

**Inchange Semiconductor**

**Product Specification**

**Silicon NPN Power Transistors**

**2SC2333**

**DESCRIPTION**

- With TO-220C package
- High speed switching
- Low collector saturation voltage

**APPLICATIONS**

- Switching regulator
- DC-DC converter
- Ultrasonic appliance

**PINNING**

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

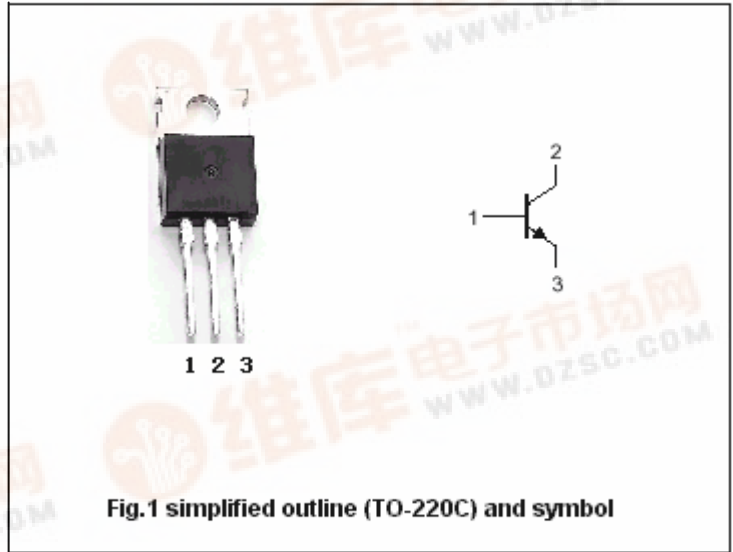


Fig.1 simplified outline (TO-220C) and symbol

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

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$V_{CBO}$	Collector-base voltage	Open emitter	500	V
$V_{CEO}$	Collector-emitter voltage	Open base	400	V
$V_{EBO}$	Emitter-base voltage	Open collector	7	V
$I_C$	Collector current		2	A
$I_{CM}$	Collector current-peak		4	A
$I_B$	Base current		1	A
$P_T$	Total power dissipation	$T_C=25$	15	W
$T_j$	Junction temperature		150	
$T_{stg}$	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(SUS)</sub>	Collector-emitter sustaining voltage	I <sub>C</sub> =0.5A; I <sub>B</sub> =0.1A; L=1mA	400			V
V <sub>CEsat</sub>	Collector-emitter saturation voltage	I <sub>C</sub> =0.5A; I <sub>B</sub> =0.1A			1.0	V
V <sub>BEsat</sub>	Base-emitter saturation voltage	I <sub>C</sub> =0.5A; I <sub>B</sub> =0.1A			1.2	V
I <sub>CER</sub>	Collector cut-off current	V <sub>CE</sub> =400V; R <sub>BE</sub> =51Ω; T <sub>a</sub> =125			1.0	mA
I <sub>CEx1</sub>	Collector cut-off current	V <sub>CE</sub> =400V; V <sub>BE(OFF)</sub> =-5.0V			10	μA
I <sub>CEx2</sub>	Collector cut-off current	V <sub>CE</sub> =400V; V <sub>BE(OFF)</sub> =-5.0V T <sub>a</sub> =125			1.0	mA
I <sub>CBO</sub>	Collector cut-off current	V <sub>CB</sub> =400V; I <sub>E</sub> =0			10	μA
I <sub>EBO</sub>	Emitter cut-off current	V <sub>EB</sub> =5V; I <sub>C</sub> =0			10	μA
h <sub>FE-1</sub>	DC current gain	I <sub>C</sub> =0.1A; V <sub>CE</sub> =5V	20		80	
h <sub>FE-2</sub>	DC current gain	I <sub>C</sub> =0.5A; V <sub>CE</sub> =5V	10			
t <sub>on</sub>	Turn on time				1.0	μs
t <sub>stg</sub>	Storage time	I <sub>C</sub> =0.5A; I <sub>B1</sub> =-I <sub>B2</sub> =0.1A R <sub>L</sub> =300Ω; V <sub>CC</sub> =150V			2.5	μs
t <sub>f</sub>	Fall time				1.0	μs

◆ h<sub>FE-1</sub> classifications

M	L	K
20-40	30-60	40-80

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PACKAGE OUTLINE

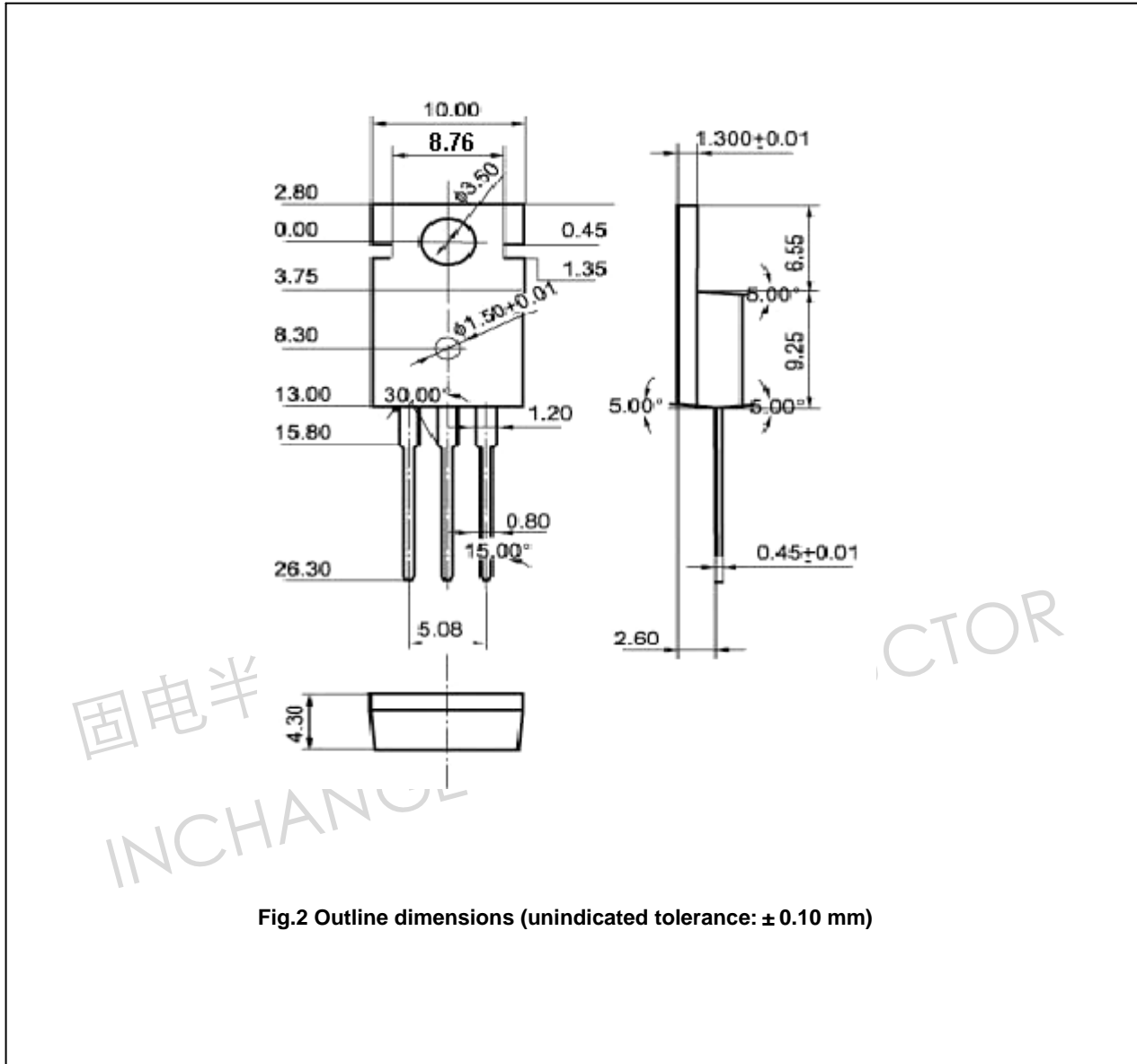


Fig.2 Outline dimensions (unindicated tolerance: ± 0.10 mm)

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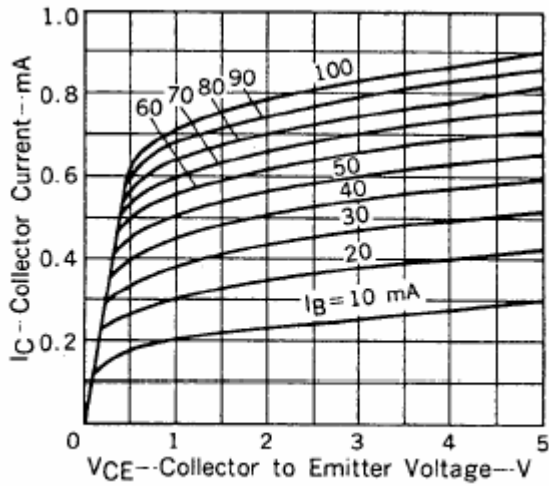


Fig.3 Static Characteristic

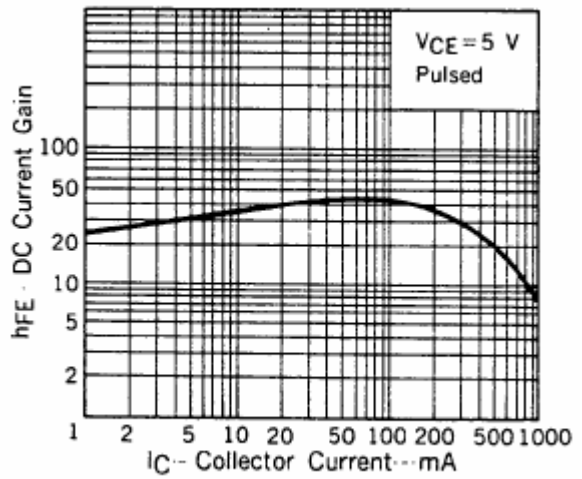


Fig.4 DC current Gain

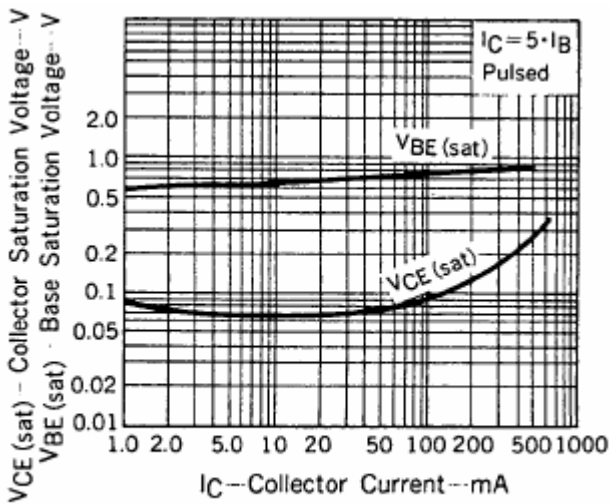


Fig.5 Base-Emitter Saturation Voltage  
Collector-Emitter Saturation Voltage

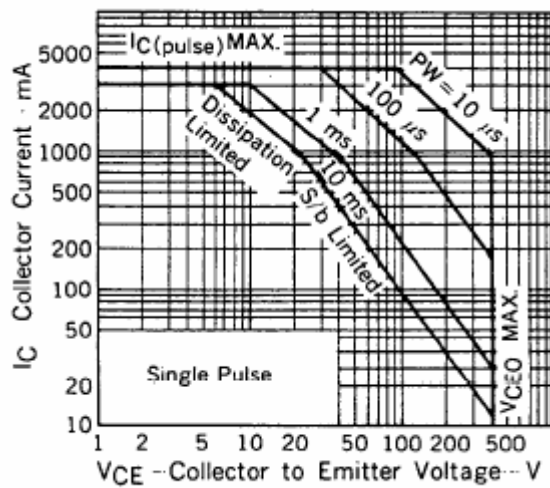


Fig.6 Safe Operating Area