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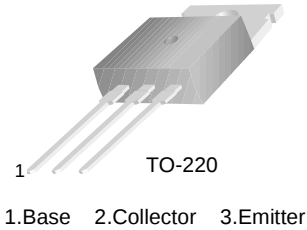
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# BD239/A/B/C

## Medium Power Linear and Switching Applications

- Complement to BD240/A/B/C respectively



## NPN Epitaxial Silicon Transistor

### Absolute Maximum Ratings $T_C=25^\circ\text{C}$ unless otherwise noted

| Symbol    | Parameter                                        | Value      | Units            |
|-----------|--------------------------------------------------|------------|------------------|
| $V_{CEO}$ | Collector-Emitter Voltage                        |            |                  |
|           | : BD239                                          | 45         | V                |
|           | : BD239A                                         | 60         | V                |
|           | : BD239B                                         | 80         | V                |
|           | : BD239C                                         | 100        | V                |
| $V_{CER}$ | Collector-Emitter Voltage                        |            |                  |
|           | : BD239                                          | 55         | V                |
|           | : BD239A                                         | 70         | V                |
|           | : BD239B                                         | 90         | V                |
|           | : BD239C                                         | 115        | V                |
| $V_{EBO}$ | Emitter-Base Voltage                             | 5          | V                |
| $I_C$     | Collector Current (DC)                           | 2          | A                |
| $I_{CP}$  | *Collector Current (Pulse)                       | 4          | A                |
| $I_B$     | Base Current                                     | 0.6        | A                |
| $P_C$     | Collector Dissipation ( $T_C=25^\circ\text{C}$ ) | 30         | W                |
| $T_J$     | Junction Temperature                             | 150        | $^\circ\text{C}$ |
| $T_{STG}$ | Storage Temperature                              | - 65 ~ 150 | $^\circ\text{C}$ |

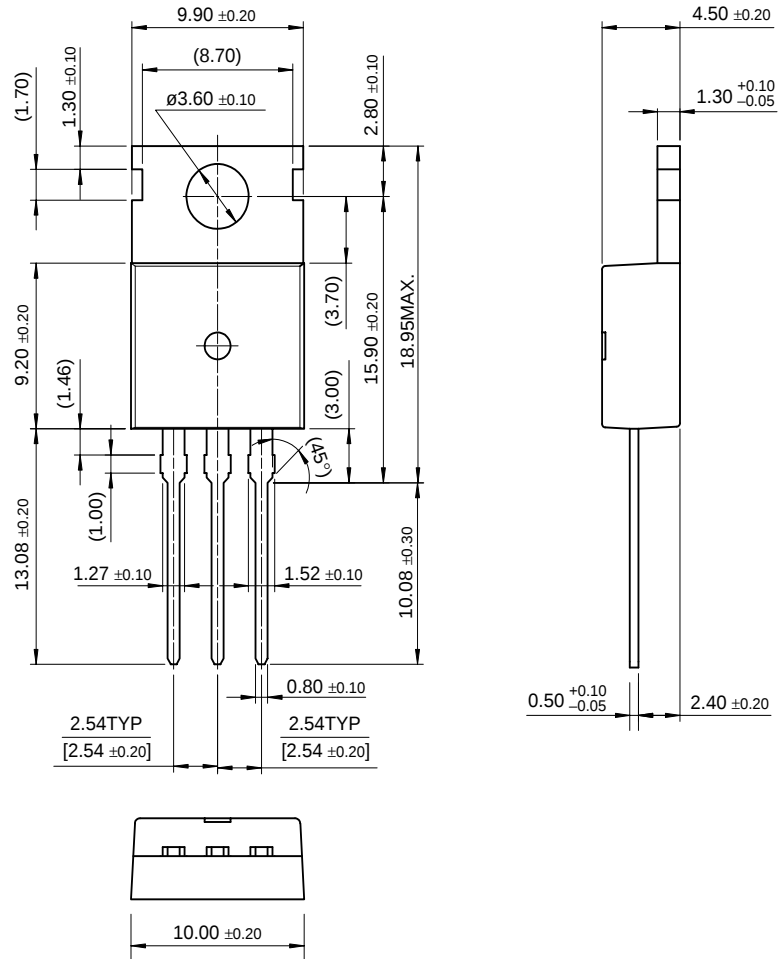
### Electrical Characteristics $T_C=25^\circ\text{C}$ unless otherwise noted

| Symbol         | Parameter                             | Test Condition                                                                   | Min.     | Typ. | Max.       | Units    |
|----------------|---------------------------------------|----------------------------------------------------------------------------------|----------|------|------------|----------|
| $V_{CEO(sus)}$ | *Collector-Emitter Sustaining Voltage |                                                                                  |          |      |            |          |
|                | : BD239                               | $I_C = 30\text{mA}, I_B = 0$                                                     | 45       |      |            | V        |
|                | : BD239A                              |                                                                                  | 60       |      |            | V        |
|                | : BD239B                              |                                                                                  | 80       |      |            | V        |
|                | : BD239C                              |                                                                                  | 100      |      |            | V        |
| $I_{CEO}$      | Collector Cut-off Current             |                                                                                  |          |      |            |          |
|                | : BD239/A<br>: BD239B/C               | $V_{CE} = 30\text{V}, I_B = 0$<br>$V_{CE} = 60\text{V}, I_B = 0$                 |          |      | 0.3<br>0.3 | mA<br>mA |
| $I_{CES}$      | Collector Cut-off Current             |                                                                                  |          |      |            |          |
|                | : BD239                               | $V_{CE} = 45\text{V}, V_{BE} = 0$                                                |          |      | 0.2        | mA       |
|                | : BD239A                              | $V_{CE} = 60\text{V}, V_{BE} = 0$                                                |          |      | 0.2        | mA       |
|                | : BD239B                              | $V_{CE} = 80\text{V}, V_{BE} = 0$                                                |          |      | 0.2        | mA       |
|                | : BD239C                              | $V_{CE} = 100\text{V}, V_{BE} = 0$                                               |          |      | 0.2        | mA       |
| $I_{EBO}$      | Emitter Cut-off Current               | $V_{EB} = 5\text{V}, I_C = 0$                                                    |          |      | 1          | mA       |
| $h_{FE}$       | *DC Current Gain                      |                                                                                  |          |      |            |          |
|                |                                       | $V_{CE} = 4\text{V}, I_C = 0.2\text{A}$<br>$V_{CE} = 4\text{V}, I_C = 1\text{A}$ | 40<br>15 |      |            |          |
| $V_{CE(sat)}$  | *Collector-Emitter Saturation Voltage | $I_C = 1\text{A}, I_B = 0.2\text{A}$                                             |          |      | 0.7        | V        |
| $V_{BE(on)}$   | *Base-Emitter ON Voltage              | $V_{CE} = 4\text{V}, I_C = 1\text{A}$                                            |          |      | 1.3        | V        |

\* Pulse Test: PW=350 $\mu\text{s}$ , duty Cycles $\leq$ 2.0% Pulsed

# Package Dimensions

## TO-220



Dimensions in Millimeters

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