



## BD181 – BD182 – BD183

### NPN SILICON TRANSISTOR POWER LINERAR AND SWITCHING APPLICATIONS

BD181, BD182 and BD183 are silicon NPN transistors intended for a wide variety of high power applications. Typical applications include power switching circuits, audio amplifiers, solenoid drivers, and series and shunt regulators.

#### ABSOLUTE MAXIMUM RATINGS

| Symbol     | Ratings                     |                      |       | Value       | Unit |
|------------|-----------------------------|----------------------|-------|-------------|------|
| $V_{CBO}$  | Collector-Base Voltage      |                      | BD181 | 55          | V    |
|            |                             |                      | BD182 | 70          |      |
|            |                             |                      | BD183 | 85          |      |
| $V_{CEO}$  | Collector-EmitterVoltage    |                      | BD181 | 45          | V    |
|            |                             |                      | BD182 | 60          |      |
|            |                             |                      | BD183 | 80          |      |
| $V_{CER}$  | Collector-EmitterVoltage    | $R_{BE}=100\ \Omega$ | BD181 | 55          | V    |
|            |                             |                      | BD182 | 70          |      |
|            |                             |                      | BD183 | 85          |      |
| $V_{CEX}$  | Collector-EmitterVoltage    | $V_{BE}=-1.5\ V$     | BD181 | 55          | V    |
|            |                             |                      | BD182 | 70          |      |
|            |                             |                      | BD183 | 85          |      |
| $V_{EBO}$  | Emitter-Base Voltage        |                      |       | 7.0         | V    |
| $I_C$      | Collector Current           |                      |       | 15          | A    |
| $I_B$      | Base Current                |                      |       | 7.0         | A    |
| $P_T$      | Power Dissipation           | @ $T_C < 25^\circ$   |       | 150         | W    |
| $P_{TOT}$  | <i>Power dissipation</i>    |                      |       | 117         | W    |
| $T_J\ T_s$ | Junction <i>Temperature</i> |                      |       | 200         | °C   |
|            | Storage Temperature         |                      |       | -65 to +200 |      |

#### THERMAL CHARACTERISTICS

| Symbol      | Ratings                              | Value | Unit |
|-------------|--------------------------------------|-------|------|
| $R_{thJ-C}$ | Thermal Resistance, Junction to Case | 1.5   | °C/W |

## BD181 – BD182 – BD183

### ELECTRICAL CHARACTERISTICS

TC=25°C unless otherwise noted

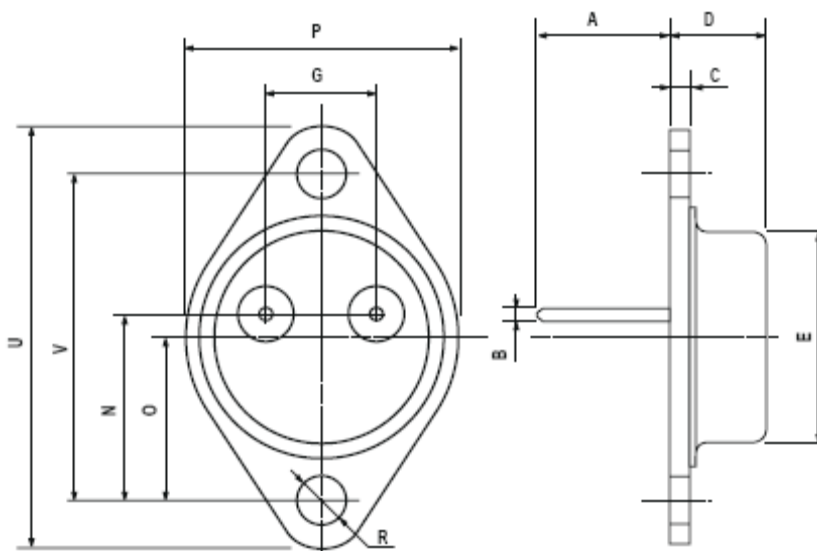
| Symbol        | Ratings                                   | Test Condition(s)                                    |       | Min | Typ | Max | Unit |
|---------------|-------------------------------------------|------------------------------------------------------|-------|-----|-----|-----|------|
| $I_{EBO}$     | Emitter-Base Cutoff Current               | $V_{EB} = 7 \text{ V}, I_C = 0$                      | BD181 | -   | -   | 5.0 | A    |
|               |                                           |                                                      | BD182 | -   | -   |     |      |
|               |                                           |                                                      | BD183 | -   | -   |     |      |
| $I_{CBO}$     | Collector-Base Cutoff Current             | $V_{CB} = 45 \text{ V}$<br>$T_j = 200^\circ\text{C}$ | BD181 | -   | -   | 2.0 | mA   |
|               |                                           | $V_{CB} = 60 \text{ V}$<br>$T_j = 200^\circ\text{C}$ | BD182 | -   | -   | 5.0 |      |
|               |                                           | $V_{CB} = 80 \text{ V}$<br>$T_j = 200^\circ\text{C}$ | BD183 | -   | -   | 5.0 |      |
| $V_{CEO(BR)}$ | Collector-Emitter Breakdown Voltage (*)   | $I_C = 200 \text{ mA}, I_B = 0$                      | BD181 | 45  | -   | -   | V    |
|               |                                           |                                                      | BD182 | 60  | -   | -   |      |
|               |                                           |                                                      | BD183 | 80  | -   | -   |      |
| $V_{CE(SAT)}$ | Collector-Emitter saturation Voltage (*)  | $I_C = 3 \text{ A}, I_B = 0.3 \text{ A}$             | BD181 | -   | -   | 1.0 | V    |
|               |                                           | $I_C = 4 \text{ A}, I_B = 0.4 \text{ A}$             | BD182 | -   | -   | 1.0 |      |
|               |                                           | $I_C = 3 \text{ A}, I_B = 0.3 \text{ A}$             | BD183 | -   | -   | 1.0 |      |
| $V_{BR(CER)}$ | Collector-Emitter Breakdown Voltage (*)   | $I_C = 200 \text{ mA}$<br>$R_{BE} = 100 \Omega$      | BD181 | 55  | -   | -   | V    |
|               |                                           |                                                      | BD182 | 70  | -   | -   |      |
|               |                                           |                                                      | BD183 | 85  | -   | -   |      |
| $f_{hfe}$     | Collector-Emitter Breakdown Voltage (*)   | $V_{CE} = 4.0 \text{ V}, I_C = 3.0 \text{ A}$        | BD181 | 15  | -   | -   | kHz  |
|               |                                           |                                                      | BD182 |     |     |     |      |
|               |                                           |                                                      | BD183 |     |     |     |      |
| $h_{FE}$      | Static forward current transfer ratio (*) | $V_{CE} = 4.0 \text{ V}, I_C = 3.0 \text{ A}$        | BD181 | 20  | -   | 70  | -    |
|               |                                           | $V_{CE} = 4.0 \text{ V}, I_C = 4.0 \text{ A}$        | BD182 | 20  | -   | 70  |      |
|               |                                           | $V_{CE} = 4.0 \text{ V}, I_C = 3.0 \text{ A}$        | BD183 | 20  | -   | 70  |      |

(\*) Pulse Width  $\approx 300 \mu\text{s}$ , Duty Cycle  $\angle 2.0\%$

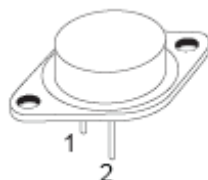
## BD181 – BD182 – BD183

### MECHANICAL DATA CASE TO-3

| DIMENSIONS (mm) |       |       |
|-----------------|-------|-------|
|                 | min   | max   |
| A               | 11    | 13.10 |
| B               | 0.97  | 1.15  |
| C               | 1.5   | 1.65  |
| D               | 8.32  | 8.92  |
| F               | 19    | 20    |
| G               | 10.70 | 11.1  |
| N               | 16.50 | 17.20 |
| P               | 25    | 26    |
| R               | 4     | 4.09  |
| U               | 38.50 | 39.30 |
| V               | 30    | 30.30 |



|         |           |
|---------|-----------|
| Pin 1 : | Base      |
| Pin 2 : | Emitter   |
| Case :  | Collector |



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