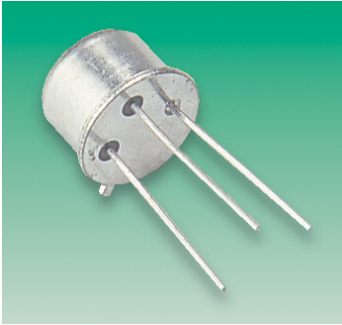


# 2N2905A

## General Purpose Transistor



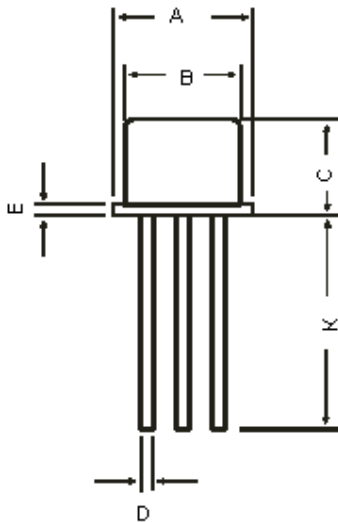
### High Speed Switching



### Features:

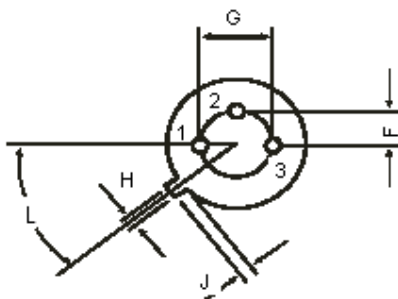
- PNP Silicon Planar Switching Transistor.
- Fast switching devices exhibiting short turn-off and low saturation voltage characteristics.
- Switching And Linear Application DC to VHF Amplifier Applications.

### TO-39 Metal Can Package



| Dimensions | Minimum | Maximum |
|------------|---------|---------|
| 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°     |

Dimensions : Millimetres



### Pin Configuration

1. Emitter
2. Base
3. Collector



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## General Purpose Transistor



### Absolute Maximum Ratings

| Parameter  | 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 at $T_a = 25^\circ\text{C}$<br>Derate above $25^\circ\text{C}$ | $P_D$          | 600         | mW                   |
| Power Dissipation at $T_c = 25^\circ\text{C}$<br>Derate above $25^\circ\text{C}$ |                | 3.43        | mW/ $^\circ\text{C}$ |
| Operating and Storage Junction Temperature Range                                 | $T_j, T_{stg}$ | -65 to +200 | $^\circ\text{C}$     |

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

| Parameter                            | Symbol          | Test Condition   | Value                                   |            | Unit                |
|--------------------------------------|-----------------|--|---|------------|---------------------|
|                                      |                 |  | Minimum                                 | Maximum    |                     |
| 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                 | $V_{EBO}$       | $I_E = 10\mu\text{A}, I_C = 0$   |   | 5.0        |                     |
| Collector-Cut off Current            | $I_{CBO}$       | $V_{CB} = 50\text{V}, I_E = 0$<br>$T_A = 150^\circ\text{C}$  | -                                       | 10         | nA                  |
|                                      | $I_{CEX}$       | $V_{CB} = 50\text{V}, I_E = 0$<br>$V_{CE} = 30\text{V}, V_{BE} = 0.5\text{V}$  | -                                       | 10<br>50   | $\mu\text{A}$<br>nA |
| Base Current                         | $I_B$           | $V_{CE} = 30\text{V}, V_{BE} = 0.5\text{V}$  | -                                       | 50         | nA                  |
| Collector Emitter Saturation Voltage | $V_{CE(sat)}^*$ | $I_C = 150\text{mA}, I_B = 15\text{mA}$  | -                                       | 0.4        | V                   |
| Base Emitter Saturation Voltage      | $V_{BE(sat)}^*$ | $I_C = 150\text{mA}, I_B = 15\text{mA}$<br>$I_C = 500\text{mA}, I_B = 50\text{mA}$   | -                                       | 1.3<br>2.6 |                     |
| DC Current Gain                      | $h_{FE}$        | $I_C = 0.1\text{mA}, V_{CE} = 10\text{V}$<br>$I_C = 1\text{mA}, V_{CE} = 10\text{V}$<br>$I_C = 10\text{mA}, V_{CE} = 10\text{V}$<br>$I_C = 150\text{mA}, V_{CE} = 10\text{V}^*$<br>$I_C = 500\text{mA}, V_{CE} = 10\text{V}^*$ | >75<br>>100<br>>100<br>100 - 300<br>>50 | -          | -                   |



# 2N2905A

## General Purpose Transistor



### Electrical Characteristics (Ta = 25°C unless otherwise specified)

| Parameter                      | Symbol       | Test Condition  | Minimum | Maximum | Unit |
|--------------------------------|--------------|---|---------|---------|------|
| <b>Dynamic Characteristics</b> |              |   |         |         |      |
| Transition Frequency           | $f_{t^{**}}$ | $I_C = 50\text{mA}, V_{CE} = 20\text{V}, f = 100\text{MHz}$ | 200     | -       | MHz  |
| Output Capacitance             | $C_{ob}$     | $V_{CB} = 10\text{V}, I_E = 0, f = 100\text{kHz}$           | -       | 8.0     | pF   |
| Input Capacitance              | $C_{ib}$     | $V_{BE} = 2\text{V}, I_C = 0, f = 100\text{kHz}$            | -       | 30      |      |
| <b>Switching Time</b>          |              |   |         |         |      |
| Delay Time                     | $t_d$        | $I_C = 150\text{mA}, I_{B1} = 15\text{mA}$                  | -       | 10      | ns   |
| Rise Time                      | $t_r$        | $V_{CC} = 30\text{V}$                                       | -       | 40      |      |
| Turn-on Time                   | $t_{on}$     | -   | -       | 45      |      |
| Storage time                   | $t_s$        | $I_C = 150\text{mA}, I_{B1} = I_{B2} = 15\text{mA}$         | -       | 80      |      |
| Fall Time                      | $t_f$        | $V_{CC} = 6\text{V}$  | -       | 30      |      |
| Turn-off Time                  | $t_{off}$    | -   | -       | 100     |      |

Pulse Test: Pulse Width = 300 $\mu$ s, Duty Cycle = 2%

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

### Specifications

| $V_{CEO}$<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)<br>at $I_C = 150\text{mA}$ | $h_{FE}$<br>minimum<br>at $I_C = 150\text{mA}$ | $P_{tot}$<br>at 25°C<br>(mW) | Package<br>and<br>Pin Out | Part Number |
|-----------------------------|-------------------------|--|---|--|------------------------------|---------------------------|-------------|
| 60                          | 0.6                     | 0.4  | 100   | 100  | 600                          | TO-39                     | 2N2905A     |



# 2N2905A

## General Purpose Transistor

### Notes:

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