

# MICRO ELECTRONICS

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## 2N/PN2905

PNP  
SILICON  
TRANSISTORS

2N/PN2905 are PNP silicon planar epitaxial transistors. It is intended for driver stage of power amplifiers and switching applications.

2N2905  
TO-39



PN2905  
TO-92A



### ABSOLUTE MAXIMUM RATINGS

|  |          | 2N2905        | PN2905        |
|--|----------|---------------|---------------|
| Collector-Base Voltage                   | VCBO     | 60V           | 60V           |
| Collector-Emitter Voltage                | VCEO     | 40V           | 40V           |
| Emitter-Base Voltage                     | VEBO     | 5V            | 5V            |
| Collector Current                        | IC       | 600mA         | 600mA         |
| Total Power Dissipation @ Ta=25°C        | Ptot     | 600mW         | 500mW         |
| Operating Junction & Storage Temperature | Tj, Tstg | -65 to +200°C | -55 to +150°C |

### ELECTRICAL CHARACTERISTICS (Ta=25°C unless otherwise noted)

| PARAMETER                            | SYMBOL               | MIN | MAX  | UNIT | TEST CONDITIONS   |
|--------------------------------------|----------------------|-----|------|------|---|
| Collector-Base Breakdown Voltage     | BV <sub>CBO</sub>    | -60 |      | V    | I <sub>C</sub> =-10uA I <sub>E</sub> =0                           |
| Collector-Emitter Breakdown Voltage  | LV <sub>CEO</sub>    | -40 |      | V    | I <sub>C</sub> =-10mA I <sub>B</sub> =0                           |
| Emitter-Base Breakdown Voltage       | BV <sub>EBO</sub>    | -5  |      | V    | I <sub>E</sub> =-10uA I <sub>C</sub> =0                           |
| Collector Cutoff Current             | I <sub>CB0</sub>     |     | -20  | nA   | V <sub>CB</sub> =-50V I <sub>E</sub> =0                           |
| Collector Cutoff Current             | I <sub>CBO</sub>     |     | -20  | uA   | V <sub>CB</sub> =-50V I <sub>E</sub> =0                           |
| Collector Cutoff Current             | I <sub>CEX</sub>     |     | -50  | nA   | T <sub>A</sub> =150°C V <sub>CE</sub> =-30V V <sub>BE</sub> =0.5V |
| Base Current                         | I <sub>B</sub>       |     | 50   | nA   | V <sub>CE</sub> =-30V V <sub>BE</sub> =0.5V                       |
| D.C. Current Gain                    | h <sub>FE</sub>      | 35  |      |      | V <sub>CE</sub> =-10V I <sub>C</sub> =-100uA                      |
| D.C. Current Gain                    | h <sub>FE</sub>      | 50  |      |      | V <sub>CE</sub> =-10V I <sub>C</sub> =-1mA                        |
| D.C. Current Gain                    | h <sub>FE</sub>      | 75  |      |      | V <sub>CE</sub> =-10V I <sub>C</sub> =-10mA                       |
| D.C. Current Gain                    | h <sub>FE</sub>      | 100 | 300  |      | V <sub>CE</sub> =-10V I <sub>C</sub> =-150mA                      |
| D.C. Current Gain                    | h <sub>FE</sub>      | 30  |      |      | V <sub>CE</sub> =-10V I <sub>C</sub> =-500mA                      |
| Collector-Emitter Saturation Voltage | V <sub>CE(sat)</sub> |     | -0.4 | V    | I <sub>C</sub> =-150mA I <sub>B</sub> =-15mA                      |
| Collector-Emitter Saturation Voltage | V <sub>CE(sat)</sub> |     | -1.6 | V    | I <sub>C</sub> =-500mA I <sub>B</sub> =-50mA                      |
| Base-Emitter Saturation Voltage      | V <sub>BE(sat)</sub> |     | -1.3 | V    | I <sub>C</sub> =-150mA I <sub>B</sub> =-15mA                      |
| Base-Emitter Saturation Voltage      | V <sub>BE(sat)</sub> |     | -2.6 | V    | I <sub>C</sub> =-500mA I <sub>B</sub> =-50mA                      |
| Output Capacitance                   | C <sub>ob</sub>      |     | 8    | pF   | V <sub>CB</sub> =-10V I <sub>E</sub> =0                           |
| Input Capacitance                    | C <sub>ib</sub>      |     | 30   | pF   | V <sub>EB</sub> =-2V I <sub>C</sub> =0                            |
| High Frequency Current Gain          | h <sub>fe</sub>      | 2   |      |      | V <sub>CE</sub> =-20V I <sub>C</sub> =-50mA<br>f=100MHz           |

----- CONTINUE -----

ELECTRICAL CHARACTERISTICS @  $T_A=25^{\circ}\text{C}$  (unless otherwise stated) :

| PARAMETER     | SYMBOL    | MIN | MAX | UNIT | TEST CONDITIONS                            |
|---------------|-----------|-----|-----|------|--|
| Delay Time    | $t_d$     |     | 10  | nsec | $I_C=-150\text{mA}$ $I_{B1}=-15\text{mA}$  |
| Rise Time     | $t_r$     |     | 40  | nsec | $V_{BE(\text{off})}=0$ $R_L=200\text{ohm}$ |
| Turn On Time  | $t_{on}$  |     | 45  | nsec |  |
| Storage Time  | $t_s$     |     | 80  | nsec | $I_C=-150\text{mA}$ $I_{B1}=-13\text{mA}$  |
| Fall Time     | $t_f$     |     | 30  | nsec | $I_{B2}=17\text{mA}$ $R_L=37\text{ohm}$    |
| Turn Off Time | $t_{off}$ |     | 100 | nsec |  |