

Silicon NPN Power Transistors

MJE13007

DESCRIPTION

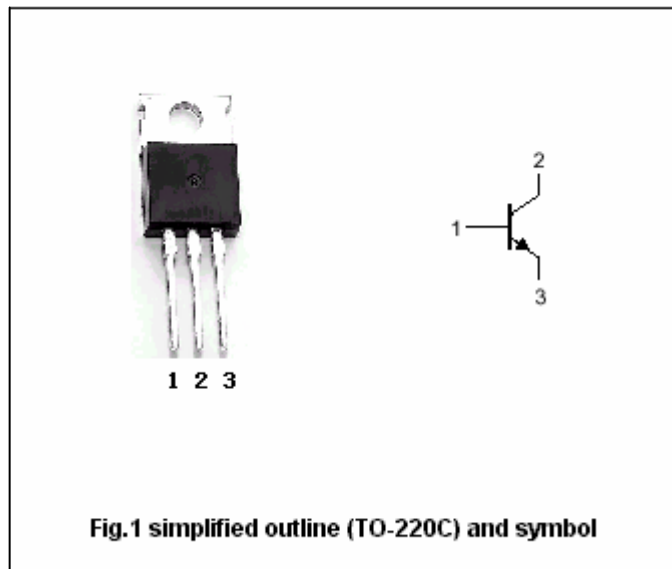
- With TO-220C package
- High voltage ,high speed

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

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)		8	A
I_{CM}	Collector current-Peak		16	A
I_B	Base current		4	A
I_{BM}	Base current-Peak		8	A
I_E	Emitter current		12	A
I_{EM}	Emitter current-Peak		24	A
P_D	Total power dissipation	$T_C=25^\circ\text{C}$	80	W
T_j	Junction temperature		150	$^\circ\text{C}$
T_{stg}	Storage temperature		-65~150	$^\circ\text{C}$

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	VALUE	UNIT
$R_{th\ j-C}$	Thermal resistance from junction to case	1.56	$^\circ\text{C/W}$

Silicon NPN Power Transistors

MJE13007

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 _{CEsat-1}	Collector-emitter saturation voltage	I _C =2A; I _B =0.4A			1.0	V
V _{CEsat-2}	Collector-emitter saturation voltage	I _C =5A; I _B =1.0A T _C =100°C			2.0 3.0	V
V _{CEsat-3}	Collector-emitter saturation voltage	I _C =8A; I _B =2.0A			3.0	V
V _{BEsat-1}	Base-emitter saturation voltage	I _C =2A; I _B =0.4A			1.2	V
V _{BEsat-2}	Base-emitter saturation voltage	I _C =5A; I _B =1.0A T _C =100°C			1.6 1.5	V
I _{CBO}	Collector cut-off current	V _{CB} =700V; I _E =0 T _C =125°C			0.1 1.0	mA
I _{EBO}	Emitter cut-off current	V _{EB} =9V; I _C =0			0.1	mA
h _{FE-1}	DC current gain	I _C =2A; V _{CE} =5V	8		40	
h _{FE-2}	DC current gain	I _C =5A; V _{CE} =5V	5		30	
f _T	Transition frequency	I _C =0.5A; V _{CE} =10V; f=1MHz	4			MHz
C _{OB}	Collector outoput capacitance	I _E =0; f=0.1MHz; V _{CB} =10V		80		pF

Switching times resistive load

t _d	Delay time	V _{CC} =125V, I _C =5A I _{B1} =-I _{B2} =1.0A t _p =25 μs duty cycle ≤1%			0.1	μs
t _r	Rise time				1.5	μs
t _s	Storage time				3.0	μs
t _f	Fall time				0.7	μs

Silicon NPN Power Transistors

MJE13007

PACKAGE OUTLINE

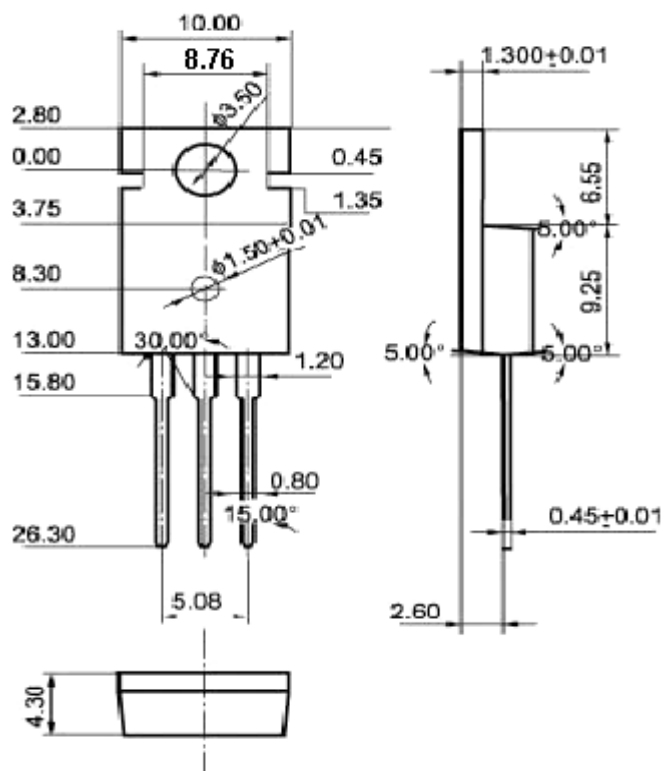


Fig.2 Outline dimensions (unindicated tolerance: 0.10mm)

Silicon NPN Power Transistors

MJE13007

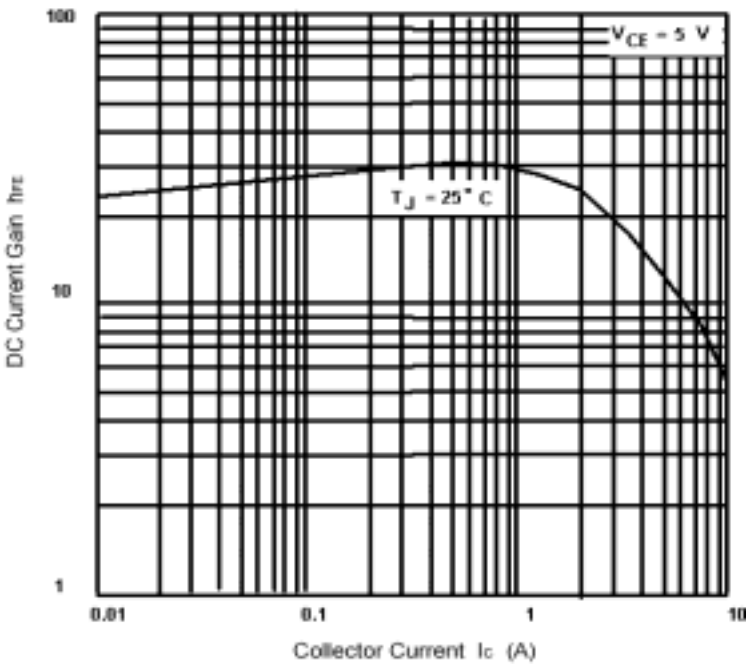


Fig.3 DC current Gain

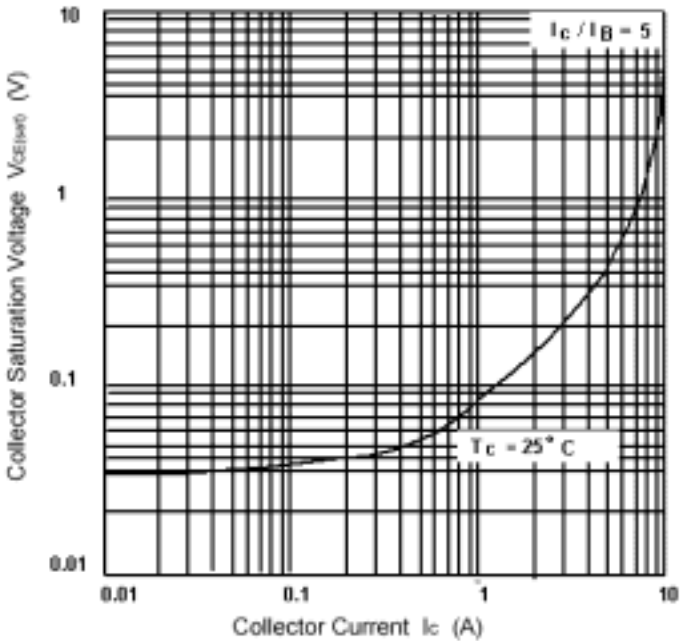


Fig.4 Collector-Emitter Saturation Voltage

Silicon NPN Power Transistors

MJE13007

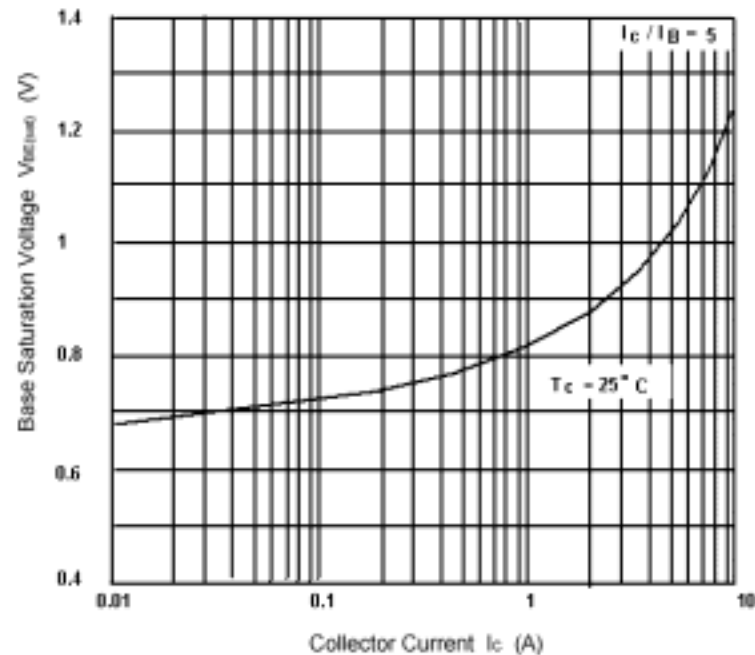


Fig.5 Base-Emitter Saturation Voltage

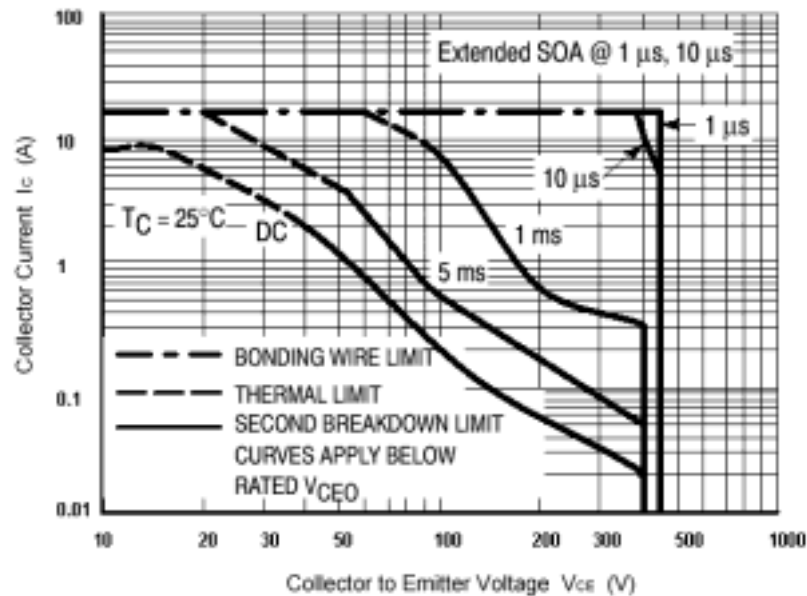


Fig.6 Safe Operating Area