

# MICRO ELECTRONICS

**2N 2907**  
**2N2907A**  
**PN 2907**  
**PN 2907A**

THE 2N2907, 2N2907A, PN2907, PN2907A ARE PNP SILICON PLANAR EPITAXIAL TRANSISTORS FOR GENERAL PURPOSE AMPLIFIERS AND MEDIUM SPEED SWITCHING APPLICATIONS. THEY ARE COMPLEMENTARY TO THE NPN TYPE 2N2222, 2N2222A, PN2222, PN2222A RESPECTIVELY. THE 2N2907, 2N2907A ARE PACKED IN TO-18. THE PN2907, PN2907A ARE PACKED IN TO-92A.

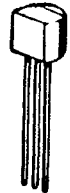
CASE TO-18



CBE

2N2907  
2N2907A

CASE TO-92A



EBC

PN2907  
PN2907A

ABSOLUTE MAXIMUM RATINGS

|   |                           | 2N2907       | 2N2907A | PN2907       | PN2907A |
|---|---------------------------|--------------|---------|--------------|---------|
| Collector-Base Voltage                            | $-V_{CB0}$                | 60V          | 60V     | 60V          | 60V     |
| Collector-Emitter Voltage                         | $-V_{CE0}$                | 40V          | 60V     | 40V          | 60V     |
| Emitter-Base Voltage                              | $-V_{EB0}$                | 5V           | 5V      | 5V           | 5V      |
| Collector Current                                 | $-I_C$                    | 0.6A         | 0.6A    | 0.6A         | 0.6A    |
| Total Power Dissipation ( $T_C \leq 25^\circ C$ ) | $P_{tot}$                 | 1.8W         | 1.8W    | 1.2W         | 1.2W    |
|   | ( $T_A \leq 25^\circ C$ ) | 400mW        | 400mW   | 500mW        | 500mW   |
| Junction Temperature                              | $T_j$                     | 200°C        | 200°C   | 150°C        | 150°C   |
| Storage Temperature Range                         | $T_{stg}$                 | -65 to 200°C |         | -55 to 150°C |         |

ELECTRICAL CHARACTERISTICS ( $T_A=25^\circ C$  unless otherwise noted)

| PARAMETER                            | SYMBOL           | 2N2907 | 2N2907A | UNIT    | TEST CONDITIONS                         |
|--------------------------------------|------------------|--------|---------|---------|---|
|                                      |                  | PN2907 | PN2907A |         |   |
|                                      |                  | MIN    | MAX     |         |   |
| Collector-Base Breakdown Voltage     | $-BV_{CB0}$      | 60     | 60      | V       | $-I_C=0.01mA$ $I_E=0$                   |
| Collector-Emitter Breakdown Voltage  | $-LV_{CE0}^*$    | 40     | 60      | V       | $-I_C=10mA$ $I_B=0$                     |
| Emitter-Base Breakdown Voltage       | $-BV_{EB0}$      | 5      | 5       | V       | $-I_E=0.01mA$ $I_C=0$                   |
| Collector Cutoff Current             | $-I_{CBO}$       | 20     | 10      | nA      | $-V_{CB}=50V$ $I_E=0$                   |
|                                      |                  | 20     | 10      | $\mu A$ | $-V_{CB}=50V$ $I_E=0$ $T_A=150^\circ C$ |
| Collector Cutoff Current             | $-I_{CEV}$       | 50     | 50      | nA      | $-V_{CE}=30V$ $-V_{EB}=0.5V$            |
| Base Cutoff Current                  | $-I_{BL}$        | 50     | 50      | nA      | $-V_{CE}=30V$ $-V_{EB}=0.5V$            |
| Collector-Emitter Saturation Voltage | $-V_{CE(sat)}^*$ | 0.4    | 0.4     | V       | $-I_C=150mA$ $-I_B=15mA$                |
|                                      |                  | 1.6    | 1.6     | V       | $-I_C=500mA$ $-I_B=50mA$                |

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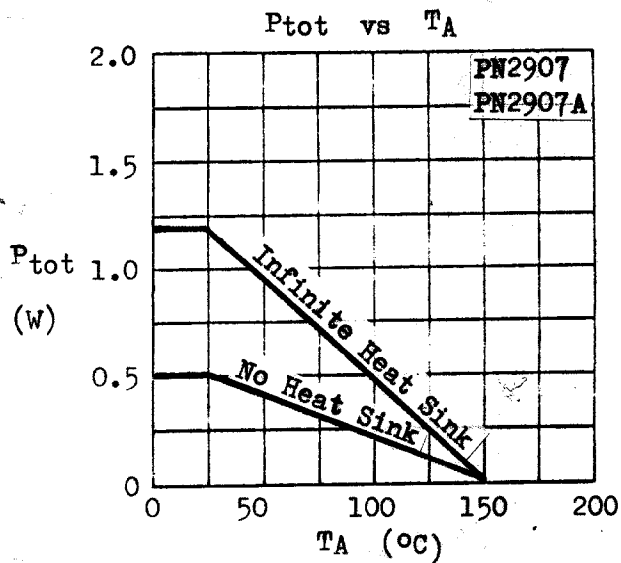
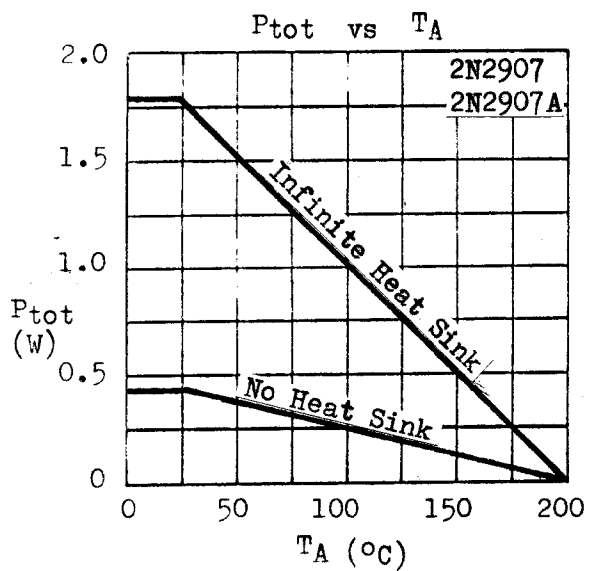
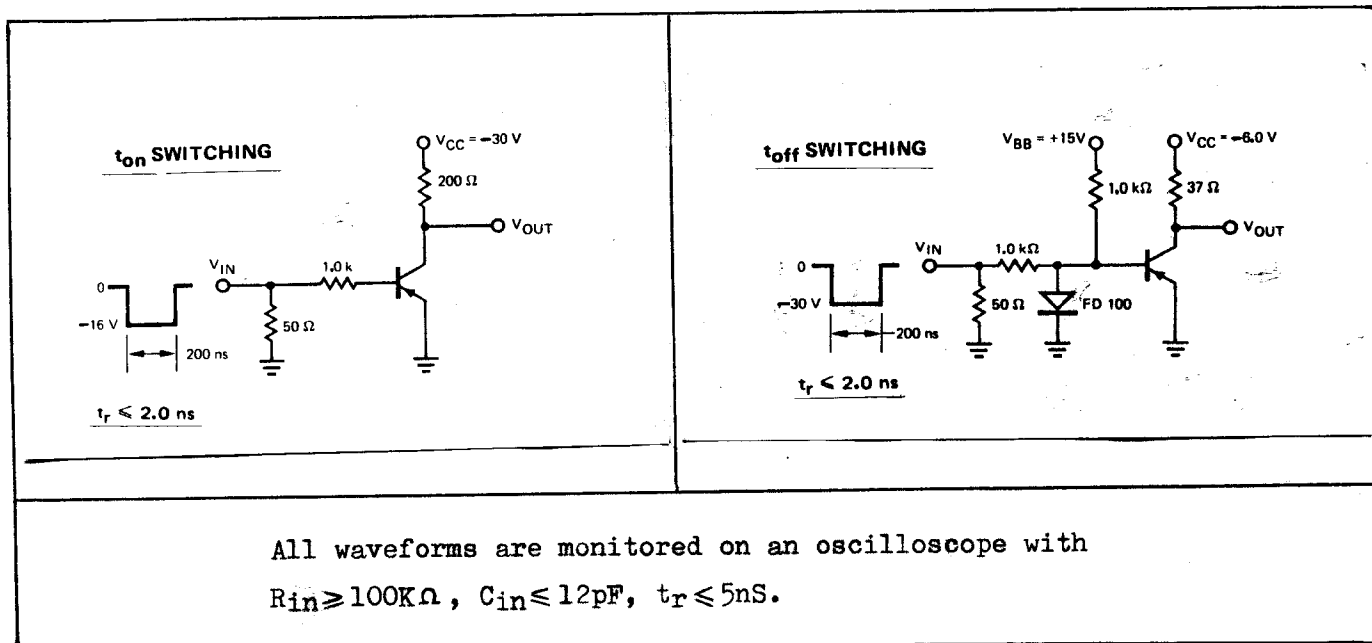
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| PARAMETER                       | SYMBOL          | 2N2907 |        | 2N2907A |         | UNIT | TEST CONDITIONS  |
|---------------------------------|-----------------|--------|--------|---------|---------|------|--|
|                                 |                 | PN2907 | PN2907 | PN2907A | PN2907A |      |  |
|                                 |                 | MIN    | MAX    | MIN     | MAX     |      |  |
| Base-Emitter Saturation Voltage | $V_{BE(sat)}^*$ | 1.3    |        | 1.3     |         | V    | -I <sub>C</sub> =150mA -I <sub>B</sub> =15mA   |
|                                 |                 | 2.6    |        | 2.6     |         | V    | -I <sub>C</sub> =500mA -I <sub>B</sub> =50mA   |
| D.C. Current Gain               | $H_{FE}^*$      | 35     |        | 75      |         |      | -I <sub>C</sub> =0.1mA -V <sub>CE</sub> =10V   |
|                                 |                 | 50     |        | 100     |         |      | -I <sub>C</sub> =1mA -V <sub>CE</sub> =10V   |
|                                 |                 | 75     |        | 100     |         |      | -I <sub>C</sub> =10mA -V <sub>CE</sub> =10V  |
|                                 |                 | 100    | 300    | 100     | 300     |      | -I <sub>C</sub> =150mA -V <sub>CE</sub> =10V   |
|                                 |                 | 30     |        | 50      |         |      | -I <sub>C</sub> =500mA -V <sub>CE</sub> =10V   |
| Current Gain-Bandwidth Product  | $f_T$           | 200    |        | 200     |         | MHz  | -I <sub>C</sub> =50mA -V <sub>CE</sub> =20V  |
| Collector-Base Capacitance      | $C_{ob}$        |        | 8      |         | 8       | pF   | -V <sub>CB</sub> =10V I <sub>E</sub> =0<br>f=100kHz                                    |
| Emitter-Base Capacitance        | $C_{ib}$        |        | 30     |         | 30      | pF   | -V <sub>EB</sub> =2V I <sub>C</sub> =0<br>f=100kHz                                     |
| Turn-On Time                    | $t_{on}$        |        |        |         | 45      | nS   | -I <sub>C</sub> =150mA -I <sub>B1</sub> =15mA<br>-V <sub>CC</sub> =30V                 |
| Turn-Off Time                   | $t_{off}$       |        |        |         | 100     | nS   | -I <sub>C</sub> =150mA -I <sub>B1</sub> =I <sub>B2</sub> =15mA<br>-V <sub>CC</sub> =6V |
| Delay Time                      | $t_d$           |        | 10     |         | 10      | nS   | -I <sub>C</sub> =150mA -I <sub>B1</sub> =15mA<br>-V <sub>CC</sub> =30V                 |
| Rise Time                       | $t_r$           |        | 40     |         | 40      | nS   | -I <sub>C</sub> =150mA -I <sub>B1</sub> =15mA<br>-V <sub>CC</sub> =30V                 |
| Storage Time                    | $t_s$           |        | 80     |         | 80      | nS   | -I <sub>C</sub> =150mA -I <sub>B1</sub> =I <sub>B2</sub> =15mA<br>-V <sub>CC</sub> =6V |
| Fall Time                       | $t_f$           |        | 30     |         | 30      | nS   | -I <sub>C</sub> =150mA -I <sub>B1</sub> =I <sub>B2</sub> =15mA<br>-V <sub>CC</sub> =6V |

\* Pulse Test : Pulse Width=0.3mS, Duty Cycle=1%

SWITCHING TIME TEST CIRCUITS



TYPICAL CHARACTERISTICS

( $T_A=25^\circ\text{C}$  unless otherwise noted)

