



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



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Surface Mount Quad NPN Transistor

2N6989U (TX, TXV)



Electrical Specifications

Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$ 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 $+200^\circ\text{C}$
Storage Junction Temperature (T_{stg})	-65°C to $+200^\circ\text{C}$
Power Dissipation (single transistor, no heat sink)	0.5 W
Power Dissipation $T_A = 25^\circ\text{C}$ (four devices driven equally)	1.0 W ⁽¹⁾
Isolation Voltage	500 V

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}	Emitter-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		-	$V_{CE} = 10\ \text{V}, I_C = 10\ \text{mA}, T_A = 55^\circ\text{C}^{(2)}$

Note:

- Derate linearly 8.57 mW/ $^\circ\text{C}$ above $T_A = 25^\circ\text{C}$
- Pulse Width = 300 $\mu\text{s} \pm 50$, 1-2% Duty Cycle

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.

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Electrical Characteristics (T _A = 25° C unless otherwise noted)					
SYMBOL	PARAMETER	MIN	MAX	UNITS	TEST CONDITIONS
ON CHARACTERISTICS					
V _{CE(SAT)1}	Collector-Emitter Saturation Voltage		0.3	V	I _C = 150 mA, I _B = 15 mA ⁽²⁾
V _{CE(SAT)2}	Collector-Emitter Saturation Voltage		1.0	V	I _C = 500 mA, I _B = 50 mA ⁽²⁾
V _{CE(SAT)3}	Collector-Emitter Saturation Voltage		0.45	V	I _C = 150 mA, I _B = 15 mA, T _A = 150° C ⁽²⁾
V _{BE(SAT)1}	Base-Emitter Saturation Voltage	0.6	1.2	V	I _C = 150 mA, I _B = 15 mA ⁽²⁾
V _{BE(SAT)2}	Base-Emitter Saturation Voltage		2.0	V	I _C = 500 mA, I _B = 50 mA ⁽²⁾
V _{BE(SAT)3}	Base-Emitter Saturation Voltage		1.4	V	I _C = 150 mA, I _B = 15 mA, T _A = 55° C ⁽²⁾
SMALL-SIGNAL CHARACTERISTICS					
h _{fe}	Magnitude of Small-Signal Short-Circuit Forward Current Transfer Ratio	2.5	8.0	-	V _{CE} = 10 V, I _C = 20 mA, f = 100 MHz
h _{fe}	Small Signal Short Circuit Forward Current Transfer Ratio	50		-	V _{CE} = 10 V, I _C = 1 mA, f = 1 kHz
C _{obo}	Open Circuit Output Capacitance		8	pF	V _{CB} = 10 V, I _E = 0, 100 kHz ≤ f ≤ 1 MHz
C _{ibo}	Input Capacitance (Output Open)		33	pF	V _{EB} = 0.5 V, I _C = 0, 100 kHz ≤ f ≤ 1 MHz
SWITCHING CHARACTERISTICS					
t _{on}	Turn-On Time		35	ns	V _{CC} = 30 V, I _C = 150 mA, I _B = 15 mA
t _{off}	Turn-Off Time		300	ns	V _{CC} = 30 V, I _C = 150 mA, I _{B1} = I _{B2} = 15 mA
TRANSISTOR TO TRANSISTOR ISOLATION					
R _{t-t}	Isolation Resistance	10k		MΩ	V _{t-t} = 500 V

Note:

- Derate linearly 8.57 mW/°C above T_A = 25°C
- Pulse Width = 300 μs ±50, 1-2% Duty Cycle

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