# BD439 – BD441

## SILICON NPN POWER TRANSISTORS.

The BD439-BD441 are NPN Transistors mounted in Jedec TO-126 plastic package.
They are recommended for use in medium power linear and switching applications.
PNP complements are BD440-BD442.
Compliance to RoHS.

### ABSOLUTE MAXIMUM RATINGS

| Symbol | Ratings | | Value | Unit |
|---|---|---|---|---|
| $V_{CBO}$ | Collector-Base Voltage ($I_E$= 0) | BD439 | 60 | V |
| | | BD441 | 80 | |
| $V_{CEO}$ | Collector-Emitter Voltage ($I_B$= 0) | BD439 | 60 | V |
| | | BD441 | 80 | |
| $V_{EBO}$ | Emitter-Base Voltage ($I_c$= 0) | | 5 | V |
| $I_C$ | Collector Current | | 4 | A |
| $I_{CM}$ | Collector Current Peak | | 7 | |
| $I_B$ | Base Current | | 1 | A |
| $P_C$ | Total power Dissipation | $T_C$ = 25℃ | 36 | W |
| $T_J$ | Junction Temperature | | 150 | ℃ |
| $T_{Stg}$ | Storage Temperature | | -65 to +150 | ℃ |

### THERMAL CHARACTERISTICS

| Symbol | Ratings | Value | Unit |
|---|---|---|---|
| $R_{thJ-c}$ | Thermal Resistance, Junction-Case | 3.5 | ℃/W |
| $R_{thJ-a}$ | Thermal Resistance, Junction-ambient in free air | 100 | ℃/W |

# BD439 – BD441

## ELECTRICAL CHARACTERISTICS

TC=25℃ unless otherwise noted

| Symbol | Ratings | Test Condition(s) | | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|---|
| $I_{CBO}$ | Collector cut-off current | $I_E$= 0, $V_{CB}$= 60 V | BD439 | - | - | 100 | µA |
| | | $I_E$= 0, $V_{CB}$= 80 V | BD441 | | | | |
| $I_{CES}$ | Collector cut-off current | $V_{BE}$= 0, $V_{CE}$= 60 V | BD439 | - | - | 100 | |
| | | $V_{BE}$= 0, $V_{CE}$= 80 V | BD441 | | | | |
| $I_{EBO}$ | Emitter cut-offcurrent | $I_C$= 0<br>$V_{EB}$= 5 V | BD439 | - | - | 1 | mA |
| | | | BD441 | | | | |
| $V_{CEO(SUS)}$ | Collector-Emitter sustaning Voltage (*) | $I_B$= 0<br>$I_C$= 100 mA | BD439 | 60 | - | - | V |
| | | | BD441 | 80 | - | - | |
| $V_{CE(SAT)}$ | Collector-Emitter saturation Voltage (*) | $I_C$= 2 A<br>$I_B$= 200 mA | BD439 | - | - | 0.8 | V |
| | | | BD441 | | | | |
| $V_{BE}$ | Base-Emitter Voltage(*) | $I_C$= 10 mA<br>$V_{CE}$= 5 V | BD439 | - | 0.58 | - | V |
| | | | BD441 | | | | |
| | | $I_C$= 2 A<br>$V_{CE}$= 1 V | BD439 | - | - | 1.5 | V |
| | | | BD441 | | | | |
| $h_{FE}$ | DC Current Gain (*) | $I_C$= 10 mA<br>$V_{CE}$= 5 V | BD439 | 20 | - | 130 | - |
| | | | BD441 | 15 | - | 130 | |
| | | $I_C$= 500 mA<br>$V_{CE}$= 1 V | BD439 | 40 | - | 140 | |
| | | | BD441 | | | | |
| | | $I_C$= 2 A<br>$V_{CE}$= 1 V | BD439 | 25 | - | - | |
| | | | BD441 | 15 | - | - | |
| $f_T$ | Transition frequency | $I_C$= 250 mA<br>$V_{CE}$= 1 V | BD439 | 3 | - | - | MHz |
| | | | BD441 | | | | |

(*) Measured under pulse conditions :$t_P$ <300µs, $\delta$ <1.5%

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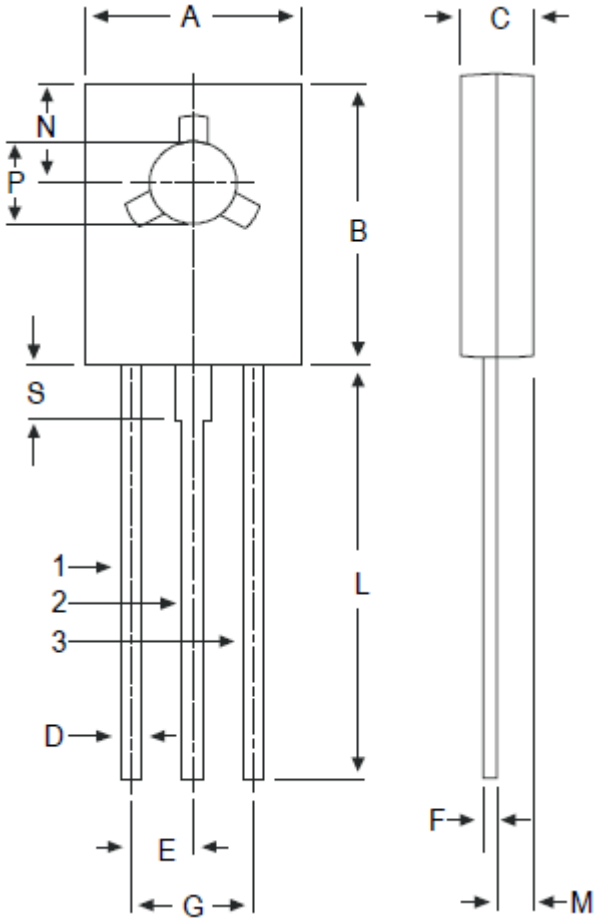
## MECHANICAL DATA CASE TO-126

| | DIMENSIONS | |
|---|---|---|
| | 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 | 4.4 typ. | |
| L | 15.7 typ. | |
| M | 1.27 typ. | |
| N | 3.75 typ. | |
| P | 3.0 | 3.2 |
| S | 2.54 typ. | |




| | |
|---|---|
| Pin 1 : | Emitter |
| Pin 2 : | Collector |
| Pin 3 : | Base |

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