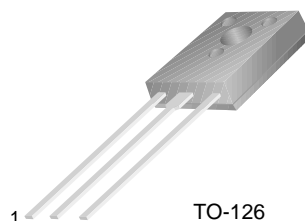


## BD375/377/379

### Medium Power Linear and Switching Applications

- Complement to BD376, BD378 and BD380 respectively

### NPN Epitaxial Silicon Transistor



TO-126  
1. Emitter 2. Collector 3. Base

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

| Symbol    | Parameter  | Value      | Units            |
|-----------|--|------------|------------------|
| $V_{CBO}$ | Collector-Base Voltage : BD375                   | 50         | V                |
|           | : BD377  | 75         | V                |
|           | : BD379  | 100        | V                |
| $V_{CEO}$ | Collector-Emitter Voltage : BD375                | 45         | V                |
|           | : BD377  | 60         | V                |
|           | : BD379  | 80         | V                |
| $V_{EBO}$ | Emitter-Base Voltage                             | 5          | V                |
| $I_C$     | Collector Current (DC)                           | 2          | A                |
| $I_{CP}$  | *Collector Current (Pulse)                       | 3          | A                |
| $I_B$     | Base Current                                     | 1          | A                |
| $P_C$     | Collector Dissipation ( $T_C=25^\circ\text{C}$ ) | 25         | W                |
| $T_J$     | Junction Temperature                             | 150        | $^\circ\text{C}$ |
| $T_{STG}$ | Storage Temperature                              | - 55 ~ 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             |
|                | : BD375                                |  |      |      |      |               |
|                | : BD377                                |  |      |      |      |               |
| $BV_{CBO}$     | Collector-Base Breakdown Voltage       | $I_C = 100\mu\text{A}, I_E = 0$  | 50   |      |      | V             |
|                | : BD377                                |  |      |      |      |               |
|                | : BD379                                |  |      |      |      |               |
| $I_{CBO}$      | Collector Cut-off Current              | $V_{CB} = 45\text{V}, I_E = 0$<br>$V_{CB} = 60\text{V}, I_E = 0$<br>$V_{CB} = 80\text{V}, I_E = 0$ |      |      | 2    | $\mu\text{A}$ |
|                | : BD375                                |  |      |      |      |               |
|                | : BD377                                |  |      |      |      |               |
| $I_{EBO}$      | Emitter Cut-off Current                | $V_{EB} = 5\text{V}, I_C = 0$  |      |      | 100  | $\mu\text{A}$ |
| $h_{FE1}$      | * DC Current Gain                      | $V_{CE} = 2\text{V}, I_C = 0.15\text{A}$   | 40   |      | 375  |               |
| $h_{FE2}$      |  |  |      |      |      |               |
| $V_{CE(sat)}$  | * Collector-Emitter Saturation Voltage | $I_C = 1\text{A}, I_B = 0.1\text{A}$   |      |      | 1    | V             |
| $V_{BE(on)}$   | * Base-Emitter ON Voltage              | $V_{CE} = 2\text{V}, I_C = 1\text{A}$  |      |      | 1.5  | V             |
| $t_{ON}$       | Turn ON Time                           | $V_{CC} = 30\text{V}, I_C = 0.5\text{A}$<br>$I_{B1} = - I_{B2} = 0.05\text{A}$<br>$R_L = 60\Omega$ |      | 50   |      | ns            |
| $t_{OFF}$      | Turn OFF Time                          |  |      |      |      |               |

\* Pulse Test: PW=350 $\mu\text{s}$ , duty Cycle=2% Pulsed

### $h_{FE}$ Classification

| Classification | 6        | 10       | 16        | 25        |
|----------------|----------|----------|-----------|-----------|
| $h_{FE1}$      | 40 ~ 100 | 63 ~ 160 | 100 ~ 250 | 150 ~ 375 |

# Typical Characteristics

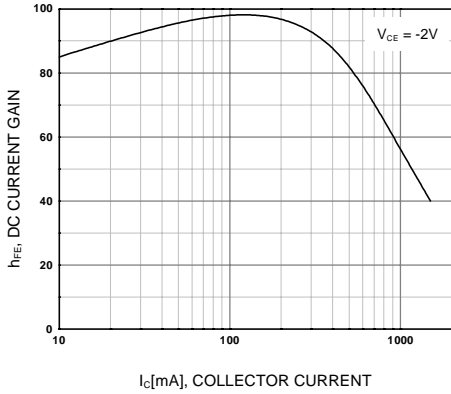


Figure 1. DC current Gain

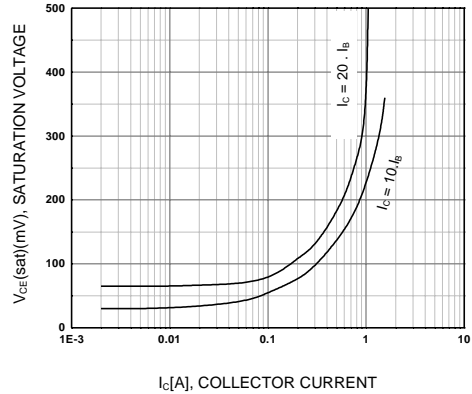


Figure 2. Collector-Emitter Saturation Voltage

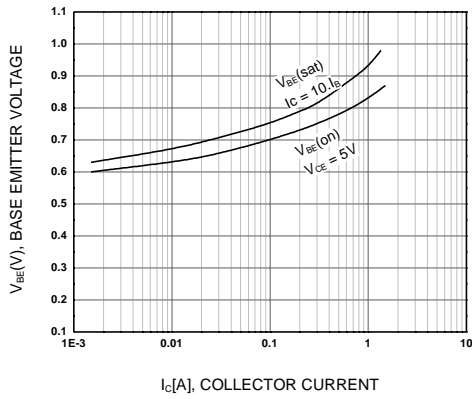


Figure 3. Base-Emitter Voltage

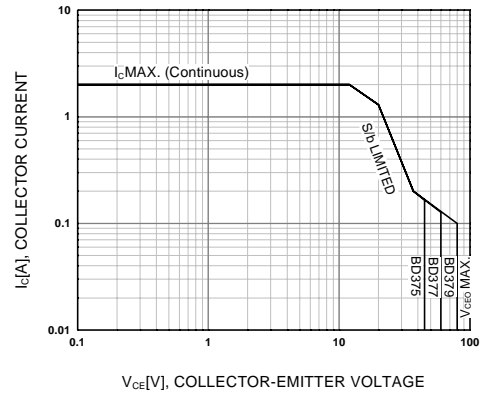


Figure 4. Safe Operating Area

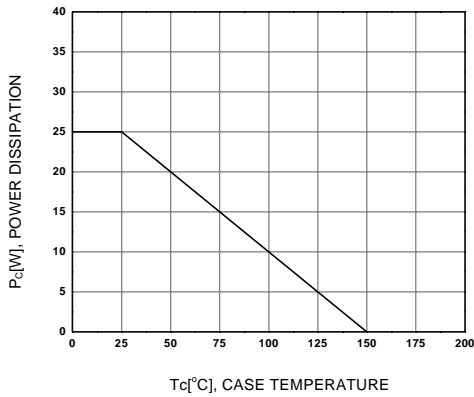


Figure 5. Power Derating

# Package Dimensions

## TO-126

BD375/377/379



Dimensions in Millimeters

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