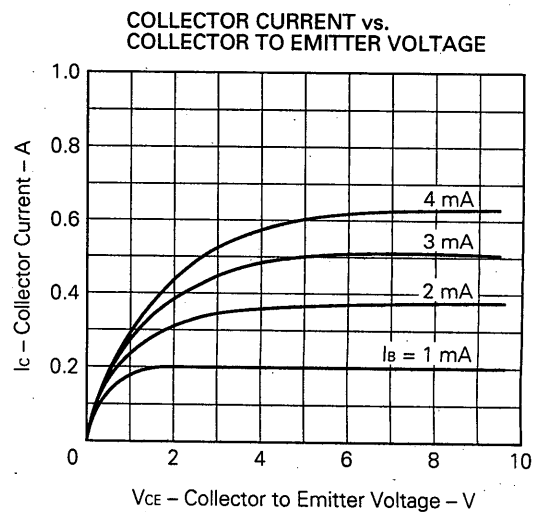
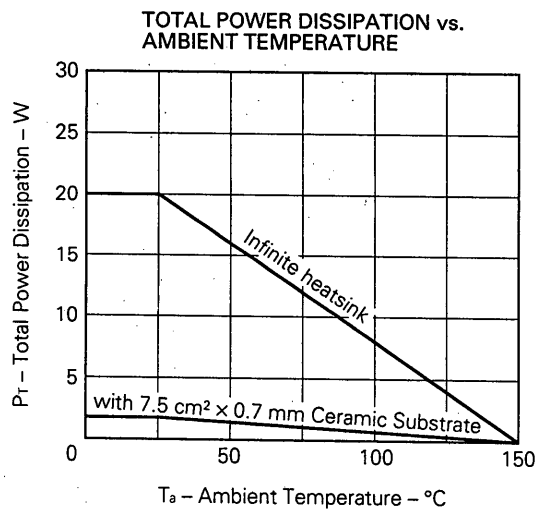
CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Collector Cutoff Current	I <sub>CB0</sub>			50	μA	V <sub>CB</sub> = 150 V, I <sub>E</sub> = 0
Emitter Cutoff Current	I <sub>EB0</sub>			50	μA	V <sub>EB</sub> = 4 V, I <sub>C</sub> = 0
DC Current Gain	h <sub>FE</sub> ***	40	100	200		V <sub>CE</sub> = 10 V, I <sub>C</sub> = 0.4 A
Collector Saturation Voltage	V <sub>CE(sat)</sub> ***		0.2	1.0	V	I <sub>C</sub> = 500 mA, I <sub>B</sub> = 50 mA
Gain Bandwidth Product	f <sub>r</sub>		10		MHz	V <sub>CE</sub> = 10 V, I <sub>E</sub> = 0.4 A

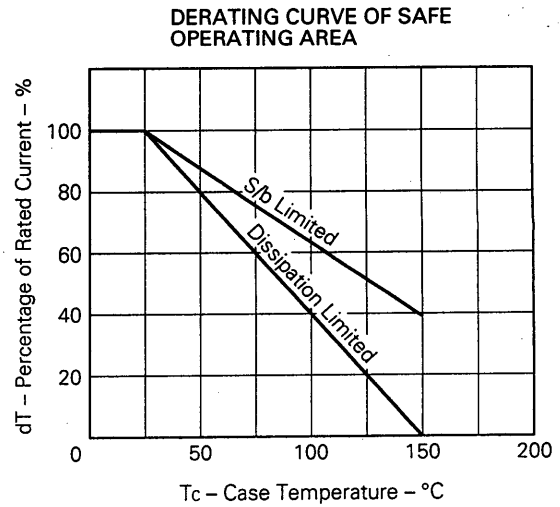
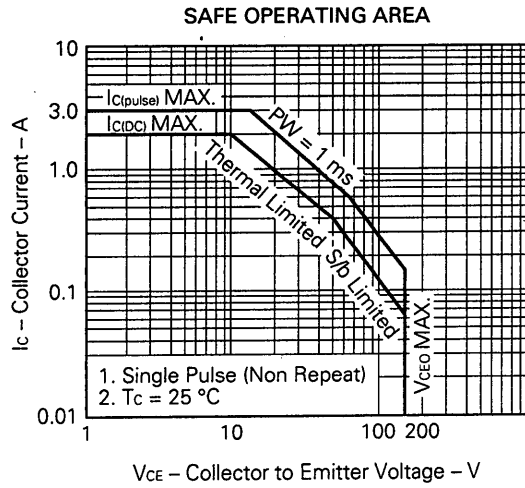
\*\*\*Pulsed: PW ≤ 350 μs, Duty Cycle ≤ 2 %

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

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

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





**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.