SGS-THOMSON MICROELECTRONICS

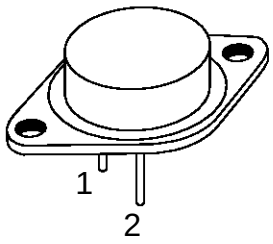
# BUX12

## HIGH CURRENT NPN SILICON TRANSISTOR

- SGS-THOMSON PREFERRED SALESTYPE

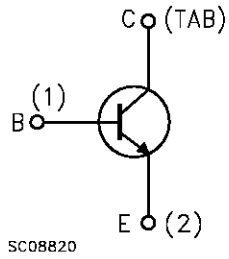
**DESCRIPTION**

The BUX12 is a silicon multiepitaxial planar NPN transistor in Jedec TO-3 metal case, intended for use in switching and linear applications in military and industrial equipment.




**TO-3**

**INTERNAL SCHEMATIC DIAGRAM**




**ABSOLUTE MAXIMUM RATINGS**

| Symbol | Parameter | Value | Unit |
|---|---|---|---|
| $V_{CBO}$ | Collector-base Voltage ($I_E$ = 0) | 300 | V |
| $V_{CEX}$ | Collector-emitter Voltage ($V_{BE}$ = - 1.5V) | 300 | V |
| $V_{CEO}$ | Collector-emitter Voltage ($I_B$ = 0) | 250 | V |
| $V_{EBO}$ | Emitter-base Voltage (Ic = 0) | 7 | V |
| $I_C$ | Collector Current | 20 | A |
| $I_{CM}$ | Collector Peak Current ($t_P$ = 10 ms) | 25 | A |
| $I_B$ | Base Current | 4 | A |
| $P_{tot}$ | Total Power Dissipation at $T_{case} \leq 25\ ^oC$ | 150 | W |
| $T_{stg}$ | Storage Temperature | -65 to 200 | $^oC$ |
| $T_j$ | Max Operating Junction Temperature | 200 | $^oC$ |

## THERMAL DATA

| | | | | |
|---|---|---|---|---|
| $R_{thj\text{-}case}$ | Thermal Resistance Junction-case | Max | 1.17 | $^oC/W$ |

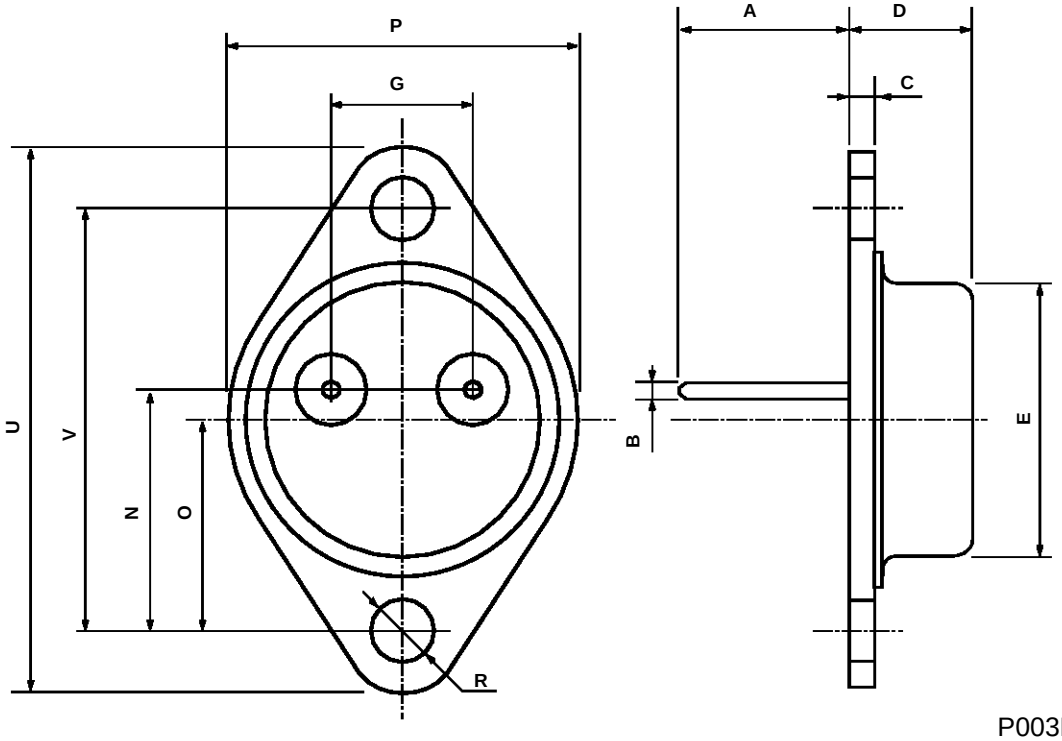
## ELECTRICAL CHARACTERISTICS ($T_{case}$ = 25 $^oC$ unless otherwise specified)

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| $I_{CEO}$ | Collector Cut-off Current ($I_B$ = 0) | $V_{CE}$ = 200 V | | | 1.5 | mA |
| $I_{CEX}$ | Collector Cut-off Current | $V_{CE}$ = 300 V $V_{BE}$ = -1.5V<br>$T_{case}$ = 125 $^oC$<br>$V_{CE}$ = 300 V $V_{BE}$ = -1.5V | | | 1.5<br><br>6 | mA<br><br>mA |
| $I_{EBO}$ | Emitter Cut-off Current ($I_C$ = 0) | $V_{EB}$ = 5 V | | | 1 | mA |
| $V_{CEO(sus)}$* | Collector-Emitter Sustaining Voltage | $I_C$ = 200 mA | 250 | | | V |
| $V_{EBO}$ | Emitter-Base Voltage ($I_C$ = 0) | $I_E$ = 50 mA | 7 | | | V |
| $V_{CE(sat)}$* | Collector-Emitter Saturation Voltage | $I_C$ = 5 A $I_B$ = 0.5 A<br>$I_C$ = 10 A $I_B$ = 1.25 A | | 0.22<br>0.5 | 1<br>1.5 | V<br>V |
| $V_{BE(sat)}$* | Base-Emitter Saturation Voltage | $I_C$ = 10 A $I_B$ = 1.25 A | | 1.23 | 1.5 | V |
| $h_{FE}$ | DC Current Gain | $I_C$ = 5 A $V_{CE}$ = 4 V<br>$I_C$ = 10 A $V_{CE}$ = 4 V | 20<br>10 | | 60 | |
| $I_{S/b}$ | Second Breakdown Collector Current | $V_{CE}$ = 30 V t = 1 s<br>$V_{CE}$ = 140 V t = 1 s | 5<br>0.15 | | | A<br>A |
| $f_T$ | Transistor Frequency | $I_C$ = 1 A $V_{CE}$ = 15 V<br>f = 10 MHz | 8 | | | MHz |
| $t_{on}$ | Turn-on Time See fig.2 | $I_C$ = 10 A $I_{B1}$ = 1.25 A<br>$V_{CC}$ = 150V | | 0.28 | 1 | µs |
| $t_s$<br>$t_f$ | Storage Time See fig.2<br>Fall Time See fig.2 | $I_C$ = 10 A $I_{B1}$ = 1.25 A<br>$I_{B2}$ = -1.25 A $V_{CC}$ = 150V | | 1.45<br>0.23 | 0.2<br>0.5 | µs<br>µs |
| | Clamped $E_{s/b}$ Collector Current | $V_{clamp}$=250 V<br>L = 500 µH | 10 | | | A |

* Pulsed: Pulse duration = 300µs, duty cycle ≤ 2 %

## TO-3 (H) MECHANICAL DATA

| DIM. | mm | | | inch | | |
|---|---|---|---|---|---|---|
| | MIN. | TYP. | MAX. | MIN. | TYP. | MAX. |
| A | | 11.7 | | | 0.460 | |
| B | 0.96 | | 1.10 | 0.037 | | 0.043 |
| C | | | 1.70 | | | 0.066 |
| D | | | 8.7 | | | 0.342 |
| E | | | 20.0 | | | 0.787 |
| G | | 10.9 | | | 0.429 | |
| N | | 16.9 | | | 0.665 | |
| P | | | 26.2 | | | 1.031 |
| R | 3.88 | | 4.09 | 0.152 | | 0.161 |
| U | | | 39.50 | | | 1.555 |
| V | | 30.10 | | | 1.185 | |

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