

isc Silicon NPN Power Transistor

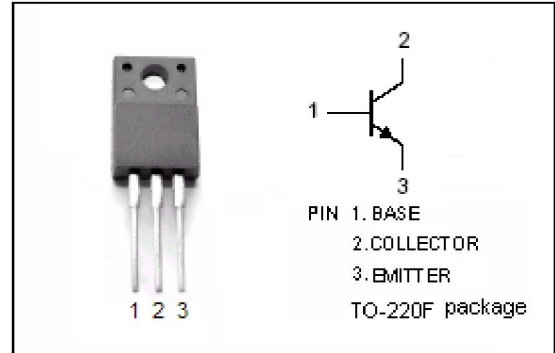
2SC4977

DESCRIPTION

- Collector-Emitter Sustaining Voltage-
: $V_{CEO(SUS)} = 400V(\text{Min})$
- Fast Switching Speed
- Collector-Emitter Saturation Voltage-
: $V_{CE(sat)} = 0.8V(\text{Max.}) @ I_C = 4.0A$

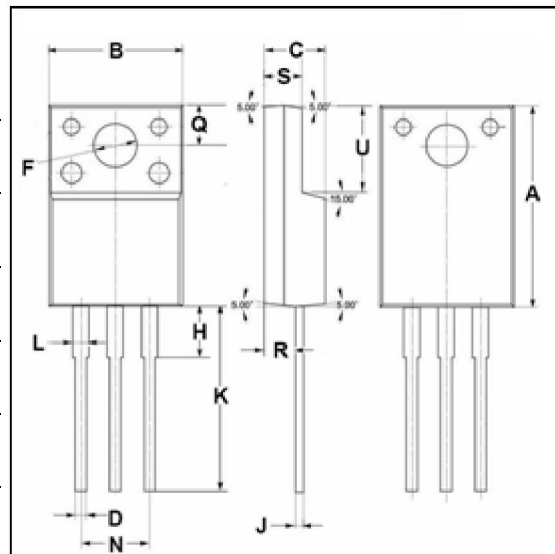
APPLICATIONS

- 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 regulator's, inverters, DC-DC converter.



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

| SYMBOL | PARAMETER | VALUE | UNIT |
|-----------|--|---------|-------------|
| V_{CBO} | Collector-Base Voltage | 450 | V |
| V_{CEO} | Collector-Emitter Voltage | 400 | V |
| V_{EBO} | Emitter-Base Voltage | 8 | V |
| I_C | Collector Current-Continuous | 7 | A |
| I_{CM} | Collector Current-Peak | 14 | A |
| I_B | Base Current-Continuous | 2 | A |
| P_C | Collector Power Dissipation @ $T_C=25^{\circ}C$ | 40 | W |
| T_J | Junction Temperature | 150 | $^{\circ}C$ |
| T_{stg} | Storage Temperature Range | -55~150 | $^{\circ}C$ |



| DIM | mm | |
|-----|-------|-------|
| | MIN | MAX |
| A | 14.95 | 15.05 |
| B | 10.00 | 10.10 |
| C | 4.40 | 4.60 |
| D | 0.75 | 0.80 |
| F | 3.10 | 3.30 |
| H | 3.70 | 3.90 |
| J | 0.50 | 0.70 |
| K | 13.4 | 13.6 |
| L | 1.10 | 1.30 |
| N | 5.00 | 5.20 |
| Q | 2.70 | 2.90 |
| R | 2.20 | 2.40 |
| S | 2.65 | 2.85 |
| U | 6.40 | 6.60 |

THERMAL CHARACTERISTICS

| SYMBOL | PARAMETER | MAX | UNIT |
|---------------|--------------------------------------|-------|---------------|
| $R_{th\ j-c}$ | Thermal Resistance, Junction to Case | 3.125 | $^{\circ}C/W$ |

isc Silicon NPN Power Transistor**2SC4977****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 | $I_C=0.1\text{A}; I_B=0$ | 400 | | | V |
| $V_{(BR)CBO}$ | Collector-Base Breakdown Voltage | $I_C=1\text{mA}; I_E=0$ | 450 | | | V |
| $V_{(BR)EBO}$ | Emitter-Base Breakdown Voltage | $I_E=1\text{mA}; I_C=0$ | 8 | | | V |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage | $I_C=4\text{A}; I_B=0.8\text{A}$ | | | 0.8 | V |
| $V_{BE(sat)}$ | Base-Emitter Saturation Voltage | $I_C=4\text{A}; I_B=0.8\text{A}$ | | | 1.2 | V |
| I_{CBO} | Collector Cutoff Current | $V_{CB}=450\text{V}; I_E=0$ | | | 100 | μA |
| I_{EBO} | Emitter Cutoff Current | $V_{EB}=8\text{V}; I_C=0$ | | | 100 | μA |
| h_{FE} | DC Current Gain | $I_C=4\text{A}; V_{CE}=5\text{V}$ | 10 | | | |

Switching times

| | | | | | | |
|-----------|--------------|---|--|--|-----|---------------|
| t_{on} | Turn-on Time | $I_C=5\text{A}, I_{B1}=-I_{B2}=1\text{A}$ $R_L=30\Omega; V_{CC}=150\text{V}$ | | | 1.0 | μs |
| t_{stg} | Storage Time | | | | 2.5 | μs |
| t_f | Fall Time | | | | 0.5 | μs |