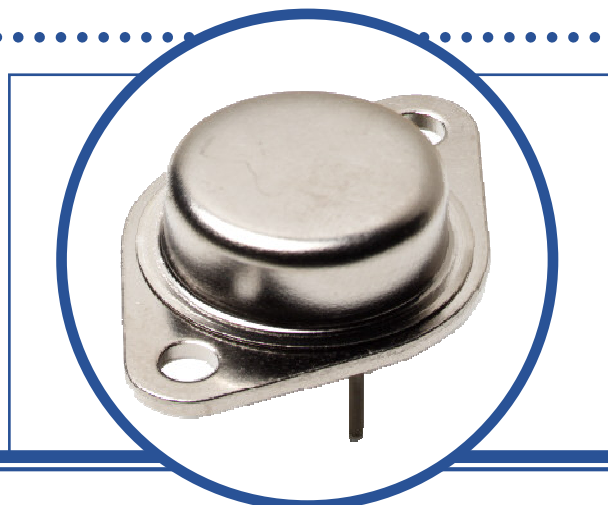


# SILICON MULTI-EPITAXIAL NPN TRANSISTOR

## BUR50

- High Pulse Power, Fast Switching.
- Hermetic Metal TO3 Package.
- Ideally suited for Motor Control and Power Switching Circuits
- Screening Options Available



### ABSOLUTE MAXIMUM RATINGS ( $T_C = 25^\circ\text{C}$ unless otherwise stated)

|           |                              |                                 |                               |
|-----------|------------------------------|---------------------------------|-------------------------------|
| $V_{CBO}$ | Collector – Base Voltage     |                                 | 200V                          |
| $V_{CEO}$ | Collector – Emitter Voltage  |                                 | 125V                          |
| $V_{EBO}$ | Emitter – Base Voltage       |                                 | 10V                           |
| $I_C$     | Continuous Collector Current |                                 | 70A                           |
| $I_{CM}$  | Peak Collector Current       | $t_p = 10\text{ms}$             | 100A                          |
| $I_B$     | Base Current                 |                                 | 20A                           |
| $P_D$     | Total Power Dissipation at   | $T_C = 25^\circ\text{C}$        | 350W                          |
|           |                              | Derate Above $25^\circ\text{C}$ | $2\text{W}/^\circ\text{C}$    |
| $T_J$     | Junction Temperature Range   |                                 | $-65$ to $+200^\circ\text{C}$ |
| $T_{stg}$ | Storage Temperature Range    |                                 | $-65$ to $+200^\circ\text{C}$ |

### THERMAL PROPERTIES

| Symbols         | Parameters                           | Min. | Typ. | Max. | Units                     |
|-----------------|--------------------------------------|------|------|------|---------------------------|
| $R_{\theta JC}$ | Thermal Resistance, Junction To Case |      |      | 0.5  | $^\circ\text{C}/\text{W}$ |

Semelab Limited reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by Semelab is believed to be both accurate and reliable at the time of going to press. However Semelab assumes no responsibility for any errors or omissions discovered in its use. Semelab encourages customers to verify that datasheets are current before placing orders.

# SILICON MULTI-EPITAXIAL NPN TRANSISTOR BUR50

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

| Symbols             | Parameters                           | Test Conditions                         | Min. | Typ | Max. | Units |
|---------------------|--------------------------------------|---|------|-----|------|-------|
| $V_{(BR)CEO}^{(1)}$ | Collector-Emitter Breakdown Voltage  | $I_C = 50\text{mA}$                     | 125  |     |      | V     |
| $V_{(BR)EBO}$       | Emitter-Base Breakdown Voltage       | $I_E = 1.0\text{mA}$                    | 10   |     |      |       |
| $I_{CEO}$           | Collector Cut-Off Current            | $V_{CE} = 125\text{V}$ $I_B = 0$        |      |     | 1.0  | mA    |
| $I_{CBO}$           | Collector Cut-Off Current            | $V_{CB} = 200\text{V}$ $I_E = 0$        |      |     | 0.2  |       |
|                     |                                      | $T_C = 125^\circ\text{C}$               |      |     | 2    |       |
| $I_{EBO}$           | Emitter Cut-Off Current              | $V_{EB} = 7\text{V}$ $I_C = 0$          |      |     | 0.2  |       |
| $V_{CE(sat)}^{(1)}$ | Collector-Emitter Saturation Voltage | $I_C = 35\text{A}$ $I_B = 2\text{A}$    |      |     | 1.0  | V     |
|                     |                                      | $I_C = 70\text{A}$ $I_B = 7\text{A}$    |      | 0.8 | 1.5  |       |
| $V_{BE(sat)}^{(1)}$ | Base-Emitter Saturation Voltage      | $I_C = 35\text{A}$ $I_B = 2\text{A}$    |      |     | 1.8  |       |
|                     |                                      | $I_C = 70\text{A}$ $I_B = 7\text{A}$    |      | 1.6 | 2    |       |
| $h_{FE}^{(1)}$      | Forward-current transfer ratio       | $I_C = 5\text{A}$ $V_{CE} = 4\text{V}$  | 20   |     | 140  |       |
|                     |                                      | $I_C = 50\text{A}$ $V_{CE} = 4\text{V}$ | 15   |     |      |       |

## DYNAMIC CHARACTERISTICS

|          |                      |  |    |      |     |               |
|----------|----------------------|--|----|------|-----|---------------|
| $f_T$    | Transition Frequency | $I_C = 1.0\text{A}$ $V_{CE} = 5\text{V}$<br>$f = 1.0\text{MHz}$  | 10 | 16   |     | MHz           |
| $t_{on}$ | Turn-On Time         | $I_C = 70\text{A}$ $V_{CC} = 60\text{V}$<br>$I_{B1} = 7\text{A}$ |    | 0.5  | 1.2 | $\mu\text{s}$ |
| $t_s$    | Storage Time         | $I_C = 70\text{A}$ $V_{CC} = 60\text{V}$                         |    | 0.82 | 2   |               |
| $t_f$    | Fall Time            | $I_{B1} = -I_{B2} = 7\text{A}$                                   |    | 0.1  | 0.5 |               |

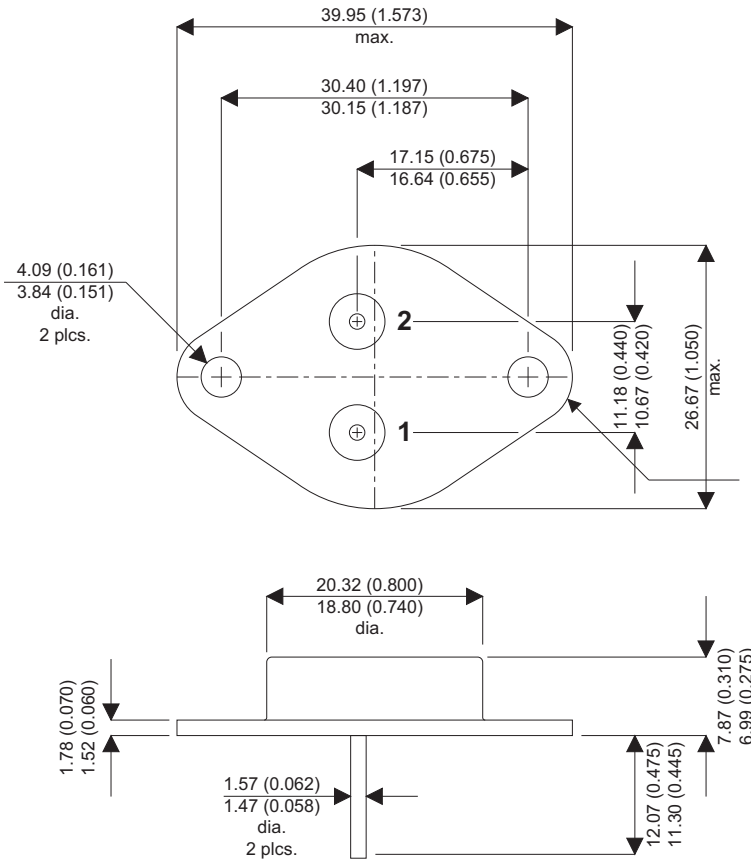
### Notes

(1) Pulse Width  $\leq 300\mu\text{s}$ ,  $\delta \leq 2\%$

# SILICON MULTI-EPITAXIAL NPN TRANSISTOR BUR50

## MECHANICAL DATA

Dimensions in mm (inches)



## TO3 (TO-204AE)

Pin 1 - Base

Pin 2 - Emitter

Case - Collector