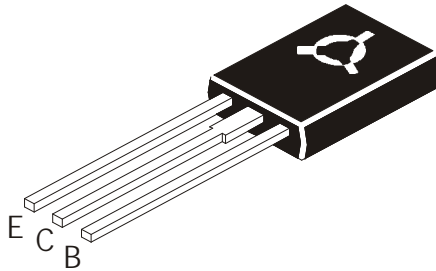


EPITAXIAL SILICON POWER TRANSISTORS



| | |
|--------------|--------------|
| BD233 | BD234 |
| BD235 | BD236 |
| BD237 | BD238 |
| NPN | PNP |

TO126
Plastic Package

Intended for use in Medium Power Linear Switching Applications

ABSOLUTE MAXIMUM RATINGS

| DESCRIPTION | SYMBOL | BD233 BD234 | BD235 BD236 | BD237 BD238 | UNIT |
|---|----------------|----------------|----------------|----------------|------------|
| Collector Base Voltage | V_{CBO} | 45 | 60 | 100 | V |
| Collector Emitter Voltage | V_{CEO} | 45 | 60 | 80 | V |
| Collector Emitter Voltage ($R_{BE}=1KW$) | V_{CER} | 45 | 60 | 100 | V |
| Emitter Base Voltage | V_{EBO} | 5.0 | | | V |
| Collector Current | I_C | 2.0 | | | A |
| Collector Peak Current | I_{CM} | 6.0 | | | A |
| Total Dissipation @ $T_C=25^\circ C$ | P_D | 25 | | | W |
| Total Dissipation @ $T_a=25^\circ C$ Derate above $25^\circ C$ | P_D | 1.25 10 | | | W mW/°C |
| Operating and Storage Junction Temperature Range | T_j, T_{stg} | - 65 to +150 | | | °C |

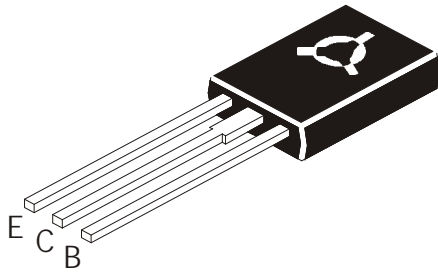
THERMAL CHARACTERISTICS

| | | | |
|---------------------------------|---------------|-----|------|
| Junction to Case | $R_{th(j-c)}$ | 5.0 | °C/W |
| Junction to Ambient in free air | $R_{th(j-a)}$ | 100 | °C/W |

ELECTRICAL CHARACTERISTICS ($T_C=25^\circ C$ unless specified otherwise)

| DESCRIPTION | SYMBOL | TEST CONDITION | MIN | TYP | MAX | UNIT | |
|---------------------------------------|-----------------|---------------------------------------|-----|-----|-----|---------|----|
| Collector Cut off Current | I_{CBO} | $V_{CB}=45V, I_E=0$ BD233/234 | | | 100 | μA | |
| | | $V_{CB}=60V, I_E=0$ BD235/236 | | | 100 | μA | |
| | | $V_{CB}=100V, I_E=0$ BD237/238 | | | 100 | μA | |
| | | $T_C = 150^\circ C$ | | | | | |
| | | $V_{CB}=45V, I_E=0$ BD233/234 | | | | 2.0 | mA |
| | | $V_{CB}=60V, I_E=0$ BD235/236 | | | | 2.0 | mA |
| $V_{CB}=100V, I_E=0$ BD237/238 | | | | 2.0 | mA | | |
| Emitter Cut off Current | I_{EBO} | $V_{EB}=5V, I_C=0$ | | | 1.0 | mA | |
| Collector Emitter Sustaining Voltage | $*V_{CEO(sus)}$ | $I_C=0.1A, I_B=0$ BD233/234 | 45 | | | V | |
| | | BD235/236 | 60 | | | V | |
| | | BD237/238 | 80 | | | V | |
| Collector Emitter Saturation Voltage | $*V_{CE(sat)}$ | $I_C=1.0A, I_B=0.1A$ | | | 0.6 | V | |
| Base Emitter Voltage | $*V_{BE(on)}$ | $I_C=1.0A, V_{CE}=2V$ | | | 1.3 | V | |

EPITAXIAL SILICON POWER TRANSISTORS



| | |
|-------|-------|
| BD233 | BD234 |
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| NPN | PNP |

TO126
Plastic Package

ELECTRICAL CHARACTERISTICS (T_C=25°C unless specified otherwise)

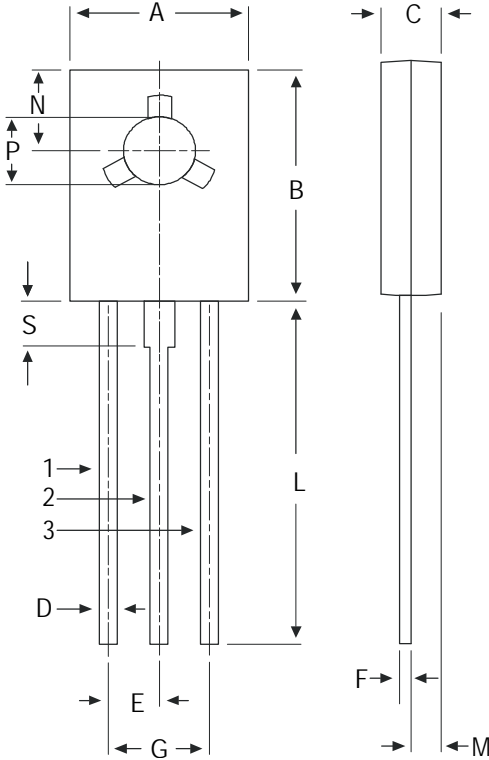
| DESCRIPTION | SYMBOL | TEST CONDITION | MIN | TYP | MAX | UNIT |
|--------------------------------------|------------------|---|-----|-----|-----|------|
| DC Current Gain | *h _{FE} | I _C =150mA, V _{CE} =2V | 40 | | | |
| | | I _C =1.0A, V _{CE} =2V | 25 | | | |
| Current Gain Bandwidth Product | f _T | I _C =250mA, V _{CE} =10V | 3 | | | MHz |
| *h _{FE1} / h _{FE2} | Matched Pairs | I _C =150mA, V _{CE} =2V | | 1.6 | | |

*Pulsed Pulse Duration=300µs, Duty Cycle=1.5%

| | |
|-------|-------|
| BD233 | BD234 |
| BD235 | BD236 |
| BD237 | BD238 |
| NPN | PNP |

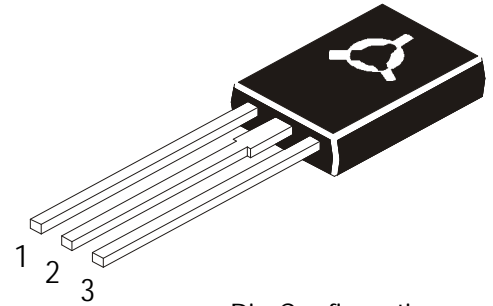
**TO126
Plastic Package**

TO-126 (SOT-32) Plastic Package



| DIM | MIN | MAX |
|-----|-----------|------|
| A | 7.4 | 7.8 |
| B | 10.5 | 10.8 |
| C | 2.4 | 2.7 |
| D | 0.7 | 0.9 |
| E | 2.25 TYP. | |
| F | 0.49 | 0.75 |
| G | 4.5 TYP. | |
| L | 15.7 TYP. | |
| M | 1.27 TYP. | |
| N | 3.75 TYP. | |
| P | 3.0 | 3.2 |
| S | 2.5 TYP. | |

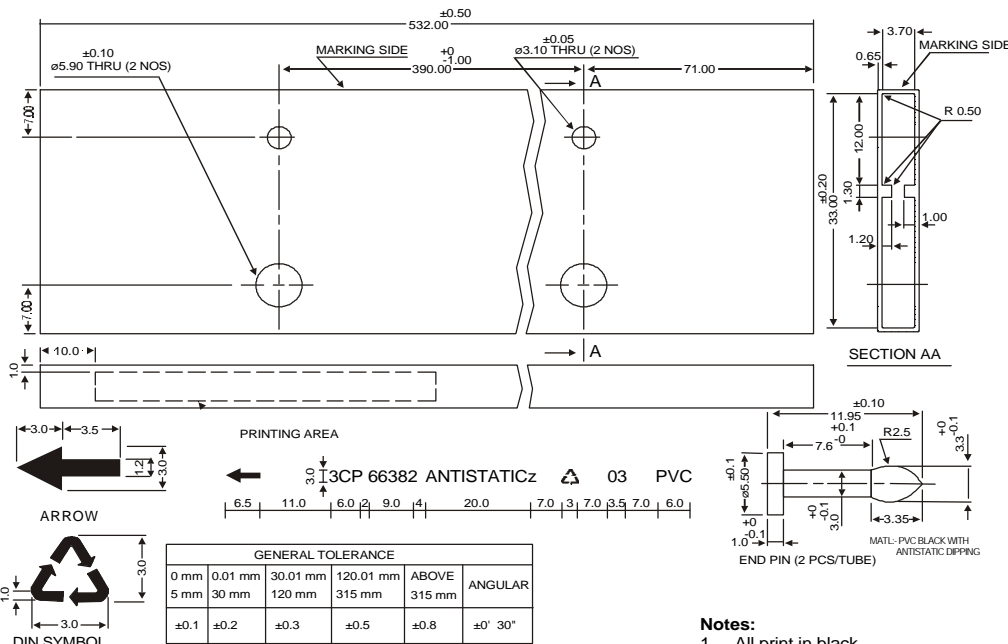
All dimensions in mm.



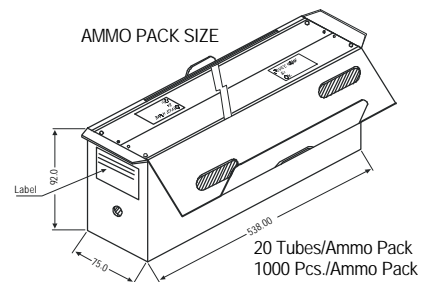
Pin Configuration

1. Emitter
2. Collector
3. Base

TO-126 TUBE PACKING



- Notes:**
1. All print in black.
 2. All text in Helvetia medium font.



Packing Details

| PACKAGE | STANDARD PACK | | INNER CARTON BOX | | OUTER CARTON BOX | | |
|-------------|-----------------|----------------|-------------------|-----|-------------------|-----|--------|
| | Details | Net Weight/Qty | Size | Qty | Size | Qty | Gr Wt |
| TO-126 Bulk | 500 pcs/polybag | 340 gm/500 pcs | 3" x 7.5" x 7.5" | 2K | 17" x 15" x 13.5" | 32K | 31 kgs |
| TO-126 Tube | 50 pcs/tube | 73 gm/50 pcs | 3" x 3.7" x 21.5" | 1K | 19" x 19" x 19" | 10K | 15 kgs |

Notes

| | |
|--------------|--------------|
| BD233 | BD234 |
| BD235 | BD236 |
| BD237 | BD238 |
| NPN | PNP |

TO126
Plastic Package

Disclaimer

The product information and the selection guides facilitate selection of the CDIL's Discrete Semiconductor Device(s) best suited for application in your product(s) as per your requirement. It is recommended that you completely review our Data Sheet(s) so as to confirm that the Device(s) meet functionality parameters for your application. The information furnished in the Data Sheet and on the CDIL Web Site/CD are believed to be accurate and reliable. CDIL however, does not assume responsibility for inaccuracies or incomplete information. Furthermore, CDIL does not assume liability whatsoever, arising out of the application or use of any CDIL product; neither does it convey any license under its patent rights nor rights of others. These products are not designed for use in life saving/support appliances or systems. CDIL customers selling these products (either as individual Discrete Semiconductor Devices or incorporated in their end products), in any life saving/support appliances or systems or applications do so at their own risk and CDIL will not be responsible for any damages resulting from such sale(s). CDIL strives for continuous improvement and reserves the right to change the specifications of its products without prior notice.



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