

File Number 673

**BD243, BD243A, BD243B, BD243C**

**Epitaxial-Base Silicon N-P-N  
VERSAWATT Transistors**

For Power-Amplifier and  
High-Speed-Switching Applications

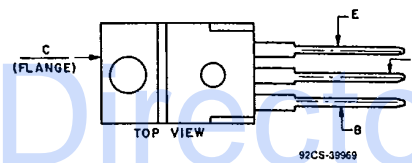
*Features:*

- 65 W at 25°C case temperature
- 7-A rated collector current
- Min.  $f_T$  of 3 MHz at 10 V, 500 mA
- Complements of p-n-p types BD244, BD244A, BD244B, and BD244C

Types BD243, BD243A, BD243B, and BD243C are epitaxial-base silicon n-p-n transistors; they differ only in their voltage ratings. These devices are intended for a wide variety of switching and amplifier applications such as series and shunt regulators, and driver and output stages of high-fidelity amplifiers. The BD243-series power transistors are complements of the devices in the BD244 series. (The BD244-series devices are described in File No. 674.)

All types utilize the JEDEC TO-220AB (VERSAWATT) plastic package.

**TERMINAL DESIGNATIONS**



**JEDEC TO-220AB**

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

|  | BD243        | BD243A         | BD243B | BD243C |     |    |
|--|--------------|----------------|--------|--------|-----|----|
| <b>COLLECTOR-TO-EMITTER VOLTAGE:</b>   |              |                |        |        |     |    |
| With external base-to-emitter resistance ( $R_{BE}$ ) = 100 $\Omega$ . . . . . | $V_{CER}$    | 55             | 70     | 90     | 115 | V  |
| With base open . . . . .   | $V_{CEO}$    | 45             | 60     | 80     | 100 | V  |
| <b>EMITTER-TO-BASE VOLTAGE . . . . .</b>                                       | $V_{EBO}$    | 5              | 5      | 5      | 5   | V  |
| <b>CONTINUOUS COLLECTOR CURRENT . . . . .</b>                                  | $I_C$        | 7              | 7      | 7      | 7   | A  |
| <b>PEAK COLLECTOR CURRENT . . . . .</b>  | $I_C$ (PEAK) | 10             | 10     | 10     | 10  | A  |
| <b>CONTINUOUS BASE CURRENT . . . . .</b>                                       | $I_B$        | 3              | 3      | 3      | 3   | A  |
| <b>TRANSISTOR DISSIPATION: <math>P_T</math></b>                                |              |                |        |        |     |    |
| At case temperatures up to 25°C . . . . .                                      |              | 65             | 65     | 65     | 65  | W  |
| At ambient temperatures up to 25°C . . . . .                                   |              | 2              | 2      | 2      | 2   | W  |
| At case temperatures above 25°C . . . . .                                      |              | ← See Fig. 2 → |        |        |     |    |
| <b>TEMPERATURE RANGE:</b>  |              |                |        |        |     |    |
| Storage & Operating (Junction) . . . . .                                       |              | ← -65 to 150 → |        |        |     | °C |
| <b>LEAD TEMPERATURE (During Soldering):</b>                                    |              |                |        |        |     |    |
| At distance 1/8 in. (3.17 mm) from case for 10 s max. . . . .                  |              | ← 235 →        |        |        |     | °C |

3875081 G E SOLID STATE  
Pro Electron Power Transistors

01E 17537 D T-33-11

**BD243, BD243A, BD243B, BD243C**

ELECTRICAL CHARACTERISTICS at Case Temperature ( $T_C$ ) = 25°C

| CHARACTERISTIC   | SYMBOL   | TEST CONDITIONS            |                 |                            |                | LIMITS |      |        |      |        |      |        |      | UNITS |
|--|--|----------------------------|-----------------|----------------------------|----------------|--------|------|--------|------|--------|------|--------|------|-------|
|  |  | VOLTAGE<br>V <sub>dc</sub> |                 | CURRENT<br>A <sub>dc</sub> |                | BD243  |      | BD243A |      | BD243B |      | BD243C |      |       |
|  |  | V <sub>CE</sub>            | V <sub>BE</sub> | I <sub>C</sub>             | I <sub>B</sub> | MIN.   | MAX. | MIN.   | MAX. | MIN.   | MAX. | MIN.   | MAX. |       |
| Collector Cutoff Current:<br>With base open  | I <sub>CEO</sub>                                 | 30                         |                 |                            | 0              | -      | 0.7  | -      | 0.7  | -      | -    | -      | -    | mA    |
|  |  | 60                         |                 |                            | 0              | -      | -    | -      | -    | 0.7    | -    | 0.7    |      |       |
|  | With base-to-emitter<br>junction short-circuited | I <sub>CES</sub>           | 45              | 0                          |                |        | -    | 0.4    | -    | -      | -    | -      | -    |       |
| 60   |  |                            | 0               |                            |                | -      | -    | -      | 0.4  | -      | -    | -      | -    |       |
| 80   |  |                            | 0               |                            |                | -      | -    | -      | -    | 0.4    | -    | -      | -    |       |
|  |  | 100                        | 0               |                            |                | -      | -    | -      | -    | -      | -    | 0.4    | -    |       |
| Emitter Cutoff Current   | I <sub>EBO</sub>                                 |                            | -5              | 0                          |                | -      | 1    | -      | 1    | -      | 1    | -      | 1    | mA    |
| Collector-to-Emitter<br>Breakdown Voltage:<br>With base open   | V <sub>BR(CEO)</sub>                             |                            |                 | 0.03 <sup>a</sup>          | 0              | 45     | -    | 60     | -    | 80     | -    | 100    | -    | V     |
| DC Forward-Current<br>Transfer Ratio   | h <sub>FE</sub>                                  | 4                          |                 | 0.3 <sup>a</sup>           |                | 30     | -    | 30     | -    | 30     | -    | 30     | -    |       |
|  |  | 4                          |                 | 3 <sup>a</sup>             |                | 15     | -    | 15     | -    | 15     | -    | 15     | -    |       |
| Base-to-Emitter Voltage  | V <sub>BE</sub>                                  | 4                          |                 | 6 <sup>a</sup>             |                | -      | 2    | -      | 2    | -      | 2    | -      | 2    | V     |
| Collector-to-Emitter<br>Saturation Voltage   | V <sub>CE(sat)</sub>                             |                            |                 | 6 <sup>a</sup>             | 1              | -      | 1.5  | -      | 1.5  | -      | 1.5  | -      | 1.5  | V     |
| Common-Emitter<br>Small-Signal Short-<br>Circuit Forward-<br>Current Transfer Ratio<br>(f = 1 kHz)             | h <sub>fe</sub>                                  | 10                         |                 | 0.5                        |                | 20     | -    | 20     | -    | 20     | -    | 20     | -    |       |
| Magnitude of Common<br>Emitter Small-Signal<br>Short-Circuit Forward-<br>Current Transfer Ratio<br>(f = 1 MHz) | h <sub>fe</sub>                                  | 10                         |                 | 0.5                        |                | 3      | -    | 3      | -    | 3      | -    | 3      | -    |       |
| Thermal Resistance:  | R <sub>θJC</sub>                                 |                            |                 |                            |                | -      | 1.92 | -      | 1.92 | -      | 1.92 | -      | 1.92 | °C/W  |
|  |  |                            |                 |                            |                | -      | 62.5 | -      | 62.5 | -      | 62.5 | -      | 62.5 |       |
|  | R <sub>θJA</sub>                                 |                            |                 |                            |                | -      | 62.5 | -      | 62.5 | -      | 62.5 | -      | 62.5 |       |

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

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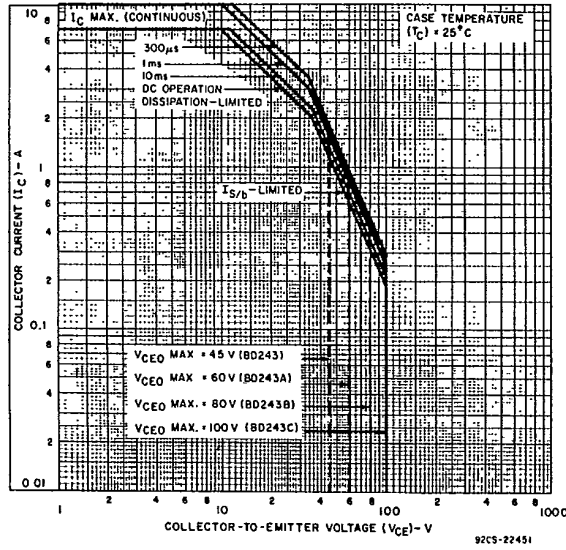


Fig. 1— Maximum safe operating areas for all types.

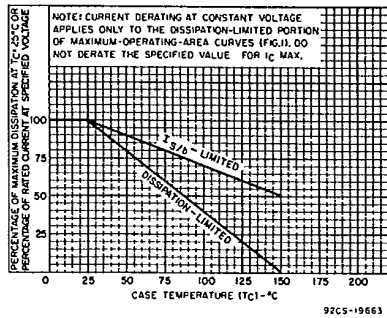


Fig. 2— Derating curves for all types.

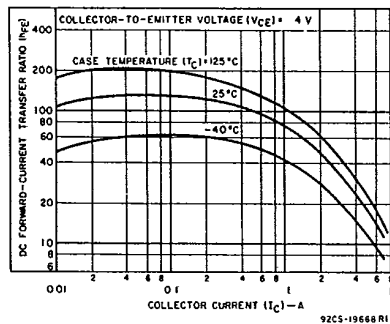


Fig. 3 — Typical dc beta characteristics for all types.