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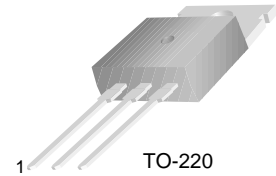
sales@integrated-circuit.com



BDX33/A/B/C

Power Linear and Switching Applications

- High Gain General Purpose
- Power Darlington TR
- Complement to BDX34/34A/34B/34C respectively



TO-220
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 | | |
| | : BDX33 | 45 | V |
| | : BDX33A | 60 | V |
| | : BDX33B | 80 | V |
| | : BDX33C | 100 | V |
| V_{CEO} | Collector-Emitter Voltage | | |
| | : BDX33 | 45 | V |
| | : BDX33A | 60 | V |
| | : BDX33B | 80 | V |
| | : BDX33C | 100 | V |
| I_C | Collector Current (DC) | 10 | A |
| I_{CP} | *Collector Current (Pulse) | 15 | A |
| I_B | Base Current | 0.25 | A |
| P_C | Collector Dissipation ($T_C=25^\circ\text{C}$) | 70 | 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 60 80 100 | | | V V V V |
| | : BDX33 | | | | | |
| | : BDX33A | | | | | |
| | : BDX33B | | | | | |
| $V_{CER(sus)}$ | * Collector-Emitter Sustaining Voltage | $I_C = 100\text{mA}, I_B = 0$ $R_{BE} = 100\Omega$ | 45 60 80 100 | | | V V V V |
| | : BDX33 | | | | | |
| | : BDX33A | | | | | |
| | : BDX33B | | | | | |
| $V_{CEV(sus)}$ | * Collector-Emitter Sustaining Voltage | $I_C = 100\text{mA}, I_B = 0$ $V_{BE} = 1.5\text{V}$ | 45 60 80 100 | | | V V V V |
| | : BDX33 | | | | | |
| | : BDX33A | | | | | |
| | : BDX33B | | | | | |
| I_{CBO} | Collector Cut-off Current | $V_{CB} = 45\text{V}, I_E = 0$ $V_{CB} = 60\text{V}, I_E = 0$ $V_{CB} = 80\text{V}, I_E = 0$ $V_{CB} = 100\text{V}, I_E = 0$ | | | 0.2 0.2 0.2 0.2 | mA mA mA mA |
| | : BDX33 | | | | | |
| | : BDX33A | | | | | |
| | : BDX33B | | | | | |
| I_{CEO} | Collector Cut-off Current | $V_{CE} = 22\text{V}, I_B = 0$ $V_{CE} = 30\text{V}, I_B = 0$ $V_{CE} = 40\text{V}, I_B = 0$ $V_{CE} = 50\text{V}, I_B = 0$ | | | 0.5 0.5 0.5 0.5 | mA mA mA mA |
| | : BDX33 | | | | | |
| | : BDX33A | | | | | |
| | : BDX33B | | | | | |
| I_{EBO} | Emitter Cut-off Current | $V_{EB} = 5\text{V}, I_C = 0$ | | | 5 | mA |
| h_{FE} | * DC Current Gain | $V_{CE} = 3\text{V}, I_C = 4\text{A}$ $V_{CE} = 3\text{V}, I_C = 3\text{A}$ | 750 | | | |
| | : BDX33/34 : BDX33B/33C | | 750 | | | |
| $V_{CE(sat)}$ | * Collector-Emitter Saturation Voltage | $I_C = 4\text{A}, I_B = 8\text{mA}$ $I_C = 3\text{A}, I_B = 6\text{mA}$ | | | 2.5 2.5 | V V |
| | : BDX33/33A : BDX33B/33C | | | | | |
| $V_{BE(on)}$ | * Base-Emitter ON Voltage | $V_{CE} = 3\text{V}, I_C = 4\text{A}$ $V_{CE} = 3\text{V}, I_C = 3\text{A}$ | | | 2.5 2.5 | V V |
| | : BDX33/33A : BDX33B/33C | | | | | |
| V_F | * Parallel Diode Forward Voltage | $I_F = 8\text{A}$ | | | 4 | V |

* Pulse Test: PW=300μs, duty Cycle =1.5% Pulse

Typical Characteristics

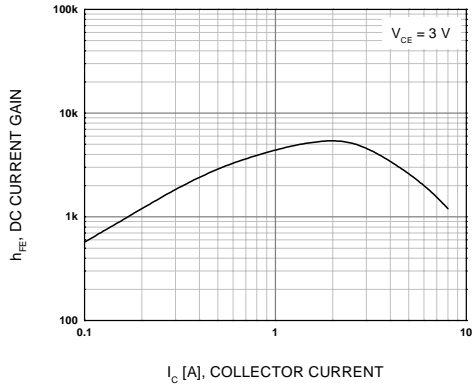


Figure 1. DC Current Gain

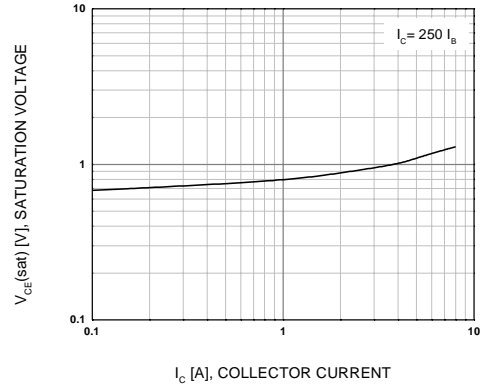


Figure 2. Collector-Emitter Saturation Voltage

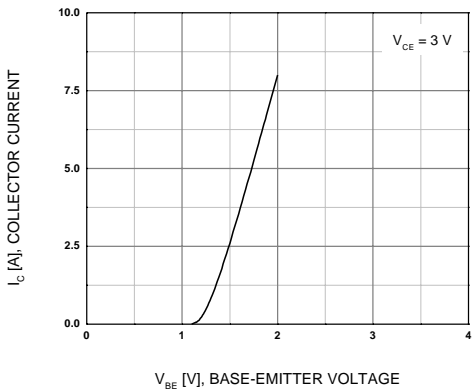


Figure 3. Base-Emitter On Voltage

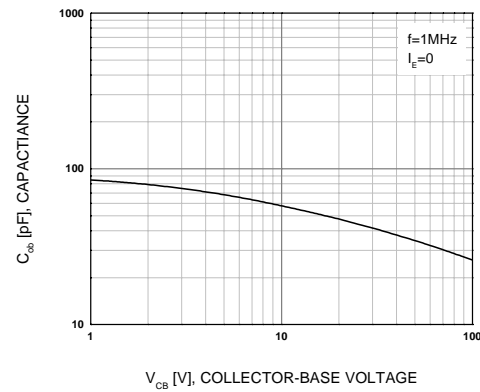


Figure 4. Output Capacitance

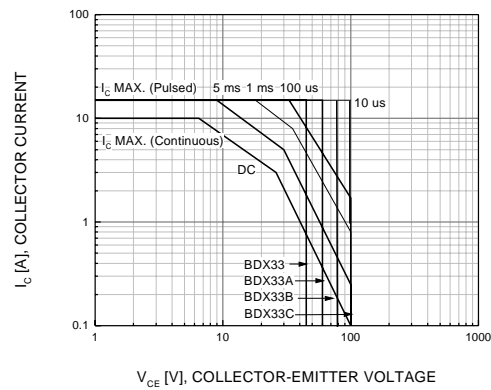


Figure 5. Safe Operating Area

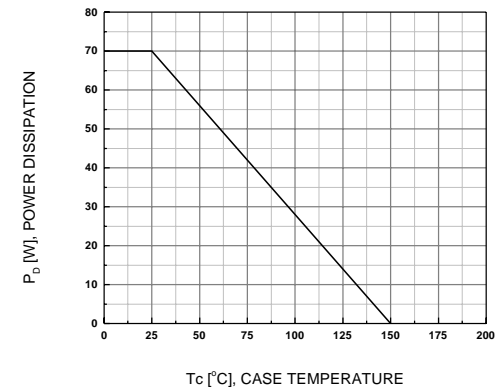
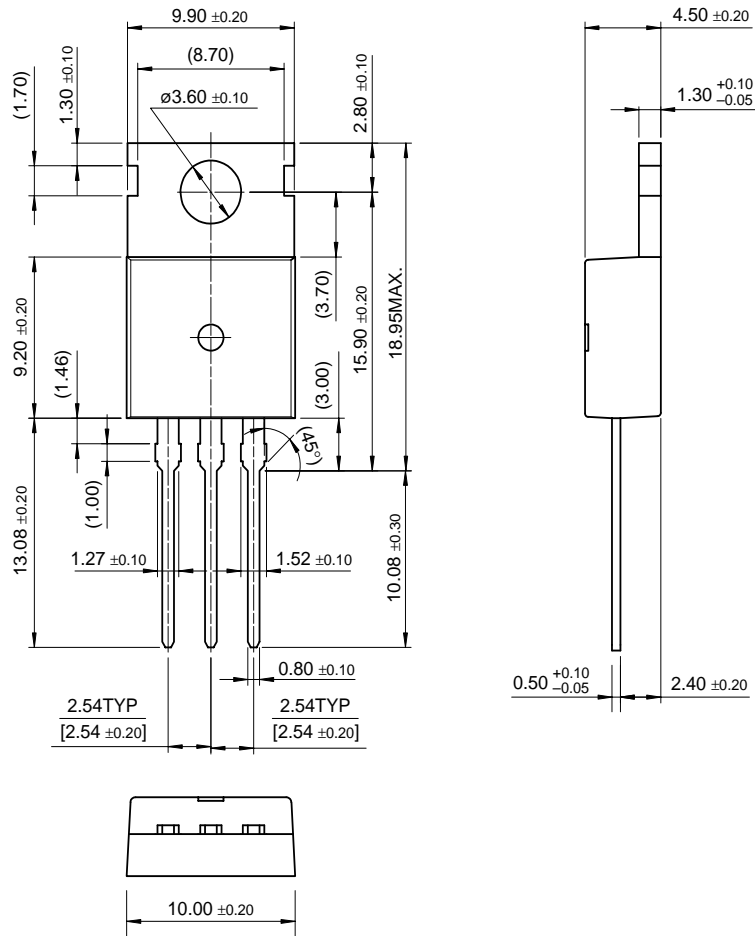


Figure 6. Power Derating

Package Dimensions

TO-220



Dimensions in Millimeters

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| | | |
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| CROSSVOLT TM | POP TM | UHC TM |
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| GTO TM | SuperSOT TM -6 | |

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