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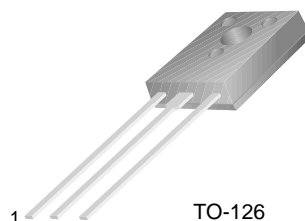
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BD675A/677A/679A/681

Medium Power Linear and Switching Applications

- Medium Power Darlington TR
- Complement to BD676A, BD678A, BD680A and BD682 respectively



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

NPN Epitaxial Silicon Transistor

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

| Symbol | Parameter | Value | Units |
|-----------|--|------------|------------------|
| V_{CB0} | Collector-Base Voltage : BD675A | 45 | V |
| | : BD677A | 60 | V |
| | : BD679A | 80 | V |
| | : BD681 | 100 | V |
| V_{CEO} | Collector-Emitter Voltage : BD675A | 45 | V |
| | : BD677A | 60 | V |
| | : BD679A | 80 | V |
| | : BD681 | 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 ($T_C=25^\circ\text{C}$) | 40 | 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 : BD675A | $I_C = 50\text{mA}, I_B = 0$ | 45 | | | V |
| | : BD677A | | 60 | | | V |
| | : BD679A | | 80 | | | V |
| | : BD681 | | 100 | | | V |
| I_{CBO} | Collector-Base Voltage : BD675A | $V_{CB} = 45\text{V}, I_E = 0$ | | | 200 | μA |
| | : BD677A | $V_{CB} = 60\text{V}, I_E = 0$ | | | 200 | μA |
| | : BD679A | $V_{CB} = 80\text{V}, I_E = 0$ | | | 200 | μA |
| | : BD681 | $V_{CB} = 100\text{V}, V_{BE} = 0$ | | | 200 | μA |
| I_{CEO} | Collector Cut-off Current : BD675A | $V_{CE} = 45\text{V}, V_{BE} = 0$ | | | 500 | μA |
| | : BD677A | $V_{CE} = 60\text{V}, V_{BE} = 0$ | | | 500 | μA |
| | : BD679A | $V_{CE} = 80\text{V}, V_{BE} = 0$ | | | 500 | μA |
| | : BD681 | $V_{CE} = 100\text{V}, V_{BE} = 0$ | | | 500 | μA |
| I_{EBO} | Emitter Cut-off Current | $V_{EB} = 5\text{V}, I_C = 0$ | | | 2 | mA |
| h_{FE} | * DC Current Gain : BD675A/677A/679A | $V_{CE} = 3\text{V}, I_C = 2\text{A}$ | 750 | | | |
| | : BD681 | $V_{CE} = 3\text{V}, I_C = 1.5\text{A}$ | 750 | | | |
| $V_{CE(sat)}$ | * Collector-Emitter Saturation Voltage : BD675A/677A/679A | $I_C = 2\text{A}, I_B = 40\text{mA}$ | | | 2.8 | V |
| | : BD681 | $I_C = 1.5\text{A}, I_B = 30\text{mA}$ | | | 2.5 | V |
| $V_{BE(on)}$ | * Base-Emitter ON Voltage : BD675A/677A/679A | $V_{CE} = 3\text{V}, I_C = 2\text{A}$ | | | 2.5 | V |
| | : BD681 | $V_{CE} = 3\text{V}, I_C = 1.5\text{A}$ | | | 2.5 | V |

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

Typical Characteristics

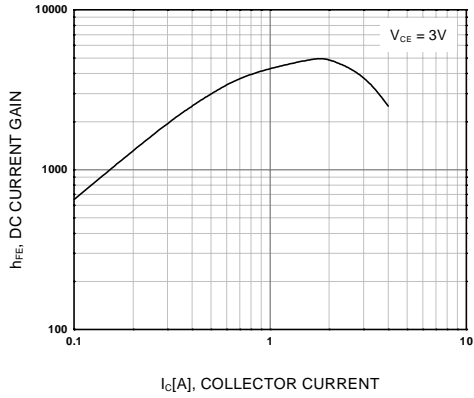


Figure 1. DC current Gain

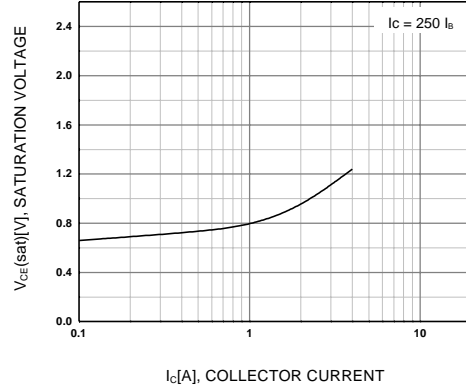


Figure 2. Collector-Emitter Saturation Voltage

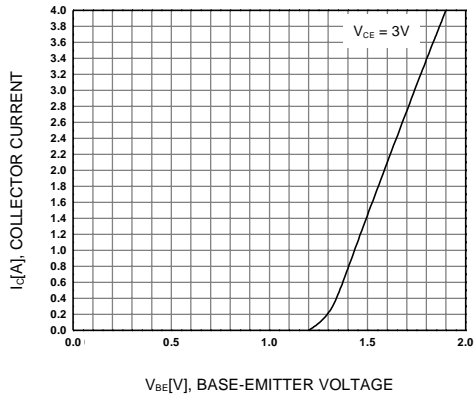


Figure 3. Base-Emitter On Voltage

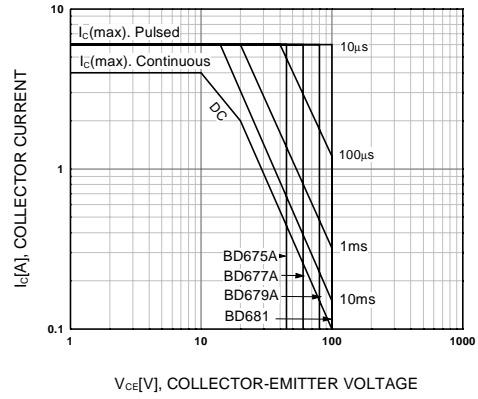


Figure 4. Safe Operating Area

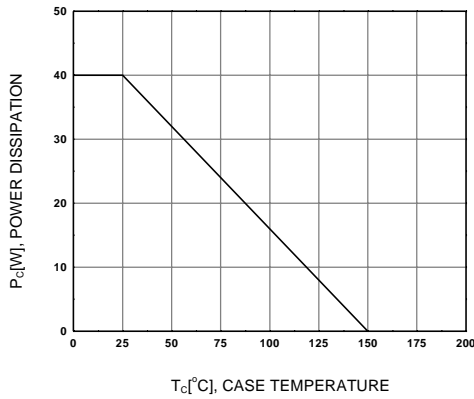
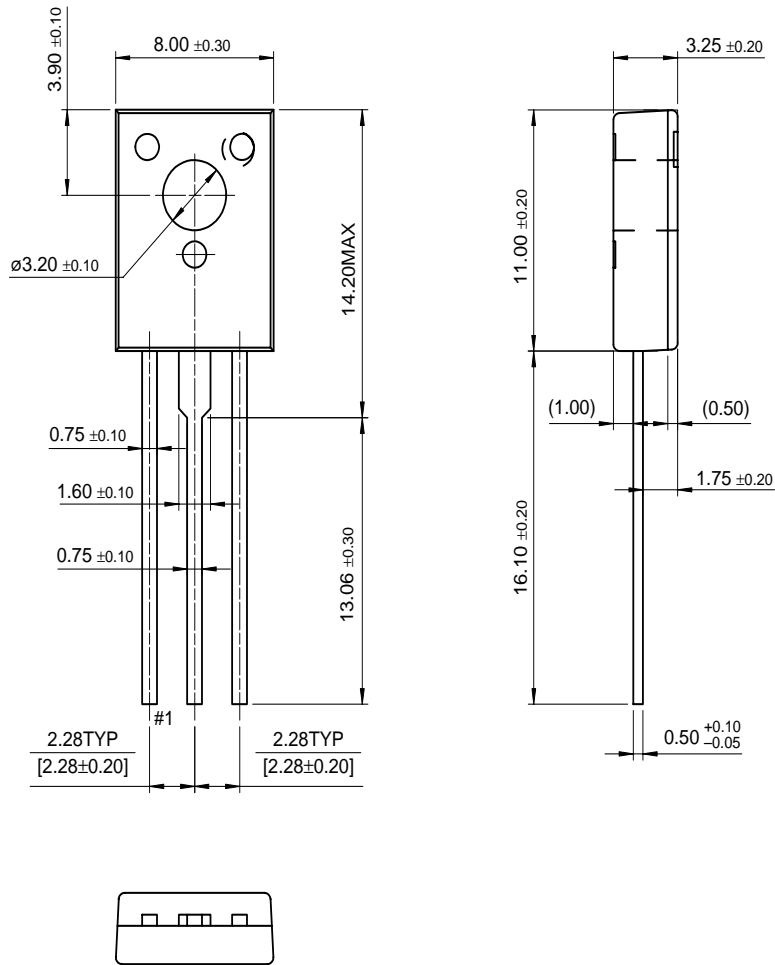


Figure 5. Power Derating

Package Dimensions

TO-126



BD675A/677A/679A/681

Dimensions in Millimeters

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Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: info@moschip.ru

Skype отдела продаж:

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