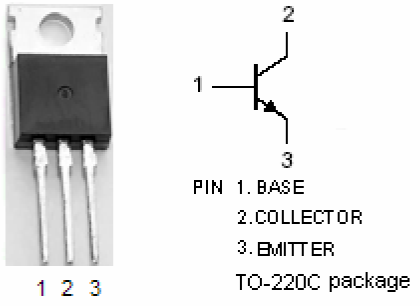
# Silicon NPN Power Transistor BUW41B

## DESCRIPTION

- High Voltage
- High Switching Speed
- Low Collector Saturation Voltage

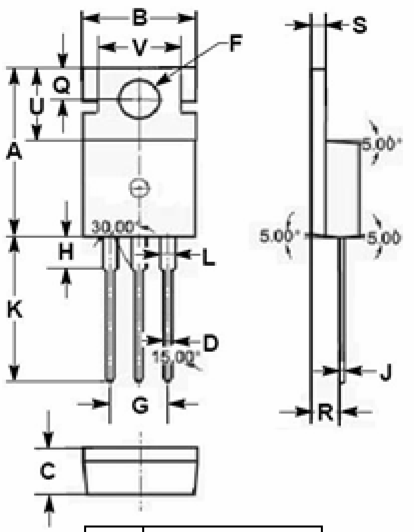
## APPLICATIONS

- Off-line power supplies
- High voltage inverters
- Switching regulators



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

| SYMBOL | PARAMETER | VALUE | UNIT |
|---|---|---|---|
| $V_{CEV}$ | Collector-Emitter Voltage $V_{BE}$= -1.5V | 650 | V |
| $V_{CEX}$ | Collector-Emitter Voltage $V_{BE}$= -1.5V | 450 | V |
| $V_{CER}$ | Collector-Emitter Voltage $R_{BE}$=100Ω | 450 | V |
| $V_{CEO}$ | Collector-Emitter Voltage | 400 | V |
| $V_{EBO}$ | Emitter-Base Voltage | 8 | V |
| $I_C$ | Collector Current-Continuous | 8 | A |
| $I_{CM}$ | Collector Current-Peak | 10 | 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 | -65~150 | ℃ |



| | mm | |
|---|---|---|
| DIM | MIN | MAX |
| A | 15.70 | 15.90 |
| B | 9.90 | 10.10 |
| C | 4.20 | 4.40 |
| D | 0.70 | 0.90 |
| F | 3.40 | 3.60 |
| G | 4.98 | 5.18 |
| H | 2.70 | 2.90 |
| J | 0.44 | 0.46 |
| K | 13.20 | 13.40 |
| L | 1.10 | 1.30 |
| Q | 2.70 | 2.90 |
| R | 2.50 | 2.70 |
| S | 1.29 | 1.31 |
| U | 6.45 | 6.65 |
| V | 8.66 | 8.86 |

## THERMAL CHARACTERISTICS

| SYMBOL | PARAMETER | MAX | UNIT |
|---|---|---|---|
| $R_{th\ j\text{-}c}$ | Thermal Resistance,Junction to Case | 1.25 | ℃/W |
| $R_{th\ j\text{-}a}$ | Thermal Resistance,Junction to Ambient | 70 | ℃/W |

## Silicon NPN Power Transistor BUW41B

### ELECTRICAL CHARACTERISTICS

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

| SYMBOL | PARAMETER | CONDITIONS | MIN | TYP. | MAX | UNIT |
|---|---|---|---|---|---|---|
| $V_{CEO(SUS)}$ | Collector-Emitter Sustaining Voltage | $I_C$= 0.2A; $I_B$= 0 | 400 | | | V |
| $V_{CE(sat)-1}$ | Collector-Emitter Saturation Voltage | $I_C$= 5A; $I_B$= 1A | | | 1.0 | V |
| $V_{CE(sat)-2}$ | Collector-Emitter Saturation Voltage | $I_C$= 8A; $I_B$= 4A | | | 2.0 | V |
| $V_{BE(sat)}$ | Base-Emitter Saturation Voltage | $I_C$= 5A; $I_B$= 1A | | | 1.6 | V |
| $I_{CEV}$ | Collector Cutoff Current | $V_{CE}$= 650V; $V_{BE}$= -1.5V | | | 0.1 | mA |
| $I_{EBO}$ | Emitter Cutoff Current | $V_{EB}$= 8V; $I_C$= 0 | | | 2.0 | mA |
| $h_{FE}$ | DC Current Gain | $I_C$= 5A; $V_{CE}$= 3V | 10 | | 40 | |
| $C_{OB}$ | Output Capacitance | $I_E$= 0; $V_{CB}$= 10V;$f_{test}$= 0.1MHz | 50 | | 300 | pF |
| $f_T$ | Current-Gain—Bandwidth Product | $I_C$= 0.2A; $V_{CE}$= 10V | 15 | | 60 | MHz |
| Switching Times; Resistive Load | | | | | | |
| $t_d$ | Delay Time | $I_C$= 5A; $I_{B1}$= -$I_{B2}$= 1A;<br>$V_{CC}$= 125V;$t_p$= 20 µs | | | 0.1 | µs |
| $t_r$ | Rise Time | | | | 0.5 | µs |
| $t_s$ | Storage Time | | | | 2.5 | µs |
| $t_f$ | Fall Time | | | | 0.4 | µs |