

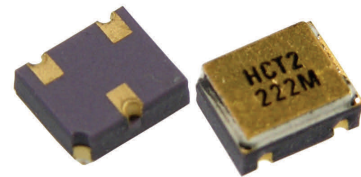
Surface Mount NPN General Purpose Transistor

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:

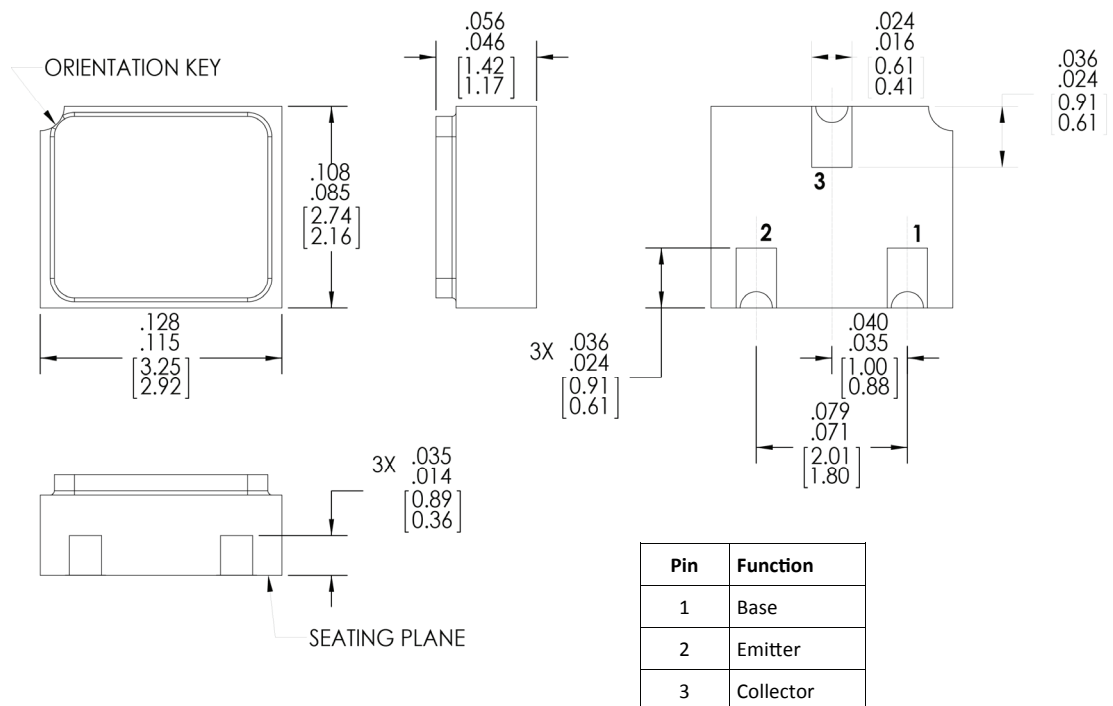
The 2N2222AUB (TX, TXV) is a miniature hermetically sealed ceramic surface mount general purpose switching transistor. The miniature three pin ceramic package is ideal for upgrading commercial grade circuits to military reliability levels where plastic SOT-23 devices have been used. The "UB" suffix denotes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

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



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.

OPTEK Technology, Inc.
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Electrical Specifications

Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$ 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 $+200^\circ\text{C}$
Storage Junction Temperature (T_{stg})	-65°C to $+200^\circ\text{C}$
Power Dissipation @ $T_A = 25^\circ\text{C}$	0.3 W
Power Dissipation @ $T_c = 25^\circ\text{C}$	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 ($T_A = 25^\circ\text{C}$ unless otherwise noted)

SYMBOL	PARAMETER	MIN	MAX	UNITS	TEST CONDITIONS
OFF CHARACTERISTICS					
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	75		V	$I_C = 10\ \mu\text{A}$, $I_E = 0$
$V_{(BR)CEO}$	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	μA	$V_{CB} = 60\ \text{V}$, $I_E = 0$, $T_A = 150^\circ\text{C}$
I_{EBO}	Emitter-Base Cutoff Current		10	nA	$V_{EB} = 4\ \text{V}$, $I_C = 0$
I_{CES}	Collector Emitter Cutoff Current		50	nA	$V_{CE} = 50\ \text{V}$
ON CHARACTERISTICS					
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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Electrical Characteristics ($T_A = 25^\circ\text{C}$ 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 mA, I _B = 15 mA ⁽²⁾
			1.0	V	I _C = 500 mA, I _B = 50 mA ⁽²⁾
V _{BE(SAT)}	Base-Emitter Saturation Voltage	0.6	1.2	V	I _C = 150 mA, I _B = 15 mA ⁽²⁾
			2.0	V	I _C = 500 mA, I _B = 50 mA ⁽²⁾
SMALL-SIGNAL CHARACTERISTICS					
h _{fe}	Small Signal Forward Current Transfer Ratio	50		-	V _{CE} = 10 V, I _C = 1.0 mA, f = 1.0 kHz
Ih _{fe}	Small Signal Forward Current Transfer Ratio	2.5		-	V _{CE} = 20 V, I _C = 20 mA, f = 100 MHz
C _{obo}	Open Circuit Output Capacitance		8.0	pF	V _{CB} = 10 V, 100 kHz ≤ f ≤ 1.0 MHZ
C _{ibo}	Input Capacitance (Output Open)		25	pF	V _{EB} = 0.5 V, 100 kHz ≤ f ≤ 1.0 MHZ
SWITCHING CHARACTERISTICS					
t _{on}	Turn-On Time		35	ns	V _{CC} = 30 V, I _C = 150 mA, I _{B1} = 15 mA
t _{off}	Turn-Off Time		300	ns	V _{CC} = 30 V, I _C = 150 mA, I _{B1} = I _{B2} = 15 mA

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