

## Silicon NPN Power Transistors

## BUW13F BUW13AF

## DESCRIPTION

- With TO-3PFa package
- High voltage;high speed

## APPLICATIONS

- Converters
- Inverters
- Switching regulators
- Motor control systems

## PINNING (See Fig.2)

PIN	DESCRIPTION
1	Base
2	Collector
3	Emitter

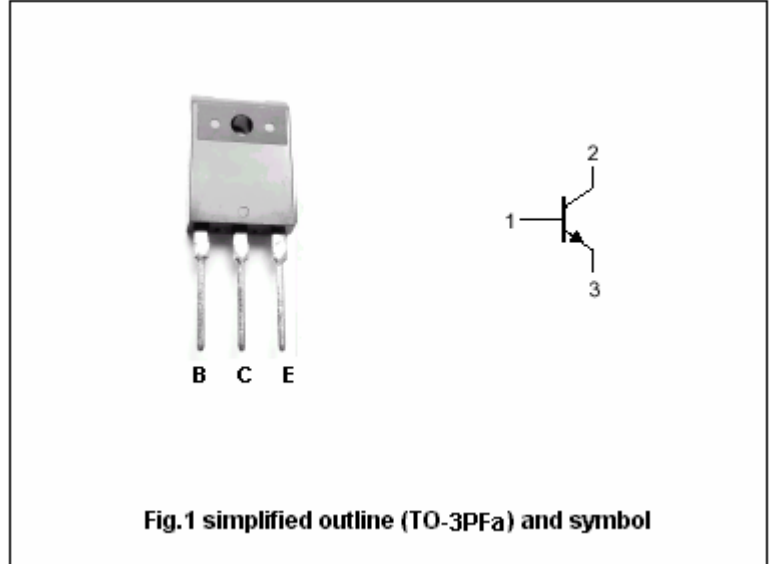


Fig.1 simplified outline (TO-3PFa) and symbol

Absolute maximum ratings( $T_a=25^\circ\text{C}$ )

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$V_{CBO}$	Collector-base voltage	BUW13F	850	V
		BUW13AF	1000	
$V_{CEO}$	Collector-emitter voltage	BUW13F	400	V
		BUW13AF	450	
$V_{EBO}$	Emitter-base voltage	Open collector	9	V
$I_C$	Collector current		15	A
$I_{CM}$	Collector current-peak		30	A
$I_B$	Base current		6	A
$I_{BM}$	Base current-peak		9	A
$P_T$	Total power dissipation	$T_C=25^\circ\text{C}$	50	W
$T_j$	Junction temperature		150	$^\circ\text{C}$
$T_{stg}$	Storage temperature		-65~150	$^\circ\text{C}$

## THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	MAX	UNIT
$R_{th\ j-a}$	Thermal resistance from junction to ambient	35	K/W

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## CHARACTERISTICS

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

SYMBOL	PARAMETER		CONDITIONS	MIN	TYP.	MAX	UNIT
V <sub>CEO(SUS)</sub>	Collector-emitter sustaining voltage	BUW13F	I <sub>C</sub> =0.1A ; I <sub>B</sub> =0; L=25mH	400			V
		BUW13AF		450			
V <sub>CEsat</sub>	Collector-emitter saturation voltage	BUW13F	I <sub>C</sub> =10A; I <sub>B</sub> =2A			1.5	V
		BUW13AF	I <sub>C</sub> =8A; I <sub>B</sub> =1.6A				
V <sub>BEsat</sub>	Base-emitter saturation voltage	BUW13F	I <sub>C</sub> =10A; I <sub>B</sub> =2A			1.6	V
		BUW13AF	I <sub>C</sub> =8A; I <sub>B</sub> =1.6A				
I <sub>CES</sub>	Collector cut-off current		V <sub>CE</sub> =Rated V <sub>CEs</sub> ; V <sub>BE</sub> =0 T <sub>j</sub> =125 °C			1.0 4.0	mA
I <sub>EBO</sub>	Emitter cut-off current		V <sub>EB</sub> =9V; I <sub>C</sub> =0			10	mA
h <sub>FE-1</sub>	DC current gain		I <sub>C</sub> =20mA ; V <sub>CE</sub> =5V	10		35	
h <sub>FE-2</sub>	DC current gain		I <sub>C</sub> =1.5A ; V <sub>CE</sub> =5V	10		35	

Switching times resistive load

t <sub>on</sub>	Turn-on time	For BUW13F I <sub>C</sub> =10A ; I <sub>B1</sub> =-I <sub>B2</sub> =-2A  For BUW13AF I <sub>C</sub> =8A ; I <sub>B1</sub> =-I <sub>B2</sub> =-1.6A			1.0	μs
t <sub>s</sub>	Storage time				4.0	μs
t <sub>f</sub>	Fall time				0.8	μs

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PACKAGE OUTLINE



Fig.2 Outline dimensions(unindicated tolerance:±0.30mm)