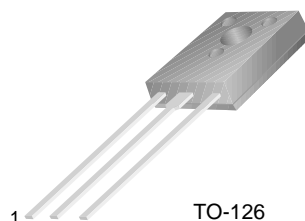


BD676A/678A/680A/682

Medium Power Linear and Switching Applications

- Medium Power Darlington TR
- Complement to BD675A, BD677A, BD679A and BD681 respectively



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

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 : BD676A | - 45 | V |
| | : BD678A | - 60 | V |
| | : BD680A | - 80 | V |
| | : BD682 | - 100 | V |
| V_{CEO} | Collector-Emitter Voltage : BD676A | - 45 | V |
| | : BD678A | - 60 | V |
| | : BD680A | - 80 | V |
| | : BD682 | - 100 | V |
| V_{EBO} | Emitter-Base Voltage | - 5 | V |
| I_C | Collector Current (DC) | - 4 | A |
| I_{CP} | *Collector Current (Pulse) | - 6 | A |
| I_B | Base Current | - 100 | mA |
| P_C | Collector Dissipation ($T_C=25^\circ\text{C}$) | 14 | W |
| $R_{\theta ja}$ | Thermal Resistance (Junction to Ambient) | 88 | $^\circ\text{C/W}$ |
| 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 : BD676A | $I_C = - 50\text{mA}, I_B = 0$ | - 45 | | | |
| | : BD678A | | | | | |
| | : BD680A | | | | | |
| | : BD682 | | | | | |
| I_{CBO} | Collector-Base Voltage : BD676A | $V_{CB} = - 45\text{V}, I_E = 0$ | | | - 200 | μA |
| | : BD678A | $V_{CB} = - 60\text{V}, I_E = 0$ | | | - 200 | μA |
| | : BD680A | $V_{CB} = - 80\text{V}, I_E = 0$ | | | - 200 | μA |
| | : BD682 | $V_{CB} = - 100\text{V}, V_{BE} = 0$ | | | - 200 | μA |
| I_{CEO} | Collector Cut-off Current : BD676A | $V_{CE} = - 45\text{V}, V_{BE} = 0$ | | | - 500 | μA |
| | : BD678A | $V_{CE} = - 60\text{V}, V_{BE} = 0$ | | | - 500 | μA |
| | : BD680A | $V_{CE} = - 80\text{V}, V_{BE} = 0$ | | | - 500 | μA |
| | : BD682 | $V_{CE} = - 100\text{V}, V_{BE} = 0$ | | | - 500 | μA |
| I_{EBO} | Emitter Cut-off Current | $V_{EB} = - 5\text{V}, I_C = 0$ | | | - 2 | mA |
| h_{FE} | * DC Current Gain : BD676A/678A/680A | $V_{CE} = - 3\text{V}, I_C = - 2\text{A}$ | 750 | | | |
| | : BD682 | $V_{CE} = - 3\text{V}, I_C = - 1.5\text{A}$ | 750 | | | |
| $V_{CE(sat)}$ | * Collector-Emitter Saturation Voltage : BD676A/678A/680A | $I_C = - 2\text{A}, I_B = - 40\text{mA}$ | | | - 2.8 | V |
| | : BD682 | $I_C = - 1.5\text{A}, I_B = - 30\text{mA}$ | | | - 2.5 | V |
| $V_{BE(on)}$ | * Base-Emitter On Voltage : BD676A/678A/680A | $V_{CE} = - 3\text{V}, I_C = - 2\text{A}$ | | | - 2.5 | V |
| | : BD682 | $V_{CE} = - 3\text{V}, I_C = - 1.5\text{A}$ | | | - 2.5 | V |

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

Typical Characteristics

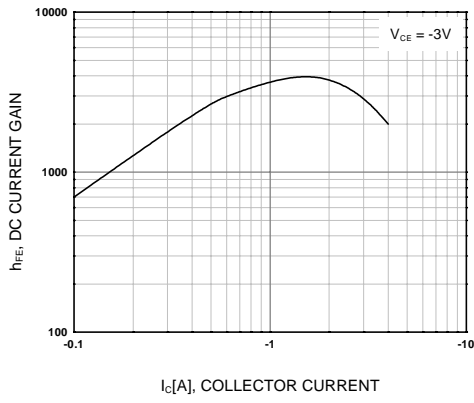


Figure 1. DC current Gain

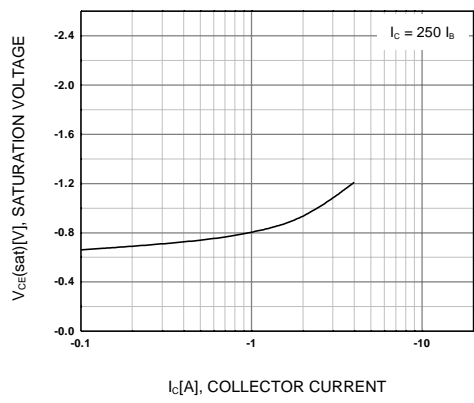


Figure 2. Collector-Emitter Saturation Voltage

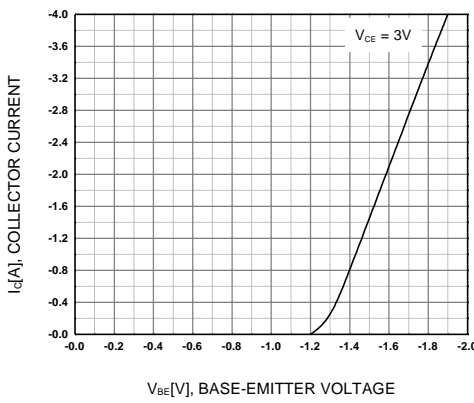


Figure 3. Base-Emitter On Voltage

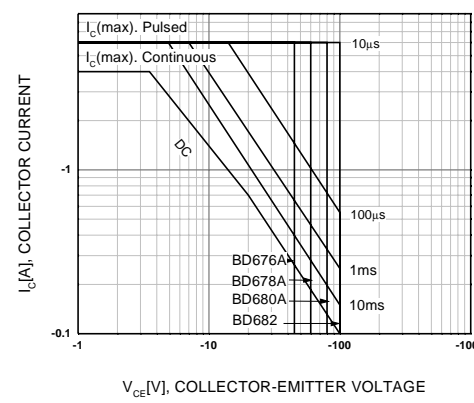


Figure 4. Safe Operating Area

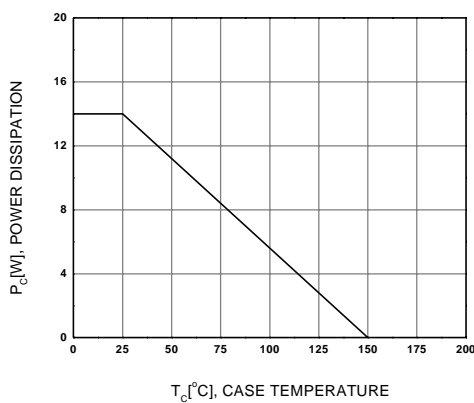
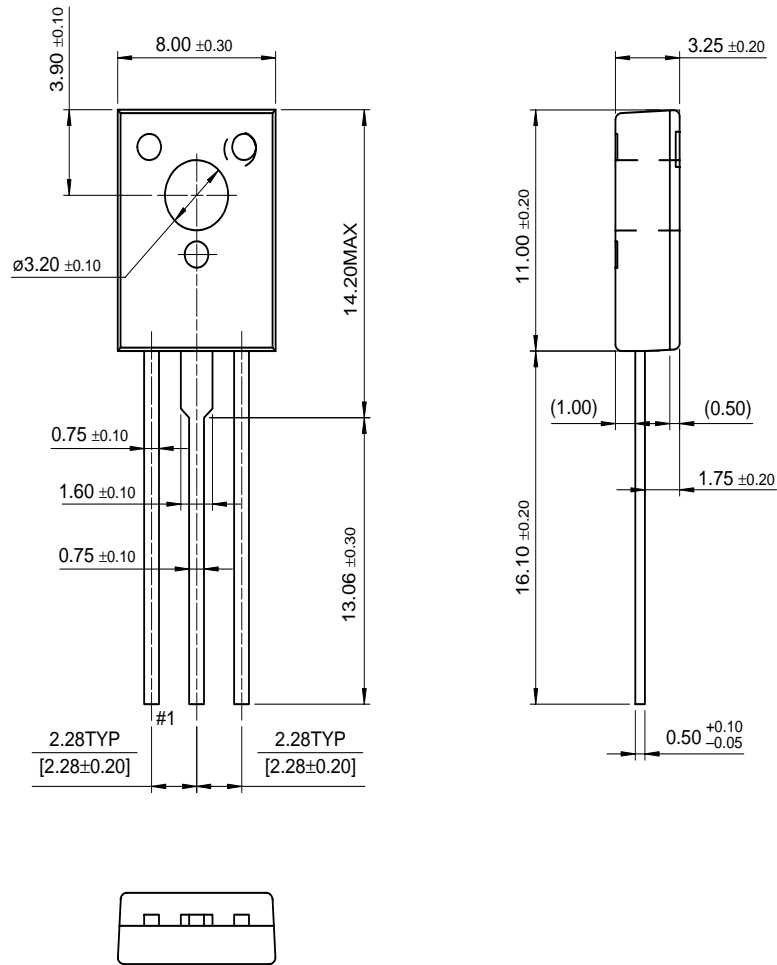


Figure 5. Power Derating

Package Dimensions

TO-126



BD676A/678A/680A/682

Dimensions in Millimeters

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