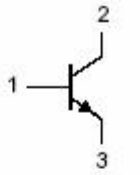
# isc Silicon NPN Power Transistor — BUL416T

## DESCRIPTION

- Collector–Emitter Sustaining Voltage
  : $V_{CEO(SUS)}$ = 800V(Min.)
- Low Collector Saturation Voltage
  : $V_{CE(sat)}$ = 1.5V(Max) @ $I_C$= 2A
- Very High Switching Speed
- Minimum Lot-to-Lot variations for robust device performance and reliable operation


PIN 1. BASE
2.COLLECTOR
3. EMITTER
TO-220C package

## APPLICATIONS

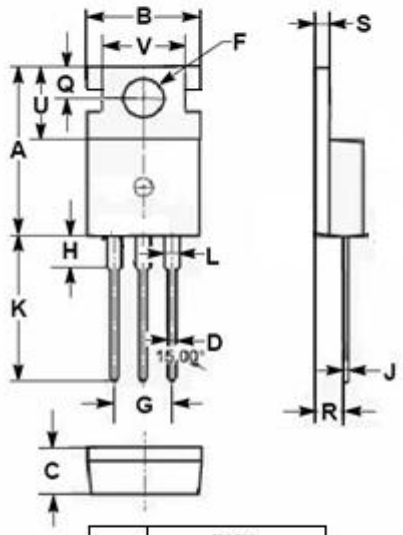
- Designed for use in lighting applications and low cost switch-mode power supplies.

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

| SYMBOL | PARAMETER | VALUE | UNIT |
|---|---|---|---|
| $V_{CES}$ | Collector-Emitter Voltage | 1600 | V |
| $V_{CEO}$ | Collector-Emitter Voltage | 800 | V |
| $V_{EBO}$ | Emitter-Base Voltage | 9 | V |
| $I_C$ | Collector Current-Continuous | 6 | A |
| $I_{CM}$ | Collector Current-peak $t_p$<5ms | 9 | A |
| $I_B$ | Base Current-Continuous | 5 | A |
| $I_{BM}$ | Base Current-peak $t_p$<5ms | 8 | A |
| $P_C$ | Collector Power Dissipation $T_C$=25℃ | 110 | W |
| $T_j$ | Junction Temperature | 150 | ℃ |
| $T_{stg}$ | Storage Temperature Range | -65~150 | ℃ |

## THERMAL CHARACTERISTICS

| SYMBOL | PARAMETER | MAX | UNIT |
|---|---|---|---|
| $R_{th\ j\text{-}c}$ | Thermal Resistance,Junction to Case | 1.14 | ℃/W |
| $R_{th\ j\text{-}A}$ | Thermal Resistance,Junction to Ambient | 62.5 | ℃/W |




| DIM | mm MIN | mm MAX |
|---|---|---|
| A | 15.50 | 15.90 |
| B | 9.80 | 10.20 |
| C | 4.20 | 4.50 |
| D | 0.70 | 0.90 |
| F | 3.40 | 3.70 |
| G | 4.98 | 5.18 |
| H | 2.68 | 2.90 |
| J | 0.44 | 0.60 |
| K | 12.80 | 13.40 |
| L | 1.20 | 1.45 |
| Q | 2.70 | 2.90 |
| R | 2.30 | 2.70 |
| S | 1.29 | 1.35 |
| U | 6.45 | 6.65 |
| V | 8.66 | 8.86 |

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## ELECTRICAL CHARACTERISTICS

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

| SYMBOL | PARAMETER | CONDITIONS | MIN | TYP. | MAX | UNIT |
|---|---|---|---|---|---|---|
| $V_{CEO(SUS)}$ | Collector-Emitter Sustaining Voltage | $I_C$= 100mA; Ib=0 | 800 | | | V |
| $V_{(BR)EBO}$ | Emitter-Base Breakdown Voltage | $I_E$= 10mA; $I_C$= 0 | 9 | | | V |
| $V_{CE(sat)-1}$ | Collector-Emitter Saturation Voltage | $I_C$= 2A; $I_B$= 0.4A | | | 1.2 | V |
| $V_{CE(sat)-2}$ | Collector-Emitter Saturation Voltage | $I_C$= 4A; $I_B$= 1.33A | | | 1.5 | V |
| $V_{BE(sat)-1}$ | Base-Emitter Saturation Voltage | $I_C$= 2A; $I_B$= 0.4A | | | 1.2 | V |
| $V_{BE(sat)-2}$ | Base-Emitter Saturation Voltage | $I_C$= 4A; $I_B$= 1.33A | | | 1.5 | V |
| $I_{CES}$ | Collector Cutoff Current | $V_{CE}$= 1600V; $V_{BE}$= 0<br>$V_{CE}$= 1600V; $V_{BE}$= 0; $T_C$= 125℃ | | | 0.1<br>0.5 | mA |
| $I_{CEO}$ | Collector Cutoff Current | $V_{CE}$= 800V; $I_B$= 0 | | | 0.25 | mA |
| $h_{FE-1}$ | DC Current Gain | $I_C$= 10mA; $V_{CE}$= 5V | 10 | | | |
| $h_{FE-2}$ | DC Current Gain | $I_C$= 0.7A; $V_{CE}$= 5V | 18 | | 32 | |