

**isc Silicon NPN Power Transistor**
**MJE13005**
**DESCRIPTION**

- Collector–Emitter Sustaining Voltage  
:  $V_{CEO(SUS)} = 400V(\text{Min.})$
- Collector Saturation Voltage  
:  $V_{CE(sat)} = 0.6(\text{Max}) @ I_C = 2.0A$
- Minimum Lot-to-Lot variations for robust device performance and reliable operation

**APPLICATIONS**

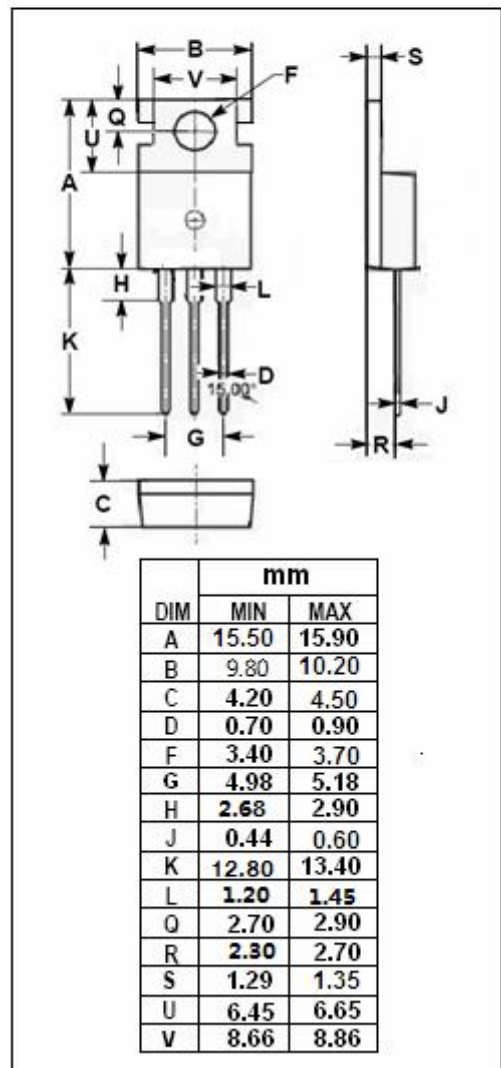
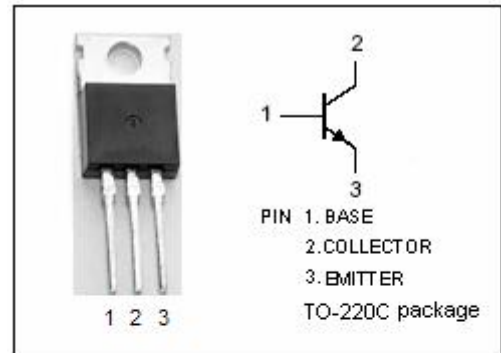
- Designed for use in high-voltage, high-speed, power switching in inductive circuit, they are particularly suited for 115 and 220V switchmode applications such as switching regulators, inverters, Motor controls, Solenoid/Relay drivers and deflection circuits.

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

SYMBOL	PARAMETER	VALUE	UNIT
$V_{CEV}$	Collector-Emitter Voltage	700	V
$V_{CEO}$	Collector-Emitter Voltage	400	V
$V_{EBO}$	Emitter-Base Voltage	9	V
$I_C$	Collector Current-Continuous	4	A
$I_{CM}$	Collector Current-peak	8	A
$P_C$	Collector Power Dissipation $T_a=25^\circ\text{C}$	2	W
	Collector Power Dissipation $T_c=25^\circ\text{C}$	75	
$T_j$	Junction Temperature	150	$^\circ\text{C}$
$T_{stg}$	Storage Temperature Range	-65~150	$^\circ\text{C}$

**THERMAL CHARACTERISTICS**

SYMBOL	PARAMETER	MAX	UNIT
$R_{th\ j-c}$	Thermal Resistance, Junction to Case	1.67	$^\circ\text{C/W}$
$R_{th\ j-a}$	Thermal Resistance, Junction to Ambient	62.5	$^\circ\text{C/W}$



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**ELECTRICAL CHARACTERISTICS**

 T<sub>c</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> = 10mA; I <sub>B</sub> = 0	400			V
V <sub>CE(sat)-1</sub>	Collector-Emitter Saturation Voltage	I <sub>C</sub> = 1A ;I <sub>B</sub> = 0.2A			0.5	V
V <sub>CE(sat)-2</sub>	Collector-Emitter Saturation Voltage	I <sub>C</sub> = 2A ;I <sub>B</sub> = 0.5 A			0.6	V
V <sub>CE(sat)-3</sub>	Collector-Emitter Saturation Voltage	I <sub>C</sub> = 4A ;I <sub>B</sub> = 1A			1.0	V
V <sub>BE(sat)-1</sub>	Base-Emitter Saturation Voltage	I <sub>C</sub> = 1A ;I <sub>B</sub> = 0.2A			1.2	V
V <sub>BE(sat)-2</sub>	Base-Emitter Saturation Voltage	I <sub>C</sub> = 2A ;I <sub>B</sub> = 0.5 A			1.6	V
I <sub>CEV</sub>	Collector Cutoff Current	V <sub>CEV</sub> = 700V; V <sub>BE(off)</sub> = 1.5V T <sub>C</sub> = 100°C			1 5	mA
I <sub>EBO</sub>	Emitter Cutoff Current	V <sub>EB</sub> = 9V; I <sub>C</sub> = 0			1	mA
h <sub>FE-1</sub>	DC Current Gain	I <sub>C</sub> = 1A; V <sub>CE</sub> = 5V	10		60	
h <sub>FE-2</sub>	DC Current Gain	I <sub>C</sub> = 2A; V <sub>CE</sub> = 5V	8		40	
f <sub>T</sub>	Current-Gain—Bandwidth Product	I <sub>C</sub> = 0.5 A; V <sub>CE</sub> = 10V;	4			MHz
C <sub>OB</sub>	Output Capacitance	I <sub>E</sub> = 0; V <sub>CB</sub> = 10V; f <sub>test</sub> = 0.1MHz		65		pF

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