

# SILICON MULTI-EPITAXIAL NPN TRANSISTOR

## BUP53

- Low  $V_{CE(SAT)}$ , Fast switching.
- Hermetic TO3 Metal package.
- Ideally suited for Motor Control, Switching and Linear Applications
- Screening Options Available



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

|           |                                                     |                         |                             |
|-----------|-----------------------------------------------------|-------------------------|-----------------------------|
| $V_{CEX}$ | Collector – Emitter Voltage                         | $V_{BE} = -1.5\text{V}$ | 400V                        |
| $V_{CEO}$ | Collector – Emitter Voltage                         |                         | 250V                        |
| $V_{EBO}$ | Emitter – Base Voltage                              |                         | 10V                         |
| $I_C$     | Continuous Collector Current                        |                         | 60A                         |
| $I_{CM}$  | Peak Collector Current                              |                         | 80A                         |
| $P_D$     | Total Power Dissipation at $T_C = 25^\circ\text{C}$ |                         | 300W                        |
|           | Derate Above $25^\circ\text{C}$                     |                         | 1.72W/ $^\circ\text{C}$     |
| $T_J$     | Junction Temperature Range                          |                         | -55 to $+200^\circ\text{C}$ |
| $T_{stg}$ | Storage Temperature Range                           |                         | -55 to $+200^\circ\text{C}$ |

### THERMAL PROPERTIES

| Symbols         | Parameters                           | Min. | Typ. | Max. | Units              |
|-----------------|--------------------------------------|------|------|------|--------------------|
| $R_{\theta JC}$ | Thermal Resistance, Junction To Case |      |      | 0.58 | $^\circ\text{C/W}$ |

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.

**Semelab Limited**

Coventry Road, Lutterworth, Leicestershire, LE17 4JB

Telephone +44 (0) 1455 556565

Fax +44 (0) 1455 552612

Email: [sales@semelab-tt.com](mailto:sales@semelab-tt.com)

Website: <http://www.semelab-tt.com>



A subsidiary of  
TT electronics plc.

Document Number 8314

Issue 1

Page 1 of 3

# SILICON MULTI-EPITAXIAL NPN TRANSISTOR BUP53

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

| Symbols             | Parameters                           | Test Conditions                  | Min. | Typ | Max. | Units |
|---------------------|--------------------------------------|----------------------------------|------|-----|------|-------|
| $I_{CEX}$           | Collector Cut-Off Current            | $V_{CE} = 400V$ $V_{BE} = -1.5V$ |      |     | 0.1  | mA    |
|                     |                                      | $T_C = 150^\circ\text{C}$        |      |     | 5    |       |
| $I_{EBO}$           | Emitter Cut-Off Current              | $V_{EB} = 8V$ $I_C = 0$          |      |     | 0.1  |       |
| $V_{(BR)CEO}^{(1)}$ | Collector-Emitter Breakdown Voltage  | $I_C = 10mA$                     | 250  |     |      | V     |
| $V_{CE(sat)}^{(1)}$ | Collector-Emitter Saturation Voltage | $I_C = 20A$ $I_B = 2A$           |      |     | 0.6  |       |
|                     |                                      | $I_C = 50A$ $I_B = 8A$           |      |     | 0.8  |       |
| $V_{BE(sat)}^{(1)}$ | Base-Emitter Saturation Voltage      | $I_C = 20A$ $I_B = 2A$           |      |     | 1.1  |       |
|                     |                                      | $I_C = 50A$ $I_B = 5A$           |      |     | 1.4  |       |
| $h_{FE}^{(1)}$      | Forward-current transfer ratio       | $I_C = 20A$ $V_{CE} = 4V$        | 12   |     |      |       |
|                     |                                      | $I_C = 50A$ $V_{CE} = 4V$        | 5    |     |      |       |

## DYNAMIC CHARACTERISTICS

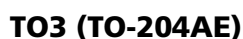
|       |              |                             |  |  |      |         |
|-------|--------------|-----------------------------|--|--|------|---------|
| $t_s$ | Storage Time | $I_C = 30A$ $V_{CC} = 200V$ |  |  | 1.8  | $\mu s$ |
| $t_f$ | Fall Time    | $I_{B1} = -I_{B2} = 10A$    |  |  | 0.35 |         |

### Notes

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



Dimensions in mm (inches)



### Case - Collector