



NPN BUX20

HIGH CURRENT, HIGH SPEED, HIGH POWER TRANSISTOR

The BUX20 is silicon multiepitaxial planar NPN transistors in Jedec TO-3. They are intended for use in switching and linear applications in military and industrial equipment. Compliance to RoHS.

ABSOLUTE MAXIMUM RATINGS

| Symbol | Ratings | | Value | Unit |
|-----------|---------------------------|--------------------|-------------|------------|
| V_{CEO} | Collector-Emitter Voltage | $I_B = 0$ | 125 | V |
| V_{CBO} | Collector-Base Voltage | $I_E = 0$ | 160 | V |
| V_{EBO} | Emitter-Base Voltage | $I_C = 0$ | 7.0 | V |
| V_{CEX} | Collector-Emitter Voltage | $V_{BE} = -1.5V$ | 160 | V |
| I_C | Collector Current | | 50 | A |
| I_{CM} | Collector Peak Current | $t_p = 10ms$ | 60 | A |
| I_B | Base Current | | 10 | A |
| P_t | Total Power Dissipation | @ $T_C = 25^\circ$ | 350 | W |
| T_J | Junction Temperature | | 200 | $^\circ C$ |
| T_{Stg} | Storage Temperature | | -65 to +200 | $^\circ C$ |

THERMAL CHARACTERISTICS

| Symbol | Ratings | Value | Unit |
|------------|--------------------------------------|-------|--------------|
| R_{thJC} | Thermal Resistance, Junction to Case | 0.5 | $^\circ C/W$ |

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ELECTRICAL CHARACTERISTICS

TC=25°C unless otherwise noted

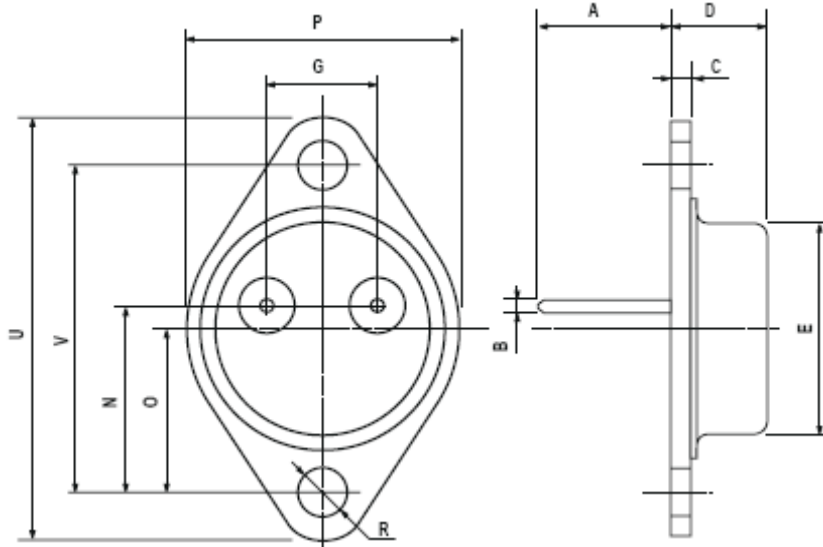
| Symbol | Ratings | Test Condition(s) | Min | Typ | Max | Unit |
|----------------|--|--|------|-----|-----|---------------|
| $V_{CEO(SUS)}$ | Collector-Emitter Sustaining Voltage (*) | $I_C = 200 \text{ mA}$ | 125 | - | - | V |
| $V_{EB0(SUS)}$ | Emitter-Base Breakdown Voltage (*) | $I_C = 0 \text{ A}, I_E = 50 \text{ mA}$ | 7 | - | - | V |
| I_{CEO} | Collector Cutoff Current | $V_{CE} = 100 \text{ V}, I_B = 0 \text{ A}$ | - | - | 3 | mA |
| I_{CEX} | Collector Cutoff Current | $V_{CE} = 160 \text{ V}, V_{BE} = -1.5 \text{ V}$ | - | - | 3 | mA |
| | | $V_{CE} = 160 \text{ V}, V_{BE} = -1.5 \text{ V}$ $T_{case} = 125^\circ \text{C}$ | - | - | 12 | |
| I_{EBO} | Emitter Cutoff Current | $V_{EB} = 5.0 \text{ V}, I_C = 0$ | - | - | 1 | mA |
| h_{FE} | DC Current Gain (*) | $I_C = 25 \text{ A}, V_{CE} = 2.0 \text{ V}$ | 20 | - | 60 | - |
| | | $I_C = 50 \text{ A}, V_{CE} = 4.0 \text{ V}$ | 10 | - | - | |
| $V_{CE(SAT)}$ | Collector-Emitter saturation Voltage (*) | $I_C = 25 \text{ A}, I_B = 2.5 \text{ A}$ | - | 0.7 | 0.6 | V |
| | | $I_C = 50 \text{ A}, I_B = 5 \text{ A}$ | - | - | 1.2 | |
| $V_{BE(SAT)}$ | Base-Emitter saturation Voltage (*) | $I_C = 50 \text{ A}, I_B = 5 \text{ A}$ | - | - | 2 | |
| $I_{S/B}$ | Second breakdown collector current | $V_{CE} = 40 \text{ V}, t_s = 1 \text{ s}$ | 1.5 | - | - | A |
| | | $V_{CE} = 20 \text{ V}, t_s = 1 \text{ s}$ | 17.5 | - | - | |
| f_T | Transition frequency | $V_{CE} = 15 \text{ V}, I_C = 2 \text{ A}$ $f = 10 \text{ MHz}$ | 8 | - | - | MHz |
| t_{on} | Turn-on time | $I_C = 50 \text{ A}, I_B = 5 \text{ A}$ $V_{CC} = 60 \text{ V}$ | - | - | 1.5 | μs |
| t_s | Storage time | $I_C = 50 \text{ A}, V_{CC} = 60 \text{ V}$ | - | - | 1.2 | |
| t_f | Fall time | $I_{B1} = -I_{B2} = 5 \text{ A}$ | - | - | 0.3 | |

(*) Pulse Duration = 300 μs , Duty Cycle $\leq 2\%$

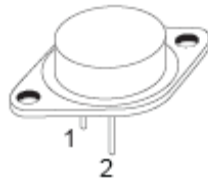
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MECHANICAL DATA CASE TO-3

| DIMENSIONS (mm) | | |
|-----------------|-------|-------|
| | min | max |
| A | 11 | 13.10 |
| B | 0.97 | 1.15 |
| C | 1.5 | 1.65 |
| D | 8.32 | 8.92 |
| F | 19 | 20 |
| G | 10.70 | 11.1 |
| N | 16.50 | 17.20 |
| P | 25 | 26 |
| R | 4 | 4.09 |
| U | 38.50 | 39.30 |
| V | 30 | 30.30 |



| | |
|---------|-----------|
| Pin 1 : | Base |
| Pin 2 : | Emitter |
| Case : | Collector |



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