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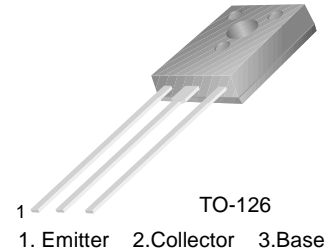
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BD176/178/180

Medium Power Linear and Switching Applications

- Complement to BD 175/177/179 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 : BD176 | - 45 | V |
| | : BD178 | - 60 | V |
| | : BD180 | - 80 | V |
| V_{CEO} | Collector-Emitter Voltage : BD176 | - 45 | V |
| | : BD178 | - 60 | V |
| | : BD180 | - 80 | V |
| V_{EBO} | Emitter-Base Voltage | - 5 | V |
| I_C | Collector Current (DC) | - 3 | A |
| I_C | *Collector Current (Pulse) | - 7 | A |
| P_C | Collector Dissipation ($T_C=25^\circ\text{C}$) | 30 | W |
| $R_{\theta ja}$ | Junction to Ambient | 70 | $^\circ\text{C/W}$ |
| $R_{\theta jc}$ | Junction to Case | 8.5 | $^\circ\text{C/W}$ |
| 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 : BD176 | $I_C = -100\text{mA}, I_B = 0$ | - 45 | | | V | | |
| | : BD178 | | | | | | - 60 | V |
| | : BD180 | | | | | | - 80 | V |
| I_{CBO} | Collector Cut-off Current : BD176 | $V_{CB} = -45\text{V}, I_E = 0$ | | | - 100 | μA | | |
| | : BD178 | $V_{CB} = -60\text{V}, I_E = 0$ | | | - 100 | μA | | |
| | : BD180 | $V_{CB} = -80\text{V}, I_E = 0$ | | | - 100 | μA | | |
| I_{EBO} | Emitter Cut-off Current | $V_{EB} = -5\text{V}, I_C = 0$ | | | - 1 | mA | | |
| h_{FE1} h_{FE2} | * DC Current Gain | $V_{CE} = -2\text{V}, I_C = -150\text{mA}$ | 40 | | 250 | | | |
| | | $V_{CE} = -2\text{V}, I_C = -1\text{A}$ | 15 | | | | | |
| $V_{CE(sat)}$ | * Collector-Emitter Saturation Voltage | $I_C = -1\text{A}, I_B = -0.1\text{A}$ | | | - 0.8 | V | | |
| $V_{BE(on)}$ | * Base-Emitter On Voltage | $V_{CE} = -2\text{V}, I_C = -1\text{A}$ | | | - 1.3 | V | | |
| f_T | Current Gain Bandwidth Product | $V_{CE} = -10\text{V}, I_C = -250\text{mA}$ | 3 | | | MHz | | |

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

h_{FE} Classification

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

* Classification 16: Only BD 176

Typical Characteristics

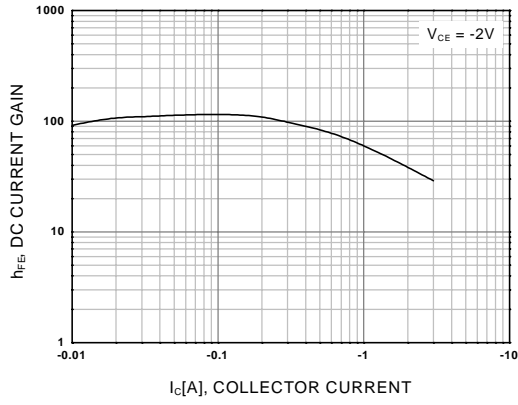
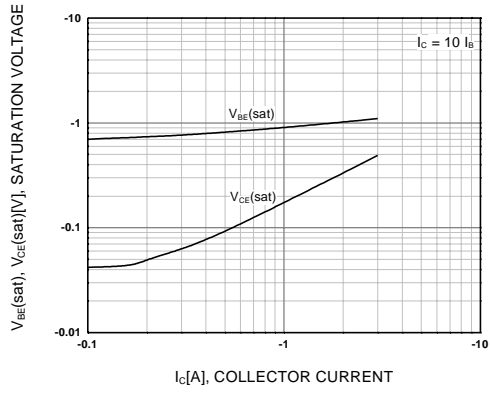


Figure 1. DC current Gain



**Figure 2. Base-Emitter Saturation Voltage
Collector-Emitter Saturation Voltage**

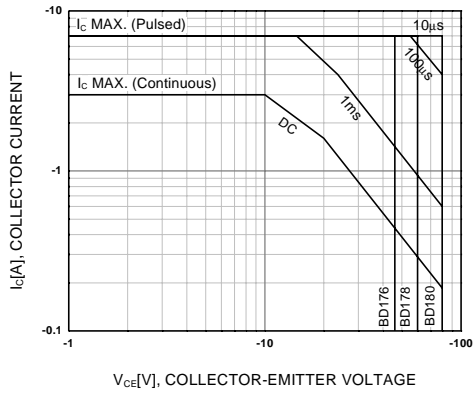


Figure 3. Safe Operating Area

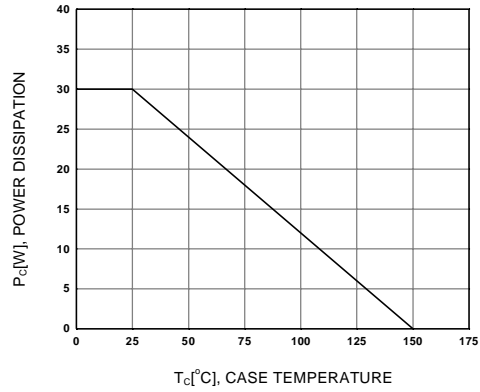


Figure 4. Power Derating

Package Dimensions

TO-126

BD176/178/180



Dimensions in Millimeters

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