

Silicon NPN Power Transistors

BUT56AF

DESCRIPTION

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

APPLICATIONS

- Switching mode power supply

PINNING

PIN	DESCRIPTION
1	Base
2	Collector
3	Emitter

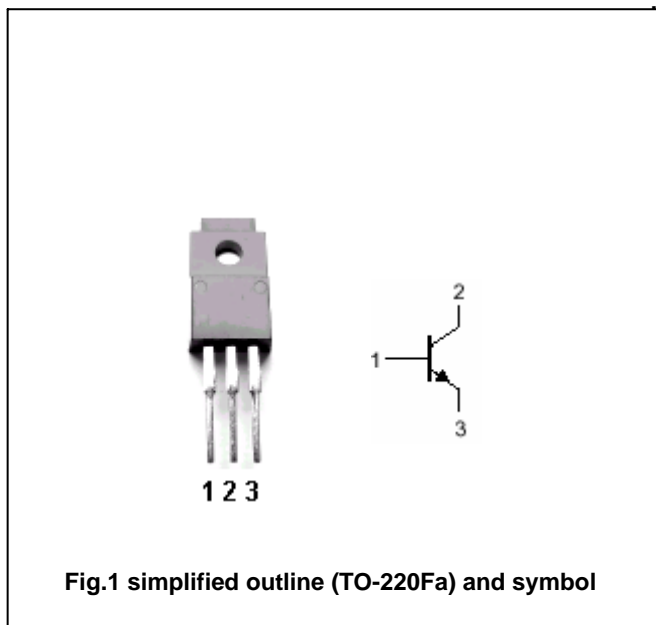


Fig.1 simplified outline (TO-220Fa) and symbol

Absolute maximum ratings (Ta=25 )

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$V_{CBO}$	Collector-base voltage	Open emitter	1000	V
$V_{CEO}$	Collector-emitter voltage	Open base	450	V
$V_{EBO}$	Emitter-base voltage	Open collector	6	V
$I_C$	Collector current		8	A
$I_{CM}$	Collector current-peak		10	A
$I_{BM}$	Base current-peak		4	A
$P_{tot}$	Total power dissipation	$T_C=25$	50	W
$T_j$	Junction temperature		150	
$T_{stg}$	Storage temperature		-65~150	

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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	I <sub>C</sub> =100mA ; L <sub>C</sub> =125mH	450			V
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			2.0	V
I <sub>CES</sub>	Collector cut-off current	V <sub>CE</sub> =1000V; V <sub>BE</sub> =0 T <sub>j</sub> =150			1.0 2.0	mA
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	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

PACKAGE OUTLINE

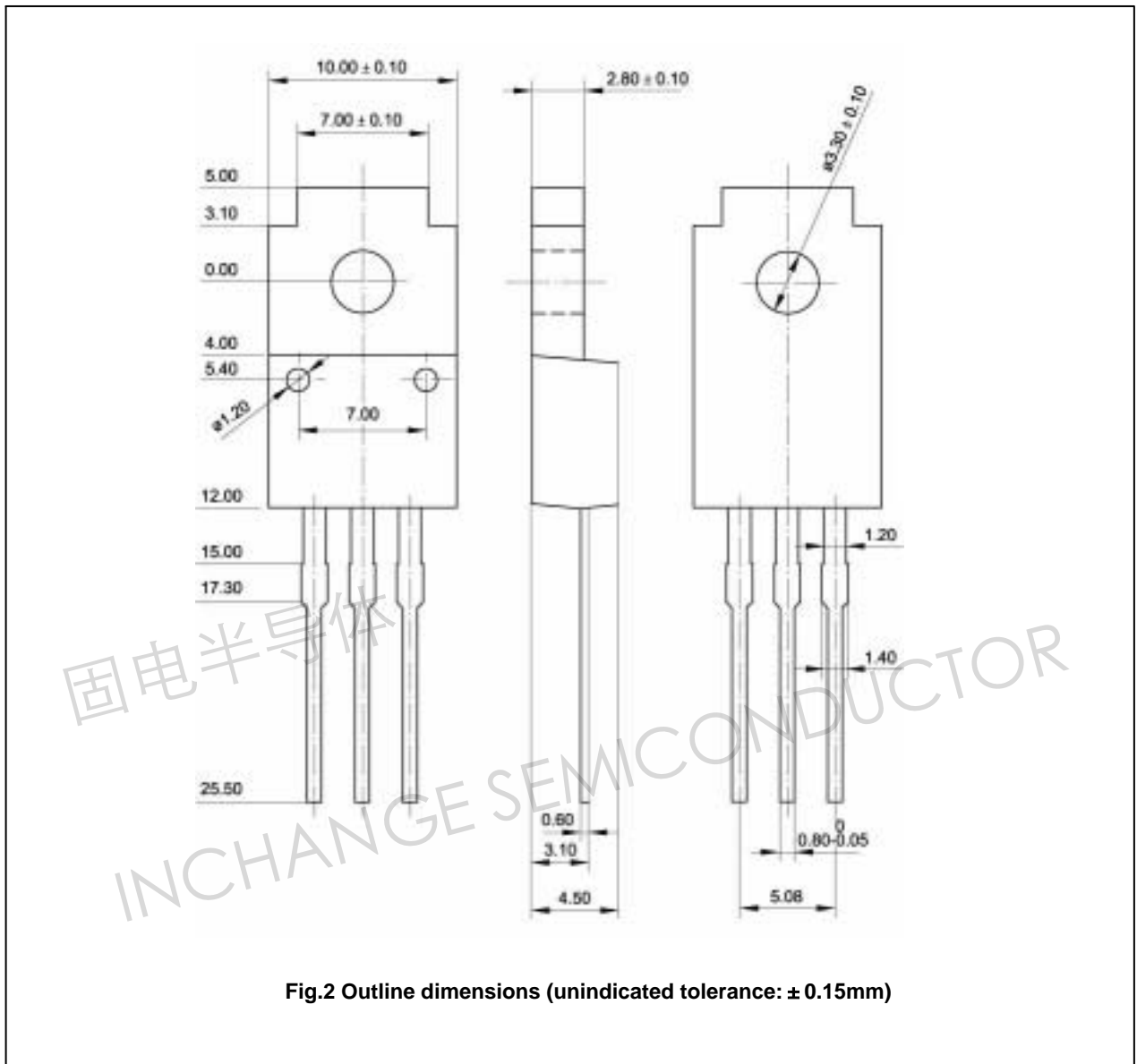


Fig.2 Outline dimensions (unindicated tolerance:  $\pm 0.15$ mm)