

# 2SD2000

## Silicon NPN triple diffusion planar type

For power switching

### ■ Features

- High-speed switching
- Satisfactory linearity of forward current transfer ratio  $h_{FE}$
- Large collector power dissipation  $P_C$
- Full-pack package which can be installed to the heat sink with one screw.

### ■ Absolute Maximum Ratings $T_C = 25^\circ\text{C}$

Parameter	Symbol	Rating	Unit
Collector-base voltage (Emitter open)	$V_{CBO}$	80	V
Collector-emitter voltage (Base open)	$V_{CEO}$	60	V
Emitter-base voltage (Collector open)	$V_{EBO}$	6	V
Collector current	$I_C$	4	A
Peak collector current	$I_{CP}$	8	A
Base current	$I_B$	1	A
Collector power dissipation	$P_C$	35	W
	$T_a = 25^\circ\text{C}$	2.0	
Junction temperature	$T_j$	150	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-55 to +150	$^\circ\text{C}$

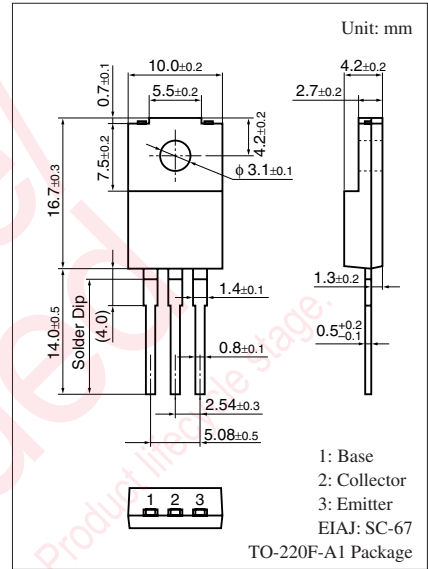
### ■ Electrical Characteristics $T_C = 25^\circ\text{C} \pm 3^\circ\text{C}$

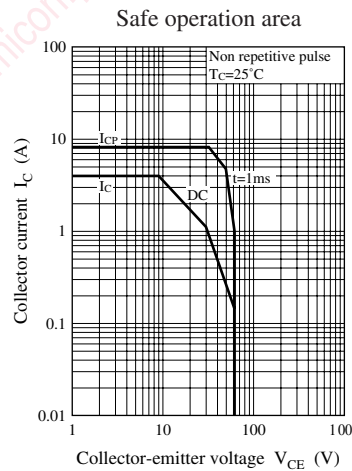
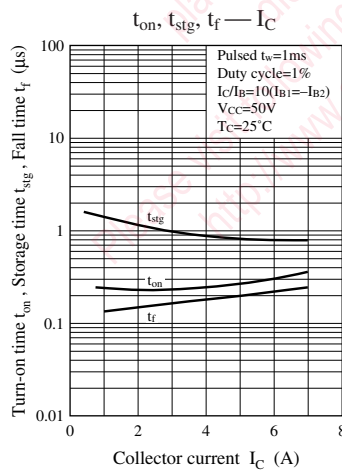
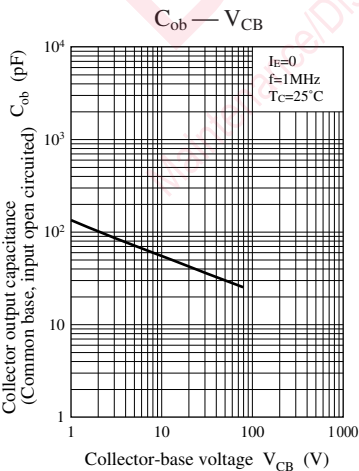
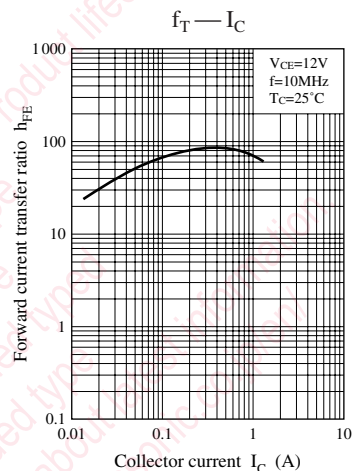
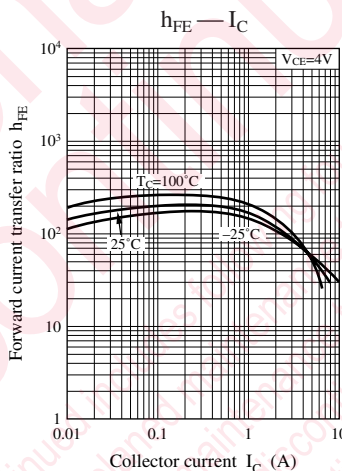
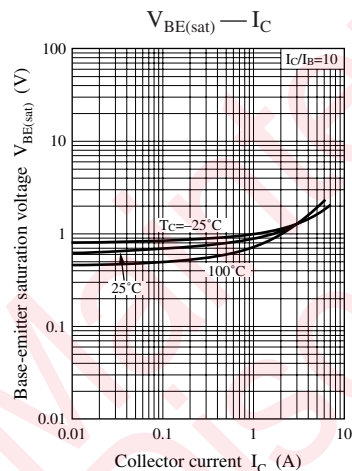
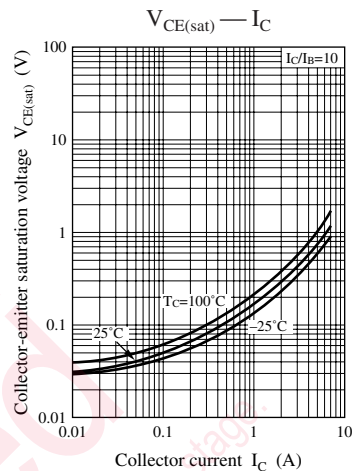
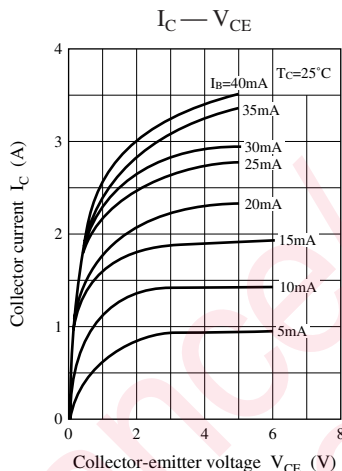
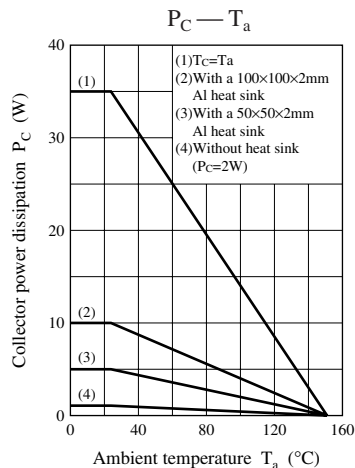
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-emitter voltage (Base open)	$V_{CEO}$	$I_C = 25 \text{ mA}, I_B = 0$	60			V
Base-emitter voltage	$V_{BE}$	$V_{CE} = 4 \text{ V}, I_C = 4 \text{ A}$			2.0	V
Collector-base cut-off current (Emitter open)	$I_{CBO}$	$V_{CB} = 80 \text{ V}, I_E = 0$			100	$\mu\text{A}$
Emitter-base cut-off current (Collector open)	$I_{EBO}$	$V_{EB} = 6 \text{ V}, I_C = 0$			100	$\mu\text{A}$
Forward current transfer ratio	$h_{FE1}^*$	$V_{CE} = 4 \text{ V}, I_C = 1 \text{ A}$	70		250	—
	$h_{FE2}$	$V_{CE} = 4 \text{ V}, I_C = 4 \text{ A}$	20			
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = 4 \text{ A}, I_B = 0.4 \text{ A}$			1.5	V
Transition frequency	$f_T$	$V_{CE} = 12 \text{ V}, I_C = 0.2 \text{ A}, f = 10 \text{ MHz}$		80		MHz
Turn-on time	$t_{on}$	$I_C = 4 \text{ A}, I_{B1} = 0.4 \text{ A}, I_{B2} = -0.4 \text{ A}$		0.3		$\mu\text{s}$
Storage time	$t_{stg}$	$V_{CC} = 50 \text{ V}$		1.0		$\mu\text{s}$
Fall time	$t_f$			0.2		$\mu\text{s}$

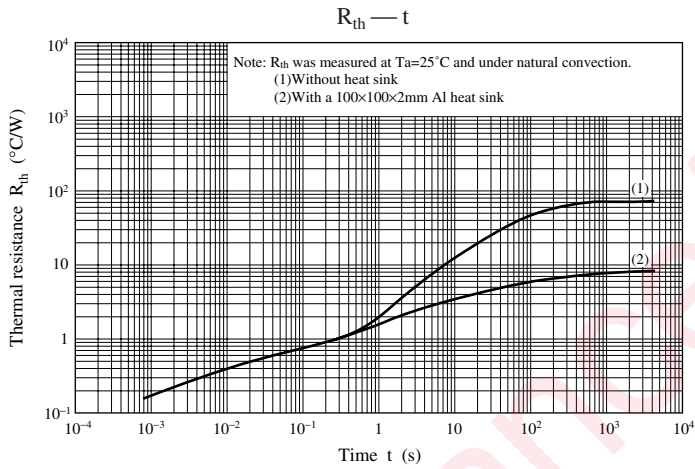
Note) 1. Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

2. \*: Rank classification

Rank	Q	P
$h_{FE1}$	70 to 150	120 to 250







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