

**isc Silicon NPN Power Transistor**

**KSC5039**

**DESCRIPTION**

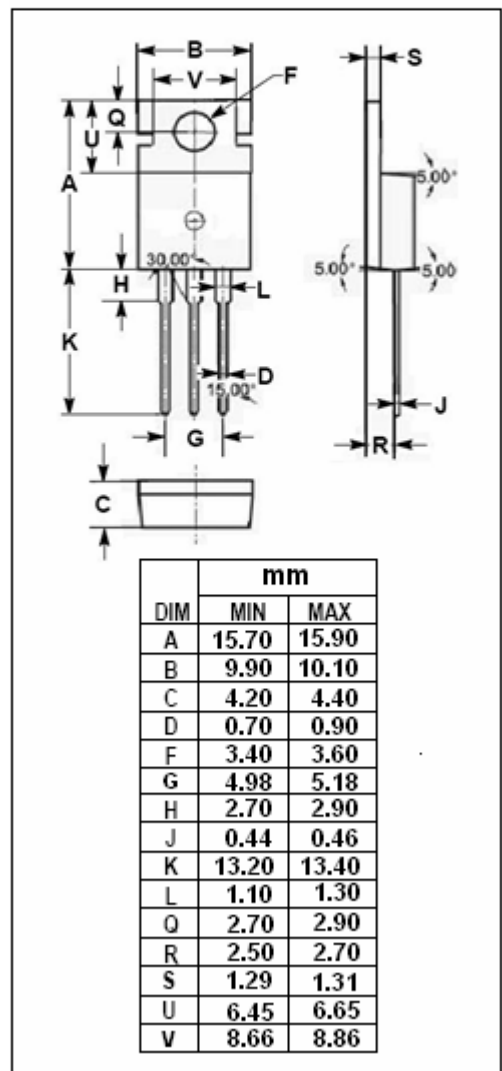
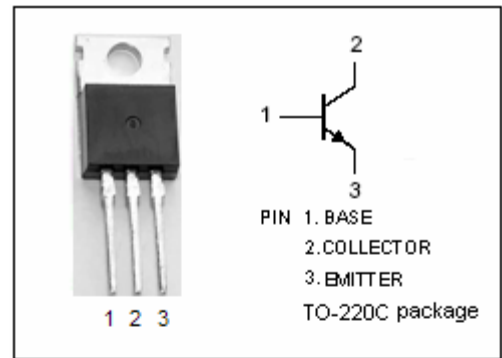
- Collector-Emitter Breakdown Voltage-  
:  $V_{(BR)CEO} = 400V(\text{Min})$
- High Switching Speed
- Wide Area of Safe Operation

**APPLICATIONS**

- Designed for switching regulator and general purpose applications.

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

| SYMBOL    | PARAMETER   | VALUE   | UNIT             |
|-----------|---|---------|------------------|
| $V_{CBO}$ | Collector-Base Voltage                                  | 800     | V                |
| $V_{CEO}$ | Collector-Emitter Voltage                               | 400     | V                |
| $V_{EBO}$ | Emitter-Base Voltage                                    | 7       | V                |
| $I_C$     | Collector Current-Continuous                            | 5       | A                |
| $I_{CM}$  | Collector Current-Peak                                  | 10      | A                |
| $I_B$     | Base Current-Continuous                                 | 3       | A                |
| $P_C$     | Collector Power Dissipation<br>@ $T_C=25^\circ\text{C}$ | 70      | W                |
| $T_J$     | Junction Temperature                                    | 150     | $^\circ\text{C}$ |
| $T_{stg}$ | Storage Temperature Range                               | -65~150 | $^\circ\text{C}$ |



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## ELECTRICAL CHARACTERISTICS

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

| SYMBOL        | PARAMETER                            | CONDITIONS  | MIN | TYP. | MAX | UNIT          |
|---------------|--------------------------------------|---|-----|------|-----|---------------|
| $V_{(BR)CBO}$ | Collector-Base Breakdown Voltage     | $I_C=1\text{mA}; I_E=0$                                 | 800 |      |     | V             |
| $V_{(BR)CEO}$ | Collector-Emitter Breakdown Voltage  | $I_C=5\text{mA}; I_B=0$                                 | 400 |      |     | V             |
| $V_{(BR)EBO}$ | Emitter-Base Breakdown Voltage       | $I_E=1\text{mA}; I_C=0$                                 | 7   |      |     | V             |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage | $I_C=2.5\text{A}; I_B=0.5\text{A}$                      |     |      | 1.5 | V             |
| $V_{BE(sat)}$ | Base-Emitter Saturation Voltage      | $I_C=2.5\text{A}; I_B=0.5\text{A}$                      |     |      | 2.0 | V             |
| $I_{CBO}$     | Collector Cutoff Current             | $V_{CB}=500\text{V}; I_E=0$                             |     |      | 10  | $\mu\text{A}$ |
| $I_{EBO}$     | Emitter Cutoff Current               | $V_{EB}=7\text{V}; I_C=0$                               |     |      | 10  | $\mu\text{A}$ |
| $h_{FE}$      | DC Current Gain                      | $I_C=0.3\text{A}; V_{CE}=5\text{V}$                     | 10  |      |     |               |
| $C_{OB}$      | Output Capacitance                   | $I_E=0; V_{CB}=10\text{V}; f_{\text{test}}=1\text{MHz}$ |     | 40   |     | pF            |
| $f_T$         | Current-Gain—Bandwidth Product       | $I_C=0.1\text{A}; V_{CE}=5\text{V}$                     |     | 10   |     | MHz           |

## Switching Times; Resistive Load

|          |              |   |  |  |     |               |
|----------|--------------|---|--|--|-----|---------------|
| $t_{on}$ | Turn-On Time | $I_C=2.5\text{A}; I_{B1}=-I_{B2}=0.5\text{A}; V_{CC}=150\text{V}$ |  |  | 1.0 | $\mu\text{s}$ |
| $t_s$    | Storage Time |   |  |  | 3.0 | $\mu\text{s}$ |
| $t_f$    | Fall Time    |   |  |  | 0.8 | $\mu\text{s}$ |