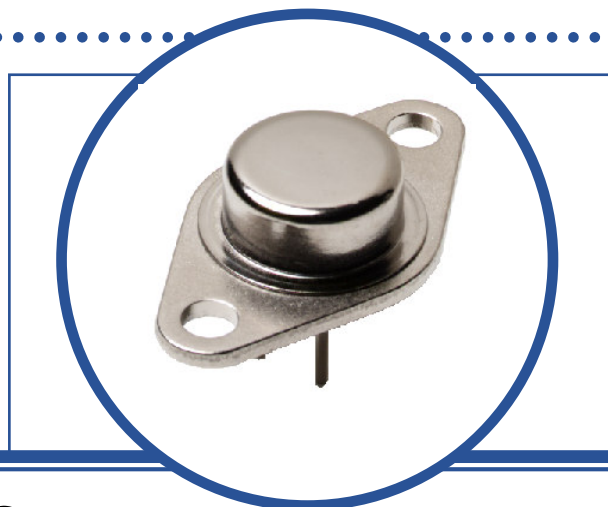


# SILICON PLANAR EPITAXIAL NPN TRANSISTOR

## BUX77

- High Power
- Hermetic TO-66 Metal Package
- Ideally suited for Driver Circuits, Switching and Amplifier Applications
- Screening Options Available



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

|           |                                                                                        |                                |
|-----------|----------------------------------------------------------------------------------------|--------------------------------|
| $V_{CBO}$ | Collector – Base Voltage                                                               | 100V                           |
| $V_{CEO}$ | Collector – Emitter Voltage                                                            | 80V                            |
| $V_{EBO}$ | Emitter – Base Voltage                                                                 | 6V                             |
| $I_C$     | Continuous Collector Current                                                           | 5A                             |
| $I_B$     | Base Current                                                                           | 0.8A                           |
| $P_D$     | Total Power Dissipation at $T_C = 25^\circ\text{C}$<br>Derate Above $25^\circ\text{C}$ | 40W<br>0.23W/ $^\circ\text{C}$ |
| $T_J$     | 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 |      |      | 4.4  | $^\circ\text{C/W}$ |

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>



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# SILICON PLANAR EPITAXIAL NPN TRANSISTOR BUX77

## 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  | $I_C = 50\text{mA}$ $I_B = 0$                                         | 80   |     |      | V             |
| $V_{(BR)CES}$       | Collector-Emitter Breakdown Voltage  | $I_C = 2\text{mA}$ $V_{BE} = 0$                                       | 100  |     |      |               |
| $V_{(BR)EBO}$       | Emitter-Base Breakdown Voltage       | $I_E = 1.0\text{mA}$ $I_C = 0$                                        | 6    |     |      |               |
| $I_{CEO}$           | Collector Cut-Off Current            | $V_{CE} = 60\text{V}$ $I_B = 0$                                       |      |     | 10   | $\mu\text{A}$ |
| $I_{CBO}$           | Collector Cut-Off Current            | $V_{CB} = 80\text{V}$ $I_E = 0$                                       |      |     | 0.5  |               |
|                     |                                      | $T_C = 150^\circ\text{C}$                                             |      |     | 150  |               |
| $I_{EBO}$           | Emitter Cut-Off Current              | $V_{EB} = 4\text{V}$ $I_C = 0$                                        |      |     | 0.5  |               |
| $h_{FE}^{(1)}$      | Forward-current transfer ratio       | $I_C = 0.5\text{A}$ $V_{CE} = 5\text{V}$                              | 50   |     |      |               |
|                     |                                      | $I_C = 2\text{A}$ $V_{CE} = 5\text{V}$                                | 50   |     | 120  |               |
|                     |                                      | $I_C = 5\text{A}$ $V_{CE} = 5\text{V}$                                | 30   |     |      |               |
|                     |                                      | $I_C = 1.0\text{A}$ $V_{CE} = 5\text{V}$<br>$T_C = -40^\circ\text{C}$ | 25   |     |      |               |
| $V_{CE(sat)}^{(1)}$ | Collector-Emitter Saturation Voltage | $I_C = 5\text{A}$ $I_B = 0.5\text{A}$                                 |      |     | 1.0  | V             |
| $V_{BE(sat)}^{(1)}$ | Base-Emitter Saturation Voltage      | $I_C = 5\text{A}$ $I_B = 0.5\text{A}$                                 |      |     | 1.3  |               |

## DYNAMIC CHARACTERISTICS

|            |                                             |                                                                             |     |     |     |               |
|------------|---------------------------------------------|-----------------------------------------------------------------------------|-----|-----|-----|---------------|
| $ h_{fe} $ | Small signal forward-current transfer ratio | $I_C = 0.5\text{A}$ $V_{CE} = 5\text{V}$<br>$f = 20\text{MHz}$              | 1.5 |     |     |               |
| $t_{on}$   | Turn-On Time                                | $I_C = 5\text{A}$ $V_{CC} = 40\text{V}$<br>$I_{B1} = 0.5\text{A}$           |     | 0.3 | 0.4 | $\mu\text{s}$ |
| $t_{off}$  | Turn-Off Time                               | $I_C = 5\text{A}$ $V_{CC} = 40\text{V}$<br>$I_{B1} = -I_{B2} = 0.5\text{A}$ |     | 1.1 | 2.5 |               |

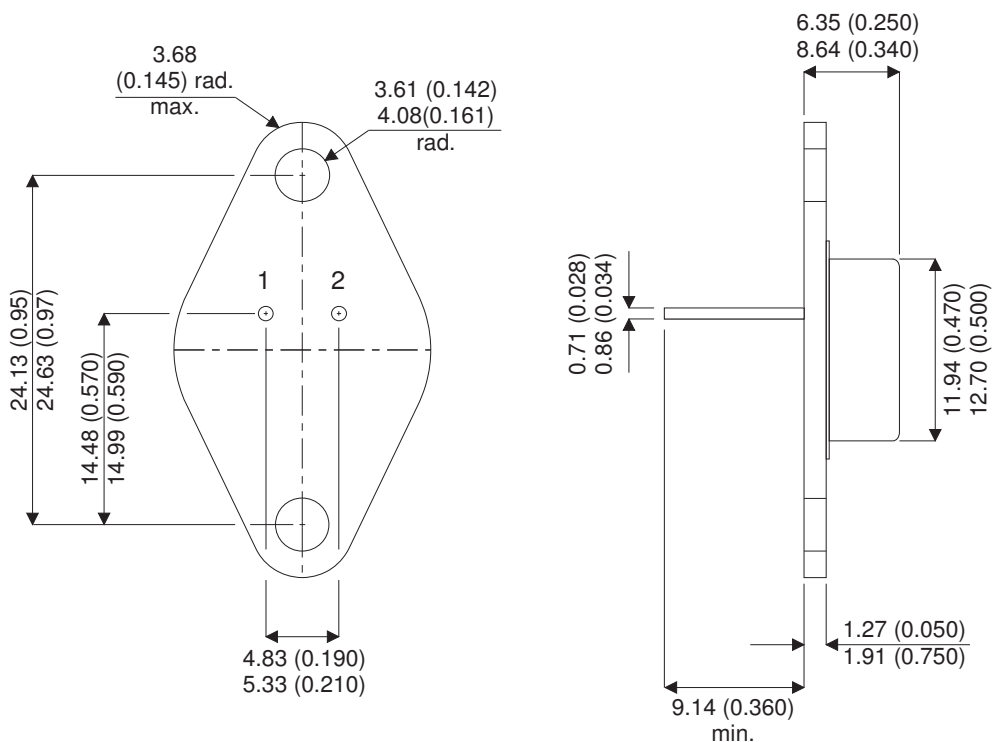
### Notes

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

# SILICON PLANAR EPITAXIAL NPN TRANSISTOR BUX77

## MECHANICAL DATA

Dimensions in mm (inches)



## TO66 (TO-213AA)

Pin 1 - Base

Pin 2 - Emitter

Case - Collector