

## SILICON POWER TRANSISTORS

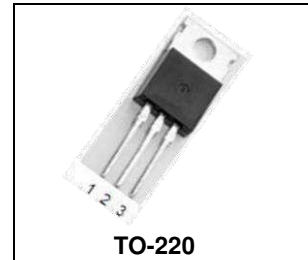
Designed for use in high-voltage, high-speed, power switching in inductive circuit, they are particularly suited for 115 and 220V switchmode applications such as switching regulators, inverters, Motor controls, Solenoid/Relay drivers and deflection circuits.

### DESCRIPTION :

- Collector–Emitter Sustaining Voltage  
V<sub>CEO(sus)</sub> = 400V(Min.)
- Collector Saturation Voltage  
V<sub>CE(sat)</sub> = 0.6(Max) @ I<sub>C</sub>= 2.0A
- Minimum Lot-to-Lot variations for robust device performance and reliable operation

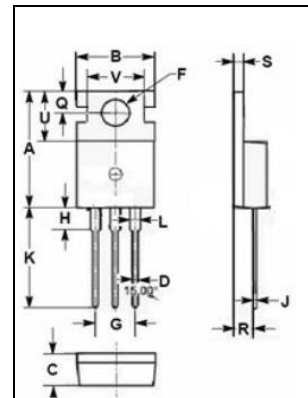
**NPN**  
**MJE13005**

**4 AMPERES**  
**SILICON**  
**POWER TRANSISTOR**  
**400 VOLTS**  
**75 WATTS**



### MAXIMUM RATINGS

Characteristic	Symbol	MJE13005	Unit
Collector-Emitter Voltage	V <sub>CEV</sub>	700	V
Collector-Emitter Voltage	V <sub>CEO</sub>	400	V
Emitter-Base Voltage	V <sub>EBO</sub>	9.0	V
Collector Current-Continuous	I <sub>C</sub>	4	A
Collector Current-Peak	I <sub>CM</sub>	8	A
Collector Power Dissipation @T <sub>a</sub> =25°C	P <sub>C</sub>	2	Watts
Collector Power Dissipation @T <sub>C</sub> =25°C	P <sub>C</sub>	75	Watts
Junction Temperature	T <sub>J</sub>	150	°C
Storage Temperature	T <sub>STG</sub>	-65 to +150	°C



PIN 1.BASE.  
2.COLLECTOR  
3.EMITTER

DIM	MILLIMETERS	
	MIN	MAX
A	15.50	15.90
B	9.80	10.20
C	4.20	4.50
D	0.70	0.90
F	3.40	3.70
G	4.98	5.18
H	2.68	2.90
J	0.44	0.60
K	12.80	13.40
L	1.20	1.45
Q	2.70	2.90
R	2.30	2.70
S	1.29	1.35
U	6.45	6.65
V	8.66	8.86

### THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	R <sub>th j-c</sub>	1.67	°C/W
Thermal Resistance, Junction to Ambient	R <sub>th j-a</sub>	62.5	°C/W

**ELECTRICAL CHARACTERISTICS ( $T_C=25^{\circ}\text{C}$  unless otherwise noted)**

Characteristic	Symbol	Min.	Max	Unit
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**OFF CHARACTERISTICS**

Collector-Emitter Sustaining Voltage ( $I_C = 10\text{ mA}$ , $I_B = 0$ )	$V_{CEO(SUS)}$	400		V
Collector Cutoff Current ( $V_{CEV} = 700\text{ V}$ , $V_{BE(off)} = 1.5\text{ V}$ )	$I_{CEV}$		1.0	mA
Emitter Cutoff Current ( $V_{EB} = 9.0\text{ V}$ , $I_C = 0$ )	$I_{EBO}$		1.0	mA

**ON CHARACTERISTICS**

DC Current Gain ( $I_C = 1\text{ A}$ , $V_{CE} = 5.0\text{ V}$ ) ( $I_C = 2\text{ A}$ , $V_{CE} = 5.0\text{ V}$ )	$h_{FE}$	10 8	60 40	
Collector-Emitter Saturation Voltage ( $I_C = 1.0\text{ A}$ , $I_B = 0.2\text{ A}$ ) ( $I_C = 2.0\text{ A}$ , $I_B = 0.5\text{ A}$ ) ( $I_C = 4.0\text{ A}$ , $I_B = 1.0\text{ A}$ )	$V_{CE(sat)}$		0.5 0.6 1.0	V
Base-Emitter Saturation Voltage ( $I_C = 1\text{ A}$ , $I_B = 0.2\text{ A}$ ) ( $I_C = 2\text{ A}$ , $I_B = 0.5\text{ A}$ )	$V_{BE(sat)}$		1.2 1.6	V

**DYNAMIC CHARACTERISTICS**

Current gain-Bandwidth product ( $I_C=0.5\text{ A}$ , $V_{CE}=10\text{ V}$ )	$f_T$	4		MHz
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