

## Silicon NPN Power Transistors

2SD2000

## DESCRIPTION

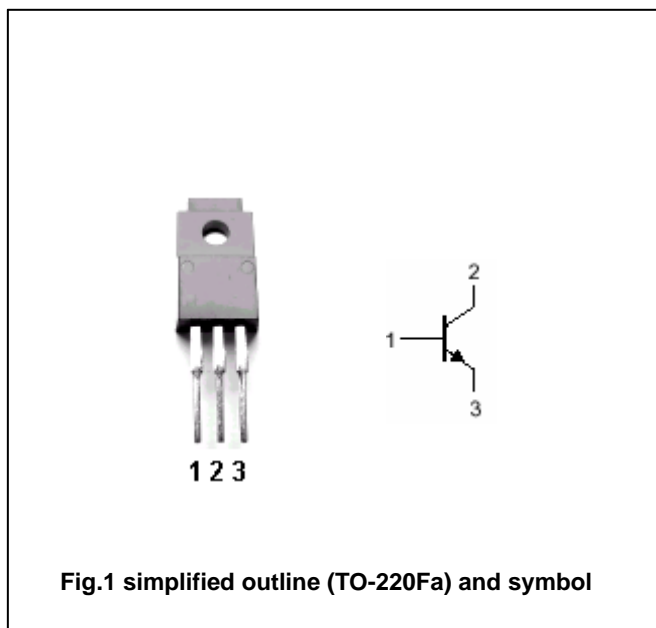
- With TO-220Fa package
- High-speed switching
- Large collector power dissipation

## APPLICATIONS

- For power switching applications

## PINNING

PIN	DESCRIPTION
1	Base
2	Collector
3	Emitter

ABSOLUTE MAXIMUM RATINGS AT  $T_c=25^\circ\text{C}$ 

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$V_{CBO}$	Collector-base voltage	Open emitter	80	V
$V_{CEO}$	Collector-emitter voltage	Open base	60	V
$V_{EBO}$	Emitter-base voltage	Open collector	6	V
$I_C$	Collector current		4	A
$I_{CM}$	Collector current-peak		8	A
$I_B$	Base current		1	A
$P_C$	Collector power dissipation	$T_c=25^\circ\text{C}$	35	W
		$T_a=25^\circ\text{C}$	2	
$T_j$	Junction temperature		150	$^\circ\text{C}$
$T_{stg}$	Storage temperature		-55~150	$^\circ\text{C}$

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## CHARACTERISTICS

T<sub>j</sub>=25°C unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP.	MAX	UNIT
V <sub>(BR)CEO</sub>	Collector-emitter breakdown voltage	I <sub>C</sub> =25mA, I <sub>B</sub> =0	60			V
V <sub>CEsat</sub>	Collector-emitter saturation voltage	I <sub>C</sub> =4A; I <sub>B</sub> =0.4A			1.5	V
V <sub>BEsat</sub>	Base-emitter saturation voltage	I <sub>C</sub> =4A; I <sub>B</sub> =0.4A			2.0	V
I <sub>CBO</sub>	Collector cut-off current	V <sub>CB</sub> =80V; I <sub>E</sub> =0			100	μ A
I <sub>EBO</sub>	Emitter cut-off current	V <sub>EB</sub> =6V; I <sub>C</sub> =0			100	μ A
h <sub>FE-1</sub>	DC current gain	I <sub>C</sub> =1A; V <sub>CE</sub> =4V	70		250	
h <sub>FE-2</sub>	DC current gain	I <sub>C</sub> =4A; V <sub>CE</sub> =4V	20			
f <sub>T</sub>	Transition frequency	I <sub>C</sub> =0.2A; V <sub>CE</sub> =12V; f=10MHz		80		MHz

## Switching times

t <sub>on</sub>	Turn-on time	I <sub>C</sub> =4A; I <sub>B1</sub> =0.4A I <sub>B2</sub> =-0.4A; V <sub>CC</sub> =50V		0.3		μ s
t <sub>s</sub>	Storage time			1.0		μ s
t <sub>f</sub>	Fall time			0.2		μ s

◆ h<sub>FE-1</sub> Classifications

Q	P
70-150	120-250

PACKAGE OUTLINE

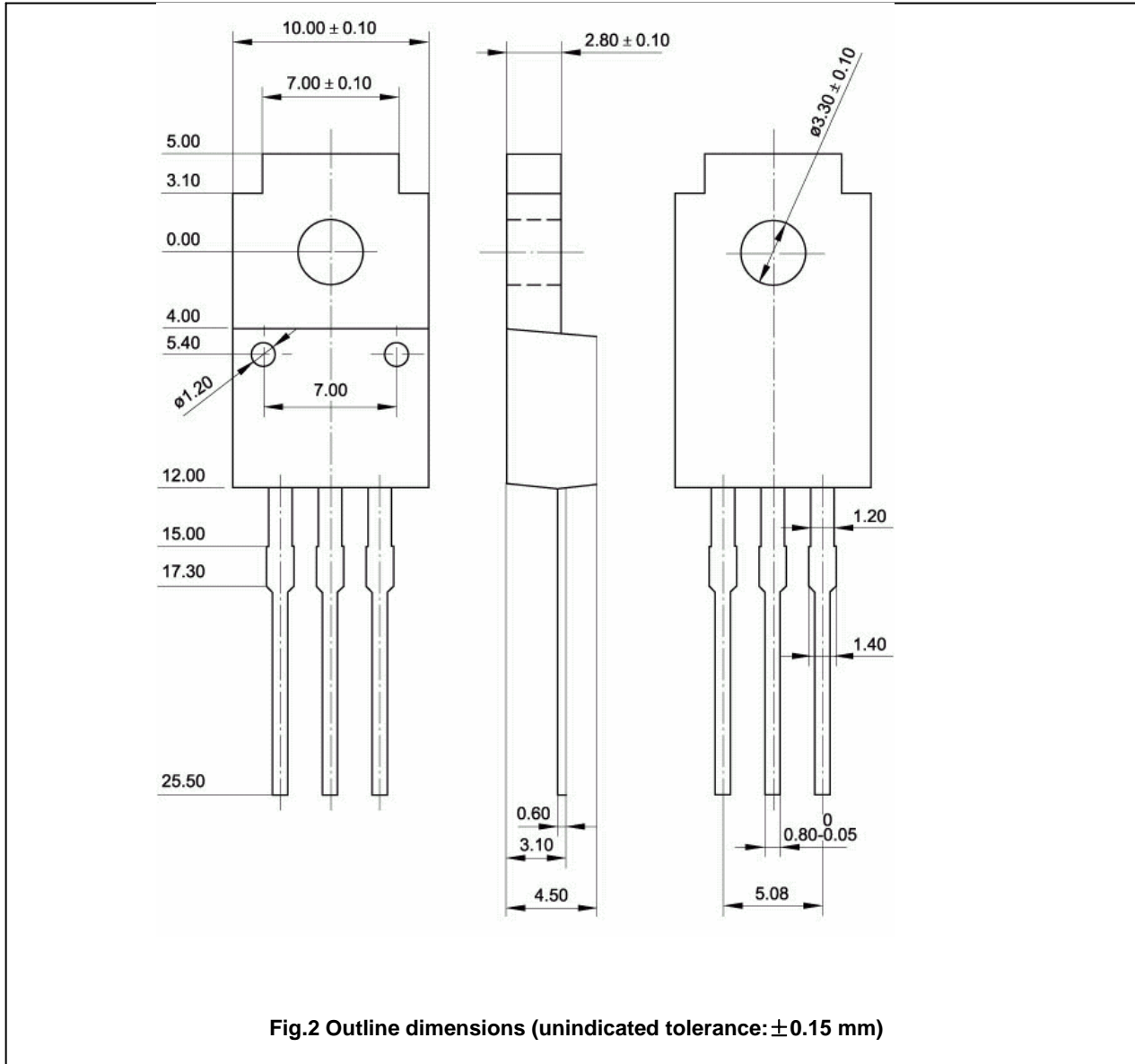


Fig.2 Outline dimensions (unindicated tolerance:  $\pm 0.15$  mm)

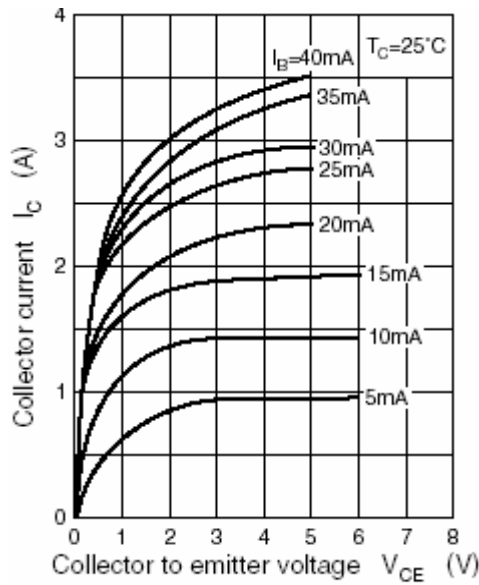


Fig.3 Static Characteristic

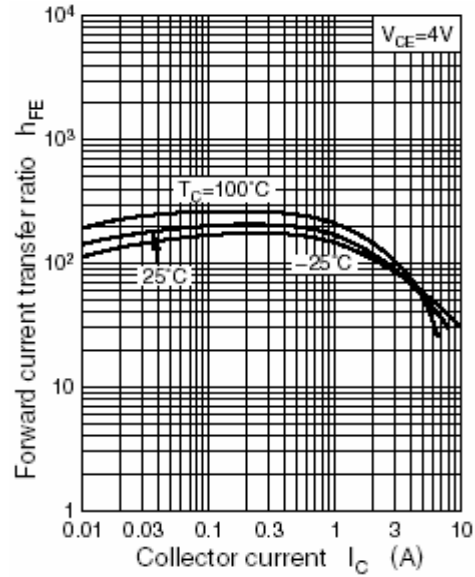


Fig.4 DC current Gain

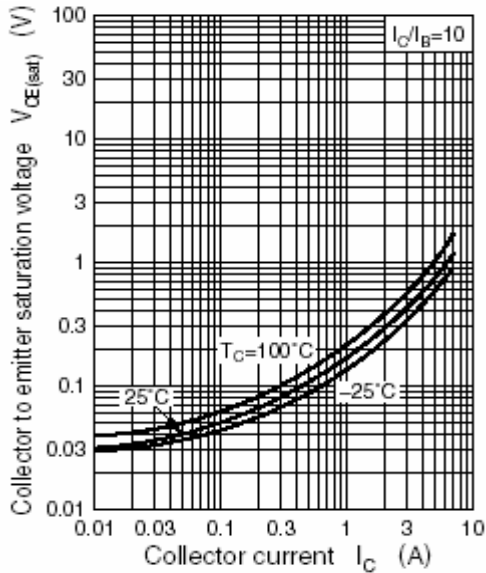


Fig.5 Collector-Emitter Saturation Voltage

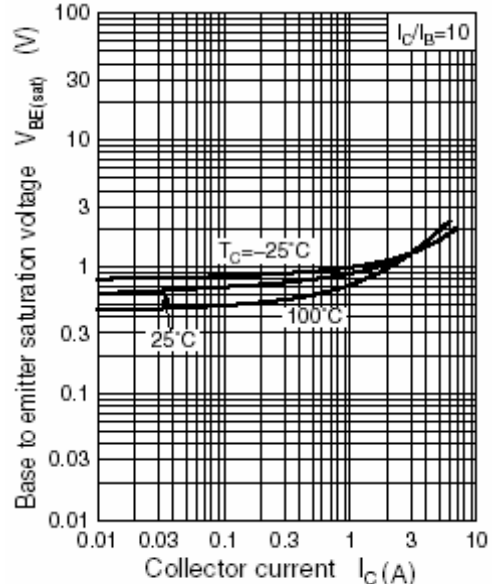


Fig.6 Base-Emitter Saturation Voltage

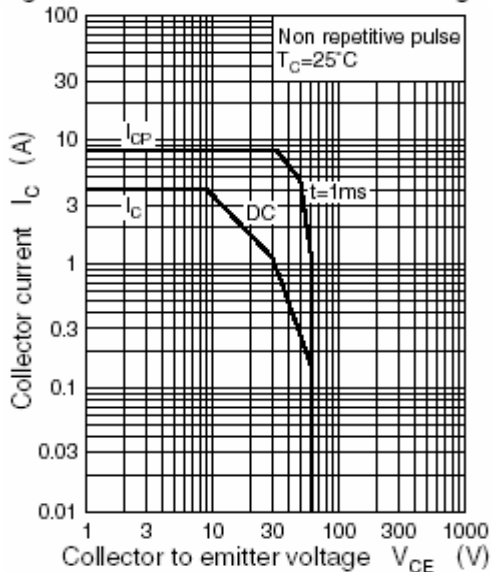


Fig.7 Safe Operating Area