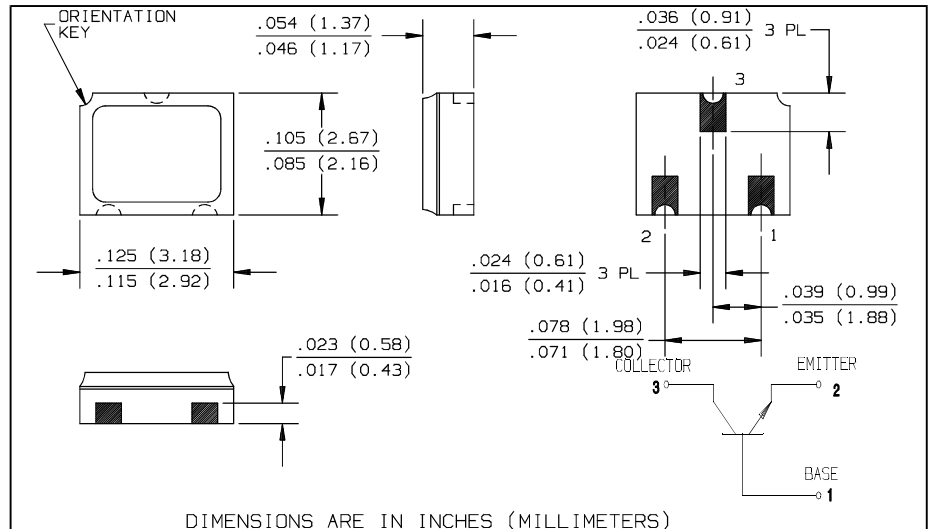


# Surface Mount NPN General Purpose Transistor

## Type JANTX, JANTXV, 2N2222AUB



### Feature

- Ceramic surface mount package
- Miniature package to minimize circuit board area
- Hermetically sealed
- Qualification per MIL-S-19500/255
- Same footprint and pin-out as many SOT-23 package transistors

### Description

The JANTX/TXV2N2222AUB 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, type "B" per MIL-PRF-19500/255.

Typical screening and lot acceptance tests are provided on page 13-4. 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 are 100% thermal response tested.

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

### 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
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 @ $T_A = 25^\circ\text{ C}$ .....	0.3 W
Power Dissipation @ $T_C = 25^\circ\text{ C}$ .....	1.16 W <sup>(1)</sup>
Soldering Temperature (vapor phase reflow for 30 sec.) .....	215 $^\circ\text{ C}$
Soldering Temperature (heated collet for 5 sec.) .....	260 $^\circ\text{ C}$

#### Notes:

(1) Derate linearly 6.6 mW/ $^\circ\text{ C}$  above 25 $^\circ\text{ C}$ .

# Types JANTX, JANTXV-2N2222AUB

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

SYMBOL	PARAMETER	MIN	MAX	UNITS	TEST CONDITION
<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		-	$V_{CE} = 10\ \text{V}, I_C = 10\ \text{mA}, T_A = -55^\circ\text{C}$
$V_{CE(SAT)}$	Collector-Emitter Saturation Voltage		0.30	V	$I_C = 150\ \text{mA}, I_B = 15\ \text{mA}^{(2)}$
			1.0	V	$I_C = 500\ \text{mA}, I_B = 15\ \text{mA}^{(2)}$
$V_{BE(SAT)}$	Base-Emitter Saturation Voltage	0.60	1.20	V	$I_C = 150\ \text{mA}, I_B = 15\ \text{mA}^{(2)}$
			2.0	V	$I_C = 500\ \text{mA}, I_B = 15\ \text{mA}^{(2)}$
<b>Small-Signal Characteristics</b>					
$h_{fe}$	Small Signal Forward Current Transfer Ratio	50		-	$V_{CE} = 10\ \text{V}, I_C = 1.0\ \text{mA}, f = 1.0\ \text{kHz}$
$h_{fe1}$	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	$V_{EB} = 0.5\ \text{V}, 100\ \text{kHz} \leq f \leq 1.0\ \text{MHz}$
<b>Switching Characteristics</b>					
$t_{on}$	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	$V_{CC} = 30\ \text{V}, I_C = 150\ \text{mA}, I_{B1} = I_{B2} = 15\ \text{mA}$

HI-REL  
SURFACE  
MOUNT

(2) Pulse Width  $\leq 300\ \mu\text{s}$ , Duty Cycle  $\leq 2.0\%$