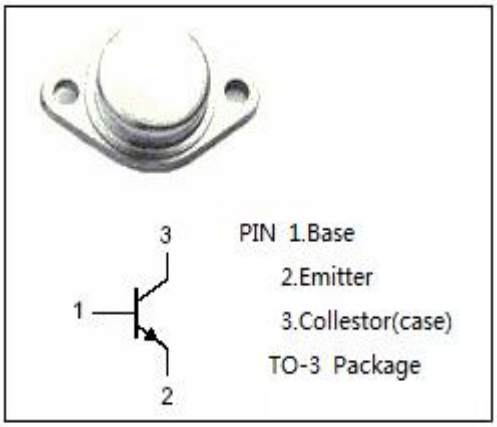
# isc Silicon NPN Power Transistor — BUX41N

## DESCRIPTION

- Collector-Emitter Voltage-
  : $V_{CEO}$= 160V(Min)
- High Current Capability
- Good Linearity of $h_{FE}$
- Minimum Lot-to-Lot variations for robust device performance and reliable operation

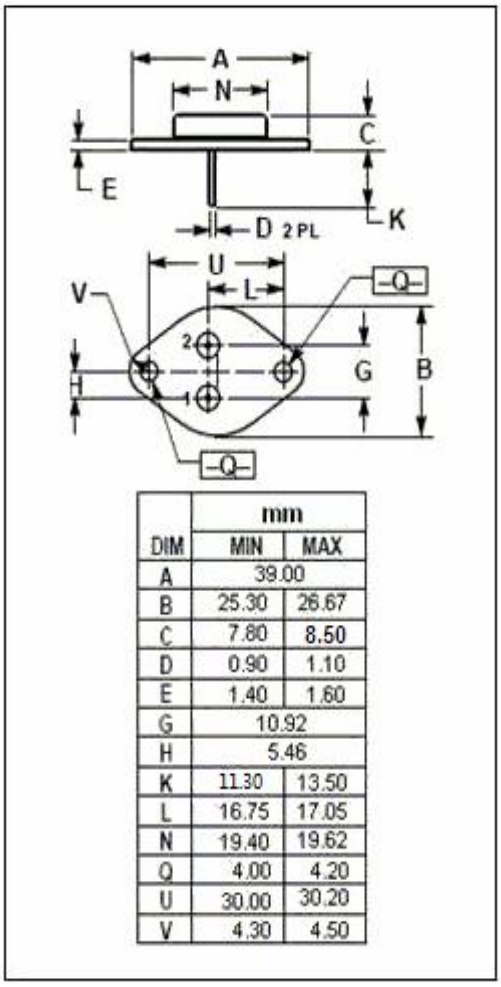



## APPLICATIONS

- Designed for high speed, high current, high power applications.

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

| SYMBOL | PARAMETER | VALUE | UNIT |
|---|---|---|---|
| $V_{CBO}$ | Collector-Base Voltage | 220 | V |
| $V_{CEO}$ | Collector-Emitter Voltage | 160 | V |
| $V_{CEX}$ | Collector-Emitter Voltage $V_{BE}$= -1.5V | 220 | V |
| $V_{CER}$ | Collector-Emitter Voltage $R_{BE}$= 100Ω | 200 | V |
| $V_{EBO}$ | Emitter-Base Voltage | 7 | V |
| $I_C$ | Collector Current-Continuous | 18 | A |
| $I_{CM}$ | Collector Current-Peak | 25 | A |
| $I_B$ | Base Current-Continuous | 3.6 | A |
| $P_C$ | Collector Power Dissipation @$T_C$=100℃ | 120 | W |
| $T_J$ | Junction Temperature | 200 | ℃ |
| $T_{stg}$ | Storage Temperature | -65~200 | ℃ |




| DIM | mm MIN | MAX |
|---|---|---|
| A | 39.00 | |
| B | 25.30 | 26.67 |
| C | 7.80 | 8.50 |
| D | 0.90 | 1.10 |
| E | 1.40 | 1.60 |
| G | 10.92 | |
| H | 5.46 | |
| K | 11.30 | 13.50 |
| L | 16.75 | 17.05 |
| N | 19.40 | 19.62 |
| Q | 4.00 | 4.20 |
| U | 30.00 | 30.20 |
| V | 4.30 | 4.50 |

## THERMAL CHARACTERISTICS

| SYMBOL | PARAMETER | MAX | UNIT |
|---|---|---|---|
| $R_{th\ j\text{-}c}$ | Thermal Resistance,Junction to Case | 1.46 | ℃/W |

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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 | $I_C$= 50mA ; $I_B$= 0 | 160 | | | V |
| $V_{(BR)EBO}$ | Emitter-Base Breakdown Voltage | $I_E$=50mA; $I_C$= 0 | 7 | | | V |
| $V_{CE(sat)-1}$ | Collector-Emitter Saturation Voltage | $I_C$=8A; $I_B$=0.8A | | | 1.2 | V |
| $V_{CE(sat)-2}$ | Collector-Emitter Saturation Voltage | $I_C$=12A; $I_B$=1.5A | | | 1.6 | V |
| $V_{BE(sat)}$ | Base-Emitter Saturation Voltage | $I_C$=12A; $I_B$=1.5A | | | 2.0 | V |
| $I_{CEO}$ | Collector Cutoff Current | $V_{CE}$=130V; $I_B$= 0 | | | 1.0 | mA |
| $I_{CBO}$ | Collector Cutoff Current | $V_{CB}$= 220V; $I_E$= 0<br>$V_{CB}$= 220V; $I_E$= 0; $T_C$= 125℃ | | | 1.0<br>5.0 | mA |
| $I_{EBO}$ | Emitter Cutoff Current | $V_{EB}$= 5V; $I_C$=0 | | | 1.0 | mA |
| $h_{FE-1}$ | DC Current Gain | $I_C$= 8A ; $V_{CE}$= 4V | 15 | | 45 | |
| $h_{FE-2}$ | DC Current Gain | $I_C$= 12A ; $V_{CE}$= 4V | 8 | | | |
| $f_T$ | Current-Gain—Bandwidth Product | $I_C$= 1A ; $V_{CE}$= 15V; f=10MHz | 8 | | | MHz |
| Switching Times; Resistive Laod | | | | | | |
| $t_{on}$ | Turn-on Time | $I_C$= 12A ;$I_{B1}$= -$I_{B2}$= 1.5A;<br>$V_{CC}$= 30V;<br>$R_B$= 3.9Ω ; $R_C$= 2.5Ω | | | 1.3 | μs |
| $t_s$ | Storage Time | | | | 1.5 | μs |
| $t_f$ | Fall Time | | | | 0.8 | μs |

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