



## BU406

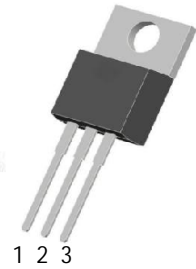
TRANSISTOR (NPN)

### FEATURES

- High Voltage
- Fast Switching Speed:  $t_f = 750$  ns (max)
- Low Saturation Voltage:  $V_{CE(sat)} = 1$  V (max) @ 5 A
- Pb-Free Packages are Available\*

TO-220-3L

1. BASE
2. COLLECTOR
3. EMITTER



### MAXIMUM RATINGS ( $T_a=25^\circ\text{C}$ unless otherwise noted)

| Symbol          | Parameter                                   | Value    | Unit               |
|-----------------|---|----------|--------------------|
| $V_{CBO}$       | Collector-Base Voltage                      | 400      | V                  |
| $V_{CEO}$       | Collector-Emitter Voltage                   | 200      | V                  |
| $V_{EBO}$       | Emitter-Base Voltage                        | 6        | V                  |
| $I_C$           | Collector Current                           | 6        | A                  |
| $P_C$           | Collector Power Dissipation                 | 2        | W                  |
| $R_{\theta JA}$ | Thermal Resistance from Junction to Ambient | 62.5     | $^\circ\text{C/W}$ |
| $T_j$           | Junction Temperature                        | 150      | $^\circ\text{C}$   |
| $T_{stg}$       | Storage Temperature                         | -55~+150 | $^\circ\text{C}$   |

### ELECTRICAL CHARACTERISTICS ( $T_a=25^\circ\text{C}$ unless otherwise specified)

| Parameter                            | Symbol          | Test conditions                                     | Min | Typ | Max | Unit          |
|--------------------------------------|-----------------|---|-----|-----|-----|---------------|
| Collector-base breakdown voltage     | $V_{(BR)CBO}$   | $I_C=100\mu\text{A}, I_E=0$                         | 400 |     |     | V             |
| Collector-emitter breakdown voltage  | $V_{(BR)CEO}^*$ | $I_C=100\text{mA}, I_B=0$                           | 200 |     |     | V             |
| Emitter-base breakdown voltage       | $V_{(BR)EBO}$   | $I_E=100\mu\text{A}, I_C=0$                         | 6   |     |     | V             |
| Collector cut-off current            | $I_{CES}$       | $V_{CB}=400\text{V}, I_E=0$                         |     |     | 5   | mA            |
| Collector cut-off current            | $I_{CES}$       | $V_{CB}=250\text{V}, I_E=0$                         |     |     | 1   | mA            |
| Collector cut-off current            | $I_{CBO}$       | $V_{CB}=300\text{V}, I_E=0$                         |     |     | 5   | $\mu\text{A}$ |
| Emitter cut-off current              | $I_{EBO}$       | $V_{EB}=6\text{V}, I_C=0$                           |     |     | 1   | mA            |
| DC current gain                      | $h_{FE}$        | $V_{CE}=5\text{V}, I_C=1\text{A}$                   | 50  |     | 100 |               |
| Collector-emitter saturation voltage | $V_{CE(sat)}^*$ | $I_C=5\text{A}, I_B=500\text{mA}$                   |     |     | 1   | V             |
| Base-emitter saturation voltage      | $V_{BE(sat)}^*$ | $I_C=5\text{A}, I_B=500\text{mA}$                   |     |     | 1.2 | V             |
| Collector output capacitance         | $C_{ob}$        | $V_{CB}=10\text{V}, I_E=0, f=1\text{MHz}$           |     | 80  |     | pF            |
| Transition frequency                 | $f_T$           | $V_{CE}=5\text{V}, I_C=0.2\text{A}, f=10\text{MHz}$ | 10  |     |     | MHz           |

\*Pulse test: pulse width  $\leq 300\mu\text{s}$ , duty cycle  $\leq 2.0\%$ .

# Typical Characteristics

