## MULTIPLE (QUAD) PNP SILICON SW ITCHING TRANSISTOR Qualified per MILPRF-19500/ 558

## Devices

## 2N6987 <br> 2N6987U

## 2N6988

Qualified Level JAN JANTX JANTXV JANS

MAXIMUM RATINGS ${ }^{(1)}$

| Ratings | Symbol | Value | Units |
| :---: | :---: | :---: | :---: |
| Collector-Emitter Voltage ${ }^{(4)}$ | $\mathrm{V}_{\text {CEO }}$ | 60 | Vdc |
| Collector-Base Voltage ${ }^{(4)}$ | $\mathrm{V}_{\mathrm{CBO}}$ | 60 | Vdc |
| Emitter-Base Voltage ${ }^{(4)}$ | $\mathrm{V}_{\text {Ebo }}$ | 5.0 | Vdc |
| Collector Current | $\mathrm{I}_{\mathrm{C}}$ | 600 | mAdc |
| Total Power Dissipation $@ \mathrm{~T}_{\mathrm{A}}=+25^{0} \mathrm{C}$ <br>  $2 \mathrm{~N} 6987^{(2)}$ <br>  $2 \mathrm{~N} 6987 \mathrm{U}^{(2)}$ <br>  $2 \mathrm{~N} 6988^{(3)}$ | $\mathrm{P}_{\mathrm{T}}$ | $\begin{aligned} & 1.5 \\ & 1.0 \\ & 0.4 \end{aligned}$ | W |
| Operating \& Storage Junction Temperature Range | $\mathrm{T}_{\text {op, }} \mathrm{T}_{\text {stg }}$ | -65 to +200 | ${ }^{0} \mathrm{C}$ |

1) Maximum voltage between transistors shall be $\geq 500 \mathrm{Vdc}$
2) Derate linearly $8.57 \mathrm{~mW} /{ }^{\circ} \mathrm{C}$ above $\mathrm{T}_{\mathrm{A}}=+25^{\circ} \mathrm{C}$
3) Derate linearly $2.286 \mathrm{~mW} /{ }^{\circ} \mathrm{C}$ above $\mathrm{T}_{\mathrm{A}}=+25^{\circ} \mathrm{C}$.
4) Ratings apply to each transistor in the array.


ELECTRICAL CHARACTERISTICS ( $\mathrm{T}_{\mathrm{A}}=\mathbf{2 5}{ }^{\mathbf{}} \mathrm{C}$ unless otherwise noted)

| Characteristics | Symbol | Min. | Max. | Unit |
| :---: | :---: | :---: | :---: | :---: |
| OFF CHARACTERISTICS |  |  |  |  |
| Collector-Emitter Breakdown Voltage $\mathrm{I}_{\mathrm{C}}=10 \mathrm{mAdc}$ | $\mathrm{V}_{\text {(BR)CEO }}$ | 60 |  | Vdc |
| $\begin{aligned} & \text { Collector-Base Cutoff Current } \\ & V_{C B}=60 \mathrm{Vdc} \\ & V_{C B}=50 \mathrm{Vdc} \\ & \hline \end{aligned}$ | $\mathrm{I}_{\text {CBO }}$ |  | $\begin{aligned} & 10 \\ & 10 \end{aligned}$ | $\mu \mathrm{Adc}$ <br> $\eta$ Adc |
| $\begin{aligned} & \text { Emitter-Base Cutoff Current } \\ & \mathrm{V}_{\mathrm{BE}}=5.0 \mathrm{Vdc} \\ & \mathrm{~V}_{\mathrm{EB}}=3.5 \mathrm{Vdc} \\ & \hline \end{aligned}$ | $\mathrm{I}_{\text {EbO }}$ |  | $\begin{aligned} & 10 \\ & 50 \end{aligned}$ | $\mu \mathrm{Adc}$ <br> $\eta$ Adc |

## ELECTRICAL CHARACTERISTICS (con't)

| Characteristics | Symbol | Min. | Max. | Unit |
| :--- | :---: | :---: | :---: | :---: |
| ON CHARACTERISTICS |  |  |  |  |
| Forward-Current Transfer Ratio |  | 75 |  |  |
| $\mathrm{I}_{\mathrm{C}}=0.1 \mathrm{mAdc}, \mathrm{V}_{\mathrm{CE}}=10 \mathrm{Vdc}$ |  | 100 | 450 |  |
| $\mathrm{I}_{\mathrm{C}}=1.0 \mathrm{mAdc}, \mathrm{V}_{\mathrm{CE}}=10 \mathrm{Vdc}$ | $\mathrm{h}_{\mathrm{FE}}$ | 100 |  |  |
| $\mathrm{I}_{\mathrm{C}}=10 \mathrm{mAdc}, \mathrm{V}_{\mathrm{CE}}=10 \mathrm{Vdc}$ |  | 100 | 300 |  |
| $\mathrm{I}_{\mathrm{C}}=150 \mathrm{mAdc}, \mathrm{V}_{\mathrm{CE}}=10 \mathrm{Vdc}$ |  | 50 |  |  |
| $\mathrm{I}_{\mathrm{C}}=500 \mathrm{mAdc}, \mathrm{V}_{\mathrm{CE}}=10 \mathrm{Vdc}$ |  |  |  |  |
| Collector-Emitter Saturation Voltage | $\mathrm{V}_{\mathrm{CE}(\mathrm{sat})}$ |  | 0.4 |  |
| $\mathrm{I}_{\mathrm{C}}=150 \mathrm{mAdc}, \mathrm{I}_{\mathrm{B}}=15 \mathrm{mAdc}$ |  |  | 1.6 | Vdc |
| $\mathrm{I}_{\mathrm{C}}=500 \mathrm{mAdc}, \mathrm{I}_{\mathrm{B}}=50 \mathrm{mAdc}$ |  |  |  |  |
| Base-Emitter Voltage | $\mathrm{V}_{\mathrm{BE}(\mathrm{sat})}$ |  | 1.3 | Vdc |
| $\mathrm{I}_{\mathrm{C}}=150 \mathrm{mAdc}, \mathrm{I}_{\mathrm{B}}=15 \mathrm{mAdc}$ |  |  | 2.6 |  |
| $\mathrm{I}_{\mathrm{C}}=500 \mathrm{mAdc}, \mathrm{I}_{\mathrm{B}}=50 \mathrm{mAdc}$ |  |  |  |  |

## DYNAMIC CHARACTERISTICS

| Magnitude of Small-Signal Short-Circuit <br> Forward-Current Transfer Ratio <br> $\mathrm{I}_{\mathrm{C}}=50 \mathrm{mAdc}, \mathrm{V}_{\mathrm{CE}}=20$ Vdc, $\mathrm{f}=100 \mathrm{MHz}$ | $\left\|\mathrm{h}_{\mathrm{fe}}\right\|$ | 2.0 | 8.0 |  |
| :--- | :---: | :---: | :---: | :---: |
| Small-Signal Short-Circuit Forward Current Transfer Ratio <br> $\mathrm{I}_{\mathrm{C}}=1.0 \mathrm{mAdc}, \mathrm{V}_{\mathrm{CE}}=10 \mathrm{Vdc}, \mathrm{f}=1.0 \mathrm{kHz}$ | $\mathrm{h}_{\mathrm{fe}}$ | 100 |  |  |
| Output Capacitance <br> $\mathrm{V}_{\mathrm{CB}}=10 \mathrm{Vdc}, \mathrm{I}_{\mathrm{E}}=0,100 \mathrm{kHz} \leq \mathrm{f} \leq 1.0 \mathrm{MHz}$ | $\mathrm{C}_{\mathrm{obo}}$ |  | 8.0 | pF |
| Input Capacitance <br> $\mathrm{V}_{\mathrm{EB}}=2.0 \mathrm{Vdc}, \mathrm{I}_{\mathrm{C}}=0,100 \mathrm{kHz} \leq \mathrm{f} \leq 1.0 \mathrm{MHz}$ | $\mathrm{C}_{\mathrm{ibo}}$ |  | 30 | pF |

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