



## Features:

- PNP silicon planar switching transistors
- Fast switching devices exhibiting short turn-off and low saturation voltage characteristics
- Switching and linear application DC and VHF amplifier applications



## Pin Configuration

1. Emitter
2. Base
3. Collector

## Absolute Maximum Ratings

| Description                                                                     | Symbol         | Value       | Unit                       |
|---------------------------------------------------------------------------------|----------------|-------------|----------------------------|
| Collector Emitter Voltage                                                       | $V_{CEO}$      | 60          | V                          |
| Collector Base Voltage                                                          | $V_{CBO}$      |             |                            |
| Emitter Base Voltage                                                            | $V_{EBO}$      |             |                            |
| Collector Current Continuous                                                    | $I_C$          | 600         | mA                         |
| Power Dissipation @ $T_a = 25^\circ\text{C}$<br>Derate above $25^\circ\text{C}$ | $P_D$          | 400<br>2.28 | mW<br>mW/ $^\circ\text{C}$ |
| Power Dissipation @ $T_c = 25^\circ\text{C}$<br>Derate Above $25^\circ\text{C}$ | $P_D$          | 1.8<br>10.3 | W<br>mW/ $^\circ\text{C}$  |
| Operating and Storage Junction Temperature Range                                | $T_j, T_{stg}$ | -55 to +175 | $^\circ\text{C}$           |

## Electrical Characteristics ( $T_A = 25^\circ\text{C}$ unless specified otherwise)

| Description                          | Symbol                 | Test Condition                                              | Min. | Max, | Unit          |
|--------------------------------------|------------------------|-------------------------------------------------------------|------|------|---------------|
| Collector Emitter Voltage            | $*V_{CEO}$             | $I_C=10\text{mA}, I_B=0$                                    | 60   | -    | V             |
| Collector Base Voltage               | $V_{CBO}$              | $I_C=10\mu\text{A}, I_E=0$                                  |      | -    |               |
| Emitter Base Voltage                 | $V_{EBO}$              | $I_E=10\mu\text{A}, I_C=0$                                  |      | -    |               |
| Collector Cut Off Current            | $I_{CBO}$<br>$I_{CEX}$ | $V_{CB} = 50\text{V}, I_E = 0$<br>$T_A = 150^\circ\text{C}$ | -    | 10   | nA            |
|                                      |                        | $V_{CB} = 50\text{V}, I_E = 0$                              | -    | 10   | $\mu\text{A}$ |
|                                      |                        | $V_{CE}=30\text{V}, V_{BE}=0.5\text{V}$                     | -    | 50   | nA            |
|                                      |                        |                                                             | -    | 50   | nA            |
| Base Current                         | $I_B$                  | $V_{CE}=30\text{V}, V_{BE}=0.5\text{V}$                     | -    | 50   | nA            |
| Collector Emitter Saturation Voltage | $V_{CE(SAT)}^*$        | $I_C = 150\text{mA}, I_B = 15\text{mA}$                     | -    | 1.3  | V             |
|                                      |                        | $I_C = 500\text{mA}, I_B = 50\text{mA}$                     |      | 2.6  |               |
| Base Emitter Saturation Voltage      | $V_{BE(SAT)}^*$        | $I_C = 150\text{mA}, I_B = 15\text{mA}$                     | -    | 1.3  | V             |
|                                      |                        | $I_C = 500\text{mA}, I_B = 50\text{mA}$                     |      | 2.6  |               |

| Description     | Symbol   | Test Condition                              | Min.     | Max.      | Unit |
|-----------------|----------|---------------------------------------------|----------|-----------|------|
|                 |          |                                             | 2N2906   | 2N2907    |      |
| DC Current Gain | $h_{FE}$ | $I_C = 0.1\text{mA}, V_{CE} = 10\text{V}$   | >20      | >35       | -    |
|                 |          | $I_C = 1\text{mA}, V_{CE} = 10\text{V}$     | >25      | >50       |      |
|                 |          | $I_C = 10\text{mA}, V_{CE} = 10\text{V}$    | >35      | >75       |      |
|                 |          | $I_C = 150\text{mA}, V_{CE} = 10\text{V}^*$ | 40 - 120 | 100 - 300 |      |
|                 |          | $I_C = 500\text{mA}, V_{CE} = 10\text{V}^*$ | >20      | >30       |      |

\*Pulse Test : Pulse Width  $\leq 300\mu\text{s}$ , Duty Cycle  $\leq 2\%$

## Electrical Characteristics ( $T_A = 25^\circ\text{C}$ unless otherwise specified)

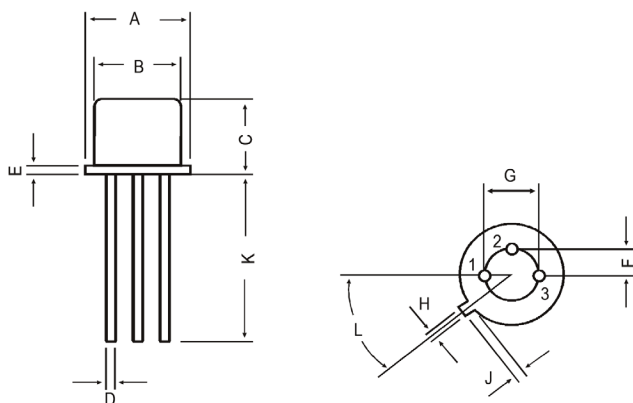
| Parameter               | Symbol            | Test Condition                                                   | Value |      | Unit |
|-------------------------|-------------------|------------------------------------------------------------------|-------|------|------|
|                         |                   |                                                                  | Min.  | Max. |      |
| Dynamic Characteristics |                   |                                                                  |       |      |      |
| Transition Frequency    | f <sub>T</sub> ** | I <sub>C</sub> = 50mA, V <sub>CE</sub> = 20V, f = 100MHz         | 200   | -    | MHz  |
| Output Capacitance      | C <sub>ob</sub>   | V <sub>CB</sub> = 10V, I <sub>E</sub> = 0, f = 100kHz            | -     | 8    | pF   |
| Input Capacitance       | C <sub>ib</sub>   | V <sub>BE</sub> = 2V, I <sub>C</sub> = 0, f = 100kHz             | -     | 30   |      |
| Switching Time          |                   |                                                                  |       |      |      |
| Delay Time              | t <sub>d</sub>    | I <sub>C</sub> = 150mA, I <sub>B1</sub> = 15 mA                  | -     | 10   | ns   |
| Rise Time               | t <sub>r</sub>    | V <sub>CC</sub> = 30V                                            | -     | 40   |      |
| Turn on Time            | t <sub>on</sub>   | -                                                                | -     | 45   |      |
| Storage time            | t <sub>s</sub>    | I <sub>C</sub> = 150mA, I <sub>B1</sub> = I <sub>B2</sub> = 15mA | -     | 80   |      |
| Fall Time               | t <sub>f</sub>    | V <sub>CC</sub> = 6V                                             | -     | 30   |      |
| Turn Off Time           | t <sub>off</sub>  | -                                                                | -     | 100  |      |

\*\*  $f_T$  is defined as the frequency at which  $|h_{fe}|$  extrapolates to unity

## Specification Table

| $V_{CEO}$<br>Maximum<br>(V) | $I_C$<br>Maximum<br>(A) | $V_{CE(sat)}$<br>Maximum<br>(V)<br>at $I_C = 150\text{mA}$ | $t_{off}$<br>Maximum<br>(ns) | $h_{FE}$<br>Minimum<br>at $I_C = 150\text{mA}$ | $P_D$<br>at $T_A = 25^\circ\text{C}$<br>(mW) | Package<br>and<br>Pin Out | Part Number |
|-----------------------------|-------------------------|------------------------------------------------------------|------------------------------|------------------------------------------------|----------------------------------------------|---------------------------|-------------|
| 60                          | 0.6                     | 0.4                                                        | 100                          | 40                                             | 400                                          | TO-18                     | 2N2906A     |
|                             |                         |                                                            |                              |                                                |                                              |                           | 2N2907A     |

## TO-18 Metal Can Package



| Dimensions | Min. | Max. |
|------------|------|------|
| A          | 5.24 | 5.84 |
| B          | 4.52 | 4.97 |
| C          | 4.31 | 5.33 |
| D          | 0.4  | 0.53 |
| E          | -    | 0.76 |
| F          | -    | 1.27 |
| G          | -    | 2.97 |
| H          | 0.91 | 1.17 |
| J          | 0.71 | 1.21 |
| K          | 12.7 | -    |
| L          | 45°  |      |

Dimensions : Millimetres

## Part Number Table

| Description                      | Part Number |
|----------------------------------|-------------|
| High Speed Switching Transistors | 2N2906A     |
|                                  | 2N2907A     |

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