

**BUX66, BUX66A, BUX66B, BUX66C**

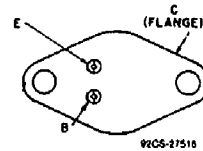
**High Voltage Silicon  
 P-N-P Transistors**

For High-Speed Switching and  
 Linear-Amplifier Applications

**Features:**

- High voltage ratings:  
 $V_{CEO(SUS)}$  = -150 V max. (BUX66)  
 = -250 V max. (BUX66A)  
 = -300 V max. (BUX66B)  
 = -350 V max. (BUX66C)
- Large safe-operating area.

**TERMINAL DESIGNATIONS**



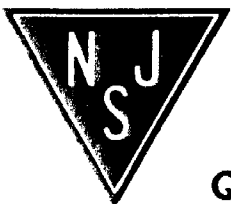
JEDEC TO-213AA

The RCA-BUX66, BUX66A, BUX66B, and BUX66C are silicon p-n-p transistors with high breakdown voltages and fast switching speeds. These transistors are intended for a wide variety of applications in ac/dc commercial equipment.

Typical applications include high-voltage operational and linear amplifiers, high-voltage switches, switching regulators, converters, and inverters.

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

|   | BUX66 | BUX66A | BUX66B     | BUX66C |      |
|---|-------|--------|------------|--------|------|
| $V_{CBO}$ .....   | -200  | -300   | -350       | -400   | V    |
| $V_{CEV(SUS)}$<br>$V_{BE} = -1.5 V$ .....                                     | -200  | -300   | -350       | -400   | V    |
| $V_{CER(SUS)}$<br>$R_{BE} = 100\Omega$ .....                                  | -175  | -275   | -325       | -375   | V    |
| $V_{CEO(SUS)}$ .....  | -150  | -250   | -300       | -350   | V    |
| $V_{EBO}$ .....   | -6    | -6     | -6         | -6     | V    |
| $I_C$ .....   | -2    | -2     | -2         | -2     | A    |
| $I_{CM}$ .....  | -5    | -5     | -5         | -5     | A    |
| $I_B$ .....   | -1    | -1     | -1         | -1     | A    |
| $P_T$<br>Up to 25°C .....   | 35    | 35     | 35         | 35     | W    |
| Above 25°C, Derate linearly. ....   | 0.2   | 0.2    | 0.2        | 0.2    | W/°C |
| $T_J, T_{stg}$ .....  |       |        | -65 to 200 |        | °C   |
| $T_L$ At distance 1/16 in. (1.58 mm) from<br>seating plane for 10 s max. .... | 235   | 235    | 235        | 235    | °C   |



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# BUX66, BUX66A, BUX66B, BUX66C

ELECTRICAL CHARACTERISTICS, At Case Temperature ( $T_C$ ) = 25°C  
Unless Otherwise Specified

| CHARACTERISTIC SYMBOL                                   | TEST CONDITIONS |                 |                   |                    | LIMITS            |      |                   |      | UNITS |
|---|-----------------|-----------------|-------------------|--------------------|-------------------|------|-------------------|------|-------|
|   | VOLTAGE<br>V dc |                 | CURRENT<br>A dc   |                    | BUX66             |      | BUX66A            |      |       |
|   | V <sub>CE</sub> | V <sub>BE</sub> | I <sub>C</sub>    | I <sub>B</sub>     | Min.              | Max. | Min.              | Max. |       |
| I <sub>CEO</sub>  | -150            |                 |                   | 0                  | -                 | -10  | -                 | -10  | mA    |
| I <sub>CEX</sub>  | -200            | 1.5             |                   |                    | -                 | -8   | -                 | -    |       |
|   | -300            | 1.5             |                   |                    | -                 | -    | -                 | -8   |       |
| T <sub>C</sub> = 100°C                                  | -200            | 1.5             |                   |                    | -                 | -10  | -                 | -    |       |
|   | -300            | 1.5             |                   |                    | -                 | -    | -                 | -10  |       |
| I <sub>EBO</sub>  |                 | 6               | 0                 |                    | -                 | -1   | -                 | -1   | mA    |
| h <sub>FE</sub>   | -5              |                 | -1 <sup>a</sup>   |                    | 10                | 150  | 10                | 150  |       |
| V <sub>CEO(sus)</sub>                                   |                 |                 | -0.2 <sup>a</sup> | 0                  | -150 <sup>c</sup> | -    | -250 <sup>c</sup> | -    | V     |
| V <sub>CEB(sus)</sub><br>R <sub>BE</sub> = 50 Ω         |                 |                 | -0.2              |                    | -175 <sup>c</sup> | -    | -275 <sup>c</sup> | -    |       |
| V <sub>BE(sat)</sub>                                    |                 |                 | -1 <sup>a</sup>   | -0.15              | -                 | -1.5 | -                 | -1.5 | V     |
| V <sub>CE(sat)</sub>                                    |                 |                 | -1 <sup>a</sup>   | -0.15              | -                 | -2.5 | -                 | -2.5 | V     |
| C <sub>obo</sub><br>V <sub>CB</sub> = 10 V<br>f = 1 MHz |                 |                 |                   |                    | -                 | 220  | -                 | 220  | pF    |
| I <sub>S/b</sub><br>t = 1 s, nonrep.                    | -40             |                 |                   |                    | -875              | -    | -875              | -    | mA    |
| h <sub>fe</sub>  <br>f = 5 MHz                          | -10             |                 | -0.2              |                    | 4                 | -    | 4                 | -    |       |
| t <sub>r</sub><br>V <sub>CC</sub> = -200 V              |                 |                 | -1                | -0.10 <sup>b</sup> | -                 | 0.6  | -                 | 0.6  | μs    |
| t <sub>s</sub><br>V <sub>CC</sub> = -200 V              |                 |                 | -1                | -0.10 <sup>b</sup> | -                 | 2.5  | -                 | 2.5  |       |
| t <sub>f</sub><br>V <sub>CC</sub> = -200 V              |                 |                 | -1                | -0.10 <sup>b</sup> | -                 | 0.6  | -                 | 0.6  |       |
| R <sub>θJC</sub>  |                 |                 |                   |                    | -                 | 5    | -                 | 5    | °C/W  |

<sup>a</sup> Pulsed: Pulse duration = 300 μs; duty factor ≤ 2%.

<sup>b</sup> I<sub>B1</sub> = I<sub>B2</sub>

<sup>c</sup> Sustaining voltages, V<sub>CEO(sus)</sub> and V<sub>CEB(sus)</sub> MUST NOT be measured on a curve tracer.

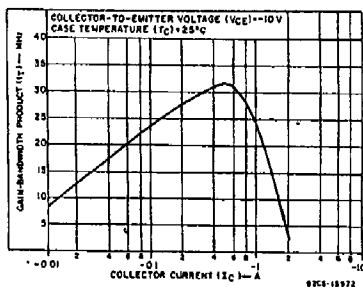


Fig. 1 - Typical gain-bandwidth product for all types.

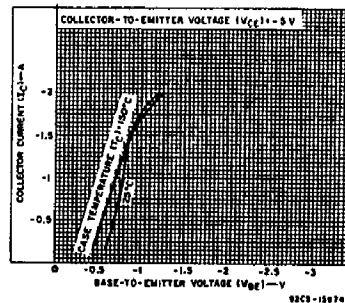


Fig. 2 - Typical transfer characteristics for all types.

# BUX66, BUX66A, BUX66B, BUX66C

ELECTRICAL CHARACTERISTICS, At Case Temperature ( $T_C$ ) = 25°C  
Unless Otherwise Specified

| CHARACTERISTIC SYMBOL                                   | TEST CONDITIONS |                 |                   |                    | LIMITS            |      |                   |      | UNITS |
|---|-----------------|-----------------|-------------------|--------------------|-------------------|------|-------------------|------|-------|
|   | VOLTAGE<br>V dc |                 | CURRENT<br>A dc   |                    | BUX66B            |      | BUX66C            |      |       |
|   | V <sub>CE</sub> | V <sub>BE</sub> | I <sub>C</sub>    | I <sub>B</sub>     | Min.              | Max. | Min.              | Max. |       |
| I <sub>CEO</sub>  | -150            |                 |                   | 0                  | -                 | -5   | -                 | -5   | mA    |
| I <sub>CEX</sub>  | -350            | 1.5             |                   |                    | -                 | -8   | -                 | -    |       |
|   | -400            | 1.5             |                   |                    | -                 | -    | -                 | -8   |       |
| T <sub>C</sub> = 100°C                                  | -350            | 1.5             |                   |                    | -                 | -10  | -                 | -    |       |
|   | -400            | 1.5             |                   |                    | -                 | -    | -                 | -10  |       |
| I <sub>EBO</sub>  |                 | 6               | 0                 |                    | -                 | -1   | -                 | -1   | mA    |
| h <sub>FE</sub>   | -5              |                 | -1 <sup>a</sup>   |                    | 10                | 150  | 10                | 150  |       |
| V <sub>CEO(sus)</sub>                                   |                 |                 | -0.2 <sup>a</sup> | 0                  | -300 <sup>c</sup> | -    | -350 <sup>c</sup> | -    | V     |
| V <sub>CER(sus)</sub><br>R <sub>BE</sub> = 50 Ω         |                 |                 | -0.2              |                    | -325 <sup>c</sup> | -    | -375 <sup>c</sup> | -    |       |
| V <sub>BE(sat)</sub>                                    |                 |                 | -1 <sup>a</sup>   | -0.15              | -                 | -1.5 | -                 | -1.5 | V     |
| V <sub>CE(sat)</sub>                                    |                 |                 | -1 <sup>a</sup>   | -0.15              | -                 | -2.5 | -                 | -2.5 | V     |
| C <sub>obo</sub><br>V <sub>CB</sub> = 10 V<br>f = 1 MHz |                 |                 |                   |                    | -                 | 220  | -                 | 220  | pF    |
| I <sub>S/b</sub><br>t = 1 s, nonrep.                    | -40             |                 |                   |                    | -875              | -    | -875              | -    | mA    |
| h <sub>fe</sub>  <br>f = 5 MHz                          | -10             |                 | -0.2              |                    | 4                 | -    | 4                 | -    |       |
| t <sub>r</sub><br>V <sub>CC</sub> = -200 V              |                 |                 | -1                | -0.10 <sup>b</sup> | -                 | 0.6  | -                 | 0.6  | μs    |
| t <sub>s</sub><br>V <sub>CC</sub> = -200 V              |                 |                 | -1                | -0.10 <sup>b</sup> | -                 | 2.5  | -                 | 2.5  |       |
| t <sub>f</sub><br>V <sub>CC</sub> = -200 V              |                 |                 | -1                | -0.10 <sup>b</sup> | -                 | 0.6  | -                 | 0.6  |       |
| R <sub>θJC</sub>  |                 |                 |                   |                    | -                 | 5    | -                 | 5    | °C/W  |

a Pulsed: Pulse duration = 300 μs; duty factor ≤ 2%.      b I<sub>B1</sub> = I<sub>B2</sub>  
c Sustaining voltages, V<sub>CEO(sus)</sub> and V<sub>CER(sus)</sub> MUST NOT be measured on a curve tracer.

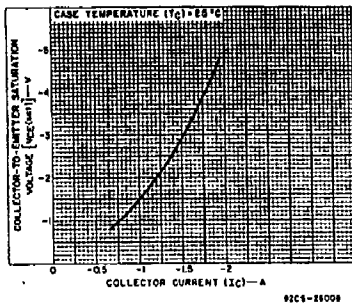


Fig. 3 — Typical saturation-voltage characteristic for all types.

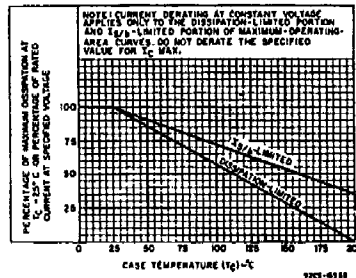


Fig. 4 — Derating curve for all types.