

## PNP SMALL SIGNAL SILICON TRANSISTOR

Qualified per MIL-PRF-19500/291

### Devices

|                  |                  |
|------------------|------------------|
| <b>2N2906A</b>   | <b>2N2907A</b>   |
| <b>2N2906AL</b>  | <b>2N2907AL</b>  |
| <b>2N2906AUA</b> | <b>2N2907AUA</b> |
| <b>2N2906AUB</b> | <b>2N2907AUB</b> |

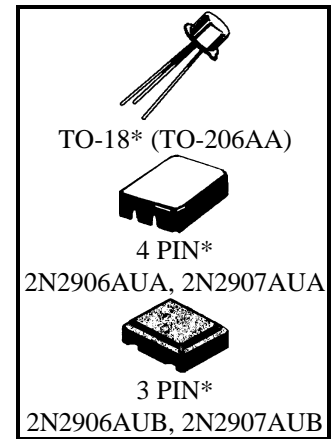
### Qualified Level

|               |
|---------------|
| <b>JAN</b>    |
| <b>JANTX</b>  |
| <b>JANTXV</b> |
| <b>JANS</b>   |

### MAXIMUM RATINGS

| Ratings  | Symbol         | All Types     | Unit        |
|--|----------------|---------------|-------------|
| Collector-Emitter Voltage                      | $V_{CEO}$      | 60            | Vdc         |
| Collector-Base Voltage                         | $V_{CBO}$      | 60            | Vdc         |
| Emitter-Base Voltage                           | $V_{EBO}$      | 5.0           | Vdc         |
| Collector Current                              | $I_C$          | 600           | mAdc        |
| Total Power Dissipation                        | $P_T^{(1)}$    | 0.4           | W           |
|  |                | $P_T^{(2/3)}$ | 1.8         |
| Operating & Storage Junction Temperature Range | $T_J, T_{stg}$ | -65 to +200   | $^{\circ}C$ |

- 1) Derate linearly 2.28 mW/ $^{\circ}C$  for  $T_A > +25^{\circ}C$ .
- 2) Derate linearly 10.3 mW/ $^{\circ}C$  for  $T_C > +25^{\circ}C$ .
- 3) For UA and UB surface mount case outlines:  $P_T = 1.16$  W; derate linearly 6.6mW/ $^{\circ}C$  for  $T_C > +25^{\circ}C$ .



\*See appendix A for package outline

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

| Characteristics | Symbol | Min. | Max. | Unit |
|-----------------|--------|------|------|------|
|-----------------|--------|------|------|------|

#### OFF CHARACTERISTICS

|   |               |    |          |                         |
|---|---------------|----|----------|-------------------------|
| Collector-Emitter Breakdown Voltage<br>$I_C = 10$ mAdc                  | $V_{(BR)CEO}$ | 60 |          | Vdc                     |
| Collector-Base Cutoff Current<br>$V_{CE} = 50$ Vdc<br>$V_{CE} = 60$ Vdc | $I_{CBO}$     |    | 10<br>10 | $\mu$ Adc<br>$\eta$ Adc |
| Collector-Base Cutoff Current<br>$V_{CE} = 50$ Vdc                      | $I_{CES}$     |    | 50       | $\eta$ Adc              |
| Emitter-Base Cutoff Current<br>$V_{EB} = 4.0$ Vdc<br>$V_{EB} = 5.0$ Vdc | $I_{EBO}$     |    | 50<br>10 | $\eta$ Adc<br>$\mu$ Adc |

**2N2906A, 2N2907A JAN SERIES**

**ELECTRICAL CHARACTERISTICS (con't)**

| Characteristics  | Symbol        | Min. | Max.       | Unit |
|--|---------------|------|------------|------|
| <b>ON CHARACTERISTICS <sup>(4)</sup></b>   |               |      |            |      |
| Forward-Current Transfer Ratio<br>$I_C = 0.1 \text{ mAdc}, V_{CE} = 10 \text{ Vdc}$<br>2N2906A, UA, UB<br>2N2907A, UA, UB                  | $h_{FE}$      | 40   |            |      |
| $I_C = 1.0 \text{ mAdc}, V_{CE} = 10 \text{ Vdc}$<br>2N2906A, UA, UB<br>2N2907A, UA, UB  |               | 75   | 175        |      |
| $I_C = 10 \text{ mAdc}, V_{CE} = 10 \text{ Vdc}$<br>2N2906A, UA, UB<br>2N2907A, UA, UB   |               | 40   | 450        |      |
| $I_C = 150 \text{ mAdc}, V_{CE} = 10 \text{ Vdc}$<br>2N2906A, UA, UB<br>2N2907A, UA, UB  |               | 100  |            |      |
| $I_C = 500 \text{ mAdc}, V_{CE} = 10 \text{ Vdc}$<br>2N2906A, UA, UB<br>2N2907A, UA, UB  |               | 40   | 120        |      |
|  |               | 100  | 300        |      |
| Collector-Emitter Saturation Voltage<br>$I_C = 150 \text{ mAdc}, I_B = 15 \text{ mAdc}$<br>$I_C = 500 \text{ mAdc}, I_B = 50 \text{ mAdc}$ | $V_{CE(sat)}$ |      | 0.4<br>1.6 | Vdc  |
| Base-Emitter Saturation Voltage<br>$I_C = 150 \text{ mAdc}, I_B = 15 \text{ mAdc}$<br>$I_C = 500 \text{ mAdc}, I_B = 50 \text{ mAdc}$      | $V_{BE(sat)}$ | 0.6  | 1.3<br>2.6 | Vdc  |

**DYNAMIC CHARACTERISTICS**

|  |            |           |     |    |
|--|------------|-----------|-----|----|
| Forward Current Transfer Ratio<br>$V_{CE} = 10 \text{ Vdc}, I_C = 1.0 \text{ mAdc}, f = 1.0 \text{ kHz}$<br>2N2906A,UA, UB<br>2N2907A,UA, UB | $h_{fe}$   | 40<br>100 |     |    |
| Magnitude of Small-Signal Forward Current Transfer Ratio<br>$V_{CE} = 20 \text{ Vdc}, I_C = 20 \text{ mAdc}, f = 100 \text{ MHz}$            | $ h_{fe} $ | 2.0       |     |    |
| Output Capacitance<br>$V_{CB} = 10 \text{ Vdc}, I_E = 0, 100 \text{ kHz} \leq f \leq 1.0 \text{ MHz}$  | $C_{obo}$  |           | 8.0 | pF |
| Input Capacitance<br>$V_{EB} = 2.0 \text{ Vdc}, I_C = 0, 100 \text{ kHz} \leq f \leq 1.0 \text{ MHz}$  | $C_{ibo}$  |           | 30  | pF |

**SWITCHING CHARACTERISTICS**

|  |           |  |     |          |
|--|-----------|--|-----|----------|
| Turn-On Time<br>$V_{CC} = 30 \text{ Vdc}; I_C = 150 \text{ mAdc}; I_{B1} = 50 \text{ mAdc}$            | $t_{on}$  |  | 45  | $\eta s$ |
| Turn-Off Time<br>$V_{CC} = 30 \text{ Vdc}; I_C = 150 \text{ mAdc}; I_{B1} = -I_{B2} = 50 \text{ mAdc}$ | $t_{off}$ |  | 300 | $\eta s$ |

(4) Pulse Test: Pulse Width = 300 $\mu s$ , Duty Cycle  $\leq$  2.0%.

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Datasheets for electronic components.