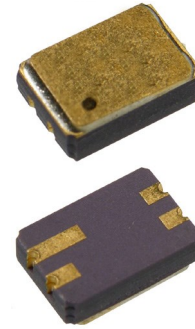


# Surface Mount NPN General Purpose Transistor

2N2222AUA

2N2222AUATXV - NRND

2N2222AUATX - Obsolete



## Features:

- Ceramic 4 pin surface mount package
- Small package to minimize circuit board area
- Hermetically sealed
- Processed per MIL-PRF-19500/255

## Description:

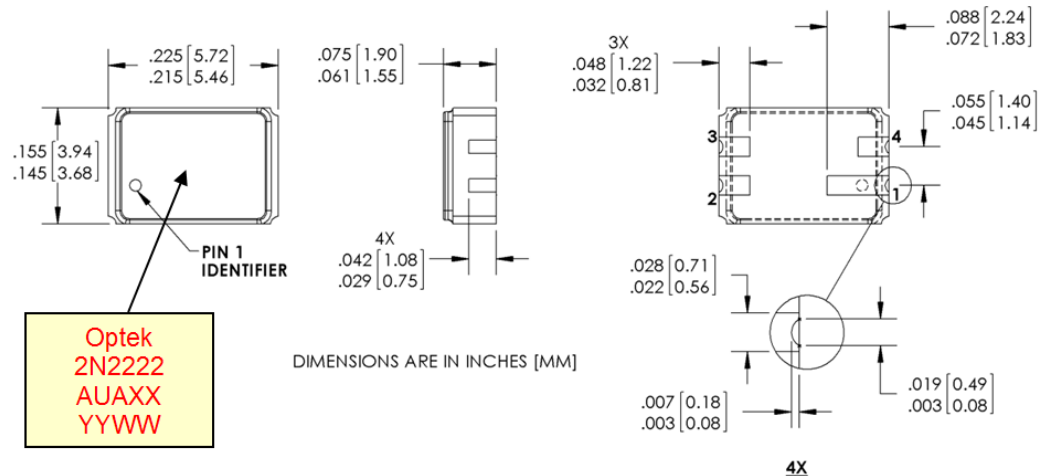
The 2N2222AUA (TX - Obsolete, TXV - NRND) is a hermetically sealed ceramic surface mount general purpose switching transistor. The four pin ceramic package is ideal for designs where board space and device weight are important design considerations. The "UA" suffix denotes the 4 terminal leadless chip carrier package, type "A" per MIL-PRF-19500/255.

Typical screening per MIL-PRF-19500/255. 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-19500/255 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

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Absolute Maximum Ratings ( $T_A = 25^\circ\text{C}$ unless otherwise noted)	
Collector-Base Voltage	75 V
Collector-Emitter Voltage	50V
Emitter-Base Voltage	6.0 V
Collector Current-Continuous	800 mA
Operating Junction Temperature ( $T_J$ )	$-65^\circ\text{C}$ to $+200^\circ\text{C}$
Storage Junction Temperature ( $T_{stg}$ )	$-65^\circ\text{C}$ to $+200^\circ\text{C}$
Power Dissipation @ $T_A = 25^\circ\text{C}$	0.5 W
Power Dissipation @ $T_c = 25^\circ\text{C}$	1.16 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	75		V	$I_C = 10\ \mu\text{A}, I_E = 0$
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	50		V	$I_C = 10\ \text{mA}, I_B = 0$
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	6.0		V	$I_E = 10\ \mu\text{A}, I_C = 0$
$I_{CBO}$	Collector-Base Cutoff Current		10	nA	$V_{CB} = 60\ \text{V}, I_E = 0$
			10	$\mu\text{A}$	$V_{CB} = 60\ \text{V}, I_E = 0, T_A = 150^\circ\text{C}$
$I_{EBO}$	Emitter-Base Cutoff Current		10	nA	$V_{EB} = 4\ \text{V}, I_C = 0$
$I_{CES}$	Collector Emitter Cutoff Current		50	nA	$V_{CE} = 50\ \text{V}$
<b>ON CHARACTERISTICS</b>					
$h_{FE}$	Forward-Current Transfer Ratio	50		-	$V_{CE} = 10\ \text{V}, I_C = 0.1\ \text{mA}$
		75	325	-	$V_{CE} = 10\ \text{V}, I_C = 1.0\ \text{mA}$
		100		-	$V_{CE} = 10\ \text{V}, I_C = 10\ \text{mA}$
		100	300	-	$V_{CE} = 10\ \text{V}, I_C = 150\ \text{mA}^{(2)}$
		30		-	$V_{CE} = 10\ \text{V}, I_C = 500\ \text{mA}^{(2)}$
		35		-	$V_{CE} = 10\ \text{V}, I_C = 10\ \text{mA}, T_A = -55^\circ\text{C}$

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

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2N2222AUA

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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		0.3	V	I <sub>C</sub> = 150 mA, I <sub>B</sub> = 15 mA <sup>(2)</sup>
			1.0	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	0.6	1.2	V	I <sub>C</sub> = 150 mA, I <sub>B</sub> = 15 mA <sup>(2)</sup>
			2.0	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	50		-	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	2.5		-	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)		25	pF	V <sub>EB</sub> = 0.5 V, 100 kHz ≤ f ≤ 1.0 MHz
<b>SWITCHING CHARACTERISTICS</b>					
t <sub>on</sub>	Turn-On Time		35	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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