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**BUX21**

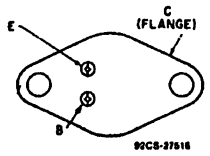
# Silicon N-P-N Switching Transistor

For Switching Applications in Industrial and Commercial Equipment

**Features:**

- $V_{CEO}$ — 200V
- $I_C$ — 40 A
- $P_T$ — 250 W

**TERMINAL DESIGNATIONS**




**JEDEC TO-204AA**

The BUX21 is a silicon NPN power transistor featuring fast switching speeds, low saturation voltage, and high safe-operation ares (SOA) ratings. It is specially designed for converters, inverters, pulse-width-modulated regulators, and a variety of power switching circuits.

The BUX21 transistor is supplied in a steel JEDEC TO-204AA hermetic package.

**MAXIMUM RATINGS,** ***Absolute-Maximum Values:***

| | BUX21 | |
|---|---|---|
| $V_{CBO}$ | 250 | V |
| $V_{CEO(SUS)}$ | 200 | V |
| $V_{CEX(SUS)}$ | | |
| $V_{BE}$ = -1.5V | 250 | V |
| $V_{CER(SUS)}$ | | |
| $R_{BE}$ = 100 Ω | 240 | V |
| $V_{EBO}$ | 7 | V |
| $I_C$ | 40 | A |
| $I_{CM}$ | 50 | A |
| $I_B$ | 8 | A |
| $P_T$ | | |
| At $T_C$ up to 25°C and $V_{CE}$ up to 20 V | 250 | W |
| $T_J$, $T_{stg}$ | -65 to +200 | °C |
| $T_L$ | | |
| At distances ≥ 1/16 in. (1.58 mm) from case for 10 s max. | 200 | °C |

**Quality Semi-Conductors**

**ELECTRICAL CHARACTERISTICS,** *at Case Temperature ($T_C$) = 25°C unless otherwise specified*

| CHARACTERISTIC | TEST CONDITIONS | | | | LIMITS | | | UNITS |
|---|---|---|---|---|---|---|---|---|
| | VOLTAGE V dc | | CURRENT A dc | | BUX21 | | | |
| | $V_{CE}$ | $V_{BE}$ | $I_C$ | $I_B$ | Min. | Typ. | Max. | |
| $I_{CEO}$ | 160 | – | – | 0 | – | – | 3 | mA |
| $I_{CEV}$ | 250 | –1.5 | – | – | – | – | 3 | |
| $T_C$ = 125°C | 250 | –1.5 | – | – | – | – | 12 | |
| $I_{EBO}$ | – | –5 | 0 | – | – | – | 1 | |
| $V_{CEO(sus)}$[b] | – | – | 0.2[a] | – | 200[a] | – | – | V |
| $V_{(BR)EBO}$ $I_E$ = 0.05 A | – | – | 0 | – | 7 | – | – | V |
| $V_{BE(sat)}$ | – | – | 25[a] | 3 | – | 1.2 | 1.5 | |
| $V_{CE(sat)}$ | – | – | 12[a] | 1.2 | – | 0.2 | 0.6 | |
| | – | – | 25[a] | 3 | – | 0.7 | 1.5 | |
| $h_{FE}$ | 2 | – | 12[a] | – | 20 | – | 60 | |
| | 4 | – | 25[a] | – | 10 | – | – | |
| $I_{S/b}$ | 140 | – | – | – | 0.15 | – | – | A |
| t = 1s, nonrepetitive | 20 | – | – | – | 12.5 | – | – | |
| $f_T$ f = 10 MHz | 15 | – | 2 | – | 8 | – | – | MHz |
| $t_{on}$ | $V_{CC}$ = 100 V | – | 25 | 3 | – | 0.3 | 1.2 | μs |
| $t_s$ ($I_{B_1} = I_{B_2}$) | $V_{CC}$ = 100 V | – | 25 | 3 | – | 1.0 | 1.8 | |
| $t_f$ ($I_{B_1} = I_{B_2}$) | $V_{CC}$ = 100 V | – | 25 | 3 | – | 0.2 | 0.4 | |
| $R_{\theta JC}$ | – | – | – | – | – | – | 0.7 | °C/W |

[a] Pulsed, pulse duration = 300 μs, duty factor ≤ 2%.
[b] CAUTION: Sustaining Voltages $V_{CEO(sus)}$ *MUST NOT* be measured on a curver tracer.

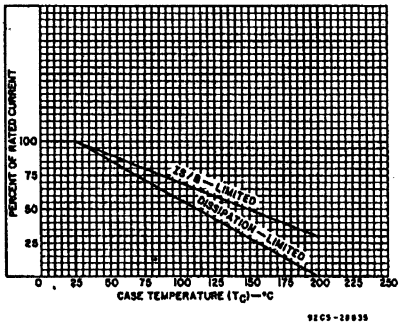



*Fig. 1 — Dissipation and $I_{S/b}$ derating curve.*

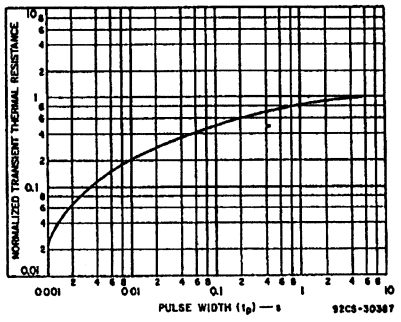



*Fig. 2 — Typical thermal-response characteristic.*