

**Silicon NPN Power Transistor**

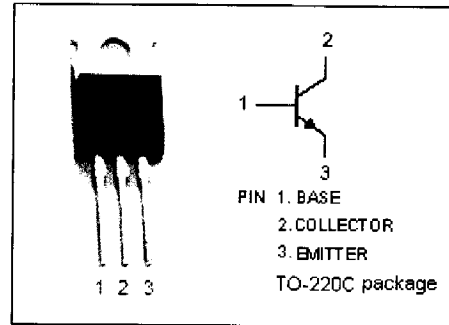
**MJE18004**

**DESCRIPTION**

- Collector-Base Breakdown Voltage-  
 :  $V_{(BR)CBO} = 1000V(\text{Min})$
- High Switching Speed

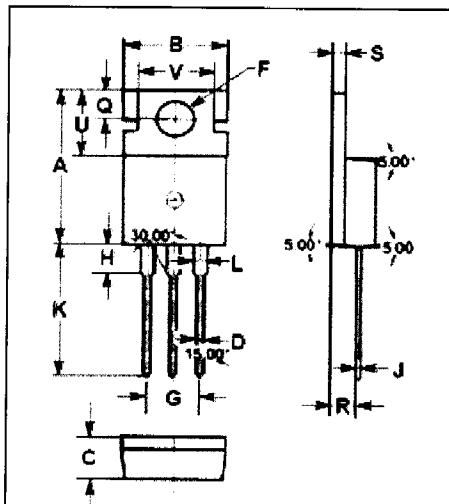
**APPLICATIONS**

- Designed for use in 220V line-operated switchmode power supplies and electronic light ballasts



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

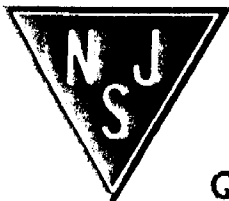
SYMBOL	PARAMETER	VALUE	UNIT
$V_{CBO}$	Collector-Base Voltage	1000	V
$V_{CEO}$	Collector-Emitter Voltage	450	V
$V_{EBO}$	Emitter-Base Voltage	9	V
$I_C$	Collector Current-Continuous	5	A
$I_{CM}$	Collector Current-Peak	10	A
$I_B$	Base Current	2	A
$I_{BM}$	Base Current-Peak	4	A
$P_D$	Total Power Dissipation@ $T_c=25^\circ\text{C}$	100	W
$T_j$	Junction Temperature	150	$^\circ\text{C}$
$T_{stg}$	Storage Temperature	-65~150	$^\circ\text{C}$



DIM	mm	
	MIN	MAX
A	15.70	15.90
B	9.90	10.10
C	4.20	4.40
D	0.70	0.90
F	3.40	3.60
G	4.98	5.18
H	2.70	2.90
J	0.44	0.46
K	13.20	13.40
L	1.10	1.30
Q	2.70	2.90
R	2.50	2.70
S	1.29	1.31
U	6.45	6.65
V	8.66	8.86

**THERMAL CHARACTERISTICS**

SYMBOL	PARAMETER	MAX	UNIT
$R_{th\ j-c}$	Thermal Resistance, Junction to Case	1.25	$^\circ\text{C/W}$
$R_{th\ j-a}$	Thermal Resistance, Junction to Ambient	62.5	$^\circ\text{C/W}$



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# MJE18004

## ELECTRICAL CHARACTERISTICS

T<sub>J</sub>=25°C unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
V <sub>CEO(SUS)</sub>	Collector-Emitter Sustaining Voltage	I <sub>C</sub> = 0.1A; L= 25mH	450			V
V <sub>CE(sat)-1</sub>	Collector-Emitter Saturation Voltage	I <sub>C</sub> = 1 A; I <sub>B</sub> = 0.1A T <sub>C</sub> =125°C			0.5 0.6	V
V <sub>CE(sat)-2</sub>	Collector-Emitter Saturation Voltage	I <sub>C</sub> = 2A; I <sub>B</sub> = 0.4 A T <sub>C</sub> =125°C			0.45 0.8	V
V <sub>CE(sat)-3</sub>	Collector-Emitter Saturation Voltage	I <sub>C</sub> = 2.5A; I <sub>B</sub> = 0.5 A			0.75	V
V <sub>BE(sat)-1</sub>	Base-Emitter Saturation Voltage	I <sub>C</sub> = 1A; I <sub>B</sub> = 0.1A			1.1	V
V <sub>BE(sat)-2</sub>	Base-Emitter Saturation Voltage	I <sub>C</sub> = 2A; I <sub>B</sub> = 0.4A			1.25	V
V <sub>BE(sat)-3</sub>	Base-Emitter Saturation Voltage	I <sub>C</sub> = 2.5A; I <sub>B</sub> = 0.5 A			1.3	V
I <sub>CEs</sub>	Collector Cutoff Current	V <sub>CEs</sub> = RatedV <sub>CEs</sub> ; V <sub>EB</sub> = 0 T <sub>C</sub> =125°C			0.05 0.5	mA
		V <sub>CEs</sub> = 800V T <sub>C</sub> =125°C			0.01 0.1	
I <sub>CEO</sub>	Collector Cutoff Current	V <sub>CE</sub> = RatedV <sub>CEO</sub> ; I <sub>B</sub> = 0			0.1	mA
I <sub>EBO</sub>	Emitter Cutoff Current	V <sub>EB</sub> = 9V; I <sub>C</sub> = 0			0.1	mA
h <sub>FE-1</sub>	DC Current Gain	I <sub>C</sub> = 1A; V <sub>CE</sub> = 2.5V	12			
h <sub>FE-2</sub>	DC Current Gain	I <sub>C</sub> = 1A; V <sub>CE</sub> = 5V	14		36	
h <sub>FE-3</sub>	DC Current Gain	I <sub>C</sub> = 2A; V <sub>CE</sub> = 1V	6			
h <sub>FE-4</sub>	DC Current Gain	I <sub>C</sub> = 10mA; V <sub>CE</sub> = 5V	10			
f <sub>T</sub>	Current-Gain—Bandwidth Product	I <sub>C</sub> = 0.5A; V <sub>CE</sub> = 10V; f <sub>test</sub> =1.0MHz		13		MHz
C <sub>OB</sub>	Output Capacitance	I <sub>E</sub> = 0; V <sub>CB</sub> = 10V; f <sub>test</sub> =1.0MHz		45		pF

Switching Times Resistive Load, Duty Cycle ≤ 10%, Pulse Width = 20 μs

t <sub>on</sub>	Turn-on Time	V <sub>CC</sub> =250V, I <sub>C</sub> =2.5A I <sub>B1</sub> =I <sub>B2</sub> =0.5 A		450	600	ns
t <sub>s</sub>	Storage Time			2	3	μs
t <sub>f</sub>	Turn-off Time			0.275	0.4	μs