

# Medium Power Bipolar Transistor



## Pin Configuration

1. Emitter
2. Base
3. Collector

## Features:

- High performance, low frequency devices typically with current ratings 1A. Up to 1W power dissipation
- Silicon power switching transistors
- Medium power amplifier and switching applications

## Absolute Maximum Ratings:

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

| Characteristic   | Symbol    | Value       | Unit             |
|--|-----------|-------------|------------------|
| Collector Base Voltage   | $V_{CBO}$ | -100        | V                |
| Collector-Emitter Voltage  | $V_{CEO}$ | -75         |                  |
| Emitter-Base Voltage   | $V_{EBO}$ | -7          |                  |
| Collector Current Continuous   | $I_C$     | -2          | A                |
| Base Current   | $I_B$     | -1          |                  |
| Power Dissipation at $T_a = 25^\circ\text{C}$<br>Derate above $25^\circ\text{C}$ | $P_D$     | 1           | W                |
| Power Dissipation at $T_c = 25^\circ\text{C}$<br>Derate above $25^\circ\text{C}$ |           | 57.14       |                  |
| 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    | $R_{th(j-c)}$ | 17.5 |                    |

# Medium Power Bipolar Transistor

## Electrical Characteristics:

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

| Parameter                            | Symbol          | Test Condition   | Min. | Max. | Unit          |
|--------------------------------------|-----------------|--|------|------|---------------|
| Collector Emitter Voltage            | $V_{CEO}$       | $I_C = 100\text{mA}, I_B = 0$  | -75  | -    | V             |
| Collector Cut off Current            | $I_{CEX}$       | $V_{CE} = 70\text{V}, V_{BE} = 1.5\text{V}, T_C = 150^\circ\text{C}$ | -    | 5    | mA            |
|                                      |                 | $V_{CE} = 100\text{V}, V_{BE} = 1.5\text{V}$                         |      | 100  | $\mu\text{A}$ |
| Emitter Cut off Current              | $I_{EBO}$       | $V_{BE} = 7\text{V}, I_C = 0$  |      |      |               |
| DC Current Gain                      | $^*h_{FE}$      | $I_C = 1\text{A}, V_{CE} = 2\text{V}$                                | 10   | -    | -             |
|                                      |                 | $I_C = 0.5\text{A}, V_{CE} = 4\text{V}$                              | 30   | 130  |               |
| Collector Emitter Saturation Voltage | $^*V_{CE(Sat)}$ | $I_C = 50\text{mA}, I_B = 50\text{mA}$                               | -    | 0.7  | V             |
| Base Emitter On Voltage              | $^*V_{BE(On)}$  | $I_C = 50\text{mA}, V_{CE} = 4\text{V}$                              |      | 1.1  |               |

## Dynamic Characteristics

|                           |          |   |   |   |   |
|---------------------------|----------|---|---|---|---|
| Small Signal Current Gain | $h_{fe}$ | $I_C = 50\text{mA}, V_{CE} = 4\text{V}, f = 10\text{MHz}$ | 5 | - | - |
|---------------------------|----------|---|---|---|---|

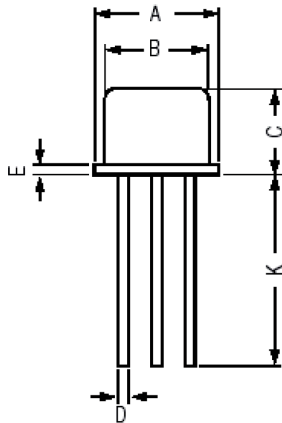
## Switching Characteristics

|               |           |  |   |       |    |
|---------------|-----------|--|---|-------|----|
| Turn On Time  | $t_{on}$  | $V_{CC} = 30\text{V}, I_C = 500\text{mA}, I_{B1} = 50\text{mA}$          | - | 100   | ns |
| Turn Off Time | $t_{off}$ | $V_{CC} = 30\text{V}, I_C = 500\text{mA}, I_{B1} = I_{B2} = 50\text{mA}$ |   | 1,000 |    |

\*Pulsed: Pulse Width  $\leq 30\mu\text{s}$ , Duty Cycle  $\leq 2\%$

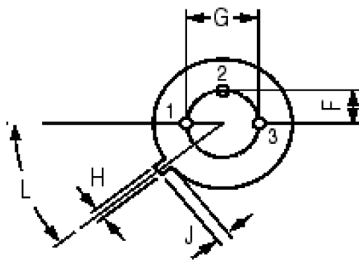
# Medium Power Bipolar Transistor

## TO-39 Metal Can Package



| 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



### Pin Configuration

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### Part Number Table

| Description            | Part Number |
|------------------------|-------------|
| Transistor, PNP, TO-39 | 2N5322      |

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