# 2SC4004

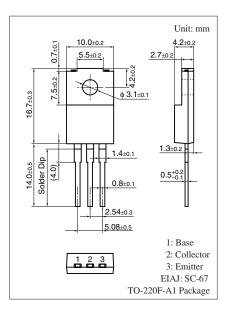
# Silicon NPN triple diffusion planar type

For high breakdown voltage high-speed switching

### Features

- High-speed switching
- High collector-base voltage (Emitter open)  $V_{CBO}$
- Wide safe operation area
- $\bullet$  Satisfactory linearity of forward current transfer ratio  $h_{\text{FE}}$
- Full-pack package which can be installed to the heat sink with one screw

#### Absolute Maximum Ratings $T_C = 25^{\circ}C$ Parameter Symbol Rating Unit Collector-base voltage (Emitter open) 900 V V<sub>CBO</sub> Collector-emitter voltage (E-B short) V<sub>CES</sub> 900 V Collector-emitter voltage (Base open) V<sub>CEO</sub> 800 V 7 Emitter-base voltage (Collector open) VEBO V Base current $I_B$ 0.3 Α А Collector current 1 $I_C$ Peak collector current 2 А I<sub>CP</sub> Collector power dissipation $P_C$ 30 W $T_a = 25^{\circ}C$ 2.0°C Junction temperature Ti 150 Storage temperature T<sub>stg</sub> -55 to +150 °C

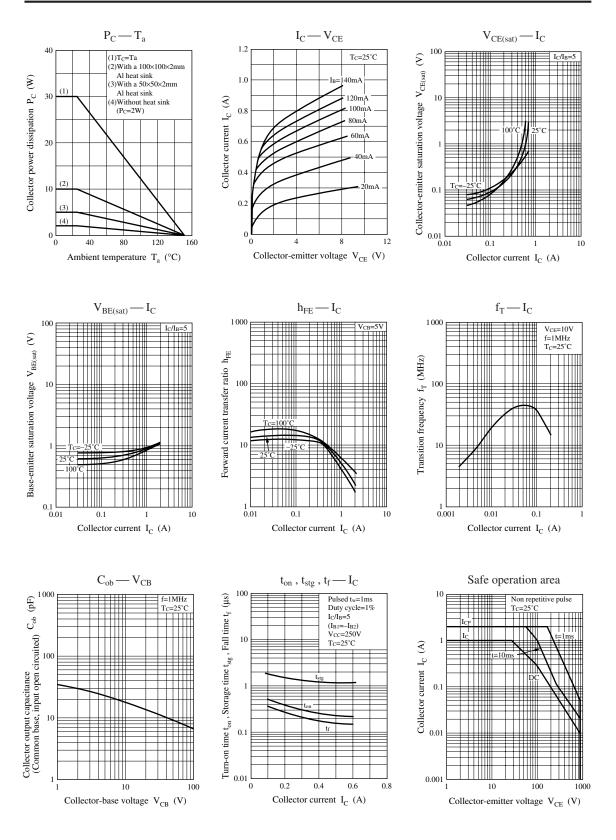


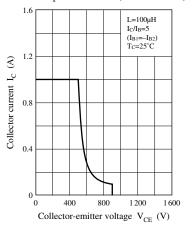
## Electrical Characteristics $T_C = 25^{\circ}C \pm 3^{\circ}C$

Parameter	Symbol	Conditions	Min	Тур	Max	Unit
Collector-emitter voltage (Base open)	V <sub>CEO</sub>	$I_{\rm C} = 1  {\rm mA},  I_{\rm B} = 0$	800			V
Collector-base cutoff current (Emitter open)	I <sub>CBO</sub>	$V_{CB} = 900 \text{ V}, I_E = 0$			50	μΑ
Emitter-base cutoff current (Collector open)	I <sub>EBO</sub>	$V_{EB} = 7 V, I_C = 0$			50	μΑ
Forward current transfer ratio	h <sub>FE1</sub>	$V_{CE} = 5 \text{ V}, I_C = 0.05 \text{ A}$	6			
	h <sub>FE2</sub>	$V_{CE} = 5 \text{ V}, I_C = 0.5 \text{ A}$	3			
Collector-emitter saturation voltage	V <sub>CE(sat)</sub>	$I_{\rm C} = 0.2 \text{ A}, I_{\rm B} = 0.04 \text{ A}$			1.5	V
Base-emitter saturation voltage	V <sub>BE(sat)</sub>	$I_C = 0.2 \text{ A}, I_B = 0.04 \text{ A}$			1.0	V
Transition frequency	f <sub>T</sub>	$V_{CE} = 10 \text{ V}, I_C = 0.05 \text{ A}, f = 1 \text{ MHz}$		4		MHz
Turn-on time	t <sub>on</sub>	$I_{\rm C} = 0.2  {\rm A}$			1.0	μs
Storage time	t <sub>stg</sub>	$I_{B1} = 0.04 \text{ A}, I_{B2} = -0.04 \text{ A}$			3.0	μs
Fall time	t <sub>f</sub>	$V_{CC} = 250 \text{ V}$			1.0	μs

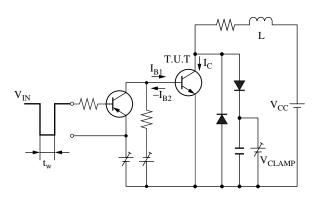
Note) Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

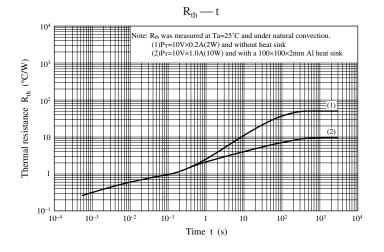
# **Panasonic**





Safe operation area (Reverse bias) Safe operation area (Reverse bias) measurement circuit





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