



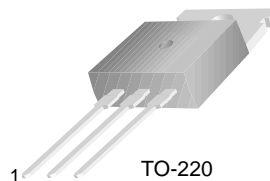
# THE DATASHEET OF BDX53BTU



## BDX53/A/B/C

### Hammer Drivers, Audio Amplifiers Applications Power Liner and Switching Applications

- Power Darlington TR
- Complement to BDX54, BDX54A, BDX54B and BDX54C respectively



1. Base 2. Collector 3. Emitter

### NPN Epitaxial Silicon Transistor

#### Absolute Maximum Ratings $T_C=25^\circ\text{C}$ unless otherwise noted

| Symbol    | Parameter  | Value      | Units            |
|-----------|--|------------|------------------|
| $V_{CBO}$ | Collector-Base Voltage : BDX53                   | 45         | V                |
|           | : BDX53A   | 60         | V                |
|           | : BDX53B   | 80         | V                |
|           | : BDX53C   | 100        | V                |
| $V_{CEO}$ | Collector-Emitter Voltage : BDX53                | 45         | V                |
|           | : BDX53A   | 60         | V                |
|           | : BDX53B   | 80         | V                |
|           | : BDX53C   | 100        | V                |
| $V_{EBO}$ | Emitter-Base Voltage                             | 5          | V                |
| $I_C$     | Collector Current (DC)                           | 8          | A                |
| $I_{CP}$  | *Collector Current (Pulse)                       | 12         | A                |
| $I_B$     | Base Current                                     | 0.2        | A                |
| $P_C$     | Collector Dissipation ( $T_C=25^\circ\text{C}$ ) | 60         | W                |
| $T_J$     | Junction Temperature                             | 150        | $^\circ\text{C}$ |
| $T_{STG}$ | Storage Temperature                              | - 65 ~ 150 | $^\circ\text{C}$ |

#### Electrical Characteristics $T_C=25^\circ\text{C}$ unless otherwise noted

| Symbol         | Parameter                              | Test Condition                        | Min. | Typ. | Max. | Units         |
|----------------|--|---------------------------------------|------|------|------|---------------|
| $V_{CEO(sus)}$ | * Collector-Emitter Sustaining Voltage | $I_C = 100\text{mA}, I_B = 0$         | 45   |      |      | V             |
|                | : BDX53A                               |                                       | 60   |      |      | V             |
|                | : BDX53B                               |                                       | 80   |      |      | V             |
|                | : BDX53C                               |                                       | 100  |      |      | V             |
| $I_{CBO}$      | Collector Cut-off Current : BDX53      | $V_{CB} = 45\text{V}, I_E = 0$        |      |      | 200  | $\mu\text{A}$ |
|                | : BDX53A                               | $V_{CB} = 60\text{V}, I_E = 0$        |      |      | 200  | $\mu\text{A}$ |
|                | : BDX53B                               | $V_{CB} = 80\text{V}, I_E = 0$        |      |      | 200  | $\mu\text{A}$ |
|                | : BDX53C                               | $V_{CB} = 100\text{V}, I_E = 0$       |      |      | 200  | $\mu\text{A}$ |
| $I_{CEO}$      | Collector Cut-off Current : BDX53      | $V_{CE} = 22\text{V}, I_B = 0$        |      |      | 500  | $\mu\text{A}$ |
|                | : BDX53A                               | $V_{CE} = 30\text{V}, I_B = 0$        |      |      | 500  | $\mu\text{A}$ |
|                | : BDX53B                               | $V_{CE} = 40\text{V}, I_B = 0$        |      |      | 500  | $\mu\text{A}$ |
|                | : BDX53C                               | $V_{CE} = 50\text{V}, I_B = 0$        |      |      | 500  | $\mu\text{A}$ |
| $I_{EBO}$      | Emitter Cut-off Current                | $V_{EB} = 5\text{V}, I_C = 0$         |      |      | 2    | mA            |
| $h_{FE}$       | * DC Current Gain                      | $V_{CE} = 3\text{V}, I_C = 3\text{A}$ | 750  |      |      |               |
| $V_{CE(sat)}$  | * Collector-Emitter Saturation Voltage | $I_C = 3\text{A}, I_B = 12\text{mA}$  |      |      | 2    | V             |
| $V_{BE(sat)}$  | * Base-Emitter Saturation Voltage      | $I_C = 3\text{A}, I_B = 12\text{mA}$  |      |      | 2.5  | V             |
| $V_F$          | * Parallel Diode Forward Voltage       | $I_F = 3\text{A}$                     |      | 1.8  | 2.5  | V             |
|                |  | $I_F = 8\text{A}$                     |      | 2.5  |      | V             |

\* Pulse Test: PW=300 $\mu\text{s}$ , duty Cycle =1.5% Pulsed

# Typical Characteristics

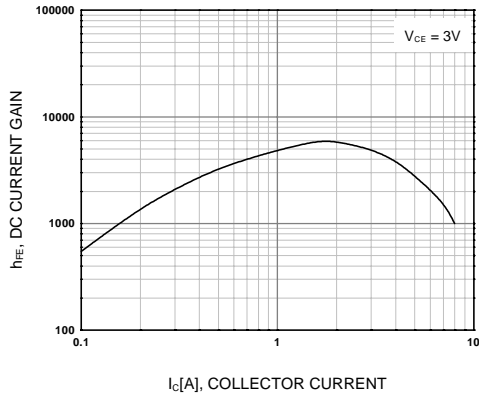


Figure 1. DC current Gain

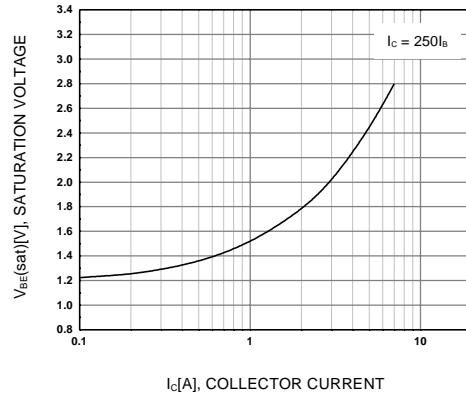


Figure 2. Base-Emitter Saturation Voltage

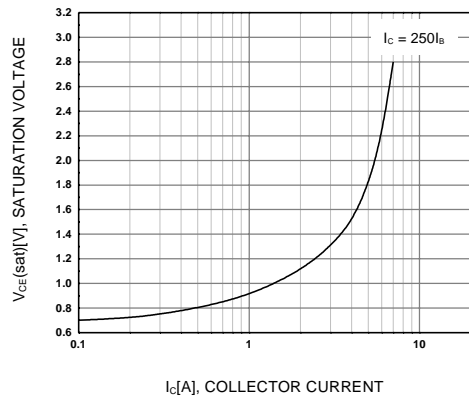


Figure 3. Collector-Emitter Saturation Voltage

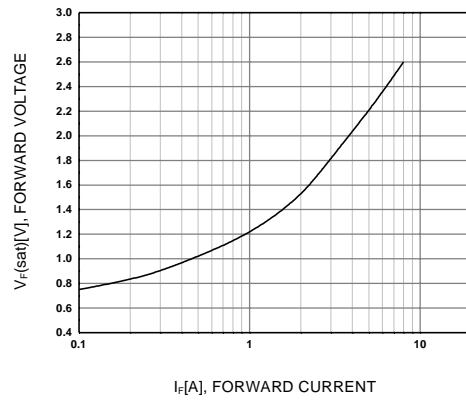


Figure 4. Damper Diode Forward Voltage

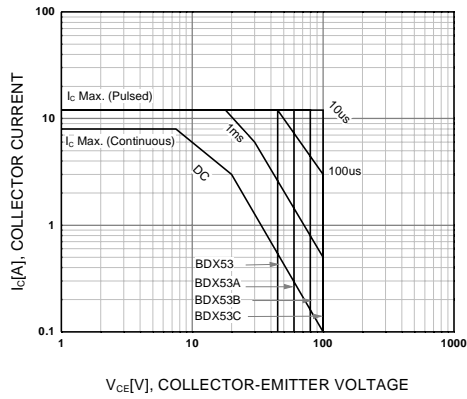


Figure 5. Safe Operating Area

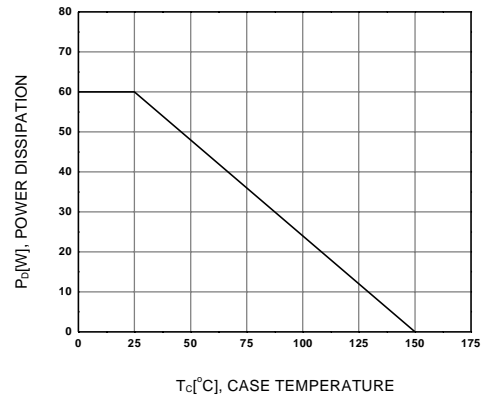


Figure 6. Power Derating

# Package Dimensions

BDX53/A/B/C

## TO-220



Dimensions in Millimeters

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| CROSSVOLT™           | POP™          | UHC™        |
| E <sup>2</sup> CMOS™ | PowerTrench®  | VCX™        |
| FACT™                | QFET™         |             |
| FACT Quiet Series™   | QS™           |             |
| FAST®                | Quiet Series™ |             |
| FASTr™               | SuperSOT™-3   |             |
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