

## Silicon NPN Power Transistors

## BUL310FP

## DESCRIPTION

- With TO-220F package
- High voltage,high speed
- Wide area of safe operation

## APPLICATIONS

- Electronic ballasts for fluorescent lighting
- Switch mode power supplies
- Flyback and forward single transistor low power converters

## PINNING

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

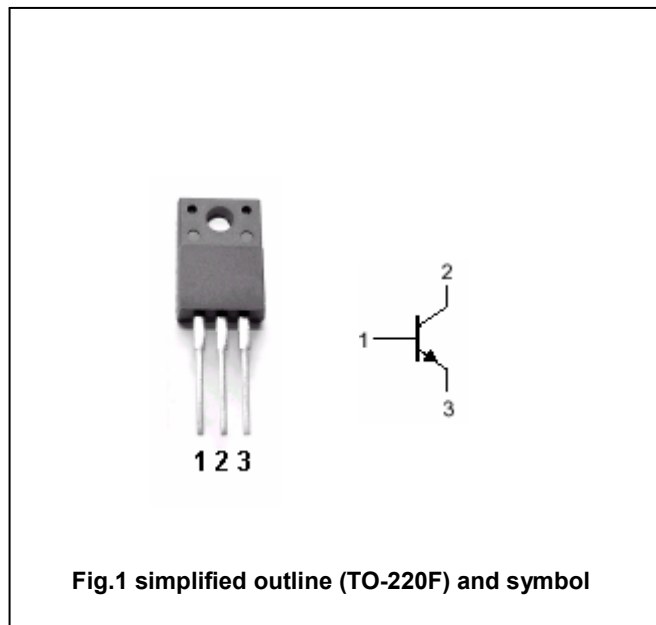


Fig.1 simplified outline (TO-220F) and symbol

## Absolute maximum ratings(Ta=25□)

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
V <sub>CBO</sub>	Collector-base voltage	Open emitter	1000	V
V <sub>CEO</sub>	Collector-emitter voltage	Open base	500	V
V <sub>EBO</sub>	Emitter-base voltage	Open collector	9	V
I <sub>C</sub>	Collector current (DC)		5	A
I <sub>CM</sub>	Collector current-Peak	t <sub>p</sub> <5ms	10	A
I <sub>B</sub>	Base current (DC)		3	A
I <sub>BM</sub>	Base current-Peak	t <sub>p</sub> <5ms	4	A
P <sub>tot</sub>	Total power dissipation	T <sub>C</sub> =25□	36	W
T <sub>j</sub>	Maximum operating junction temperature		150	□
T <sub>stg</sub>	Storage temperature		-65~150	□

## THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	VALUE	UNIT
R <sub>th j-case</sub>	Thermal resistance junction to case	3.5	□/W

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## CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP.	MAX	UNIT
V <sub>CEQ(SUS)</sub>	Collector-emitter sustaining voltage	I <sub>C</sub> =100mA ; I <sub>B</sub> =0; L=25mH	500			V
V <sub>(BR)EBO</sub>	Emitter-base breakdown voltage	I <sub>E</sub> =10mA ; I <sub>C</sub> =0	9			V
V <sub>CEsat-1</sub>	Collector-emitter saturation voltage	I <sub>C</sub> =1A; I <sub>B</sub> =0.2A			0.5	V
V <sub>CEsat-2</sub>	Collector-emitter saturation voltage	I <sub>C</sub> =2A ; I <sub>B</sub> =0.4A			0.7	V
V <sub>CEsat-3</sub>	Collector-emitter saturation voltage	I <sub>C</sub> =3A ; I <sub>B</sub> =0.6A			1.1	V
V <sub>BEsat-1</sub>	Base-emitter saturation voltage	I <sub>C</sub> =1A; I <sub>B</sub> =0.2A			1.0	V
V <sub>BEsat-2</sub>	Base-emitter saturation voltage	I <sub>C</sub> =2A ; I <sub>B</sub> =0.4A			1.1	V
V <sub>BEsat-3</sub>	Base-emitter saturation voltage	I <sub>C</sub> =3A ; I <sub>B</sub> =0.6A			1.2	V
I <sub>CES</sub>	Collector cut-off current	V <sub>CE</sub> =1000V; V <sub>BE</sub> =0 T <sub>C</sub> =125 °C			100 500	μA
I <sub>CEO</sub>	Collector cut-off current	V <sub>CE</sub> =400V; I <sub>B</sub> =0			250	μA
h <sub>FE-1</sub>	DC current gain	I <sub>C</sub> =10mA ; V <sub>CE</sub> =5V	10			
h <sub>FE-2</sub>	DC current gain	I <sub>C</sub> =3A ; V <sub>CE</sub> =2.5V		10		

Switching times inductive load

t <sub>s</sub>	Storage time	I <sub>C</sub> =2A ; V <sub>CL</sub> =250V I <sub>B1</sub> =0.4A; V <sub>BE(off)</sub> =-5V L=200μH; R <sub>BB</sub> =0Ω			1.9	μs
t <sub>f</sub>	Fall time				0.16	μs

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PACKAGE OUTLINE

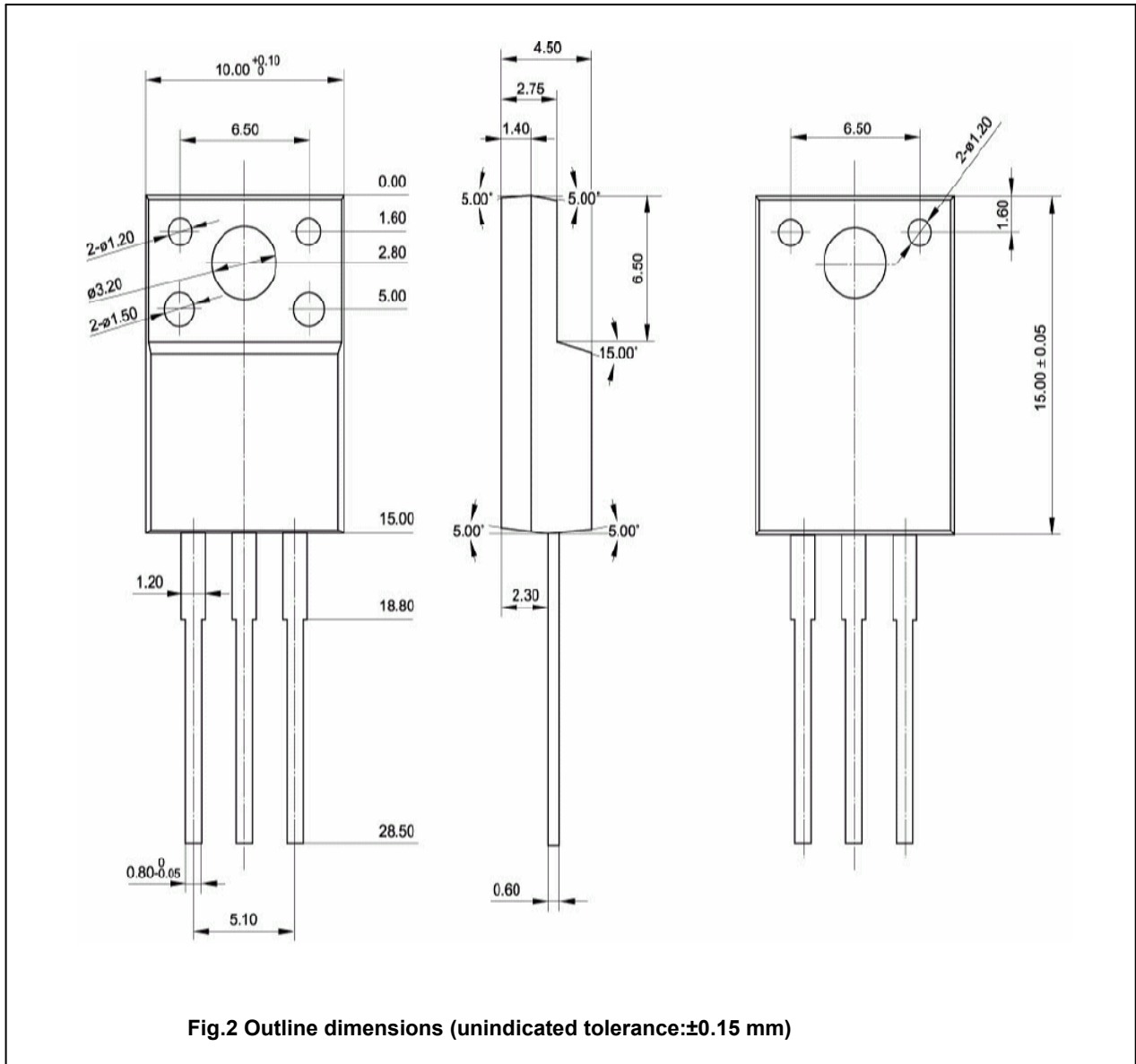


Fig.2 Outline dimensions (unindicated tolerance:±0.15 mm)