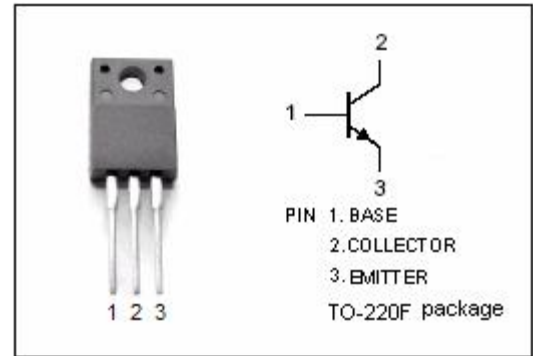


isc Silicon NPN Power Transistor
MJE13009F
DESCRIPTION

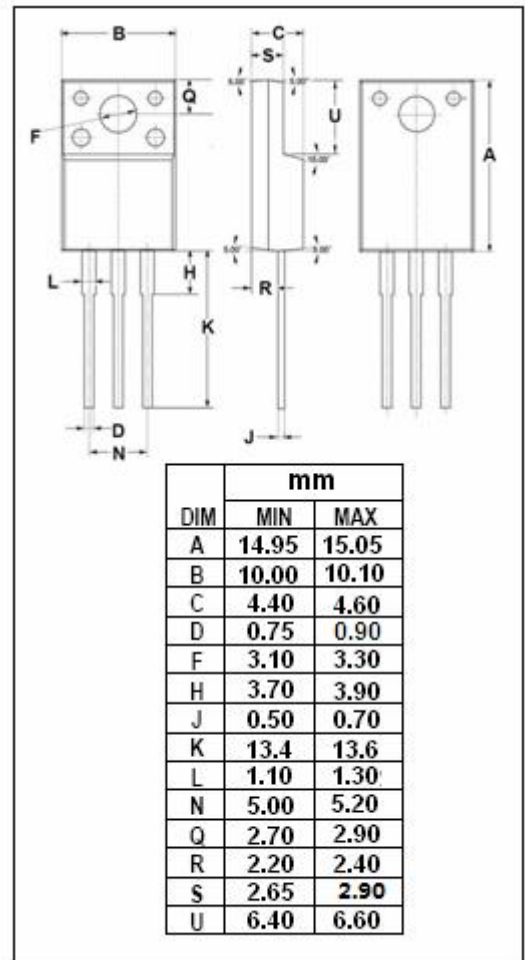
- Collector–Emitter Sustaining Voltage
: $V_{CEO(SUS)} = 400V(\text{Min.})$
- Collector Saturation Voltage
: $V_{CE(sat)} = 1.5 (\text{Max}) @ I_C = 8.0A$
- Minimum Lot-to-Lot variations for robust device performance and reliable operation

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_{CBO} | Collector- Base Voltage | 700 | V |
| V_{CEO} | Collector-Emitter Voltage | 400 | V |
| V_{EBO} | Emitter-Base Voltage | 9 | V |
| I_C | Collector Current-Continuous | 12 | A |
| I_{CM} | Collector Current-peak | 24 | A |
| I_B | Base Current | 6 | A |
| I_{BM} | Base Current-Peak | 12 | A |
| P_C | Collector Power Dissipation $T_C=25^\circ\text{C}$ | 50 | W |
| 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 | 2.5 | $^\circ\text{C/W}$ |
| $R_{th\ j-a}$ | Thermal Resistance, Junction to Ambient | 62.5 | $^\circ\text{C/W}$ |

isc Silicon NPN Power Transistor

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ELECTRICAL CHARACTERISTICS

 $T_C = 25^\circ\text{C}$ unless otherwise specified

| SYMBOL | PARAMETER | CONDITIONS | MIN | TYP. | MAX | UNIT |
|-----------------|--------------------------------------|--|-----|------|--------|------|
| $V_{CEO(SUS)}$ | Collector-Emitter Sustaining Voltage | $I_C = 10\text{mA}; I_B = 0$ | 400 | | | V |
| $V_{CE(sat)-1}$ | Collector-Emitter Saturation Voltage | $I_C = 5\text{A}; I_B = 1\text{A}$ | | | 1.0 | V |
| $V_{CE(sat)-2}$ | Collector-Emitter Saturation Voltage | $I_C = 8\text{A}; I_B = 1.6\text{A}$ | | | 1.5 | V |
| $V_{CE(sat)-3}$ | Collector-Emitter Saturation Voltage | $I_C = 12\text{A}; I_B = 3\text{A}$ | | | 3.0 | V |
| $V_{BE(sat)-1}$ | Base-Emitter Saturation Voltage | $I_C = 5\text{A}; I_B = 1\text{A}$ | | | 1.2 | V |
| $V_{BE(sat)-2}$ | Base-Emitter Saturation Voltage | $I_C = 8\text{A}; I_B = 1.6\text{A}$ | | | 1.6 | V |
| I_{CBO} | Collector Cutoff Current | $V_{CB} = 700\text{V}; I_E = 0$ $T_C = 100^\circ\text{C}$ | | | 1 5 | mA |
| I_{EBO} | Emitter Cutoff Current | $V_{EB} = 9\text{V}; I_C = 0$ | | | 1 | mA |
| h_{FE-1} | DC Current Gain | $I_C = 5\text{A}; V_{CE} = 5\text{V}$ | 8 | | 40 | |
| h_{FE-2} | DC Current Gain | $I_C = 8\text{A}; V_{CE} = 5\text{V}$ | 6 | | 30 | |

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