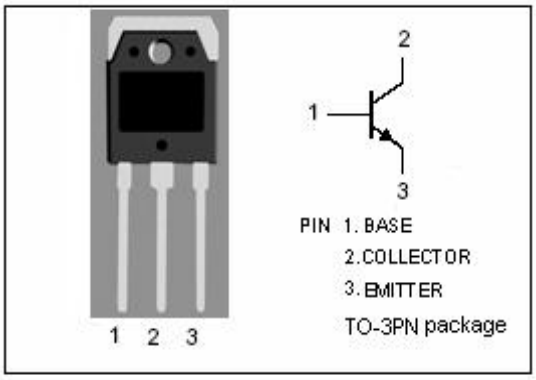
# isc Silicon NPN Power Transistor — 2SC3831

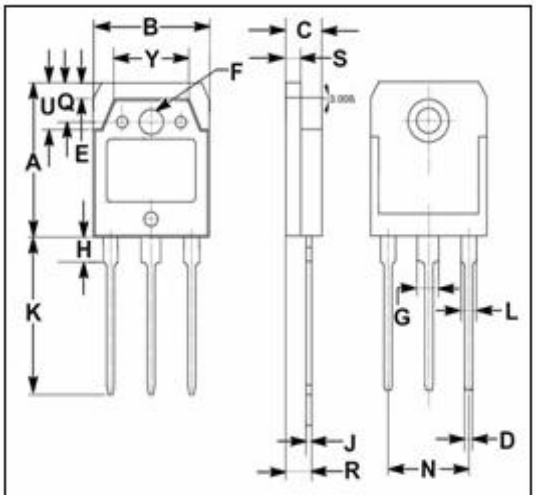



## DESCRIPTION

- Low Collector Saturation Voltage
  : $V_{CE(sat)}$= 0.5V(Max)@ $I_C$= 5A
- Collector-Emitter Breakdown Voltage-
  : $V_{(BR)CEO}$= 500V (Min)
- High Switching Speed
- Minimum Lot-to-Lot variations for robust device performance and reliable operation

## APPLICATIONS

- Designed for switching regulator and general purpose applications.




| DIM | mm MIN | MAX |
|---|---|---|
| A | 19.60 | 20.10 |
| B | 15.50 | 15.70 |
| C | 4.70 | 4.90 |
| D | 0.90 | 1.10 |
| E | 1.90 | 2.10 |
| F | 3.40 | 3.60 |
| G | 2.90 | 3.20 |
| H | 3.20 | 3.40 |
| J | 0.595 | 0.605 |
| K | 20.00 | 20.70 |
| L | 1.90 | 2.20 |
| N | 10.89 | 10.91 |
| Q | 4.90 | 5.10 |
| R | 3.35 | 3.45 |
| S | 1.995 | 2.100 |
| U | 5.90 | 6.10 |
| Y | 9.90 | 10.10 |

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

| SYMBOL | PARAMETER | VALUE | UNIT |
|---|---|---|---|
| $V_{CBO}$ | Collector-Base Voltage | 600 | V |
| $V_{CEO}$ | Collector-Emitter Voltage | 500 | V |
| $V_{EBO}$ | Emitter-Base Voltage | 10 | V |
| $I_C$ | Collector Current-Continuous | 10 | A |
| $I_{CM}$ | Collector Current-Pulse | 20 | A |
| $I_B$ | Base Current-Continuous | 4 | A |
| $P_C$ | Collector Power Dissipation @ $T_C$=25℃ | 100 | W |
| $T_J$ | Junction Temperature | 150 | ℃ |
| $T_{stg}$ | Storage Temperature Range | -55~150 | ℃ |

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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 | $I_C$= 25mA; $I_B$= 0 | 500 | | | V |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage | $I_C$= 5A; $I_B$= 1A | | | 0.5 | V |
| $V_{BE(sat)}$ | Base-Emitter Saturation Voltage | $I_C$= 5A; $I_B$= 1A | | | 1.3 | V |
| $I_{CBO}$ | Collector Cutoff Current | $V_{CB}$= 600V; $I_E$= 0 | | | 1 | mA |
| $I_{EBO}$ | Emitter Cutoff Current | $V_{EB}$= 10V; $I_C$= 0 | | | 100 | μA |
| $h_{FE}$ | DC Current Gain | $I_C$= 5A; $V_{CE}$= 4V | 10 | | 30 | |
| $f_T$ | Current-Gain—Bandwidth Product | $I_E$= -1A; $V_{CE}$= 12V | | 8 | | MHz |
| $C_{OB}$ | Output Capacitance | $I_E$= 0; $V_{CB}$= 10V; $f_{test}$= 1.0MHz | | 105 | | pF |
| Switching times | | | | | | |
| $t_{on}$ | Turn-on Time | $I_C$= 5A ;$I_{B1}$=0.5A; $I_{B2}$= -1A; $R_L$= 40Ω ; $V_{CC}$= 200V | | | 1.0 | μs |
| $t_{stg}$ | Storage Time | | | | 4.5 | μs |
| $t_f$ | Fall Time | | | | 0.5 | μs |

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