



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 | $T_C = 25^\circ\text{C}$ | 36 | W |
| T_J | Junction Temperature | | 150 | $^\circ\text{C}$ |
| T_{Stg} | Storage Temperature | | -65 to +150 | $^\circ\text{C}$ |

THERMAL CHARACTERISTICS

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

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ELECTRICAL CHARACTERISTICS

TC=25°C unless otherwise noted

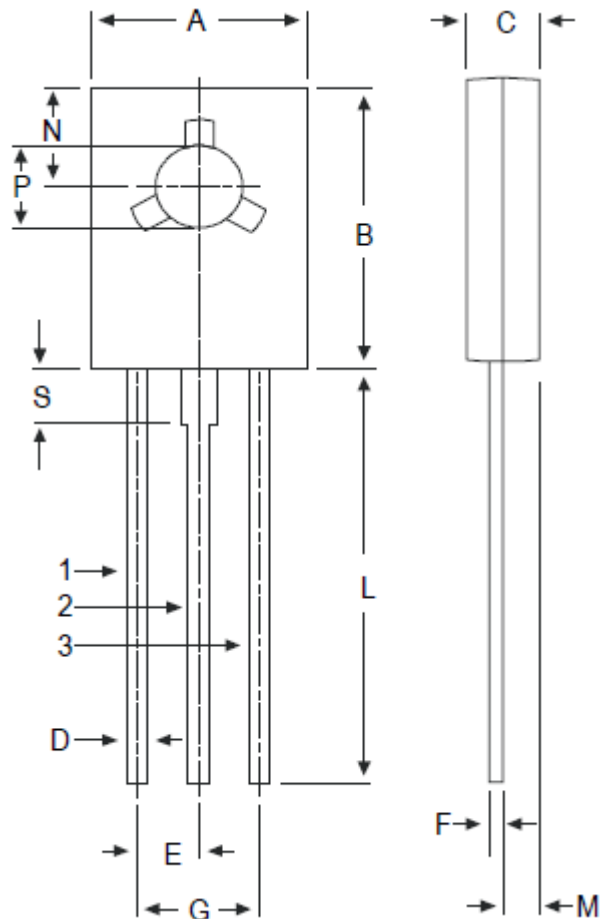
| Symbol | Ratings | Test Condition(s) | Min | Typ | Max | Unit | | |
|----------------|--|------------------------------------|-------|-----|------|------|---------------|---------------|
| I_{CBO} | Collector cut-off current | $I_E = 0, V_{CB} = 60\text{ V}$ | BD439 | - | - | 100 | μA | |
| | | $I_E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

(*) Measured under pulse conditions : $t_p < 300\mu\text{s}$, $\delta < 1.5\%$

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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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