

**Silicon NPN Power Transistors**

**2SC4004**

**DESCRIPTION**

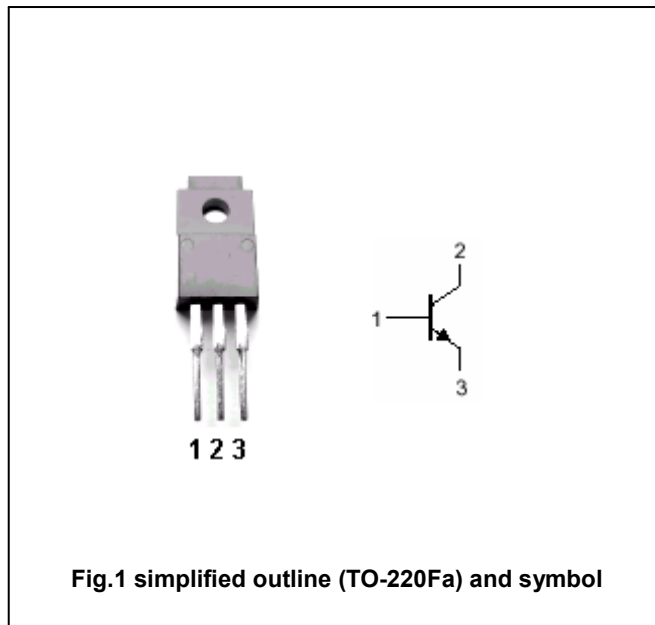
- With TO-220Fa package
- Wide area of safe operation (ASO)
- High-speed switching
- High collector to base voltage  $V_{CBO}$

**APPLICATIONS**

- For high breakdown voltage high-speed switching applications

**PINNING**

PIN	DESCRIPTION
1	Base
2	Collector
3	Emitter



**Absolute maximum ratings (Ta=25°C)**

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$V_{CBO}$	Collector-base voltage	Open emitter	900	V
$V_{CEO}$	Collector-emitter voltage	Open base	800	V
$V_{EBO}$	Emitter-base voltage	Open collector	7	V
$I_C$	Collector current (DC)		1	A
$I_{CM}$	Collector current-Peak		2	A
$I_B$	Base current		0.3	A
$P_C$	Collector power dissipation	$T_C=25^\circ\text{C}$	30	w
		$T_a=25^\circ\text{C}$	2	
$T_j$	Junction temperature		150	°C
$T_{stg}$	Storage temperature		-55~150	°C

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## 2SC4004

## 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> =1mA, I <sub>B</sub> =0	800			V
V <sub>CEsat</sub>	Collector-emitter saturation voltage	I <sub>C</sub> =0.2A; I <sub>B</sub> =0.04A			1.5	V
V <sub>BEsat</sub>	Base-emitter saturation voltage	I <sub>C</sub> =0.2A; I <sub>B</sub> =0.04A			1.0	V
I <sub>CBO</sub>	Collector cut-off current	V <sub>CB</sub> =900V; I <sub>E</sub> =0			50	μA
I <sub>EBO</sub>	Emitter cut-off current	V <sub>EB</sub> =7V; I <sub>C</sub> =0			50	μA
h <sub>FE-1</sub>	DC current gain	I <sub>C</sub> =0.05A; V <sub>CE</sub> =5V	6			
h <sub>FE-2</sub>	DC current gain	I <sub>C</sub> =0.5A; V <sub>CE</sub> =5V	3			
f <sub>T</sub>	Transition frequency	I <sub>C</sub> =0.05A; V <sub>CE</sub> =10V; f=1MHz		4		MHz

## Switching times

t <sub>on</sub>	Turn-on time	I <sub>C</sub> =0.2A; I <sub>B1</sub> =0.04A; I <sub>B2</sub> =-0.04A; V <sub>CC</sub> =250V			1.0	μs
t <sub>s</sub>	Storage time				3.0	μs
t <sub>f</sub>	Fall time				1.0	μs

PACKAGE OUTLINE

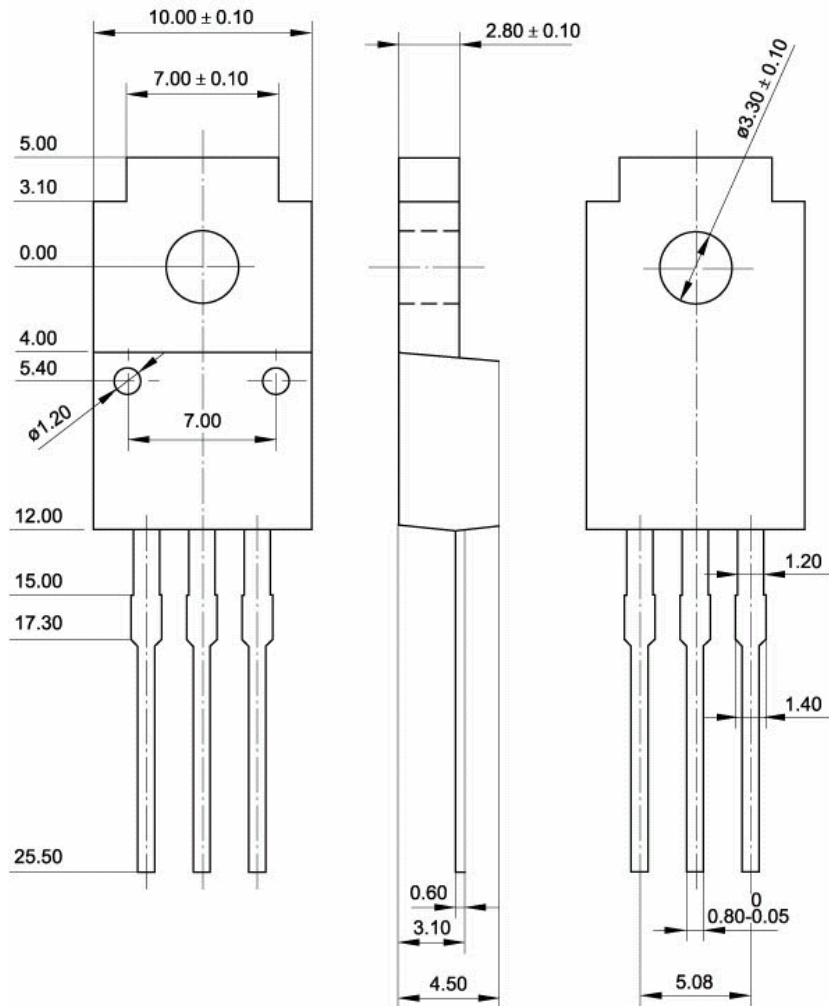


Fig.2 Outline dimensions (unindicated tolerance:  $\pm 0.15$  mm)