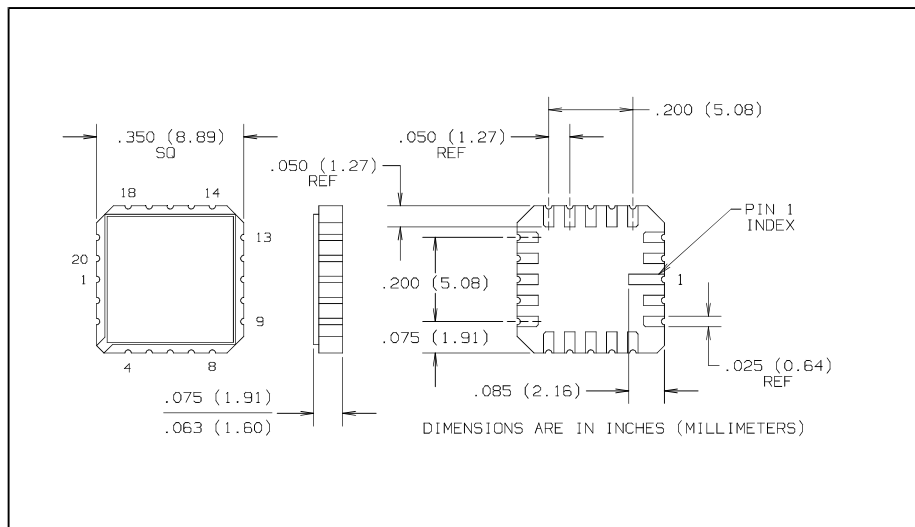


Surface Mount Quad NPN Transistor Type JANTX, JANTXV, 2N6989U



Features

- Ceramic surface mount package
- Hermetically sealed
- Small package minimizes circuit board area required
- Electrical performance similar to a 2N2222A
- Qualification per MIL-PRF-19500/559

Description

The JANTX2N6989U is a hermetically sealed, ceramic surface-mount device, consisting of four individual silicon NPN transistors. The 20 pin ceramic package is ideal for designs where board space and device weight are important design considerations.

Typical screening and lot acceptance tests are provided on page 13-4. The burn-in condition is $V_{CB} = 30$ V, $P_D = 250$ mW each transistor, $T_A = 25^\circ$ C. Refer to MIL-PRF-19500/559 for complete requirements.

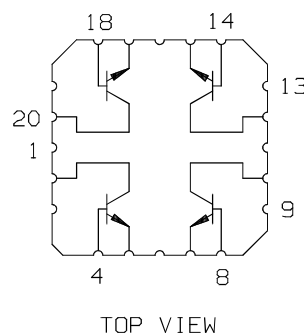
When ordering parts without processing, do not use a JAN prefix.

Absolute Maximum Ratings ($T_A = 25^\circ$ C unless otherwise noted)

Collector-Base Voltage	75 V
Collector-Emitter Voltage	50 V
Emitter-Base Voltage	6.0 V
Collector Current-Continuous	800 mA
Operating Junction Temperature (T_J)	-65° C to $+200^\circ$ C
Storage Junction Temperature (T_{stg})	-65° C to $+200^\circ$ C
Power Dissipation (single transistor, no heat sink)	0.5 W
Power Dissipation $T_A = 25^\circ$ C (four devices driven equally)	1.0 W ⁽¹⁾
Isolation Voltage	500 Vdc

Notes:

(1) Derate linearly 8.57 mW/ $^\circ$ C above 25° C.



Type JANTX, JANTXV, 2N6989U

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

SYMBOL	PARAMETER	MIN	MAX	UNITS	TEST CONDITIONS
Off Characteristics					
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	75		V	$I_C = 10 \mu\text{A}$
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	50		V	$I_C = 10 \text{ mA}^{(2)}$
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	6		V	$I_E = 10 \mu\text{A}$
I_{CBO}	Collector-Base Cutoff Current		10	nA	$V_{CB} = 60 \text{ V}$
I_{CBO2}	Collector-Base Cutoff Current		10	μA	$V_{CB} = 60 \text{ V}, T_A = 150^\circ \text{C}$
I_{EBO}	Emitter-Base Cutoff Current		10	nA	$V_{EB} = 4 \text{ V}$
On Characteristics					
h_{FE1}	Forward Current Transfer Ratio	50			$V_{CE} = 10 \text{ V}, I_C = 0.1 \text{ mA}$
h_{FE2}	Forward Current Transfer Ratio	75	325		$V_{CE} = 10 \text{ V}, I_C = 1.0 \text{ mA}$
h_{FE3}	Forward Current Transfer Ratio	100			$V_{CE} = 10 \text{ V}, I_C = 10 \text{ mA}^{(2)}$
h_{FE4}	Forward Current Transfer Ratio	100	300		$V_{CE} = 10 \text{ V}, I_C = 150 \text{ mA}^{(2)}$
h_{FE5}	Forward Current Transfer Ratio	30			$V_{CE} = 10 \text{ V}, I_C = 500 \text{ mA}^{(2)}$
h_{FE6}	Forward Current Transfer Ratio	35			$V_{CE} = 10 \text{ V}, I_C = 10 \text{ mA}, T_A = 55^\circ \text{C}^{(2)}$
$V_{CE(SAT)1}$	Collector-Emitter Saturation Voltage		0.3	V	$I_C = 150 \text{ mA}, I_B = 15 \text{ mA}^{(2)}$
$V_{CE(SAT)2}$	Collector-Emitter Saturation Voltage		1.0	V	$I_C = 500 \text{ mA}, I_B = 50 \text{ mA}^{(2)}$
$V_{CE(SAT)3}$	Collector-Emitter Saturation Voltage		0.45	V	$I_C = 150 \text{ mA}, I_B = 15 \text{ mA}, T_A = 150^\circ \text{C}^{(2)}$
$V_{BE(SAT)1}$	Base-Emitter Saturation Voltage	0.6	1.2	V	$I_C = 150 \text{ mA}, I_B = 15 \text{ mA}^{(2)}$
$V_{BE(SAT)2}$	Base-Emitter Saturation Voltage		2.0	V	$I_C = 500 \text{ mA}, I_B = 50 \text{ mA}^{(2)}$
$V_{BE(SAT)3}$	Base-Emitter Saturation Voltage		1.4	V	$I_C = 150 \text{ mA}, I_B = 15 \text{ mA}, T_A = 55^\circ \text{C}^{(2)}$
Small-Signal Characteristics					
$ h_{fe} $	Magnitude of Small-Signal Short-Circuit Forward Current Transfer Ratio	2.5	8.0		$V_{CE} = 10 \text{ V}, I_C = 20 \text{ mA}, f = 100 \text{ MHz}$
h_{fe}	Small-Signal Short Circuit Forward Current Transfer Ratio	50			$V_{CE} = 10 \text{ V}, I_C = 1 \text{ mA}, f = 1 \text{ kHz}$
C_{obo}	Open Circuit Output Capacitance		8	pF	$V_{CB} = 10 \text{ V}, I_E = 0, 100 \text{ kHz} \leq f \leq 1 \text{ MHz}$
C_{ibo}	Input Capacitance		33	pF	$V_{EB} = 0.5 \text{ V}, I_C = 0, 100 \text{ kHz} \leq f \leq 1 \text{ MHz}$
Switching Characteristics					
t_{on}	Turn-On Time		35	ns	$V_{CC} = 30 \text{ V}, I_C = 150 \text{ mA}, I_B = 15 \text{ mA}$
t_{off}	Turn-Off Time		300	ns	$V_{CC} = 30 \text{ V}, I_C = 150 \text{ mA}, I_{B1} = I_{B2} = 15 \text{ mA}$
Transistor to Transistor Isolation					
R_{t-t}	Isolation Resistance	10k		$\text{M}\Omega$	$V_{t-t} = 500 \text{ V}$

(2) Pulsed Test: Pulse Width = $300 \mu\text{s} \pm 50$, 1-2 % Duty Cycle.

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