

# **MULTIPLE (QUAD) PNP SILICON SWITCHING TRANSISTOR**

**Qualified per MIL-PRF-19500/558**

## **Devices**

**2N6987  
2N6987U**

**2N6988**

## **Qualified Level**

**JAN  
JANTX  
JANTXV  
JANS**

## **MAXIMUM RATINGS <sup>(1)</sup>**

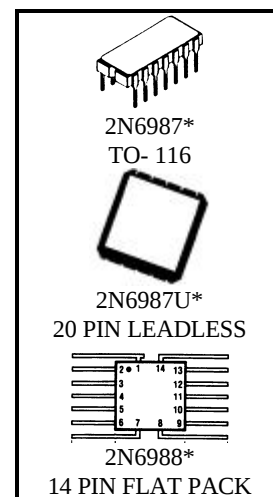
| <b>Ratings</b>                                                                                                                    | <b>Symbol</b>     | <b>Value</b>      | <b>Units</b>       |
|-----------------------------------------------------------------------------------------------------------------------------------|-------------------|-------------------|--------------------|
| Collector-Emitter Voltage <sup>(4)</sup>                                                                                          | $V_{CEO}$         | 60                | Vdc                |
| Collector-Base Voltage <sup>(4)</sup>                                                                                             | $V_{CBO}$         | 60                | Vdc                |
| Emitter-Base Voltage <sup>(4)</sup>                                                                                               | $V_{EBO}$         | 5.0               | Vdc                |
| Collector Current                                                                                                                 | $I_C$             | 600               | mAdc               |
| Total Power Dissipation @ $T_A = +25^{\circ}\text{C}$<br>2N6987 <sup>(2)</sup><br>2N6987U <sup>(2)</sup><br>2N6988 <sup>(3)</sup> | $P_T$             | 1.5<br>1.0<br>0.4 | W                  |
| Operating & Storage Junction Temperature Range                                                                                    | $T_{op}, T_{stg}$ | -65 to +200       | $^{\circ}\text{C}$ |

1) Maximum voltage between transistors shall be  $\geq 500$  Vdc

2) Derate linearly 8.57 mW/ $^{\circ}\text{C}$  above  $T_A = +25^{\circ}\text{C}$

3) Derate linearly 2.286 mW/ $^{\circ}\text{C}$  above  $T_A = +25^{\circ}\text{C}$ .

4) Ratings apply to each transistor in the array.



\*See appendix A for package outline

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

| <b>Characteristics</b>                                                  | <b>Symbol</b> | <b>Min.</b> | <b>Max.</b> | <b>Unit</b>                         |
|-------------------------------------------------------------------------|---------------|-------------|-------------|-------------------------------------|
| <b>OFF CHARACTERISTICS</b>                                              |               |             |             |                                     |
| Collector-Emitter Breakdown Voltage<br>$I_C = 10$ mAdc                  | $V_{(BR)CEO}$ | 60          |             | Vdc                                 |
| Collector-Base Cutoff Current<br>$V_{CB} = 60$ Vdc<br>$V_{CB} = 50$ Vdc | $I_{CBO}$     |             | 10<br>10    | $\mu\text{Adc}$<br>$\eta\text{Adc}$ |
| Emitter-Base Cutoff Current<br>$V_{BE} = 5.0$ Vdc<br>$V_{EB} = 3.5$ Vdc | $I_{EBO}$     |             | 10<br>50    | $\mu\text{Adc}$<br>$\eta\text{Adc}$ |

**ELECTRICAL CHARACTERISTICS (con't)**

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

**DC CHARACTERISTICS**

|                                                                                                                                                                                                                                                                                                        |               |                               |            |     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-------------------------------|------------|-----|
| Forward-Current Transfer Ratio<br>$I_C = 0.1 \text{ mAdc}, V_{CE} = 10 \text{ Vdc}$<br>$I_C = 1.0 \text{ mAdc}, V_{CE} = 10 \text{ Vdc}$<br>$I_C = 10 \text{ mAdc}, V_{CE} = 10 \text{ Vdc}$<br>$I_C = 150 \text{ mAdc}, V_{CE} = 10 \text{ Vdc}$<br>$I_C = 500 \text{ mAdc}, V_{CE} = 10 \text{ Vdc}$ | $h_{FE}$      | 75<br>100<br>100<br>100<br>50 | 450<br>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 Voltage<br>$I_C = 150 \text{ mAdc}, I_B = 15 \text{ mAdc}$<br>$I_C = 500 \text{ mAdc}, I_B = 50 \text{ mAdc}$                                                                                                                                                                             | $V_{BE(sat)}$ |                               | 1.3<br>2.6 | Vdc |

**DYNAMIC CHARACTERISTICS**

|                                                                                                                                                    |            |     |     |    |
|----------------------------------------------------------------------------------------------------------------------------------------------------|------------|-----|-----|----|
| Magnitude of Small-Signal Short-Circuit<br>Forward-Current Transfer Ratio<br>$I_C = 50 \text{ mAdc}, V_{CE} = 20 \text{ Vdc}, f = 100 \text{ MHz}$ | $ h_{fe} $ | 2.0 | 8.0 |    |
| Small-Signal Short-Circuit Forward Current Transfer Ratio<br>$I_C = 1.0 \text{ mAdc}, V_{CE} = 10 \text{ Vdc}, f = 1.0 \text{ kHz}$                | $h_{fe}$   | 100 |     |    |
| 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 |