

PNP Epitaxial Silicon Transistor

BD136 Series

BD136 / BD138 / BD140

Applications

- Complement to BD135, BD137 and BD139 Respectively
- These are Pb-Free Devices

ABSOLUTE MAXIMUM RATINGS (T_C = 25°C unless otherwise noted)

| Rating | Symbol | Max | Unit |
|--|------------------|-------------------|------|
| Collector-Base Voltage BD136 BD138 BD140 | V _{CB0} | -45 -60 -80 | V |
| Collector-Emitter Voltage BD136 BD138 BD140 | V _{CEO} | -45 -60 -80 | V |
| Emitter-Base Voltage | V _{EBO} | -5 | V |
| Collector Current (DC) | I _C | -1.5 | A |
| Collector Current (Pulse) | I _{CP} | -3.0 | A |
| Base Current | I _B | -0.5 | A |

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

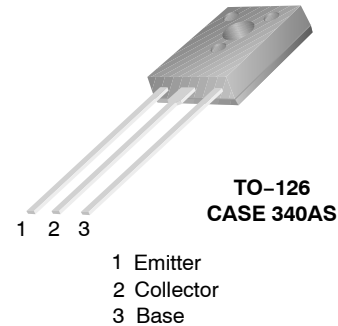
THERMAL CHARACTERISTICS

| Rating | Symbol | Max | Unit |
|---|------------------|---------|------|
| Collector Dissipation | P _C | 12.5 | W |
| Collector Dissipation (T _A = 25°C) | P _C | 1.25 | W |
| Junction Temperature | T _J | 150 | °C |
| Storage Temperature Range | T _{STG} | -55~150 | °C |

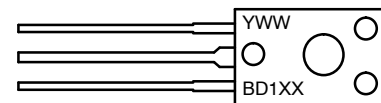


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MARKING DIAGRAM



Y = Year
 WW = Work Week
 BD1XX = Specific Device Code
 XX = 36, 38, 40

ORDERING INFORMATION

| Device | Package | Shipping |
|------------|---------------------|---------------------|
| BD13610STU | TO-126 (Pb-Free) | 60 Units/ Tube |
| BD13610S | | 500 Units/ Bulk Box |
| BD13616STU | | 60 Units/ Tube |
| BD13616S | | 500 Units/ Bulk Box |
| BD13810STU | | 60 Units/ Tube |
| BD13816STU | | 60 Units/ Tube |
| BD14010STU | | 60 Units/ Tube |
| BD14016STU | | 60 Units/ Tube |
| BD14016S | | 500 Units/ Bulk Box |

BD136 Series

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 (Note 1) BD136 BD138 BD140 | $I_C = -30\text{ mA}, I_B = 0$ | -45 -60 -80 | | | V |
| I_{CBO} | Collector Cut-off Current | $V_{CB} = -30\text{ V}, I_E = 0$ | | | -0.1 | μA |
| I_{EBO} | Emitter Cut-off Current | $V_{EB} = -5\text{ V}, I_C = 0$ | | | -10 | μA |
| h_{FE1} | DC Current Gain (Note 1) | $V_{CE} = -2\text{ V}, I_C = -5\text{ mA}$ | 25 | | | |
| h_{FE2} | | $V_{CE} = -2\text{ V}, I_C = -150\text{ mA}$ BD13610/BD13810/BD14010 BD13616/BD13816/BD14016 | 63 100 | | 160 250 | |
| h_{FE3} | | $V_{CE} = -2\text{ V}, I_C = -500\text{ mA}$ | 25 | | | |
| $V_{CE(sat)}$ | | Collector-Emitter Saturation Voltage (Note 1) | $I_C = 500\text{ mA}, I_B = 50\text{ mA}$ | | | -0.5 |
| $V_{BE(on)}$ | Base-Emitter ON Voltage (Note 1) | $V_{CE} = -2\text{ V}, I_C = -0.5\text{ A}$ | | | -1 | V |

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

1. Pulse Test: $PW = 350\ \mu\text{s}$, duty Cycle = 2% Pulsed

TYPICAL PERFORMANCE CHARACTERISTICS

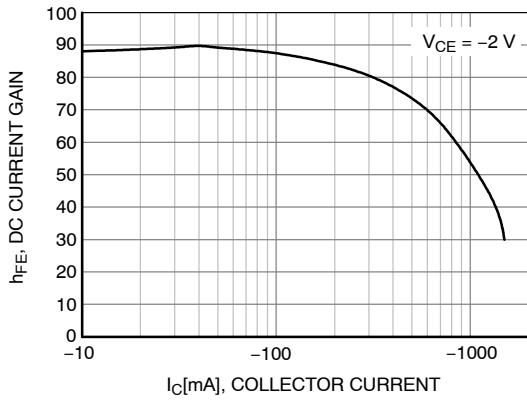


Figure 1. DC Current Gain

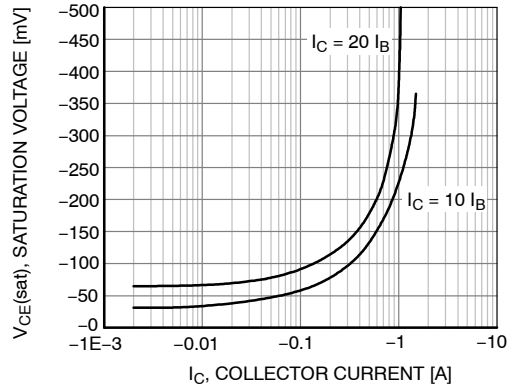


Figure 2. Collector-Emitter Saturation Voltage

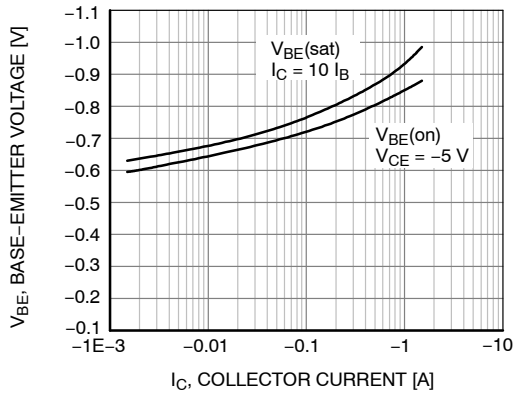


Figure 3. Base-Emitter Voltage

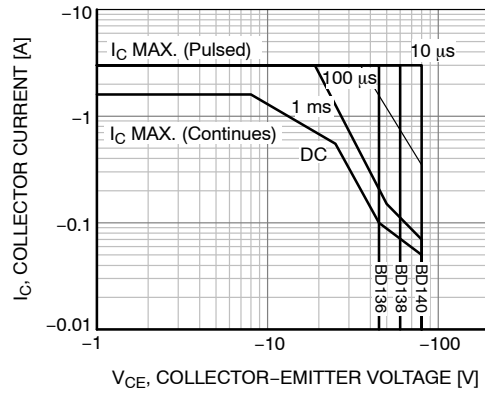


Figure 4. Safe Operating Area

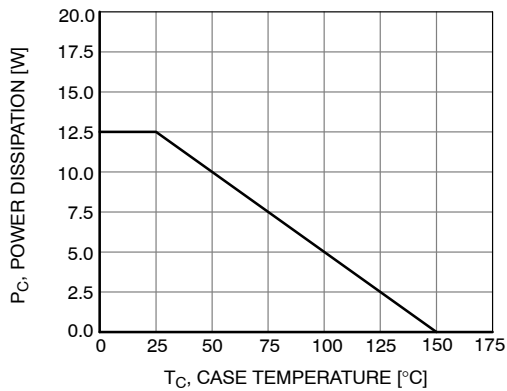


Figure 5. Power Derating

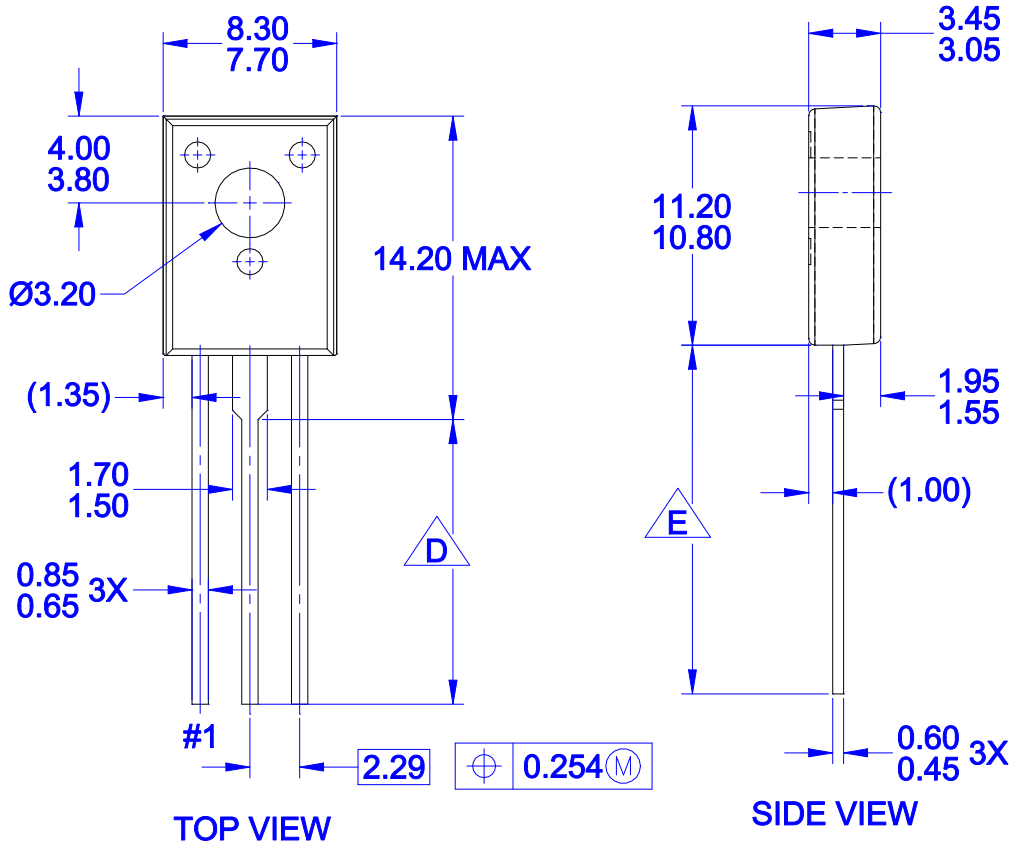
MECHANICAL CASE OUTLINE
PACKAGE DIMENSIONS

ON Semiconductor®



TO-126-3LD
CASE 340AS
ISSUE 0

DATE 30 SEP 2016



| PRODUCTION CODE | TERMINAL LENGTH "D" | TERMINAL LENGTH "E" |
|-------------------|---------------------|---------------------|
| TSSTU | 3.45 - 4.05 | 6.45 - 7.45 |
| TSTU | 2.36 - 2.96 | 5.36 - 6.36 |
| NONE (STD LENGTH) | 12.76 - 13.36 | 15.76 - 16.76 |

NOTES:

- A. NO INDUSTRY STANDARD APPLIES TO THIS PACKAGE
- B. ALL DIMENSIONS ARE IN MILLIMETERS
- C. DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH, AND TIE BAR PROTRUSIONS

D FOR TERMINAL LENGTH "D", REFER TO TABLE

E FOR TERMINAL LENGTH "E", REFER TO TABLE

| | |
|-------------------------------------|--|
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| DESCRIPTION: TO-126-3LD | PAGE 1 OF 1 |

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