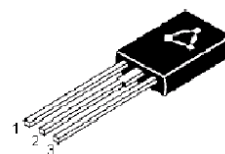


NPN Power Darlington Transistor



Pin Configuration:

1. Emitter
2. Collector
3. Base

Feature:

- NPN Plastic Power Darlington Transistor

Absolute Maximum Ratings

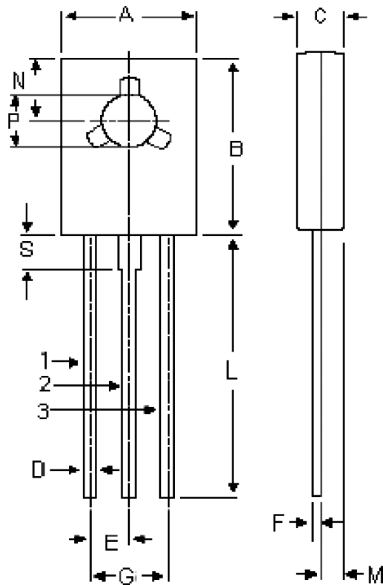
| Parameter | Symbol | BD681 | Unit |
|--|----------------|-------------|-----------------------|
| Collector Base Voltage | V_{CBO} | 100 | V |
| Collector Emitter Voltage | V_{CEO} | | |
| Emitter Base Voltage | V_{EBO} | 5 | |
| Collector Current | I_C | 4 | A |
| Base Current | I_B | 0.1 | |
| Total Power Dissipation at $T_a = 25^\circ\text{C}$ Derate above 25°C | P_D | 1.25 | W |
| | | 10 | mW/ $^\circ\text{C}$ |
| Total Power Dissipation at $T_C = 25^\circ\text{C}$ Derate above 25°C | | 40 | W W/ $^\circ\text{C}$ |
| | | 0.32 | |
| Operating and Storage Junction Temperature Range | T_j, T_{stg} | -55 to +150 | $^\circ\text{C}$ |
| Thermal Resistance | | | |
| Junction to Case | $R_{th(j-c)}$ | 3.13 | $^\circ\text{C/W}$ |
| Junction to Ambient in Free Air | $R_{th(j-a)}$ | 100 | |

NPN Power Darlington Transistor

Electrical Characteristics ($T_a = 25^\circ\text{C}$ unless specified otherwise)

| Parameter | Symbol | Test Condition | Min. | Max. | Unit |
|--------------------------------------|-----------------|--|------|------|---------------|
| Collector Emitter Voltage | V_{CEO}^* | $I_C = 50\text{mA}, I_B = 0$ | 100 | - | V |
| Collector Cut off Current | I_{CEO} | $V_{CE} = \text{Half Rated } V_{CEO}, I_B = 0$ | - | 500 | μA |
| | I_{CBO} | $V_{CB} = \text{Rated } V_{CBO}, I_E = 0$ | - | 0.2 | mA |
| | I_{CBO} | $V_{CB} = \text{Rated } V_{CBO}, I_E = 0$ $T_C = 100^\circ\text{C}$ | - | 2 | mA |
| Emitter Cut off Current | I_{EBO} | $V_{EB} = 5\text{V}, I_C = 0$ | - | 2 | mA |
| Collector Emitter Saturation Voltage | $V_{CE(sat)}^*$ | $I_C = 1.5\text{A}, I_B = 6\text{mA}$ | - | 2.5 | V |
| Base Emitter On Voltage | $V_{EB(on)}^*$ | $I_C = 1.5\text{A}, V_{CE} = 3\text{V}$ | - | | |
| DC Current Gain | h_{FE}^* | $I_C = 1.5\text{A}, V_{CE} = 3\text{V}$ | 750 | - | - |
| Small Signal Current Gain | $ h_{fe} $ | $I_C = 1.5\text{A}, V_{CE} = 3\text{V}$ $f = 1\text{MHz}$ | 1 | - | - |

*Pulse Test : Pulse Width = $\leq 300\mu\text{s}$, Duty Cycle = $\leq 2\%$.



Pin Configuration:

1. Emitter
2. Collector
3. Base

| Dimensions | Minimum | Maximum |
|------------|----------------|---------|
| A | 7.4 | 7.8 |
| B | 10.5 | 10.8 |
| C | 2.4 | 2.7 |
| D | 0.7 | 0.9 |
| E | 2.25 (Typical) | |
| F | 0.49 | 0.75 |
| G | 4.5 (Typical) | |
| L | 15.7 (Typical) | |
| M | 1.27 (Typical) | |
| N | 3.75 (Typical) | |
| P | 3 | 3.2 |
| S | 2.5 (Typical) | |

Dimensions : Millimetres

Part Number Table

| Description | Part Number |
|-------------------------------|-------------|
| Darlington Transistor, TO-126 | BD681 |

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