# BD180G

# Plastic Medium-Power Silicon PNP Transistor

This device is designed for use in 5.0 to 10 Watt audio amplifiers and drivers utilizing complementary or quasi complementary circuits.

**Features**

- High DC Current Gain
- BD180 is complementary with BD179
- These Devices are Pb−Free and are RoHS Compliant*

**MAXIMUM RATINGS**

| Rating | Symbol | Value | Unit |
|---|---|---|---|
| Collector−Emitter Voltage | $V_{CEO}$ | 80 | Vdc |
| Collector−Base Voltage | $V_{CBO}$ | 80 | Vdc |
| Emitter−Base Voltage | $V_{EBO}$ | 5.0 | Vdc |
| Collector Current | $I_C$ | 1.0 | Adc |
| Base Current | $I_B$ | 2.0 | Adc |
| Total Power Dissipation<br>@ $T_C$ = 25°C<br>Derate above 25°C | $P_D$ | <br>30<br>240 | <br>W<br>mW/°C |
| Operating and Storage Junction Temperature Range | $T_J$, $T_{stg}$ | −65 to +150 | °C |

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

**THERMAL CHARACTERISTICS**

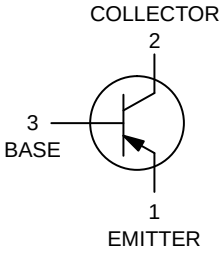
| Characteristic | Symbol | Max | Unit |
|---|---|---|---|
| Thermal Resistance, Junction−to−Case | $R_{\theta JC}$ | 4.16 | °C/W |

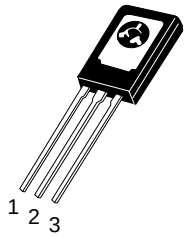
*For additional information on our Pb−Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

**ON Semiconductor®**

**http://onsemi.com**

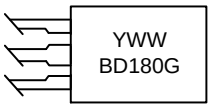
**3.0 AMPERES**
**POWER TRANSISTORS**
**PNP SILICON**
**80 VOLTS, 30 WATTS**




**TO−225**
**CASE 77**
**STYLE 1**

**MARKING DIAGRAM**




Y = Year
WW = Work Week
BD180 = Device Code
G = Pb−Free Package

**ORDERING INFORMATION**

| Device | Package | Shipping |
|---|---|---|
| BD180G | TO−225<br>(Pb−Free) | 500 Units/Box |

**ELECTRICAL CHARACTERISTICS** ($T_C$ = 25°C unless otherwise noted)

| Characteristic | Symbol | Min | Max | Unit |
|---|---|---|---|---|
| Collector−Emitter Sustaining Voltage (Note 1)<br>($I_C$ = 0.1 Adc, $I_B$ = 0) | $V_{(BR)CEO}$ | 80 | – | Vdc |
| Collector Cutoff Current<br>($V_{CB}$ = 80 Vdc, $I_E$ = 0) | $I_{CBO}$ | – | 1.0 | mAdc |
| Emitter Cutoff Current<br>($V_{BE}$ = 5.0 Vdc, $I_C$ = 0) | $I_{EBO}$ | – | 1.0 | mAdc |
| DC Current Gain<br>($I_C$ = 0.15 A, $V_{CE}$ = 2.0 V)<br>($I_C$ = 1.0 A, $V_{CE}$ = 2.0 V) | $h_{FE}$ | 40<br>15 | 250<br>– | – |
| Collector−Emitter Saturation Voltage (Note 1)<br>($I_C$ = 1.0 Adc, $I_B$ = 0.1 Adc) | $V_{CE(sat)}$ | – | 0.8 | Vdc |
| Base−Emitter On Voltage (Note 1)<br>($I_C$ = 1.0 Adc, $V_{CE}$ = 2.0 Vdc) | $V_{BE(on)}$ | – | 1.3 | Vdc |
| Current−Gain − Bandwidth Product<br>($I_C$ = 250 mAdc, $V_{CE}$ = 10 Vdc, f = 1.0 MHz) | $f_T$ | 3.0 | – | MHz |

1. Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%.

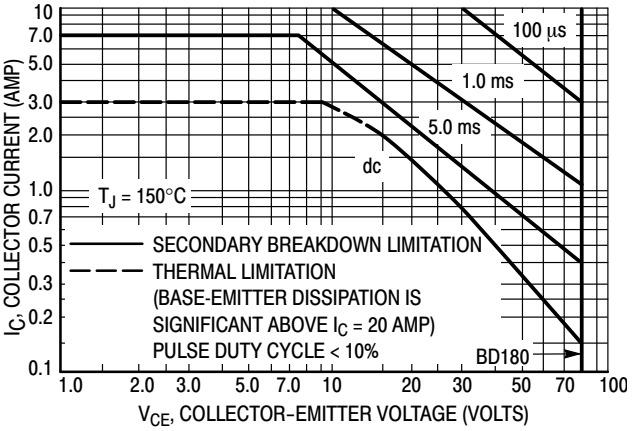



**Figure 1. Active Region Safe Operating Area**

The Safe Operating Area Curves indicate $I_C - V_{CE}$ limits below which the device will not enter secondary breakdown. Collector load lines for specific circuits must fall within the applicable Safe Area to avoid causing a catastrophic failure. To insure operation below the maximum $T_J$, power−temperature derating must be observed for both steady state and pulse power conditions.

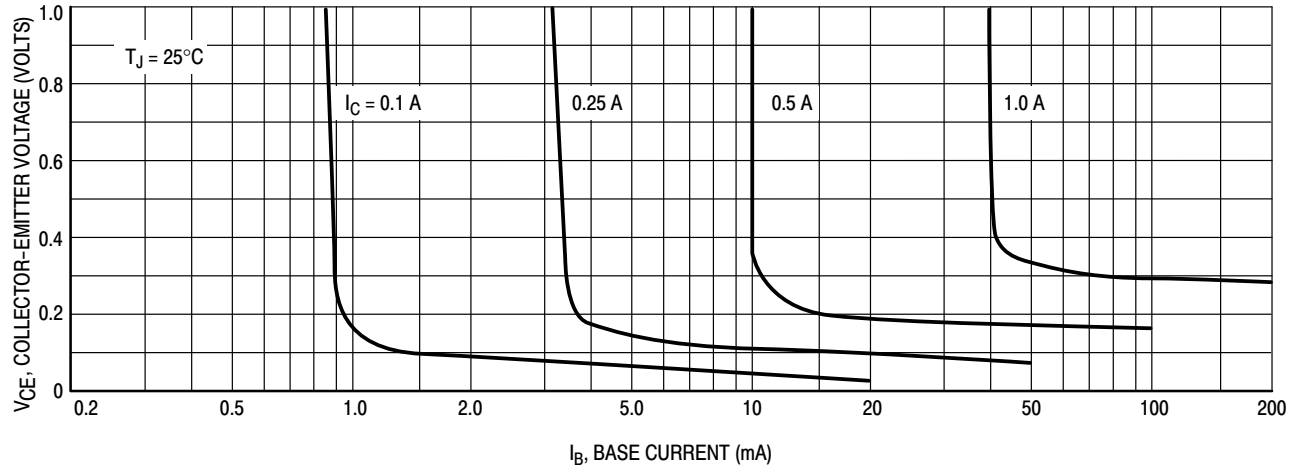



**Figure 2. Collector Saturation Region**

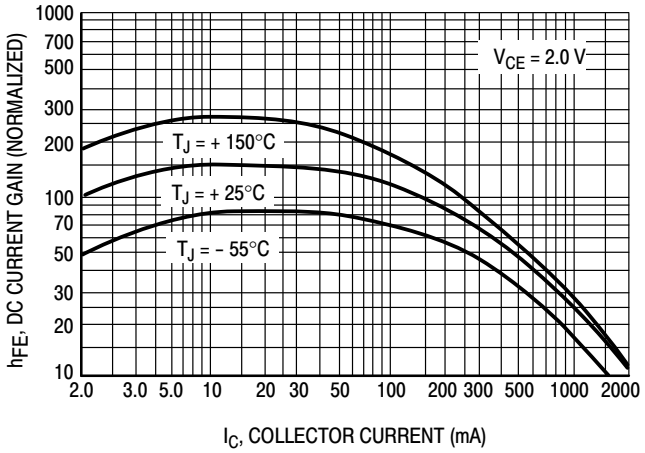



**Figure 3. Current Gain**

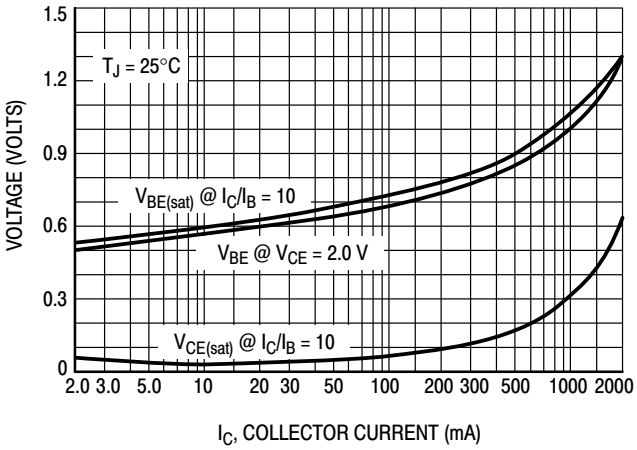



**Figure 4. "On" Voltages**

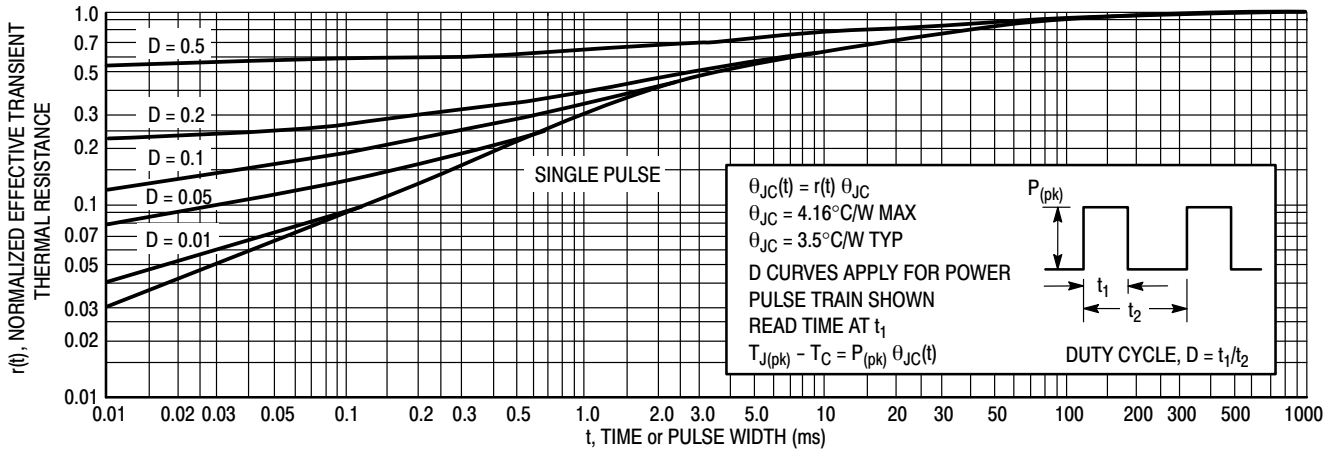


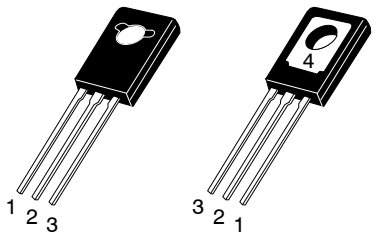

**Figure 5. Thermal Response**

# MECHANICAL CASE OUTLINE
## PACKAGE DIMENSIONS

ON Semiconductor®

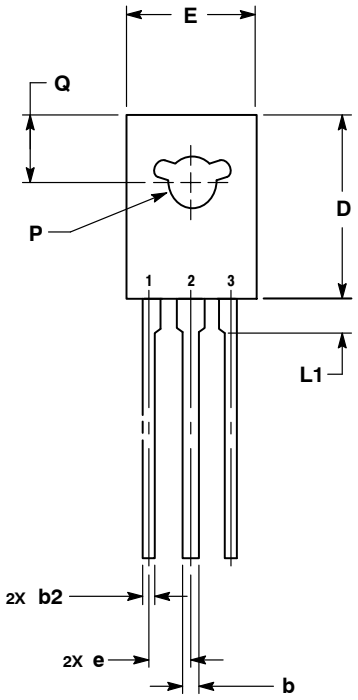
**TO−225**
CASE 77−09
ISSUE AD

DATE 25 MAR 2015

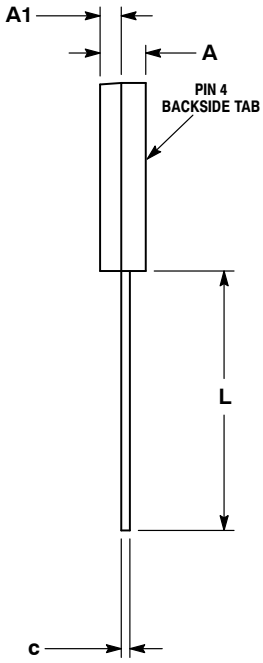



**FRONT VIEW** **BACK VIEW**

**SCALE 1:1**




**FRONT VIEW**

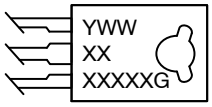



**SIDE VIEW**

NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. NUMBER AND SHAPE OF LUGS OPTIONAL.

| | MILLIMETERS | |
|---|---|---|
| DIM | MIN | MAX |
| A | 2.40 | 3.00 |
| A1 | 1.00 | 1.50 |
| b | 0.60 | 0.90 |
| b2 | 0.51 | 0.88 |
| c | 0.39 | 0.63 |
| D | 10.60 | 11.10 |
| E | 7.40 | 7.80 |
| e | 2.04 | 2.54 |
| L | 14.50 | 16.63 |
| L1 | 1.27 | 2.54 |
| P | 2.90 | 3.30 |
| Q | 3.80 | 4.20 |

### GENERIC MARKING DIAGRAM*




Y = Year
WW = Work Week
XXXXX = Device Code
G = Pb−Free Package

*This information is generic. Please refer to device data sheet for actual part marking. Pb−Free indicator, “G” or microdot “ ▪”, may or may not be present.

STYLE 1:
PIN 1. EMITTER
2., 4. COLLECTOR
3. BASE

STYLE 2:
PIN 1. CATHODE
2., 4. ANODE
3. GATE

STYLE 3:
PIN 1. BASE
2., 4. COLLECTOR
3. EMITTER

STYLE 4:
PIN 1. ANODE 1
2., 4. ANODE 2
3. GATE

STYLE 5:
PIN 1. MT 1
2., 4. MT 2
3. GATE

STYLE 6:
PIN 1. CATHODE
2., 4. GATE
3. ANODE

STYLE 7:
PIN 1. MT 1
2., 4. GATE
3. MT 2

STYLE 8:
PIN 1. SOURCE
2., 4. GATE
3. DRAIN

STYLE 9:
PIN 1. GATE
2., 4. DRAIN
3. SOURCE

STYLE 10:
PIN 1. SOURCE
2., 4. DRAIN
3. GATE

| | | |
|---|---|---|
| **DOCUMENT NUMBER:** | **98ASB42049B** | Electronic versions are uncontrolled except when accessed directly from the Document Repository. Printed versions are uncontrolled except when stamped “CONTROLLED COPY” in red. |
| **DESCRIPTION:** | **TO−225** | **PAGE 1 OF 1** |

## PUBLICATION ORDERING INFORMATION

**LITERATURE FULFILLMENT**:
**Email Requests to:** orderlit@onsemi.com

**onsemi Website:** www.onsemi.com

**TECHNICAL SUPPORT**
**North American Technical Support:**
Voice Mail: 1 800−282−9855 Toll Free USA/Canada
Phone: 011 421 33 790 2910

**Europe, Middle East and Africa Technical Support:**
Phone: 00421 33 790 2910
For additional information, please contact your local Sales Representative

◊

# X-ON Electronics

Largest Supplier of Electrical and Electronic Components

***Click to view similar products for*** Bipolar Transistors - BJT ***category:***

***Click to view products by*** ON Semiconductor ***manufacturer:***

Other Similar products are found below :

619691C MCH4017-TL-H BC546/116 BC557/116 BSW67A NTE158 NTE187A NTE195A NTE2302 NTE2330 NTE63 C4460 2SA1419T-TD-H 2SA1721-O(TE85L,F) 2SA2126-E 2SB1204S-TL-E 2SC5488A-TL-H 2SD2150T100R SP000011176 FMMTA92QTA 2N2369ADCSM 2SC2412KT146S 2SC5490A-TL-H 2SD1816S-TL-E 2SD1816T-TL-E CMXT2207 TR CPH6501-TL-E MCH4021-TL-E US6T6TR 732314D CMXT3906 TR CPH3121-TL-E CPH6021-TL-H 873787E IMZ2AT108 UMX21NTR EMT2T2R MCH6102-TL-E FP204-TL-E NJL0302DG 2N3583 2SA1434-TB-E 2SC3143-4-TB-E 2SD1621S-TD-E NTE103 30A02MH-TL-E NSV40301MZ4T1G NTE101 NTE13 NTE15