

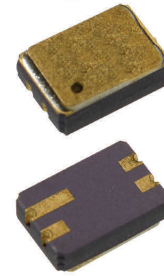
# Surface Mount NPN General Purpose Transistor

## 2N2907AUA (TX, TXV)



### Features:

- Ceramic 4 pin surface mount package
- Miniature package to minimize circuit board area
- Hermetically sealed
- Processed per MIL-PRF-19500/291



### Description:

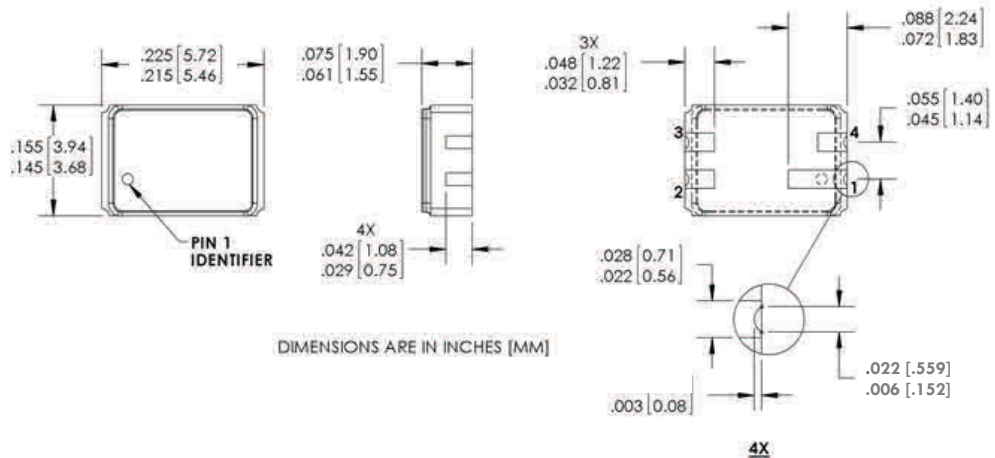
The 2N2907AUA (TX, TXV) is a hermetically sealed ceramic surface mount general purpose switching transistor. The miniature four pin ceramic package is ideal for designs where board space and device weight are important design considerations. The "UA" suffix denotes the 4 terminal leadless chip carrier package, type "A" per MIL-PRF-19500/291.

Typical screening per MIL-PRF-19500/291. The burn-in condition is  $V_{CB} = 30\text{ V}$ ,  $P_D = 400\text{ mW}$ ,  $T_A = 25^\circ\text{C}$ ,  $t = 80\text{ hrs}$ . Refer to MIL-PRF-19500/291 for complete requirements. In addition, the TX and TXV versions receive 100% thermal response testing.

When ordering parts without processing, do not use the TX or TXV suffix.

### Applications:

- General switching
- Amplification
- Signal processing
- Radio transmission
- Logic gates



| Pin | Function      |
|-----|---------------|
| 1   | Collector     |
| 2   | Emitter       |
| 3   | Base          |
| 4   | No Connection |

General Note  
TT Electronics reserves the right to make changes in product specification without notice or liability. All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

OPTEK Technology, Inc.  
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## Electrical Specifications

| Absolute Maximum Ratings ( $T_A = 25^\circ\text{C}$ unless otherwise noted) |                       |
|---|-----------------------|
| Collector-Base Voltage  | 60V                   |
| Collector-Emitter Voltage   | 60V                   |
| Emitter-Base Voltage  | 5.0V                  |
| Collector Current-Continuous  | 600mA                 |
| Operating Junction Temperature ( $T_J$ )                                    | -65° C to +200° C     |
| Storage Junction Temperature ( $T_{stg}$ )                                  | -65° C to +200° C     |
| Power Dissipation @ $T_A = 25^\circ\text{C}$                                | 0.5 W                 |
| Power Dissipation @ $T_c = 25^\circ\text{C}$                                | 1.00 W <sup>(1)</sup> |
| Soldering Temperature (vapor phase reflow for 30 seconds)                   | 215° C                |
| Soldering Temperature (heated collet for 5 seconds)                         | 260° C                |

| Electrical Characteristics ( $T_A = 25^\circ\text{C}$ unless otherwise noted) |                                     |     |     |               |  |
|---|-------------------------------------|-----|-----|---------------|--|
| SYMBOL  | PARAMETER                           | MIN | MAX | UNITS         | TEST CONDITIONS  |
| <b>OFF CHARACTERISTICS</b>  |                                     |     |     |               |  |
| $V_{(BR)CBO}$   | Collector-Base Breakdown Voltage    | 60  |     | V             | $I_C = 10\ \mu\text{A}, I_E = 0$                                       |
| $V_{(BR)CEO}$   | Collector-Emitter Breakdown Voltage | 60  |     | V             | $I_C = 10\ \text{mA}, I_B = 0^{(2)}$                                   |
| $V_{(BR)EBO}$   | Emitter-Base Breakdown Voltage      | 5.0 |     | V             | $I_E = 10\ \mu\text{A}, I_C = 0$                                       |
| $I_{CBO}$   | Collector-Base Cutoff Current       |     | 10  | $\mu\text{A}$ | $V_{CB} = 50\ \text{V}, I_E = 0$                                       |
|   |                                     |     | 10  | $\mu\text{A}$ | $V_{CB} = 50\ \text{V}, I_E = 0, T_A = 150^\circ\text{C}$              |
| $I_{EBO}$   | Emitter-Base Cutoff Current         |     | 10  | $\mu\text{A}$ | $V_{CE} = 4.0\ \text{V}, I_C = 0$                                      |
| $I_{CES}$   | Collector Emitter Cutoff Current    |     | 50  | nA            | $V_{EB} = 50\ \text{V}$  |
| <b>ON CHARACTERISTICS</b>   |                                     |     |     |               |  |
| $h_{FE}$  | Forward-Current Transfer Ratio      | 75  |     | -             | $V_{CE} = 10\ \text{V}, I_C = 0.1\ \text{mA}$                          |
|   |                                     | 100 | 450 | -             | $V_{CE} = 10\ \text{V}, I_C = 1.0\ \text{mA}$                          |
|   |                                     | 100 |     | -             | $V_{CE} = 10\ \text{V}, I_C = 10\ \text{mA}$                           |
|   |                                     | 100 | 300 | -             | $V_{CE} = 10\ \text{V}, I_C = 150\ \text{mA}^{(2)}$                    |
|   |                                     | 50  |     | -             | $V_{CE} = 10\ \text{V}, I_C = 500\ \text{mA}^{(2)}$                    |
|   |                                     | 50  |     | -             | $V_{CE} = 10\ \text{V}, I_C = 1.0\ \text{mA}, T_A = -55^\circ\text{C}$ |

Note:

- Derate linearly 6.6 mW/°C above 25° C
- Pulse Width  $\leq 300\ \mu\text{s}$ , Duty Cycle  $\leq 2.0\%$

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| Electrical Characteristics (T <sub>A</sub> = 25° C unless otherwise noted) |   |     |      |       |  |
|--|---|-----|------|-------|--|
| SYMBOL   | PARAMETER                                   | MIN | MAX  | UNITS | TEST CONDITIONS  |
| <b>ON CHARACTERISTICS</b>  |   |     |      |       |  |
| V <sub>CE(SAT)</sub>   | Collector-Emitter Saturation Voltage        |     | 0.40 | V     | I <sub>C</sub> = 150 mA, I <sub>B</sub> = 15 mA <sup>(2)</sup>                             |
|  |   |     | 1.60 | V     | I <sub>C</sub> = 500 mA, I <sub>B</sub> = 50 mA <sup>(2)</sup>                             |
| V <sub>BE(SAT)</sub>   | Base-Emitter Saturation Voltage             |     | 1.30 | V     | I <sub>C</sub> = 150 mA, I <sub>B</sub> = 15 mA <sup>(2)</sup>                             |
|  |   |     | 2.60 | V     | I <sub>C</sub> = 500 mA, I <sub>B</sub> = 50 mA <sup>(2)</sup>                             |
| <b>SMALL-SIGNAL CHARACTERISTICS</b>  |   |     |      |       |  |
| h <sub>fe</sub>  | Small Signal Forward Current Transfer Ratio | 100 |      | -     | V <sub>CE</sub> = 10 V, I <sub>C</sub> = 1.0 mA, f = 1.0 kHz                               |
| h <sub>fe</sub>  | Small Signal Forward Current Transfer Ratio | 2.0 |      | -     | V <sub>CE</sub> = 20 V, I <sub>C</sub> = 20 mA, f = 100 MHz                                |
| C <sub>obo</sub>   | Open Circuit Output Capacitance             |     | 8.0  | pF    | V <sub>CB</sub> = 10 V, 100 kHz ≤ f ≤ 1.0 MHz  |
| C <sub>ibo</sub>   | Input Capacitance (Output Open)             |     | 30   | pF    | V <sub>EB</sub> = 2.0 V, 100 kHz ≤ f ≤ 1.0 MHz   |
| <b>SWITCHING CHARACTERISTICS</b>   |   |     |      |       |  |
| t <sub>on</sub>  | Turn-On Time                                |     | 45   | ns    | V <sub>CC</sub> = 30 V, I <sub>C</sub> = 150 mA, I <sub>B1</sub> = 15 mA                   |
| t <sub>off</sub>   | Turn-Off Time                               |     | 300  | ns    | V <sub>CC</sub> = 30 V, I <sub>C</sub> = 150 mA, I <sub>B1</sub> = I <sub>B2</sub> = 15 mA |

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