Silicon NPN Power Transistors MJE13004

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

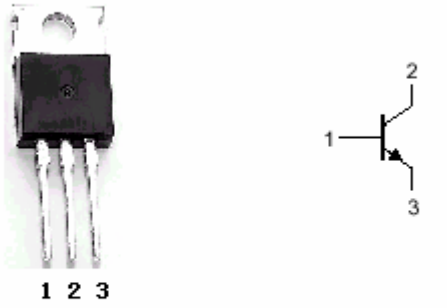

Fig.1 simplified outline (TO-220C) and symbol

PINNING

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

ABSOLUTE MAXIMUM RATINGS(T_C=25□)

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
V_{CBO}	Collector-base voltage	Open emitter	600	V
V_{CEO}	Collector-emitter voltage	Open base	300	V
V_{EBO}	Emitter-base voltage	Open collector	9	V
I_C	Collector current (DC)		4	A
I_{CM}	Collector current-Peak		8	A
I_B	Base current		2	A
I_{BM}	Base current-PeaK		4	A
P_D	Total power dissipation	T_a=25□	2	W
		T_C=25□	75	
T_j	Junction temperature		150	□
T_{stg}	Storage temperature		-65~150	□

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	MAX	UNIT
$R_{th\ j\text{-}C}$	Thermal resistance from junction to case	1.67	□/W

CHARACTERISTICS

Tj=25□ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP.	MAX	UNIT
$V_{CEO(SUS)}$	Collector-emitter sustaining voltage	I_C=10mA ;I_B=0	300			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			0.6	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			1.6	V
I_{CEV}	Collector cut-off current	V_{CEV}=600V; V_{BE}=1.5V T_C=100□			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

PACKAGE OUTLINE

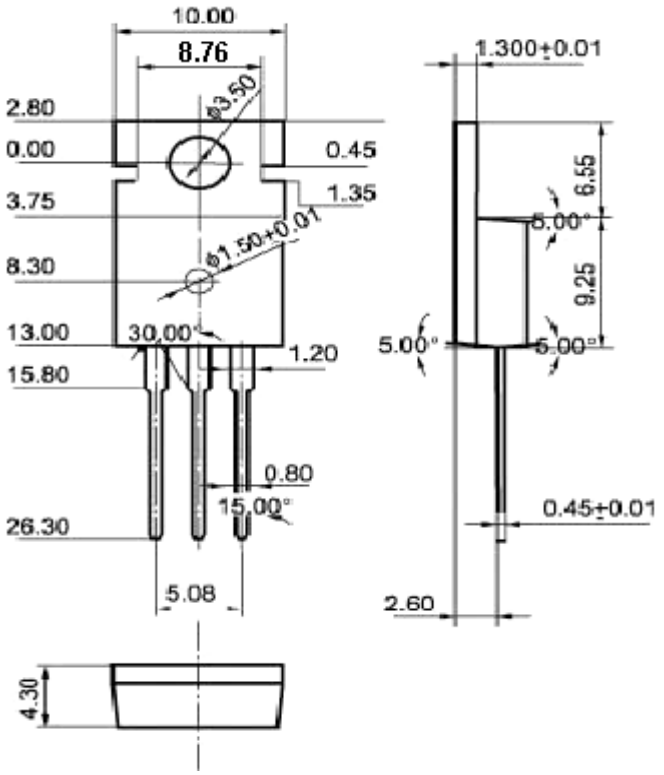

Fig.2 Outline dimensions (unindicated tolerance:±0.10mm)