

**Silicon NPN Power Transistors**

**BUT56 BUT56A**

**DESCRIPTION**

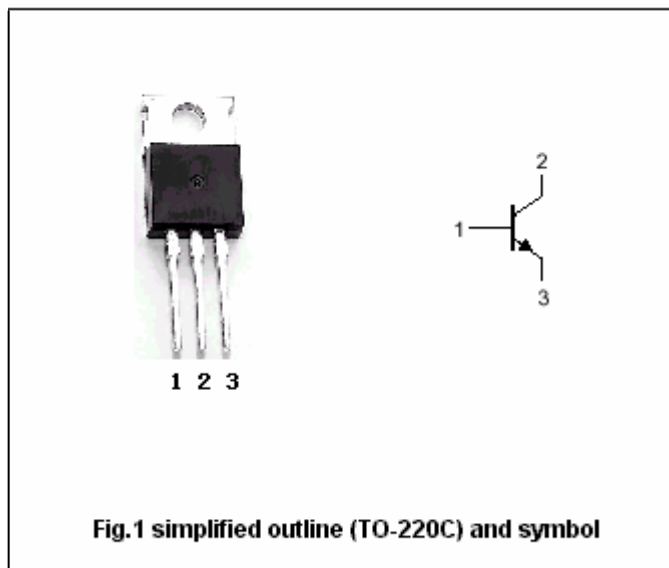
- With TO-220C package
- High voltage;high speed
- High power dissipation

**APPLICATIONS**

- Switching mode power supply

**PINNING**

PIN	DESCRIPTION
1	Base
2	Collector;connected to mounting base
3	Emitter



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

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
V <sub>CBO</sub>	Collector-base voltage	BUT56	800	V
		BUT56A	1000	
V <sub>CEO</sub>	Collector-emitter voltage	BUT56	400	V
		BUT56A	450	
V <sub>EBO</sub>	Emitter-base voltage	Open collector	6	V
I <sub>C</sub>	Collector current		8	A
I <sub>CM</sub>	Collector current-peak		10	A
I <sub>BM</sub>	Base current-peak		4	A
P <sub>tot</sub>	Total power dissipation	T <sub>C</sub> =25	100	W
T <sub>j</sub>	Junction temperature		150	
T <sub>stg</sub>	Storage temperature		-65~150	

**THERMAL CHARACTERISTICS**

SYMBOL	PARAMETER	MAX	UNIT
R <sub>th j-c</sub>	Thermal resistance junction to mounting case	1.25	K/W

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## CHARACTERISTICS

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

SYMBOL	PARAMETER		CONDITIONS	MIN	TYP.	MAX	UNIT
V <sub>(BR)CEO</sub>	Collector-emitter breakdown voltage	BUT56	I <sub>C</sub> =100mA ; L <sub>C</sub> =125mH	400			V
		BUT56A		450			
V <sub>(BR)EBO</sub>	Emitter-base breakdown voltage		I <sub>E</sub> =1mA ; I <sub>C</sub> =0	6			V
V <sub>CEsat</sub>	Collector-emitter saturation voltage		I <sub>C</sub> =4A ; I <sub>B</sub> =0.8A			5.0	V
V <sub>BEsat</sub>	Base-emitter saturation voltage		I <sub>C</sub> =4A ; I <sub>B</sub> =0.8A			2.0	V
I <sub>CES</sub>	Collector cut-off current	BUT56	V <sub>CE</sub> =800V ; V <sub>BE</sub> =0 T <sub>j</sub> =150			1.0 2.0	mA
		BUT56A	V <sub>CE</sub> =1000V ; V <sub>BE</sub> =0 T <sub>j</sub> =150			1.0 2.0	
h <sub>FE-1</sub>	DC current gain		I <sub>C</sub> =1A ; V <sub>CE</sub> =5V	15		45	
h <sub>FE-2</sub>	DC current gain	BUT56	I <sub>C</sub> =4A ; V <sub>CE</sub> =5V	5.5			
		BUT56A	I <sub>C</sub> =3A ; V <sub>CE</sub> =2V	4			
f <sub>T</sub>	Transition frequency		I <sub>C</sub> =0.5A ; V <sub>CE</sub> =10V ; f=1.0MHz		10		MHz

## Switching times

t <sub>off</sub>	Turn-off time	I <sub>C</sub> =4A ; I <sub>B1</sub> =-I <sub>B2</sub> =1.25A t <sub>p</sub> =20 μs			4	μs
t <sub>f</sub>	Fall time				1	μs

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PACKAGE OUTLINE

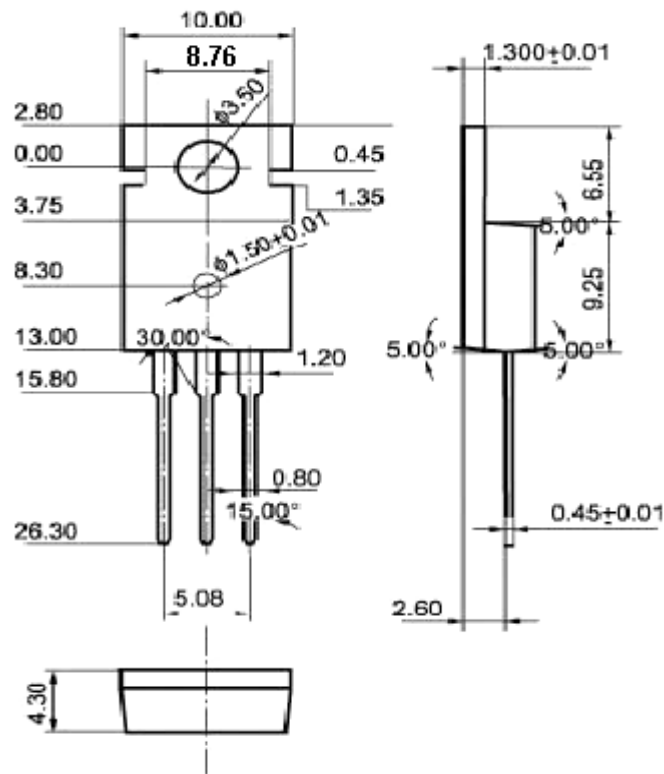


Fig.2 Outline dimensions (unindicated tolerance:  $\pm 0.10\text{mm}$ )