

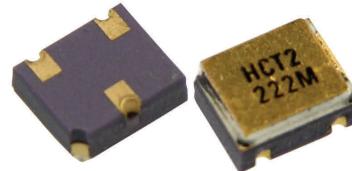
Surface Mount NPN General Purpose Transistor

2N2222AUB (TX, TXV)



Features:

- Ceramic 3 pin surface mount package (UBN)
- Miniature package to minimize circuit board area
- Hermetically sealed
- Processed per MIL-PRF-19500/255
- Same footprint and pin-out as many SOT-23 package transistors



Description:

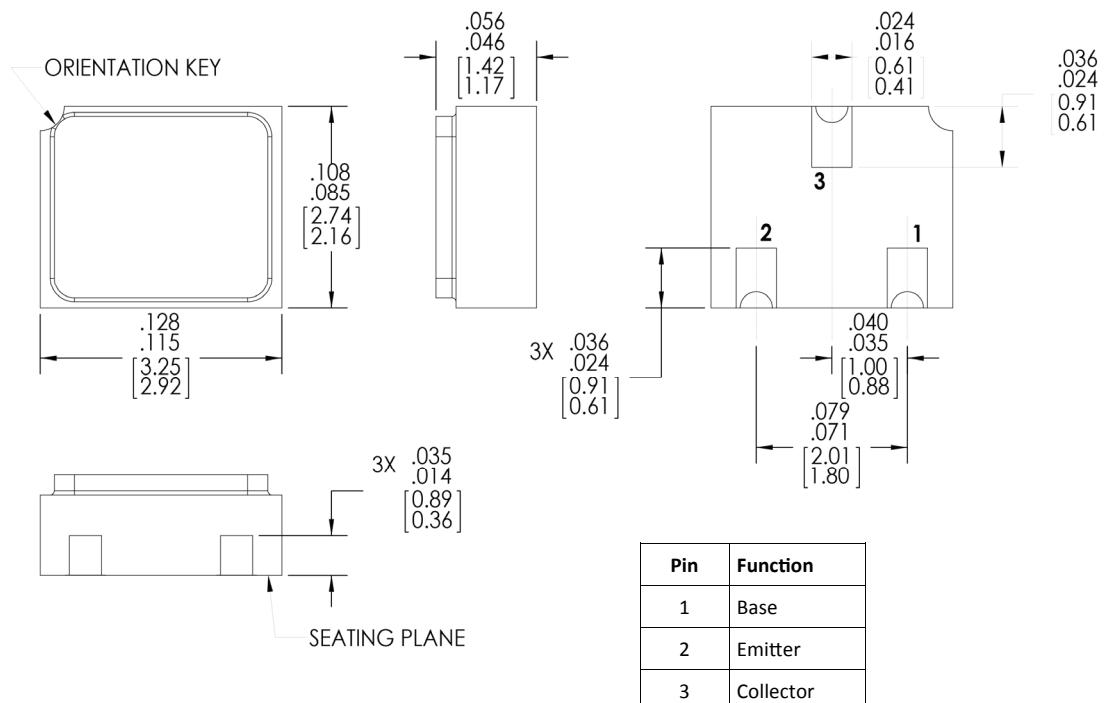
The 2N2222AUB (TX, TXV) is a miniature hermetically sealed ceramic surface mount general purpose switching transistor. The miniature three pin ceramic package is ideal for upgrading commercial grade circuits to military reliability levels where plastic SOT-23 devices have been used. The "UB" suffix denotes the 3 terminal chip carrier package.

Typical screening per MIL-PRF-19500/255. The burn-in condition is $V_{CB} = 30$ V. $P_D = 200$ mW, $T_A = 25^\circ\text{C}$, $t = 80$ 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



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 Specifications

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

Collector-Base Voltage	75V
Collector-Emitter Voltage	50V
Emitter-Base Voltage	6.0V
Collector Current-Continuous	800mA
Operating Junction Temperature (T_J)	-65° C to +200° C
Storage Junction Temperature (T_{stg})	-65° C to +200° C
Power Dissipation @ $T_A = 25^\circ C$	0.3 W
Power Dissipation @ $T_c = 25^\circ C$	1.00 W ⁽¹⁾
Soldering Temperature (vapor phase reflow for 30 seconds)	215° C
Soldering Temperature (heated collet for 5 seconds)	260° C

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

SYMBOL	PARAMETER	MIN	MAX	UNITS	TEST CONDITIONS
OFF CHARACTERISTICS					
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	75		V	$I_C = 10 \mu A, I_E = 0$
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	50		V	$I_C = 10 mA, I_B = 0$
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	6.0		V	$I_E = 10 \mu A, I_C = 0$
I_{CBO}	Collector-Base Cutoff Current	10	nA		$V_{CB} = 60 V, I_E = 0$
		10	μA		$V_{CB} = 60 V, I_E = 0, T_A = 150^\circ C$
I_{EBO}	Emitter-Base Cutoff Current	10	nA		$V_{EB} = 4 V, I_C = 0$
I_{CES}	Collector Emitter Cutoff Current	50	nA		$V_{CE} = 50 V$
ON CHARACTERISTICS					
h_{FE}	Forward-Current Transfer Ratio	50		-	$V_{CE} = 10 V, I_C = 0.1 mA$
		75	325	-	$V_{CE} = 10 V, I_C = 1.0 mA$
		100		-	$V_{CE} = 10 V, I_C = 10 mA$
		100	300	-	$V_{CE} = 10 V, I_C = 150 mA^{(2)}$
		30		-	$V_{CE} = 10 V, I_C = 500 mA^{(2)}$
		35		-	$V_{CE} = 10 V, I_C = 10 mA, T_A = -55^\circ C$

Note:

- Derate linearly 6.6 mW/°C above 25° C
- Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%

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

SYMBOL	PARAMETER	MIN	MAX	UNITS	TEST CONDITIONS
ON CHARACTERISTICS					
$V_{CE(SAT)}$	Collector-Emitter Saturation Voltage	0.3	V		$I_C = 150 \text{ mA}, I_B = 15 \text{ mA}^{(2)}$
		1.0	V		$I_C = 500 \text{ mA}, I_B = 50 \text{ mA}^{(2)}$
$V_{BE(SAT)}$	Base-Emitter Saturation Voltage	0.6	1.2	V	$I_C = 150 \text{ mA}, I_B = 15 \text{ mA}^{(2)}$
			2.0	V	$I_C = 500 \text{ mA}, I_B = 50 \text{ mA}^{(2)}$
SMALL-SIGNAL CHARACTERISTICS					
h_{fe}	Small Signal Forward Current Transfer Ratio	50		-	$V_{CE} = 10 \text{ V}, I_C = 1.0 \text{ mA}, f = 1.0 \text{ kHz}$
lh_{fe}	Small Signal Forward Current Transfer Ratio	2.5		-	$V_{CE} = 20 \text{ V}, I_C = 20 \text{ mA}, f = 100 \text{ MHz}$
C_{obo}	Open Circuit Output Capacitance		8.0	pF	$V_{CB} = 10 \text{ V}, 100 \text{ kHz} \leq f \leq 1.0 \text{ MHz}$
C_{ibo}	Input Capacitance (Output Open)		25	pF	$V_{EB} = 0.5 \text{ V}, 100 \text{ kHz} \leq f \leq 1.0 \text{ MHz}$
SWITCHING CHARACTERISTICS					
t_{on}	Turn-On Time		35	ns	$V_{CC} = 30 \text{ V}, I_C = 150 \text{ mA}, I_{B1} = 15 \text{ mA}$
t_{off}	Turn-Off Time		300	ns	$V_{CC} = 30 \text{ V}, I_C = 150 \text{ mA}, I_{B1} = I_{B2} = 15 \text{ mA}$

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