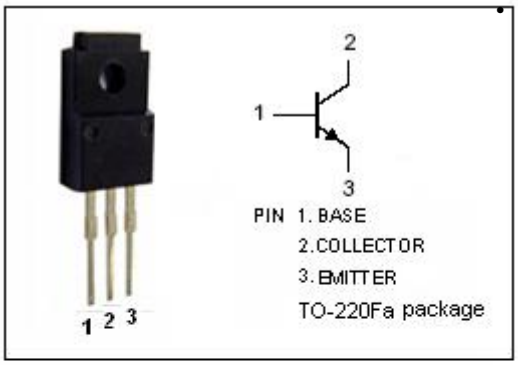
# isc Silicon NPN Power Transistor — 2SC4559

## DESCRIPTION

- Collector-Base Breakdown Voltage-
  : $V_{(BR)CBO}$= 500V(Min.)
- High Speed Switching
- 100% avalanche tested
- Minimum Lot-to-Lot variations for robust device performance and reliable operation

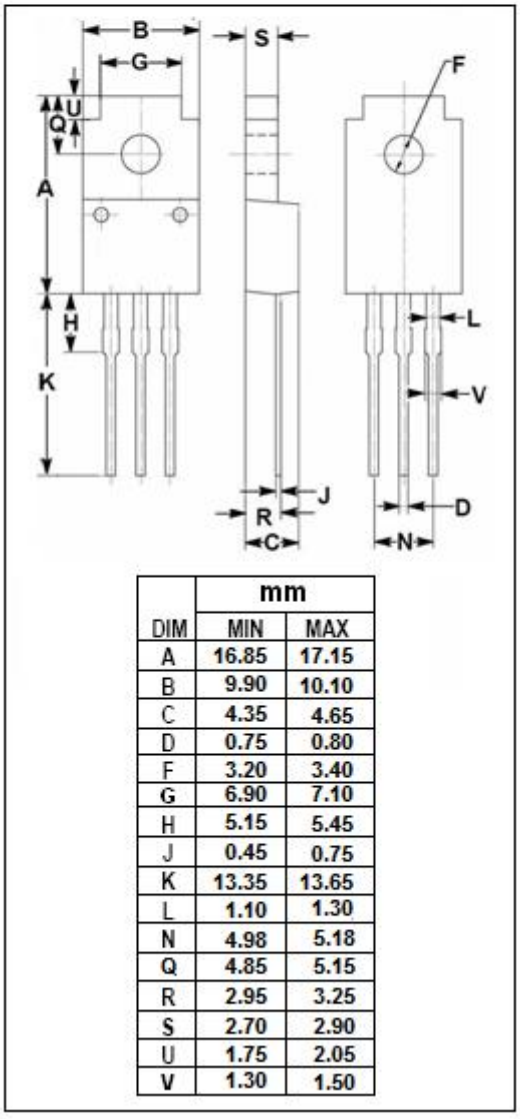



## APPLICATIONS

- Designed for high speed switching applications.

## ABSOLUTE MAXIMUM RATINGS ($T_a$=25℃)

| SYMBOL | PARAMETER | VALUE | UNIT |
|---|---|---|---|
| $V_{CBO}$ | Collector-Base Voltage | 500 | V |
| $V_{CES}$ | Collector-Emitter Voltage | 500 | V |
| $V_{CEO}$ | Collector-Emitter Voltage | 400 | V |
| $V_{EBO}$ | Emitter-Base Voltage | 7 | V |
| $I_C$ | Collector Current-Continuous | 7 | A |
| $I_{CM}$ | Collector Current-Peak | 15 | A |
| $I_B$ | Base Current-Continuous | 3 | A |
| $P_C$ | Collector Power Dissipation @$T_a$=25℃ | 2 | W |
| | Collector Power Dissipation @$T_C$=25℃ | 40 | |
| $T_j$ | Junction Temperature | 150 | ℃ |
| $T_{stg}$ | Storage Temperature Range | -55~150 | ℃ |




| DIM | mm MIN | mm MAX |
|---|---|---|
| A | 16.85 | 17.15 |
| B | 9.90 | 10.10 |
| C | 4.35 | 4.65 |
| D | 0.75 | 0.80 |
| F | 3.20 | 3.40 |
| G | 6.90 | 7.10 |
| H | 5.15 | 5.45 |
| J | 0.45 | 0.75 |
| K | 13.35 | 13.65 |
| L | 1.10 | 1.30 |
| N | 4.98 | 5.18 |
| Q | 4.85 | 5.15 |
| R | 2.95 | 3.25 |
| S | 2.70 | 2.90 |
| U | 1.75 | 2.05 |
| V | 1.30 | 1.50 |

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## ELECTRICAL CHARACTERISTICS

**$T_C$=25℃ unless otherwise specified**

| SYMBOL | PARAMETER | CONDITIONS | MIN | TYP. | MAX | UNIT |
|---|---|---|---|---|---|---|
| $V_{(BR)CEO}$ | Collector-Emitter Breakdown Voltage | $I_C$= 10mA; $I_B$= 0 | 400 | | | V |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage | $I_C$= 3A; $I_B$= 0.6A | | | 1.0 | V |
| $V_{BE(sat)}$ | Base-Emitter Saturation Voltage | $I_C$= 3A; $I_B$= 0.6A | | | 1.5 | V |
| $I_{CBO}$ | Collector Cutoff Current | $V_{CB}$= 500V; $I_E$= 0 | | | 100 | μA |
| $I_{EBO}$ | Emitter Cutoff Current | $V_{EB}$= 5V; $I_C$= 0 | | | 100 | μA |
| $h_{FE-1}$ | DC Current Gain | $I_C$= 0.1A; $V_{CE}$= 5V | 10 | | | |
| $h_{FE-2}$ | DC Current Gain | $I_C$= 3A; $V_{CE}$= 5V | 8 | | | |
| $f_T$ | Current-Gain—Bandwidth Product | $I_C$= 0.5A; $V_{CE}$= 10V; f= 1MHz | | 5.5 | | MHz |
| Switching Times | | | | | | |
| $t_{on}$ | Turn-on Time | $I_C$= 3A; $I_{B1}$= 0.6A; $I_{B2}$= -1.2A; $V_{CC}$= 150V | | | 1.0 | μs |
| $t_s$ | Storage Time | | | | 3.0 | μs |
| $t_f$ | Fall Time | | | | 0.3 | μs |