

# Surface Mount NP General Purpose Transistor

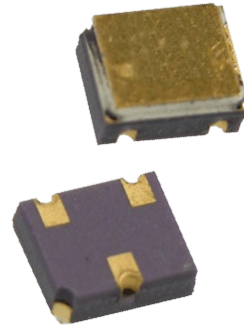


## 2N2907AUB

Obsolete (2N2907AUBTX, 2N2907AUBTXV)

### Features:

- Ceramic 3 pin surface mount package (UBN)
- Miniature package to minimize circuit board area
- Hermetically sealed
- Footprint and pin-out matches SOT-23 package transistors
- Processed per MIL-PRF-19500/291



### Description:

The 2N2907AUB, (TX, TXV - **Obsolete**) are miniature, hermetically sealed, ceramic surface mount general purpose switching transistors. 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-19500/291.

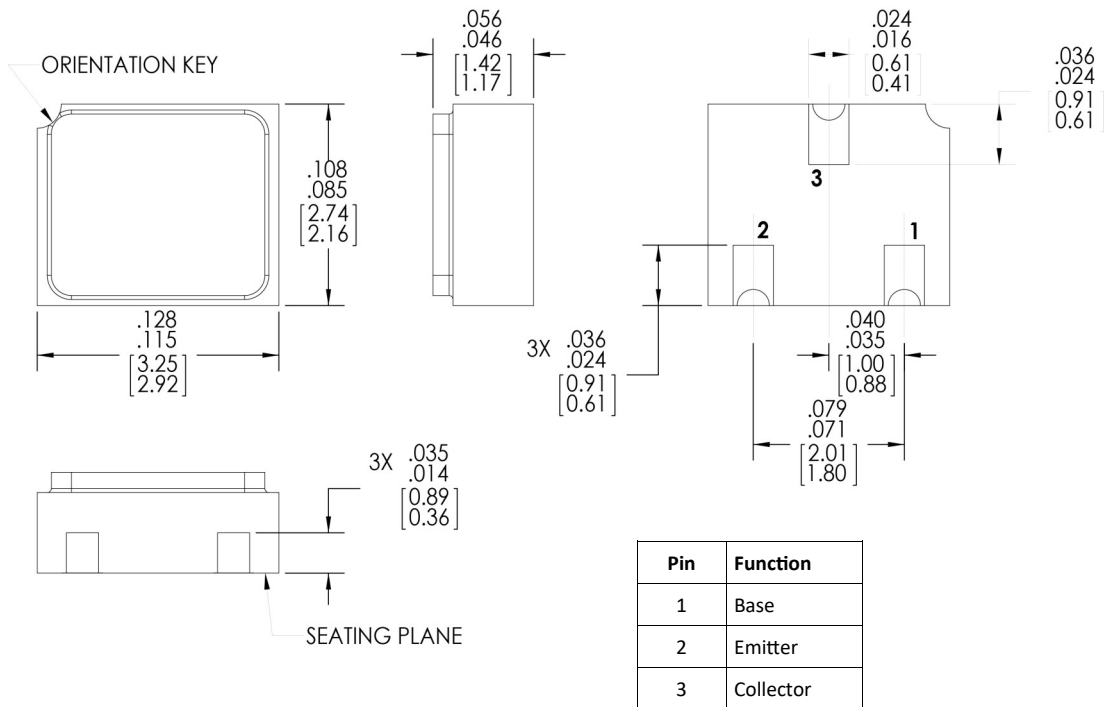
Typical screening and lot acceptance tests per MIL-PRF-19500/291.

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-19500/291 for complete requirements. In addition, the TX and TXV versions receive 100 % thermal response testing.

### Applications:

- General switching
- Amplification
- Signal processing
- Radio transmission
- Logic gates



### General Note

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## Electrical Specifications

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

Collector-Base Voltage	60 V
Collector-Emitter Voltage	60 V
Emitter-Base Voltage	5.0 V
Collector Current-Continuous	600 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 @ $T_c = 25^\circ\text{C}$	1.00 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	60	-	V	$I_C = 10\ \mu\text{A}, I_E = 0$
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	60	-	V	$I_C = 10\ \text{mA}, I_B = 0^{(2)}$
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	5.0	-	V	$I_E = 10\ \mu\text{A}, I_C = 0$
$I_{CBO}$	Collector-Base Cutoff Current	-	10	$\mu\text{A}$	$V_{CB} = 50\ \text{V}, I_E = 0$
		-	10	$\mu\text{A}$	$V_{CB} = 50\ \text{V}, I_E = 0, T_A = 150^\circ\text{C}$
$I_{EBO}$	Emitter-Base Cutoff Current	-	10	$\mu\text{A}$	$V_{CE} = 4.0\ \text{V}, I_C = 0$
$I_{CES}$	Collector Emitter Cutoff Current	-	10	nA	$V_{EB} = 50\ \text{V}$
<b>ON CHARACTERISTICS</b>					
$h_{FE}$	Forward-Current Transfer Ratio	75	-	-	$V_{CE} = 10\ \text{V}, I_C = 0.1\ \text{mA}$
		100	450	-	$V_{CE} = 10\ \text{V}, I_C = 1.0\ \text{mA}$
		100	-	-	$V_{CE} = 10\ \text{V}, I_C = 10\ \text{mA}$
		100	300	-	$V_{CE} = 10\ \text{V}, I_C = 150\ \text{mA}^{(2)}$
		50	-	-	$V_{CE} = 10\ \text{V}, I_C = 500\ \text{mA}^{(2)}$
		50	-	-	$V_{CE} = 10\ \text{V}, I_C = 1.0\ \text{mA}, T_A = -55^\circ\text{C}$

Note:

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

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## Electrical Specifications

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	-	0.40	V	I <sub>C</sub> = 150 mA, I <sub>B</sub> = 15 mA <sup>(2)</sup>
		-	1.60	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	-	1.30	V	I <sub>C</sub> = 150 mA, I <sub>B</sub> = 15 mA <sup>(2)</sup>
		-	2.60	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	100	-	-	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	2.0	-	-	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)	-	30	pF	V <sub>EB</sub> = 2.0 V, 100 kHz ≤ f ≤ 1.0 MHz
<b>SWITCHING CHARACTERISTICS</b>					
t <sub>on</sub>	Turn-On Time	-	45	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

**Note:**

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

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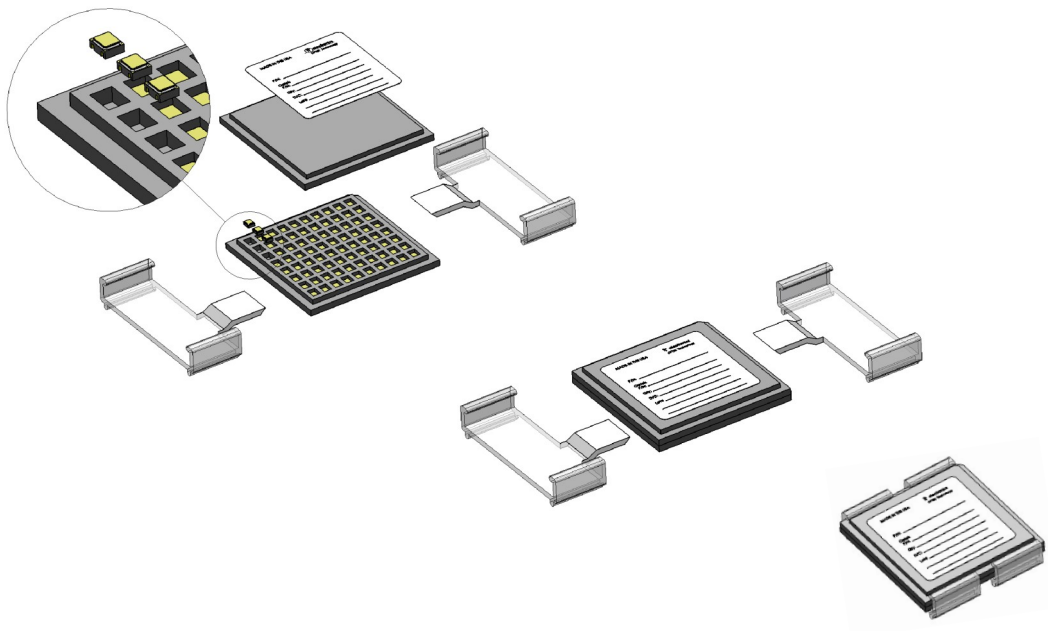
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## Standard Packaging:

Waffle Pack



### Note:

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

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