



## Pin Configuration

1. Emitter
2. Base
3. Collector

## Features:

- NPN High Voltage Silicon Transistor
- High Voltage Silicon Planar Transistors used in High Voltage and High Power Amplifier Applications

## Absolute Maximum Ratings:

( $T_a = 25^\circ\text{C}$  unless otherwise specified)

| Characteristic                                                                   | Symbol    | Value       | Unit             |
|----------------------------------------------------------------------------------|-----------|-------------|------------------|
| Collector Base Voltage                                                           | $V_{CBO}$ | 300         | V                |
| Collector-Emitter Voltage                                                        | $V_{CES}$ | 250         |                  |
| Emitter-Base Voltage                                                             | $V_{EBO}$ | 7           |                  |
| Collector Current Continuous                                                     | $I_C$     | 1           | A                |
| Base Current                                                                     | $I_B$     | 0.5         |                  |
| Power Dissipation at $T_a = 25^\circ\text{C}$<br>Derate above $25^\circ\text{C}$ | $P_D$     | 1           | W                |
|                                                                                  |           | 5.7         |                  |
| Power Dissipation at $T_C = 25^\circ\text{C}$<br>Derate above $25^\circ\text{C}$ |           | 5<br>28.6   |                  |
| Operating Temperature                                                            | $T_J$     | 200         | $^\circ\text{C}$ |
| Storage Temperature Range                                                        | $T_{stg}$ | -65 to +200 |                  |

## Thermal Resistance

|                     |               |     |                    |
|---------------------|---------------|-----|--------------------|
| Junction to Ambient | $R_{th(j-a)}$ | 175 | $^\circ\text{C/W}$ |
| Junction to Case    | $R_{th(j-c)}$ | 35  |                    |

## Electrical Characteristics:

(T<sub>a</sub> = +25°C unless otherwise specified)

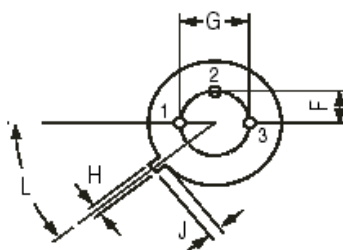
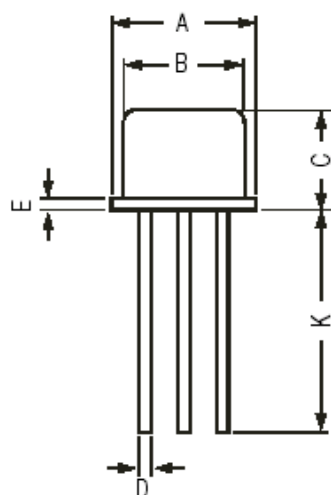
| Parameter                            | Symbol                  | Test Condition                                 |          | Unit |
|--------------------------------------|-------------------------|------------------------------------------------|----------|------|
| Collector-Emitter Voltage            | V <sub>CEO(sus)</sub> * | I <sub>C</sub> = 50mA, I <sub>B</sub> = 0      | 250      | V    |
| Collector-Cut off Current            | I <sub>CBO</sub>        | V <sub>CB</sub> = 250V, I <sub>E</sub> = 0     | <20      | μA   |
|                                      | I <sub>CEO</sub>        | V <sub>CE</sub> = 200V, I <sub>B</sub> = 0     | <50      |      |
|                                      | I <sub>CEX</sub>        | V <sub>CE</sub> = 300V, V <sub>BE</sub> = 1.5V | <500     |      |
| Emitter-Cut off Current              | I <sub>EBO</sub>        | V <sub>EB</sub> = 6V, I <sub>C</sub> = 0       | <20      |      |
| DC Current Gain                      | h <sub>FE</sub> *       | I <sub>C</sub> = 20mA, V <sub>CE</sub> = 10V   | 40 - 160 | -    |
| Collector Emitter Saturation Voltage | V <sub>CE(sat)</sub> *  | I <sub>C</sub> = 0.05A, I <sub>B</sub> = 4mA   | <0.5     | V    |
| Base Emitter Saturation Voltage      | V <sub>BE(Sat)</sub> *  | I <sub>C</sub> = 50mA, I <sub>B</sub> = 4mA    | <1.3     |      |

## Small Signal Characteristics

|                                |                     |                                                        |      |     |
|--------------------------------|---------------------|--------------------------------------------------------|------|-----|
| Small Signal Current Gain      | h <sub>fe</sub>     | I <sub>C</sub> = 5mA, V <sub>CE</sub> = 10V, f = 1kHz  | >25  | -   |
| Output Capacitance             | C <sub>ob</sub>     | V <sub>CB</sub> = 10V, I <sub>E</sub> = 0, f = 1MHz    | <10  | pF  |
| Input Capacitance              | C <sub>ib</sub>     | V <sub>EB</sub> = 5V, I <sub>C</sub> = 0, f = 1MHz     | <75  |     |
| Current Gain-Bandwidth Product | f <sub>t</sub>      | I <sub>C</sub> = 10mA, V <sub>CE</sub> = 10V, f = 5MHz | >15  | MHz |
| Real Part of Input impedance   | R <sub>e(hie)</sub> | V <sub>CE</sub> = 10V, I <sub>C</sub> = 5mA, f = 1MHz  | <300 | Ω   |

\*Pulse Test: Pulse Width = 300μs, Duty Cycle = 2%

## TO-39 Metal Can Package



### Pin Configuration

1. Emitter
2. Base
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| Dim. | Min. | Max. |
|------|------|------|
| A    | 8.5  | 9.39 |
| B    | 7.74 | 8.5  |
| C    | 6.09 | 6.6  |
| D    | 0.4  | 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    | 12.7 | -    |
| L    | 42°  | 48°  |

Dimensions : Millimetres

## Part Number Table

| Description            | Part Number |
|------------------------|-------------|
| Transistor, NPN, TO-39 | 2N3440      |

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