

isc Silicon NPN Power Transistor

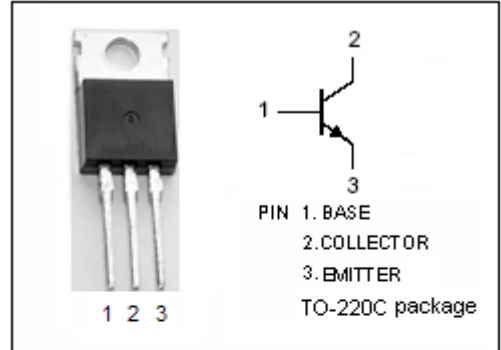
MJE18006

DESCRIPTION

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

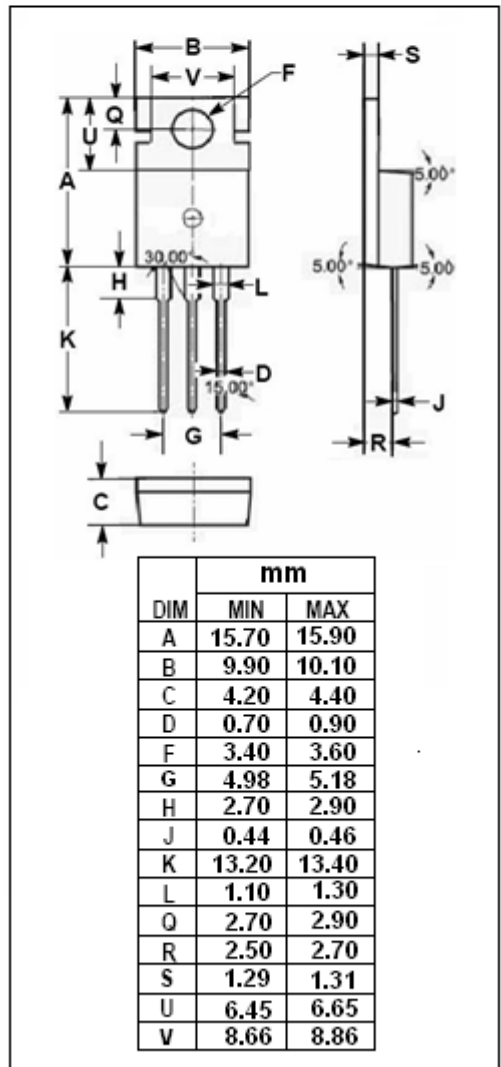
APPLICATIONS

- 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	6	A
$I_{CM}$	Collector Current-Peak	15	A
$I_B$	Base Current	4	A
$I_{BM}$	Base Current-Peak	8	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	$^\circ\text{C}$



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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## ELECTRICAL CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
V <sub>CE0(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> = 1.5 A ; I <sub>B</sub> = 0.15A T <sub>C</sub> = 125°C			0.6 0.65	V
V <sub>CE(sat)-2</sub>	Collector-Emitter Saturation Voltage	I <sub>C</sub> = 3A ; I <sub>B</sub> = 0.6A T <sub>C</sub> = 125°C			0.7 0.8	V
V <sub>BE(sat)-1</sub>	Base-Emitter Saturation Voltage	I <sub>C</sub> = 1.5A; I <sub>B</sub> = 0.15A			1.2	V
V <sub>BE(sat)-2</sub>	Base-Emitter Saturation Voltage	I <sub>C</sub> = 3A; I <sub>B</sub> = 0.6A			1.3	V
I <sub>CES</sub>	Collector Cutoff Current	V <sub>CE</sub> S=RatedV <sub>CE</sub> S; V <sub>EB</sub> = 0 T <sub>C</sub> =125°C			0.1 0.5	mA
		V <sub>CE</sub> S= 800V T <sub>C</sub> =125°C			0.1	
I <sub>CEO</sub>	Collector Cutoff Current	V <sub>CE</sub> = RatedV <sub>CE0</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> = 0.5A ; V <sub>CE</sub> = 5V	14		34	
h <sub>FE-2</sub>	DC Current Gain	I <sub>C</sub> = 3A ; V <sub>CE</sub> = 1V	6			
h <sub>FE-3</sub>	DC Current Gain	I <sub>C</sub> = 1.5 A ; V <sub>CE</sub> = 1V	11			
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		14		MHz
C <sub>OB</sub>	Output Capacitance	I <sub>E</sub> = 0; V <sub>CB</sub> = 10V; f <sub>test</sub> =1.0MHz		75		pF

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

t <sub>on</sub>	Turn-on Time	V <sub>CC</sub> = 300V , I <sub>C</sub> = 3A I <sub>B1</sub> = 0.6A; I <sub>B2</sub> = 1.5A		90	180	ns
t <sub>off</sub>	Turn-off Time			1.7	2.5	μ s
t <sub>on</sub>	Turn-on Time	V <sub>CC</sub> = 300V , I <sub>C</sub> = 1.3A I <sub>B1</sub> = 0.13A; I <sub>B2</sub> = 0.65A		0.2	0.3	μ s
t <sub>off</sub>	Turn-off Time			1.2	2.5	μ s