



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-Emitter Voltage | | BD181 | 45 | V |
| | | | BD182 | 60 | |
| | | | BD183 | 80 | |
| V_{CER} | Collector-Emitter Voltage | $R_{BE}=100\ \Omega$ | BD181 | 55 | V |
| | | | BD182 | 70 | |
| | | | BD183 | 85 | |
| V_{CEX} | Collector-Emitter Voltage | $V_{BE}=-1.5\ V$ | BD181 | 55 | V |
| | | | BD182 | 70 | |
| | | | BD183 | 85 | |
| V_{EBO} | Emitter-Base Voltage | | BD181 | 7.0 | V |
| | | | BD182 | | |
| | | | BD183 | | |
| I_C | Collector Current | | BD181 | 15 | A |
| | | | BD182 | | |
| | | | BD183 | | |
| I_B | Base Current | | BD181 | 7.0 | A |
| | | | BD182 | | |
| | | | BD183 | | |
| P_T | Power Dissipation | @ $T_C < 25^\circ$ | BD181 | 150 | Watts |
| | | | BD182 | | |
| | | | BD183 | | |



BD181 – BD182 – BD183

| Symbol | Ratings | Value | Unit | |
|-----------|---------------------------------|-------------|------|----|
| P_{TOT} | Power dissipation | BD181 | 117 | W |
| | | BD182 | | |
| | | BD183 | | |
| $T_J T_s$ | Junction Storage Temperature | BD181 | 200 | °C |
| | | BD182 | | |
| | | BD183 | | |
| | | -65 to +200 | | |

THERMAL CHARACTERISTICS

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

ELECTRICAL CHARACTERISTICS

TC=25°C unless otherwise noted

| Symbol | Ratings | Test Condition(s) | Min | Typ | Mx | 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 | $V_{CB}=45\text{ V}$ $t_i=200^\circ\text{C}$ | BD181 | - | - | 2.0 | mA |
| | | $V_{CB}=60\text{ V}$ $t_i=200^\circ\text{C}$ | BD182 | - | - | 5.0 | |
| | | $V_{CB}=80\text{ V}$ $t_i=200^\circ\text{C}$ | 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 (*) | $I_C=200\text{ mA}, R_{BE}=100\ \Omega$ | BD181 | 55 | - | - | V |
| | | | BD182 | 70 | - | - | |
| | | | BD183 | 85 | - | - | |

BD181 – BD182 – BD183

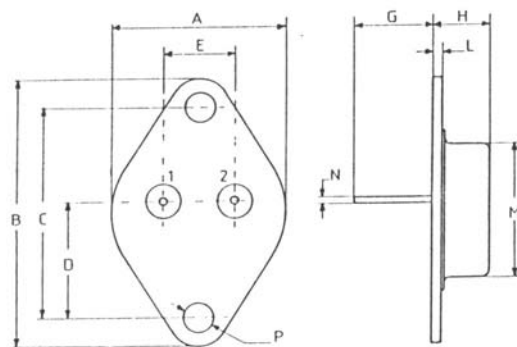
| Symbol | Ratings | Test Condition(s) | Min | Typ | Mx | Unit | |
|-----------|---|---|--------------|-----|----|------|-----|
| f_{hfe} | Collector-Emitter Breakdown Voltage (*) | $V_{CE}=4.0\text{ V}, I_C=3.0\text{ A}$ | BD181 | 15 | - | - | kHz |
| | | | BD182 | | | | |
| | | | BD183 | | | | |
| 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 | |

For PNP types current and voltage values are negative

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

MECHANICAL DATA CASE TO-3

| DIMENSIONS | | |
|------------|-------|--------|
| | mm | inches |
| A | 25,51 | 1,004 |
| B | 38,93 | 1,53 |
| C | 30,12 | 1,18 |
| D | 17,25 | 0,68 |
| E | 10,89 | 0,43 |
| G | 11,62 | 0,46 |
| H | 8,54 | 0,34 |
| L | 1,55 | 0,6 |
| M | 19,47 | 0,77 |
| N | 1 | 0,04 |
| P | 4,06 | 0,16 |



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