

# ULTRA MINIATURE SMD VC/TCXO

## ASVTX-13/ASTX-13



2.0 x 1.6 x 0.8mm

### FEATURES:

- Industry smallest 2.0 x 1.6 x 0.8mm
- Low current consumption 1.5mA at 26MHz
- Vc function ideal for PLL application
- Suitable for RoHS complaint reflow

### APPLICATIONS:

- Cellular and cordless phones
- Standard reference oscillator for test equipment
- Mobile communication equipment
- Portable radio equipment and music player
- Phase Locked Loop



Moisture Sensitivity Level (MSL) -1

### STANDARD SPECIFICATIONS:

Parameters	Minimum	Typical	Maximum	Units	Notes	
Frequency Range	10	-----	52	MHz		
Standard Frequencies	10, 16.368, 19.2, 26, 38.4, 52			MHz	16.368MHz VCTCXO is available upon request. Please contact Abracon for details.	
Operating Temperature	-30	-----	+75	°C		
Storage Temperature	-40	-----	+85	°C		
Frequency Stability $\Delta f/f_0$ vs					+25°C, Vcon=1.4V After 2- reflow	
Tolerance (@+25°C)	-2.0	-----	+2.0	ppm	See option (Table 1)	
Temperature (ref. to +25°C)	-1.5	-----	+1.5			
Supply Voltage Change (Vdd±5%)	-0.2	-----	+0.2			
Load Change (ZL±10%)	-0.2	-----	+0.2			
Supply Voltage (Vdd)	+2.85	+3.0	+3.15	V	Option A	
	+2.66	+2.7	+2.94		Option B	
	+1.71	+1.8	+1.89		Option C	
	+3.135	+3.2	+3.465		Option D	
Aging (first year @+25±2°C)	-1.0	-----	+1.0	ppm		
Supply Current (Icc)	-----	-----	1.5	mA	16.368MHz, -30 to +85°C	
	-----	-----	1.5		19.200MHz, -30 to +85°C	
	-----	-----	1.5		26.000MHz, -30 to +85°C	
	-----	-----	2.0		38.400MHz, -30 to +85°C	
Startup Time	-----	-----	3.0	ms	90% Vp-p ±0.5ppm	
Voltage Control Function (for ASVTX-13) Control Voltage (Vcon)	Vdd=3.3V	+0.5	+1.5	+2.5	Vdc	19.200MHz 26.000MHz 38.400MHz
	Vdd=3.0V	+0.5	+1.5	+2.5		
	Vdd=2.8V	+0.4	+1.4	+2.4		
	Vdd=1.8V	+0.3	+0.9	+1.5		

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ESD Sensitive



RoHS Compliant



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Parameters	Minimum	Typical	Maximum	Units	Notes
Frequency Tuning Range @Vcon (min)	-5.5		-9.5	ppm	
@Vcon (max)	+5.5		+9.5		
Frequency Tuning Transition	Positive				
Output Voltage	0.8	-----	-----	Vp-p	
Harmonics	-----	-----	-5.0	dBc	
Load	10kΩ//10pF				
Waveform	Clipped Sine Wave				
Phase Noise					
10Hz offset from the carrier	-----	-----	-80	dBc/Hz	Applicable to all standard available frequencies with Vdd = +1.8V, +2.8 & +3.0V, +3.3V
100Hz offset from the carrier	-----	-----	-105		
1kHz offset from the carrier	-----	-----	-130		
10kHz offset from the carrier	-----	-----	-144		
100kHz offset from the carrier	-----	-----	-144		

## OPTIONS & PART IDENTIFICATION:

ASVTX-13 or ASTX-13 - [ ] - [ ] MHz - [ ] - [ ]

Vdd (V)
A: 3.0V±5%
B: 2.8V±5%
C: 1.8V±5%
D: 3.3V±5%

Frequency in MHz
Please specify the frequency in MHz. e.g. 19.200MHz 26.000MHz

Packaging
Blank: Bulk
T: 1000pcs/reel
T3: 3000pcs/reel
T4: 4000pcs/reel (STD)

Table 1: Frequency Stability vs Operating Temperature

	±0.5ppm	±1.0ppm	±1.5ppm	±2.0ppm
-10°C ~ +75°C	A05	A10	A15	A20
-30°C ~ +75°C	B05	B10	Std.(Blank)	B20
-30°C ~ +80°C	C05	C10	C15	C20
-30°C ~ +85°C	D05	D10	D15	D20
-40°C ~ +85°C	I05	I10	I15	I20

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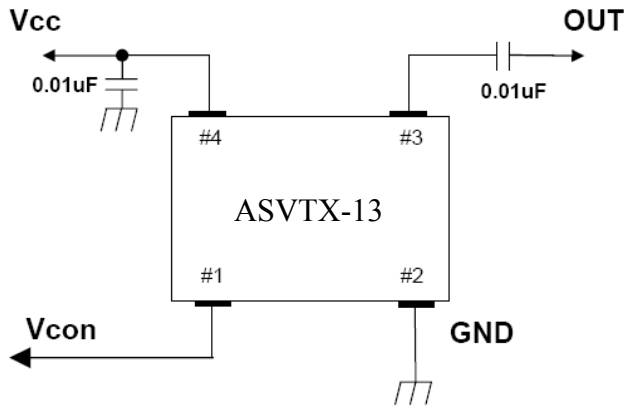


ESD Sensitive  
RoHS Compliant

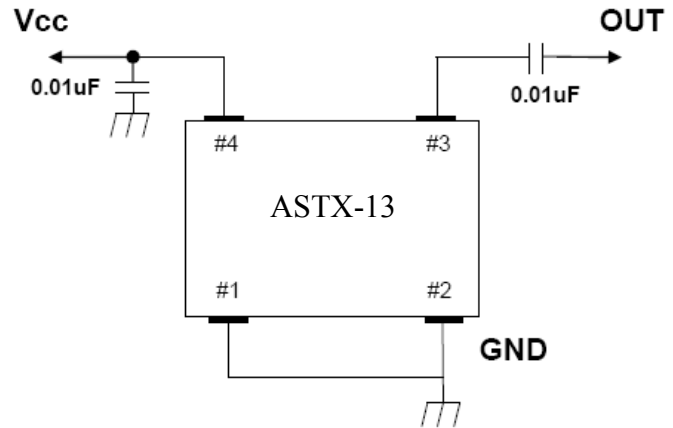


2.0 x 1.6 x 0.8mm

## RECOMMENDED TEST CIRCUIT

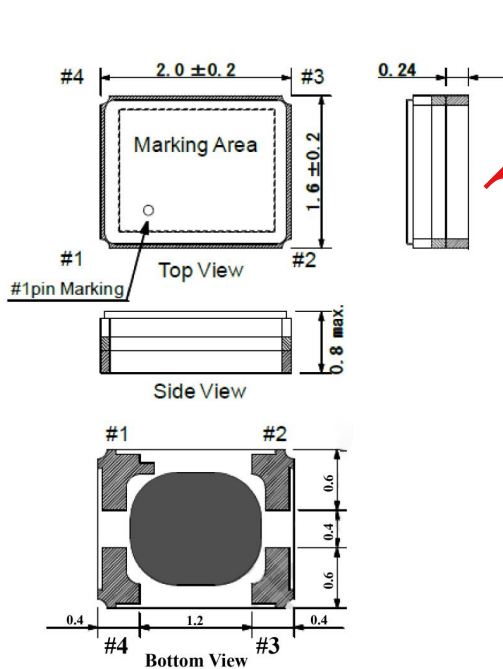


VCTCXO

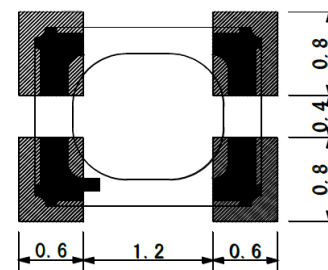


TCXO

## MECHANICAL DIMENSIONS:



Recommended Land Pattern



ASVTX-13 VCTCXO

	Pin Connection
# 1 pin	Vcon
# 2 pin	GND
# 3 pin	Output
# 4 pin	Vcc

ASTX-13 TCXO

	Pin Connection
# 1 pin	GND
# 2 pin	GND
# 3 pin	Output
# 4 pin	+Vcc

**Note 1:**  
Terminal Coplanarity: 80µm max.

**Note 2:**  
Electrode: Cu + Ni + Au  
(10µ min. + 3µ min. + 0.03µ min.)

**Note:** It is recommended that a by-pass capacitor of 0.01uF value be placed between pin #2 and pin #4 and an AC-coupling capacitor of the same value be placed in series with pin#3 for optimal performance.  
For ASTX (TCXO), please connect pin #1 and #2 to GND.

Dimensions: inches (mm)

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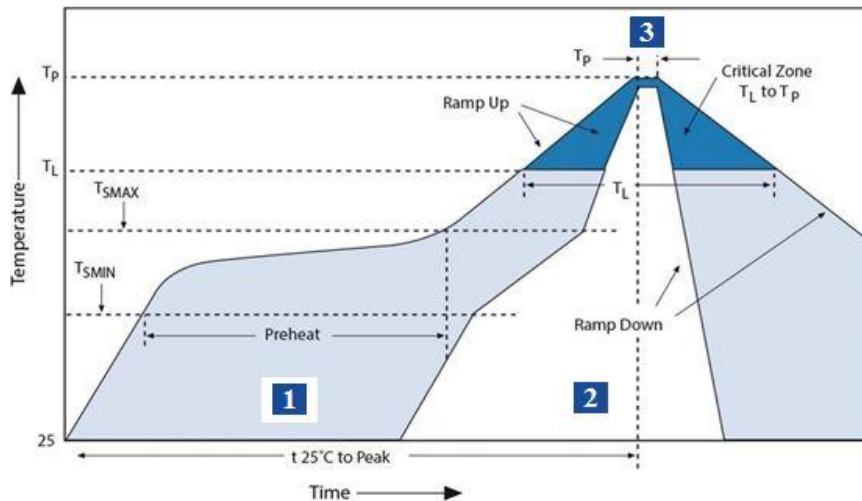
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RoHS Compliant



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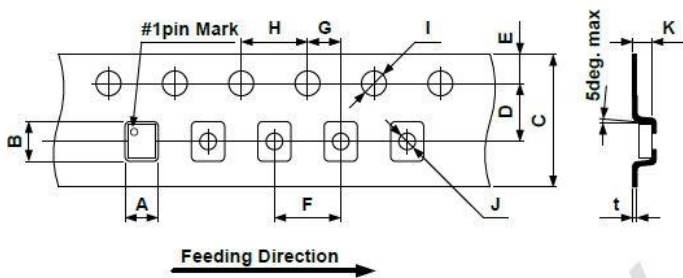
## REFLOW PROFILE:



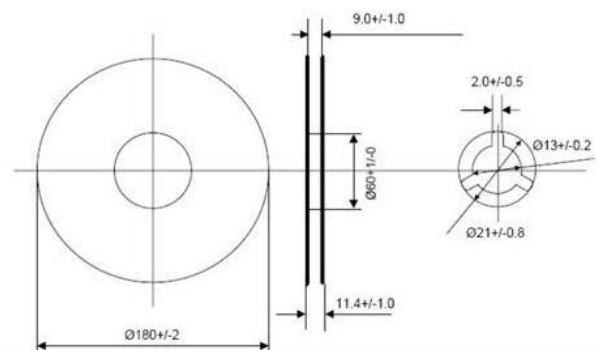
Zone	Description	Temperature	Times
1	Preheat	$T_{SMIN} \sim T_{SMAX}$ $180^{\circ}\text{C} \pm 10$	120 sec. MAX
2	Reflow	$T_L$ $220^{\circ}\text{C}$	40 sec. MAX
3	Peak heat	$T_p$ $260^{\circ}\text{C}$	10 sec. MAX

## REFLOW PROFILE:

T: 1000pcs/reel  
T3: 3000pcs/reel  
T4: 4000pcs/reel (STD)



A	B	C	D	E
$2.0 \pm 0.05$	$2.4 \pm 0.05$	$8.0 \pm 0.2$	$3.5 \pm 0.05$	$1.75 \pm 0.1$
F	G	H	I	J
$4.0 \pm 0.1$	$2.0 \pm 0.05$	$4.0 \pm 0.1$	$\phi 1.5 \pm 0.1 / -0$	$\phi 1.0 \pm 0.1 / -0$
K	t			
$0.9 \pm 0.05$	$0.25 \pm 0.05$			



Dimensions: mm

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