

Silicon NPN Power Transistors

MJE13003

DESCRIPTION

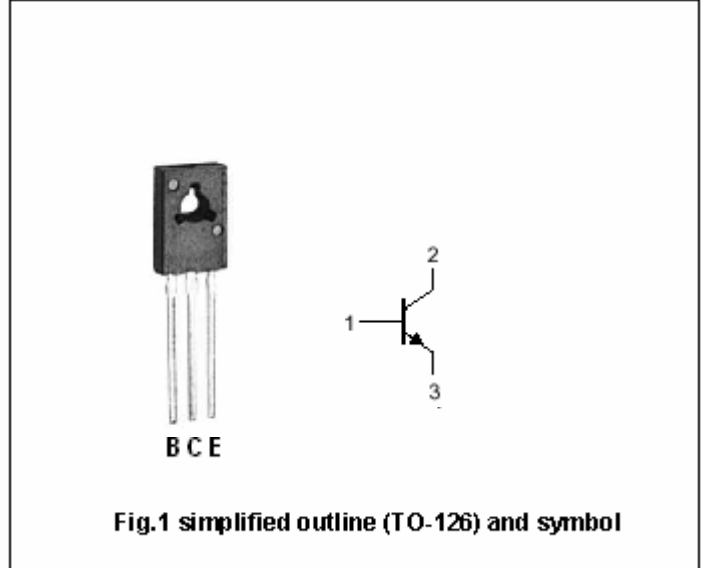
- With TO-126 package
- High voltage ,high speed

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

ABSOLUTE MAXIMUM RATINGS ($T_C=25^\circ\text{C}$)

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 (DC)		1.5	A
I_{CM}	Collector current-Peak		3	A
I_B	Base current		0.75	A
I_{BM}	Base current-Peak		1.5	A
I_E	Emitter current		2.25	A
I_{EM}	Emitter current-Peak		4.5	A
P_D	Total power dissipation	$T_a=25^\circ\text{C}$	1.4	W
		$T_C=25^\circ\text{C}$	40	
T_j	Junction temperature		150	$^\circ\text{C}$
T_{stg}	Storage temperature		-65~150	$^\circ\text{C}$

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	MAX	UNIT
R_{thj-c}	Thermal resistance from junction to case	3.12	$^\circ\text{C}/\text{W}$

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CHARACTERISTICS

T_j=25°C unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP.	MAX	UNIT
V _{CEQ(SUS)}	Collector-emitter sustaining voltage	I _C =10mA ; I _B =0	400			V
V _{CE(sat)-1}	Collector-emitter saturation voltage	I _C =0.5A; I _B =0.1A			0.5	V
V _{CE(sat)-2}	Collector-emitter saturation voltage	I _C =1A; I _B =0.25A T _C =100°C			1.0 1.0	V
V _{CE(sat)-3}	Collector-emitter saturation voltage	I _C =1.5A; I _B =0.5A			3.0	V
V _{BE(sat)-1}	Base-emitter saturation voltage	I _C =0.5A; I _B =0.1A			1.0	V
V _{BE(sat)-2}	Base-emitter saturation voltage	I _C =1A; I _B =0.25A T _C =100°C			1.2 1.1	V
I _{CEV}	Collector cut-off current	V _{CEV} =Rated value; V _{BE(off)} =1.5V 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 =0.5A ; V _{CE} =2V	8		40	
h _{FE-2}	DC current gain	I _C =1A ; V _{CE} =2V	5		25	
f _T	Transition frequency	I _C =0.1A ; V _{CE} =10V; f=1MHz	4			MHz
C _{OB}	Collector outoput capacitance	I _E =0; f=0.1MHz ; V _{CB} =10V		21		pF

Switching times resistive load

t _d	Delay time	V _{CC} =125V , I _C =1A I _{B1} =-I _{B2} =0.2A t _p =25μs duty cycle≤1%		0.05	0.1	μs
t _r	Rise time			0.5	1.0	μs
t _s	Storage time			2.0	4.0	μs
t _f	Fall time			0.4	0.7	μs

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PACKAGE OUTLINE

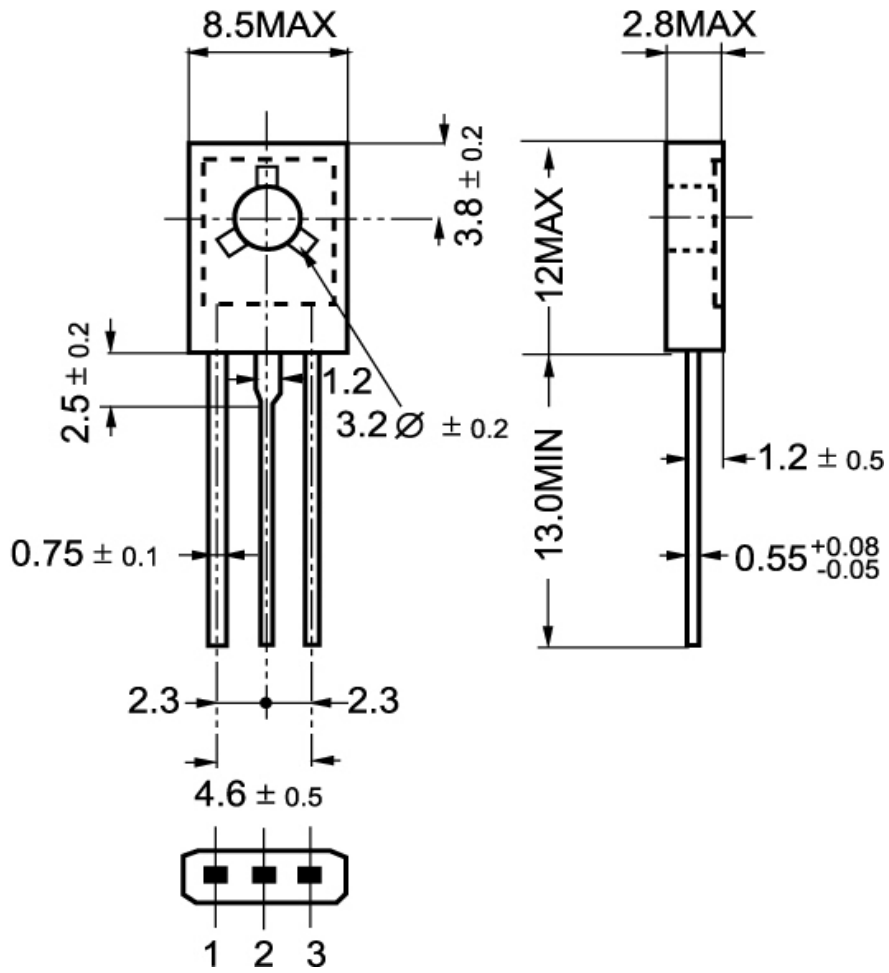


Fig.2 Outline dimensions

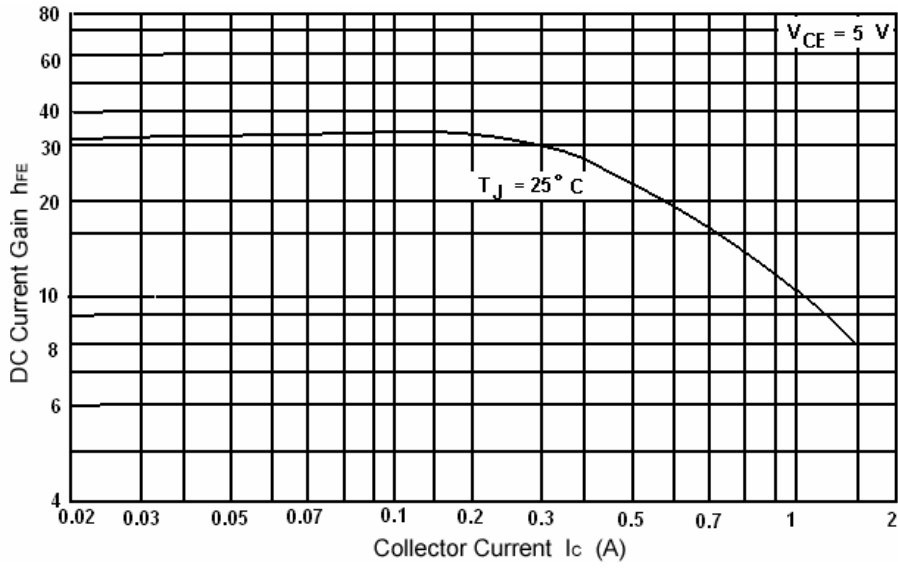


Fig.3 DC current Gain

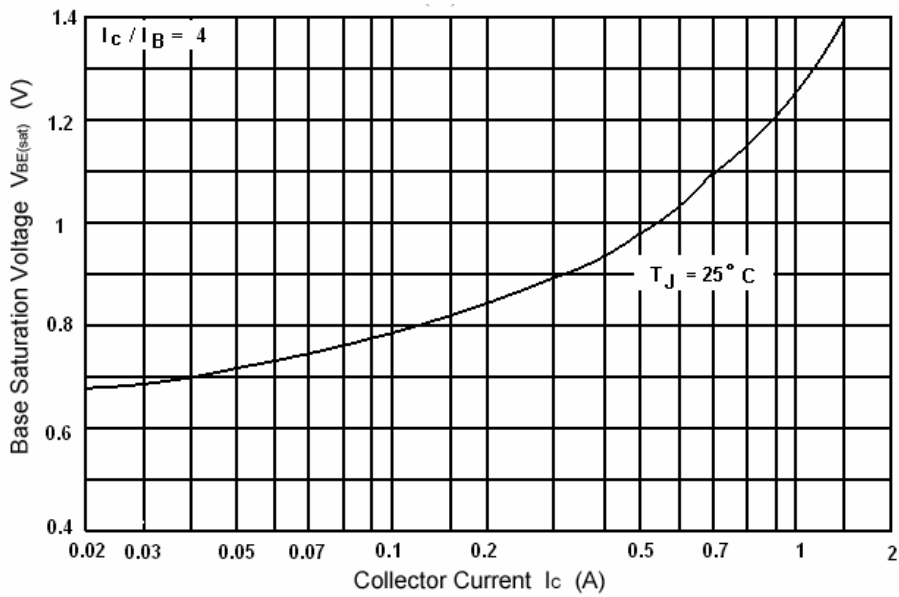


Fig.4 Base-Emitter Saturation Voltage

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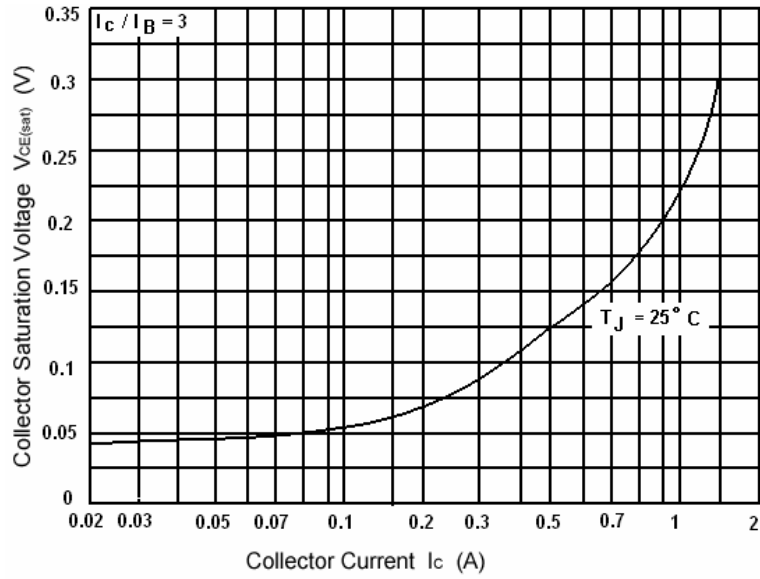


Fig.5 Collector-Emitter Saturation Voltage

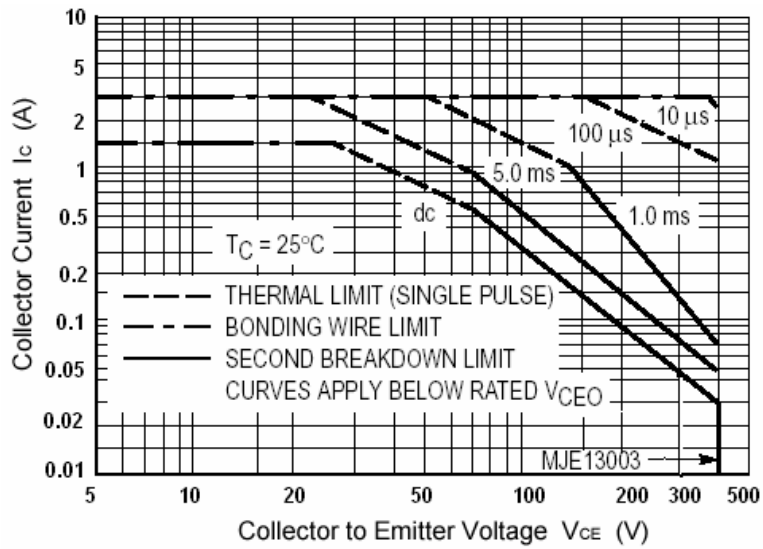


Fig.6 Safe Operating Area