

BD434/436/438

Medium Power Linear and Switching Applications

- Complement to BD433, BD435 and BD437 respectively



PNP Epitaxial Silicon Transistor

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

| Symbol | Parameter | Value | Units |
|-----------|--|------------|------------------|
| V_{CBO} | Collector-Base Voltage | | |
| | : BD434 | - 22 | V |
| | : BD436 | - 32 | V |
| | : BD438 | - 45 | V |
| V_{CES} | Collector-Emitter Voltage | | |
| | : BD434 | - 22 | V |
| | : BD436 | - 32 | V |
| | : BD438 | - 45 | V |
| V_{CEO} | Collector-Emitter Voltage | | |
| | : BD434 | - 22 | V |
| | : BD436 | - 32 | V |
| | : BD438 | - 45 | V |
| V_{EBO} | Emitter-Base Voltage | - 5 | V |
| I_C | Collector Current (DC) | - 4 | A |
| I_{CP} | *Collector Current (Pulse) | - 7 | A |
| I_B | Base Current | - 1 | A |
| P_C | Collector Dissipation ($T_C=25^\circ\text{C}$) | 36 | 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 | $I_C = -100\text{mA}, I_B = 0$ | -22 -32 -45 | | | V V V |
| | : BD434 | | | | | |
| | : BD436 | | | | | |
| I_{CBO} | Collector Cut-off Current | $V_{CB} = -22\text{V}, I_E = 0$ | | | -100 -100 -100 | μA μA μA |
| | : BD434 | $V_{CB} = -32\text{V}, I_E = 0$ | | | | |
| | : BD436 | $V_{CB} = -45\text{V}, I_E = 0$ | | | | |
| I_{CEO} | Collector Cut-off Current | $V_{CE} = -22\text{V}, V_{BE} = 0$ $V_{CE} = -32\text{V}, V_{BE} = 0$ $V_{CE} = -45\text{V}, V_{BE} = 0$ | | | -100 -100 -100 | μA μA μA |
| | : BD434 | | | | | |
| | : BD436 | | | | | |
| I_{EBO} | Emitter Cut-off Current | $V_{EB} = -5\text{V}, I_C = 0$ | | | -1 | mA |
| | : BD438 | | | | | |
| h_{FE} | * DC Current Gain | $V_{CE} = -5\text{V}, I_C = -10\text{mA}$ $V_{CE} = -1\text{V}, I_C = -500\text{mA}$ $V_{CE} = -1\text{V}, I_C = -2\text{A}$ | 40 30 85 50 40 | 140 140 140 | | |
| | : BD434/436 | | | | | |
| | : BD438 | | | | | |
| | : ALL DEVICE | | | | | |
| | : BD434/436 | | | | | |
| : BD438 | | | | | | |
| $V_{CE(sat)}$ | * Collector-Emitter Saturation Voltage | $I_C = -2\text{A}, I_B = -0.2\text{A}$ | | | -0.2 -0.2 -0.2 | -0.5 -0.5 -0.6 |
| | : BD434 | | | | | |
| | : BD436 | | | | | |
| $V_{BE(on)}$ | * Base-Emitter ON Voltage | $V_{CE} = -1\text{V}, I_C = -2\text{A}$ | | | -1.1 -1.1 -1.2 | V V V |
| | : BD434 | | | | | |
| | : BD436 | | | | | |
| f_T | Current Gain Bandwidth Product | $V_{CE} = -1\text{V}, I_C = -250\text{mA}$ | 3 | | | MHz |
| | : BD438 | | | | | |

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

Typical Characteristics

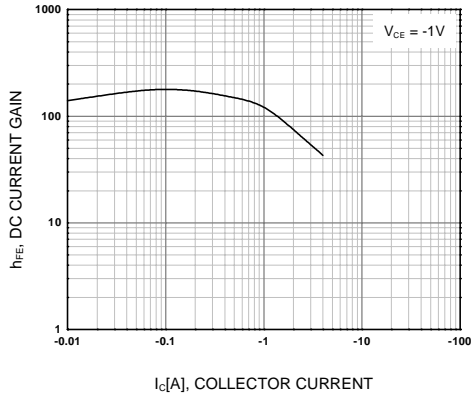


Figure 1. DC current Gain

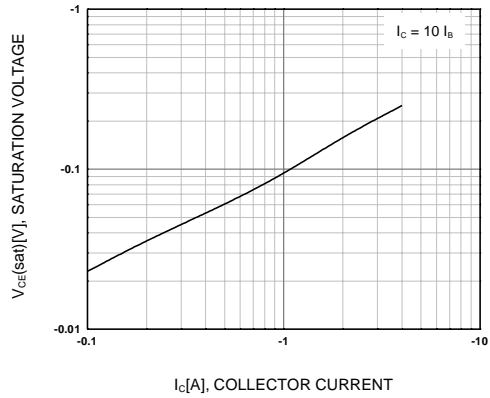


Figure 2. Collector-Emitter Saturation Voltage

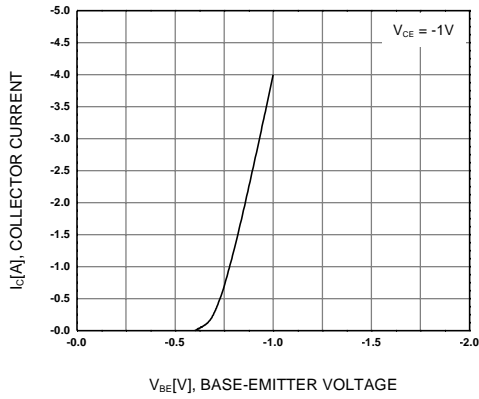


Figure 3. Base-Emitter On Voltage

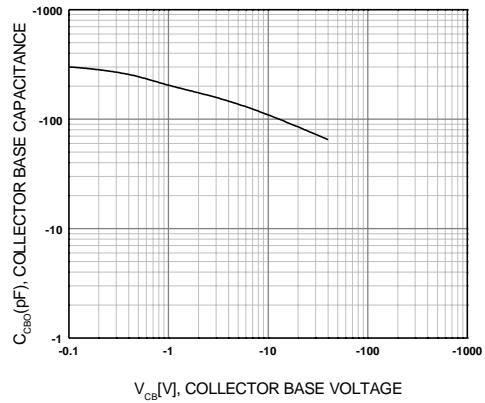


Figure 4. Collector-Base Capacitance

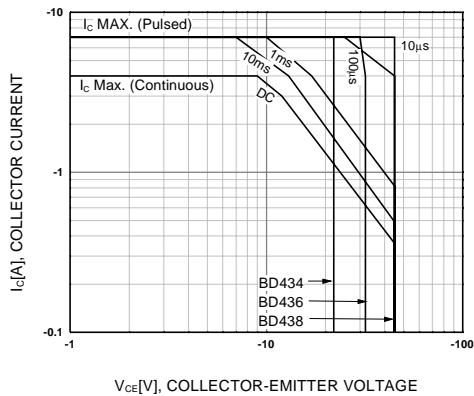


Figure 5. Safe Operating Area

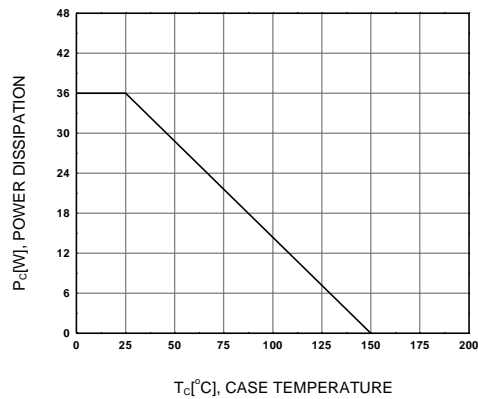


Figure 6. Power Derating

Package Dimensions

TO-126

BD434/436/438



Dimensions in Millimeters

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| Bottomless™ | FAST ^r ™ | PACMAN™ | SuperSOT™-6 |
| CoolFET™ | FRFET™ | POP™ | SuperSOT™-8 |
| CROSSVOLT™ | GlobalOptoisolator™ | PowerTrench [®] | SyncFET™ |
| DenseTrench™ | GTO™ | QFET™ | TinyLogic™ |
| DOME™ | HiSeC™ | QS™ | UHC™ |
| EcoSPARK™ | ISOPLANAR™ | QT Optoelectronics™ | UltraFET [®] |
| E ² CMOS™ | LittleFET™ | Quiet Series™ | VCX™ |
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