

Silicon NPN Power Transistors

MJE13005

DESCRIPTION

- With TO-220C package
- High voltage ,high speed

APPLICATIONS

- Particularly suited for 115V and 220V switchmode applications such as switching regulators,inverters ,motor controls,solenoid/ relay drivers and deflection circuits

PINNING

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

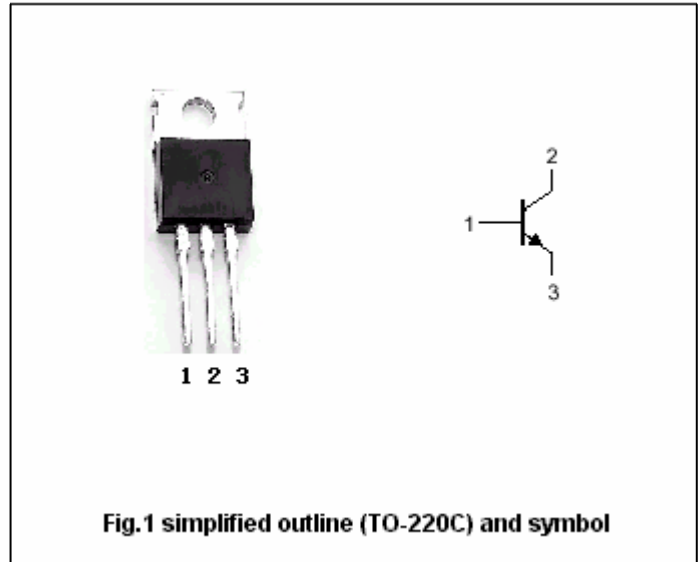


Fig.1 simplified outline (TO-220C) and symbol

ABSOLUTE MAXIMUM RATINGS ($T_C=25^\circ$)

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
V_{CBO}	Collector-base voltage	Open emitter	700	V
V_{CEO}	Collector-emitter voltage	Open base	400	V
V_{EBO}	Emitter-base voltage	Open collector	9	V
I_C	Collector current		4	A
I_{CM}	Collector current-Peak		8	A
I_B	Base current		2	A
I_{BM}	Base current-Peak		4	A
I_E	Emitter current		6	A
I_{EM}	Emitter current-Peak		12	A
P_D	Total power dissipation	$T_a=25^\circ$	2	W
		$T_C=25^\circ$	75	
T_j	Junction temperature		150	$^\circ$
T_{stg}	Storage temperature		-65~150	$^\circ$

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	MAX	UNIT
R_{thj-C}	Thermal resistance from junction to case	1.67	$^\circ/W$

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CHARACTERISTICS

T_j=25 °C unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP.	MAX	UNIT
V _{CEO(SUS)}	Collector-emitter sustaining voltage	I _C =10mA ; I _B =0	400			V
V _{CE(sat)-1}	Collector-emitter saturation voltage	I _C =1A; I _B =0.2A			0.5	V
V _{CE(sat)-2}	Collector-emitter saturation voltage	I _C =2A; I _B =0.5A T _C =100 °C			0.6 1.0	V
V _{CE(sat)-3}	Collector-emitter saturation voltage	I _C =4A; I _B =1A			1.0	V
V _{BE(sat)-1}	Base-emitter saturation voltage	I _C =1A; I _B =0.2A			1.2	V
V _{BE(sat)-2}	Base-emitter saturation voltage	I _C =2A ; I _B =0.5A T _C =100 °C			1.6 1.5	V
I _{CBO}	Collector cut-off current	V _{CB} =700V; I _E =0 T _C =100 °C			1.0 5.0	mA
I _{EBO}	Emitter cut-off current	V _{EB} =9V; I _C =0			1.0	mA
h _{FE-1}	DC current gain	I _C =1A ; V _{CE} =5V	10		60	
h _{FE-2}	DC current gain	I _C =2A ; V _{CE} =5V	8		40	
f _T	Transition frequency	I _C =0.5A ; V _{CE} =10V; f=1MHz	4			MHz
C _{OB}	Collector outoput capacitance	I _E =0; f=1MHz ; V _{CB} =10V		65		pF

Switching times

t _d	Delay time	V _{CC} =125V , I _C =2A I _{B1} =-I _{B2} =0.4A t _p =25µs duty cycle≤1%			0.1	µs
t _r	Rise time				0.7	µs
t _s	Storage time				4.0	µs
t _f	Fall time				0.9	µs

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PACKAGE OUTLINE

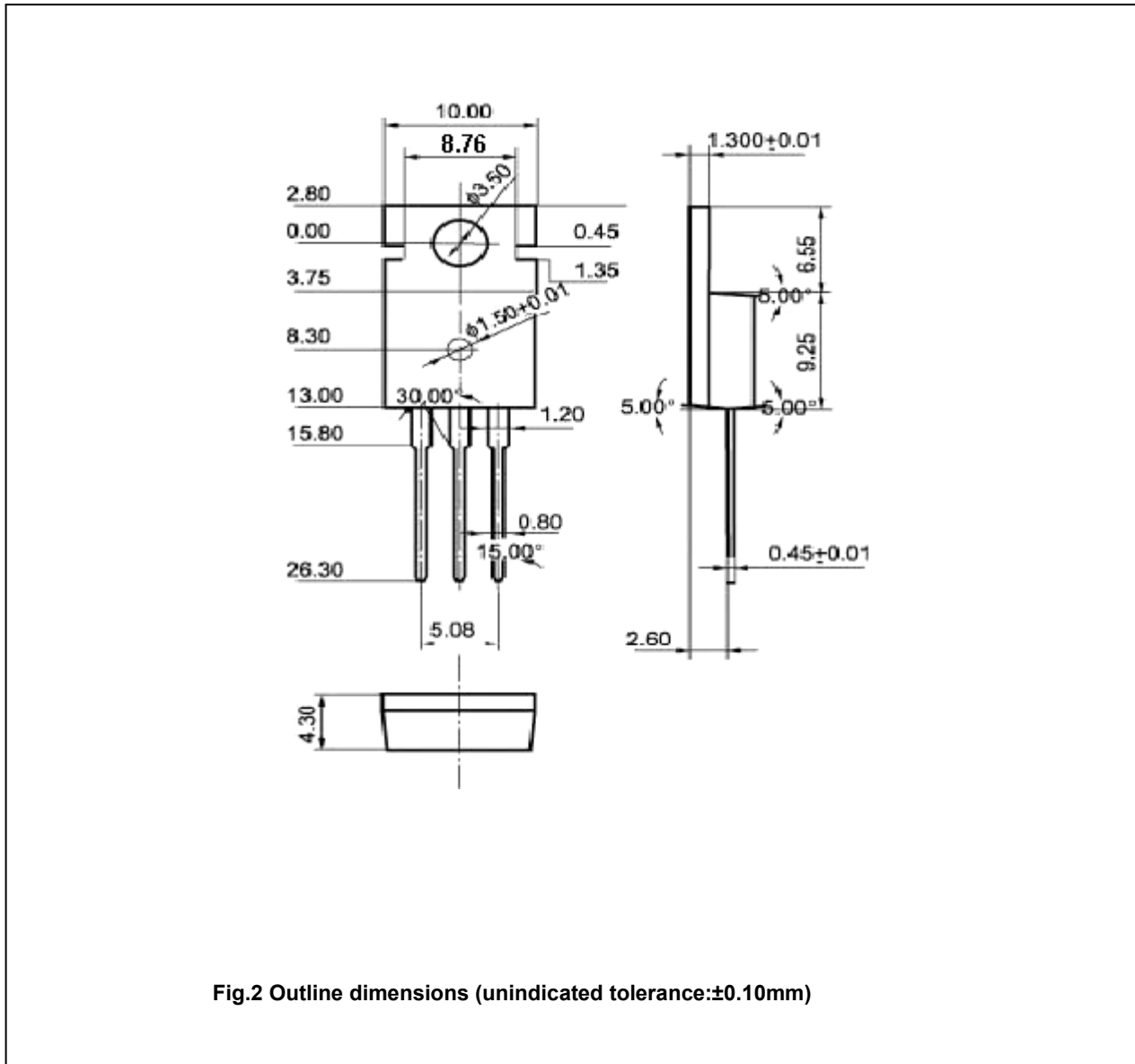


Fig.2 Outline dimensions (unindicated tolerance:±0.10mm)

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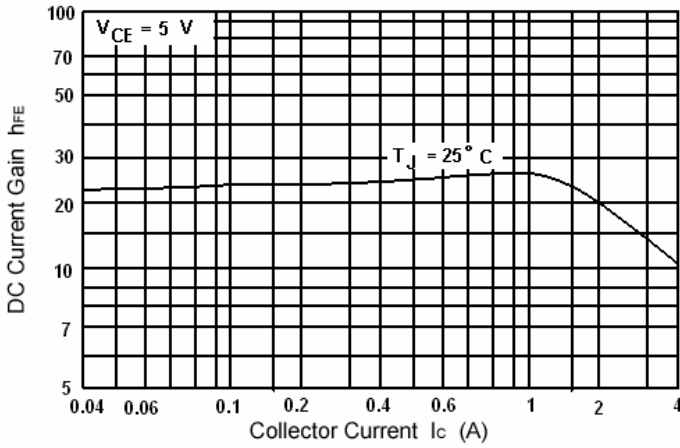


Fig.3 DC current Gain

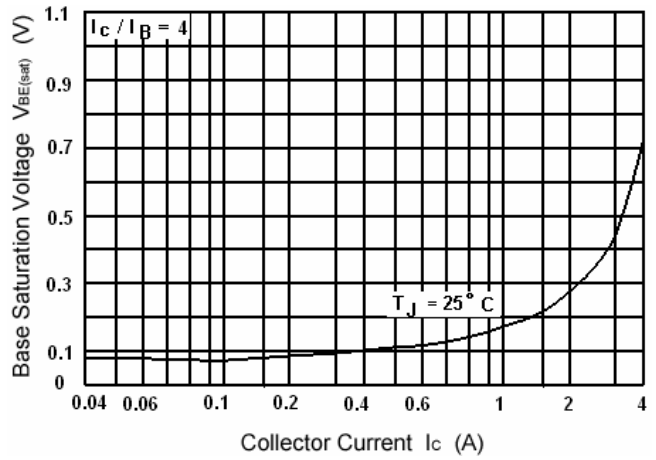


Fig.4 Base-Emitter Saturation Voltage

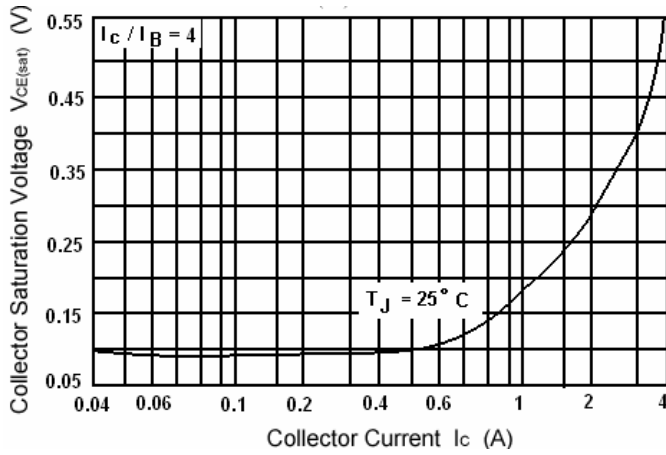


Fig.5 Collector-Emitter Saturation Voltage

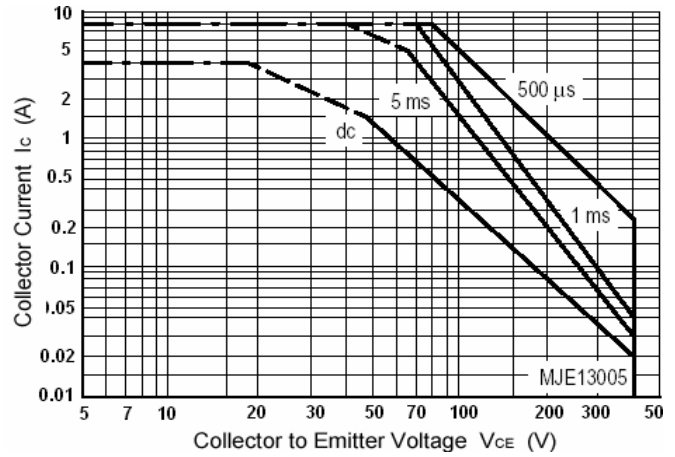


Fig.6 Safe Operating Area