

PNP BC160 – BC161

GENERAL PURPOSE TRANSISTORS

They are silicon planar epitaxial PNP transistors mounted in TO-39 metal package. They are particularly designed for audio amplifiers and switching applications up to 1A. NPN complements are the BC140 – BC141. Compliance to RoHS.

ABSOLUTE MAXIMUM RATINGS

| Symbol | Ratings | | Value | Unit |
|------------|--|---------------------------|-------------|------------------|
| $-V_{CBO}$ | Collector-Base Voltage $I_E = 0$ | BC160 | 40 | V |
| | | BC161 | 60 | |
| $-V_{CEO}$ | Collector-Emitter Voltage $I_B = 0$ | BC160 | 40 | V |
| | | BC161 | 60 | |
| $-V_{EBO}$ | Emitter-Base Voltage $I_C = 0$ | BC160 | 5 | V |
| | | BC161 | | |
| $-I_C$ | Collector Current | BC160 | 1 | A |
| | | BC161 | | |
| $-I_B$ | Base Current | BC160 | 0.1 | A |
| | | BC161 | | |
| P_{tot} | Total Power Dissipation | @ $T_{case} = < 45^\circ$ | 3.7 | W |
| | | @ $T_{amb} = < 45^\circ$ | 0.65 | |
| T_J | Junction Temperature | | 175 | $^\circ\text{C}$ |
| T_{Stg} | Storage Temperature range | | -55 to +175 | $^\circ\text{C}$ |

THERMAL CHARACTERISTICS

| Symbol | Ratings | Value | Unit |
|---------------|--------------------------------------|-------|------|
| R_{thJ-c} | Thermal Resistance, Junction-case | 35 | K/ W |
| $R_{thJ-amb}$ | Thermal Resistance, Junction-ambient | 200 | K/ W |

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ELECTRICAL CHARACTERISTICS

TC=25°C unless otherwise noted

| Symbol | Ratings | Test Condition(s) | Min | Typ | Max | Unit | | |
|--------------------|---------------------------------------|---|--------------------------|-------|-----|------|-----|---------------|
| $-I_{CES}$ | Collector – Cutoff Current | $I_E = 0 ; V_{CES} = 40 \text{ V}$ | BC160 | - | - | 100 | nA | |
| | | $I_E = 0 ; V_{CES} = 60 \text{ V}$ | BC161 | - | - | - | - | |
| | | $I_E = 0 ; V_{amb} = 150^\circ\text{C}$ | $V_{CES} = 40 \text{ V}$ | BC160 | - | - | 100 | μA |
| | | | $V_{CES} = 60 \text{ V}$ | BC161 | - | - | - | - |
| $-V_{CB0}$ | Collector – Base Breakdown Voltage | $-I_C = 100 \mu\text{A}$ | BC160 | 40 | - | - | V | |
| | | $I_E = 0$ | BC161 | 60 | - | - | | |
| $-V_{CE0} (*)$ | Collector – Emitter Breakdown Voltage | $-I_C = 10 \text{ mA}$ | BC160 | 40 | - | - | V | |
| | | $I_B = 0$ | BC161 | 60 | - | - | | |
| $-V_{EB0}$ | Emitter – Base Breakdown Voltage | $-I_E = 100 \mu\text{A}$ | BC160 | 5 | - | - | V | |
| | | $I_C = 0$ | BC161 | | | | | |
| $-V_{CE(SAT)} (*)$ | Collector-Emitter saturation Voltage | $-I_C = 100 \text{ mA} , -I_B = 10 \text{ mA}$ | - | 0.1 | - | V | | |
| | | $-I_C = 500 \text{ mA} , -I_B = 50 \text{ mA}$ | - | 0.35 | - | | | |
| | | $-I_C = 1 \text{ A} , -I_B = 100 \text{ mA}$ | - | 0.6 | 1 | | | |
| $-V_{BE} (*)$ | Base-Emitter Voltage | $-I_C = 1 \text{ A} , -V_{CE} = 1 \text{ V}$ | - | 1 | 1.7 | - | | |
| $h_{FE} (*)$ | DC Current Gain | $-I_C = 100 \mu\text{A} , -V_{CE} = 1 \text{ V}$ | Gr 10 | - | 80 | - | - | |
| | | | Gr 16 | - | 120 | - | | |
| | | $-I_C = 100 \text{ mA} , -V_{CE} = 1 \text{ V}$ | Gr 10 | 63 | 100 | 160 | | |
| | | | Gr 16 | 100 | 160 | 250 | | |
| | | $-I_C = 1 \text{ A} , -V_{CE} = 1 \text{ V}$ | Gr 10 | - | 20 | - | | |
| | | | Gr 16 | - | 30 | - | | |
| f_T | Transition Frequency | $-I_C = 50 \text{ mA} , -V_{CE} = 10 \text{ V}$ | 50 | - | - | MHz | | |
| C_{CB0} | Collector – base Capacitance | $I_E = 0 ; -V_{CB} = 20 \text{ V}$ $f = 1 \text{ MHz}$ | - | 15 | 30 | pF | | |
| t_{off} | Turn-off times | $-I_C = 100 \text{ mA}$ $-I_{B1} = -I_{B2} = 5 \text{ mA}$ | - | - | 650 | ns | | |
| t_{on} | Turn-on times | $-I_C = 100 \text{ mA}$ $-I_{B1} = 1 \text{ mA}$ | - | - | 500 | ns | | |

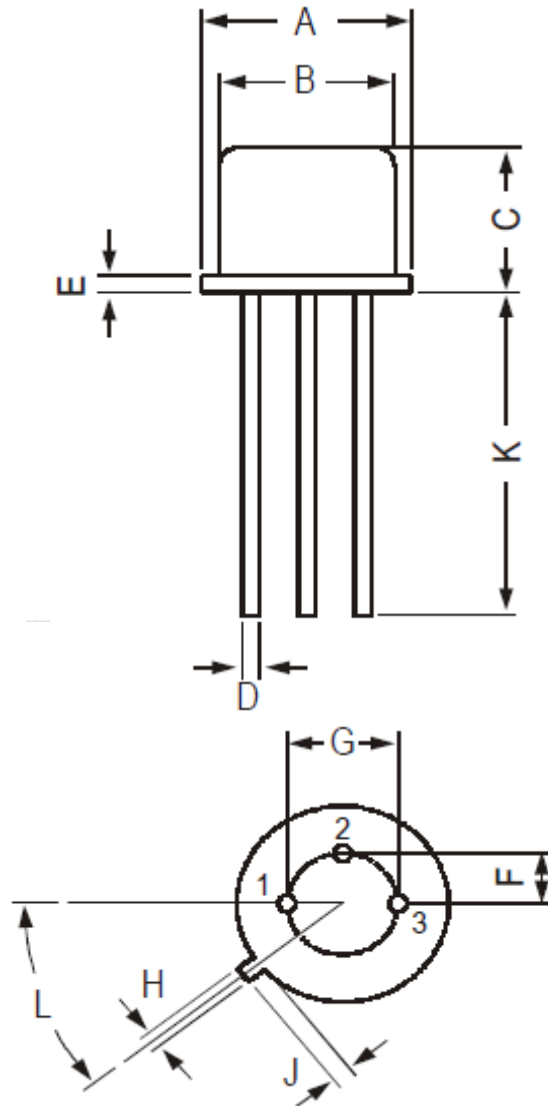
(*) Pulsed : pulse duration = 300 μs , duty cycle = 1%

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MECHANICAL DATA CASE TO-39

| DIMENSIONS (mm) | | |
|-----------------|-------|------|
| | min | max |
| A | 8.50 | 9.39 |
| B | 7.74 | 8.50 |
| C | 6.09 | 6.60 |
| D | 0.40 | 0.53 |
| E | - | 0.88 |
| F | 2.41 | 2.66 |
| G | 4.82 | 5.33 |
| H | 0.71 | 0.86 |
| J | 0.73 | 1.02 |
| K | 12.70 | - |
| L | 42° | 48° |

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



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