

**Silicon NPN Power Transistors**

**2SD1409**

**DESCRIPTION**

- With TO-220F package
- High DC current gain
- Monolithic construction with built-in base-emitter shunt resistor

**APPLICATIONS**

- Igniter applications
- High voltage switching applications

**PINNING**

PIN	DESCRIPTION
1	Base
2	Collector
3	Emitter

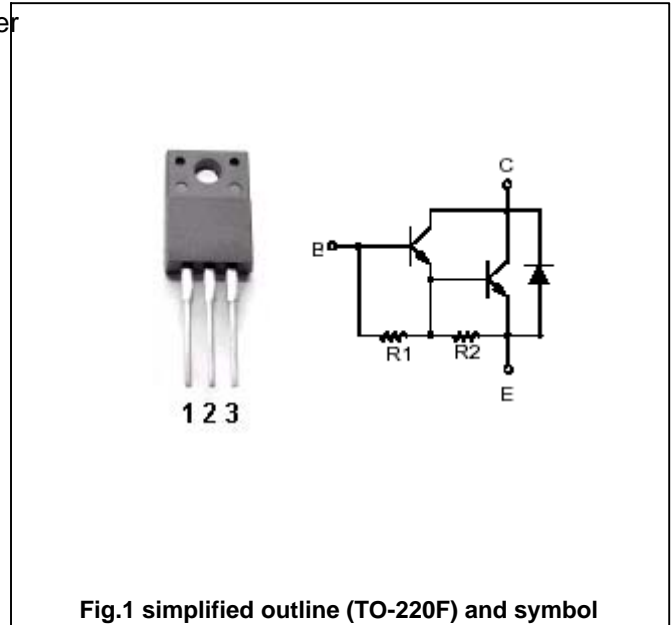


Fig.1 simplified outline (TO-220F) and symbol

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

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
V <sub>CBO</sub>	Collector-base voltage	Open emitter	600	V
V <sub>CEO</sub>	Collector -emitter voltage	Open base	400	V
V <sub>EBO</sub>	Emitter-base voltage	Open collector	5	V
I <sub>C</sub>	Collector current		6	A
I <sub>B</sub>	Base current		1	A
P <sub>C</sub>	Collector power dissipation	T <sub>C</sub> =25	25	W
		T <sub>a</sub> =25	2.0	
T <sub>j</sub>	Junction temperature		150	
T <sub>stg</sub>	Storage temperature		-55~150	

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## CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP.	MAX	UNIT
V <sub>CEO</sub>	Collector-emitter voltage	I <sub>C</sub> =10mA; I <sub>B</sub> =0	400			V
V <sub>CEsat</sub>	Collector-emitter saturation voltage	I <sub>C</sub> =4A ; I <sub>B</sub> =0.04A			2.0	V
V <sub>BEsat</sub>	Base-emitter saturation voltage	I <sub>C</sub> =4A ; I <sub>B</sub> =0.04A			2.5	V
V <sub>ECF</sub>	Emitter-collector forward voltage	I <sub>E</sub> =4A; I <sub>B</sub> =0			3.0	V
I <sub>CBO</sub>	Collector cut-off current	V <sub>CB</sub> =100V; I <sub>E</sub> =0			0.5	mA
I <sub>EBO</sub>	Emitter cut-off current	V <sub>EB</sub> =5V; I <sub>C</sub> =0			3	mA
h <sub>FE-1</sub>	DC current gain	I <sub>C</sub> =2A ; V <sub>CE</sub> =2V	600			
h <sub>FE-2</sub>	DC current gain	I <sub>C</sub> =4A ; V <sub>CE</sub> =2V	100			
C <sub>OB</sub>	Collector output capacitance	f=1MHz ; V <sub>CB</sub> =50V; I <sub>E</sub> =0		35		pF

## Switching times

t <sub>on</sub>	Turn-on time	I <sub>B1</sub> =-I <sub>B2</sub> =0.04A V <sub>CC</sub> =100V , R <sub>L</sub> =25		1		μs
t <sub>stg</sub>	Storage time			8		μs
t <sub>f</sub>	Fall time			5		μs

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PACKAGE OUTLINE

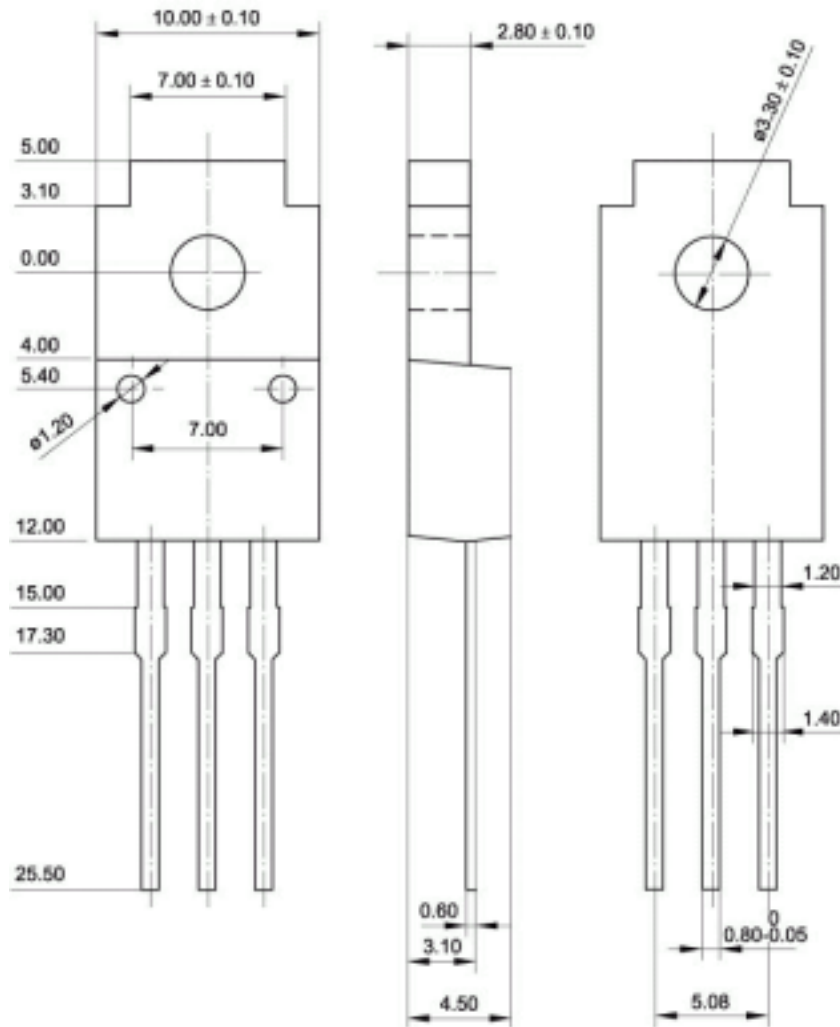


Fig.2 Outline dimensions (unindicated tolerance:  $\pm 0.15$  mm)