

Automotive and Industrial Grade Ultra Miniature SMD VC/TCXO



2.0 x 1.6 x 0.8mm

ASVTXAIG-13/ASTXAIG-13 series

RoHS/RoHS II Compliant

Moisture Sensitivity Level (MSL) – This product is Hermetically Sealed and not Moisture Sensitive - MSL = N/A: Not Applicable

FEATURES:

- Ultra Miniature size and low profile
- AEC-Q200 qualified
- Low current consumption <1.5mA at 26MHz
- Vc function ideal for PLL application
- Suitable for RoHS complaint reflow
- Low phase noise

APPLICATIONS:

- Automotive electronics
- Industrial electronics

STANDARD SPECIFICATIONS

Parameters	Minimum	Typical	Maximum	Units	Notes	
Frequency Range	13		52	MHz		
Standard Frequencies	13, 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 Tolerance (@+25°C) Temperature (ref. to +25°C) Supply Voltage Change (Vdd±5%) Load Change (ZL±10%)	-2.0 -1.5 -0.2 -0.2		+2.0 +1.5 +0.2 +0.2	ppm	+25°C, Vcon=1.4V After 2 time reflow See option (Table 1)	
Supply Voltage (Vdd)	+2.85 +2.66 +1.71	+3.0 +2.8 +1.8	+3.15 +2.94 +1.89	V	Option A Option B Option C (ASTXAG-13 only)	
Aging (first year @+25±2°C)	-1.0		+1.0	ppm		
Supply Current (Icc)	Vdd=3.0V		2.0	mA		
	Vdd=2.8V		1.5	mA		
	Vdd=1.8V		1.5	mA		
Startup Time			3.0	ms	90% Vp-p ±0.5ppm	
Voltage Control Function (for ASVTXAIG-13) Control Voltage (Vcon)	Vdd=3.0V	+0.4	+1.4	+2.4	Vdc	19.2MHz; 26.0MHz; 38.4MHz
	Vdd=2.8V	+0.4	+1.4	+2.4		19.2MHz
		+0.5	+1.5	+2.5		26.0MHz
		+0.1	+1.2	+2.3	38.4MHz	
@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					

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(Continued)

Parameters	Minimum	Typical	Maximum	Units	Notes
Phase Noise					
10Hz offset from the carrier			-80	dBc/Hz	Applicable to all standard available frequencies with Vdd = +1.8V, +2.8 & +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		

PART IDENTIFICATION: (left blank if standard)

ASVTXAIG-13 or ASTXAIG-13 - - MHz - -

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

*1.8V is only for ASTXAIG-13 (TCXO)

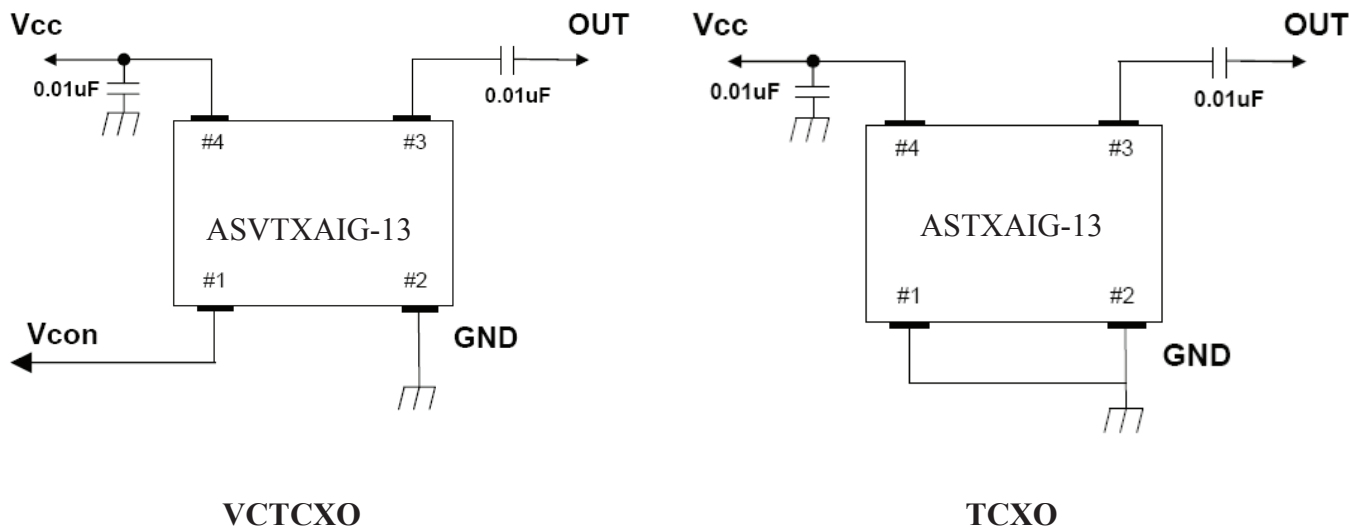
Frequency in MHz
Please specify the frequency in MHz. e.g. 19.200MHz 26.000MHz

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
-40°C ~ +85°C	I05	I10	I15	I20

RECOMMENDED TEST CIRCUIT



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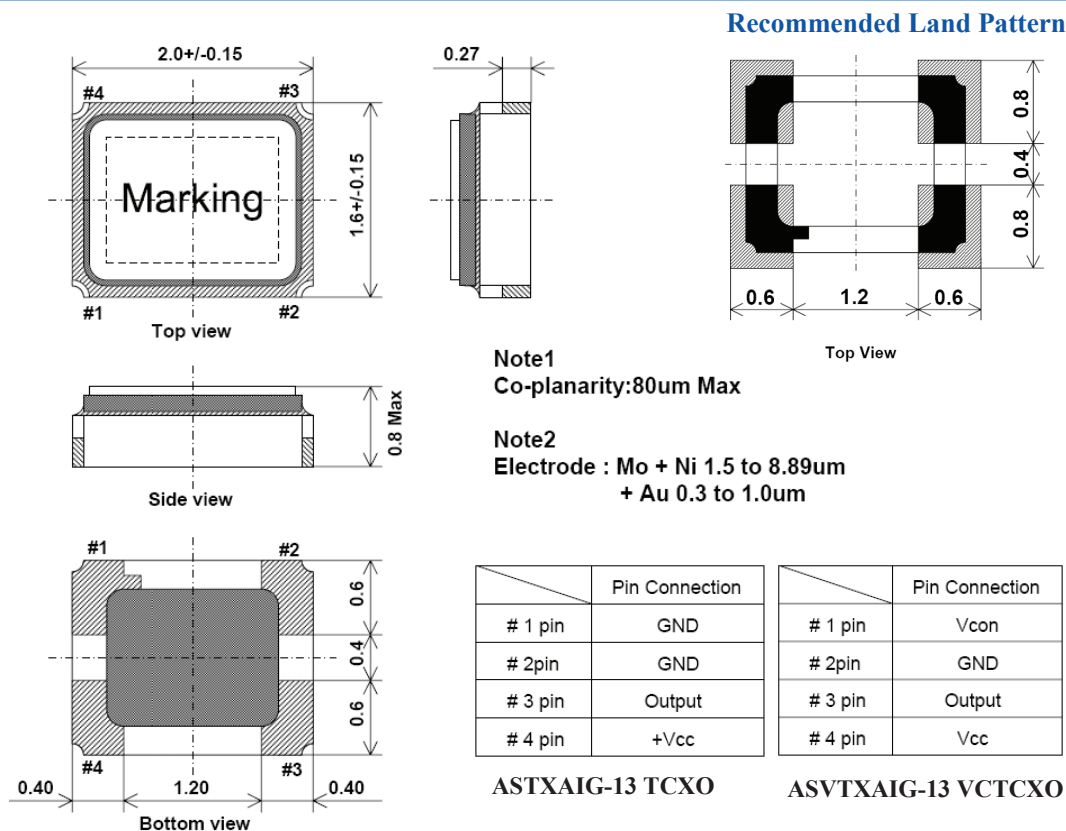


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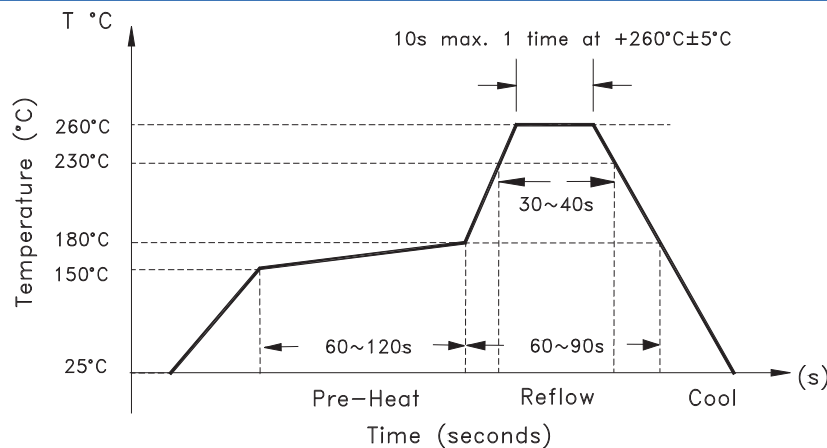
OUTLINE DIMENSIONS



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 ASTXAIG (TCXO) Please connect pin #1 and #2 to GND.

Dimensions: mm

REFLOW PROFILE



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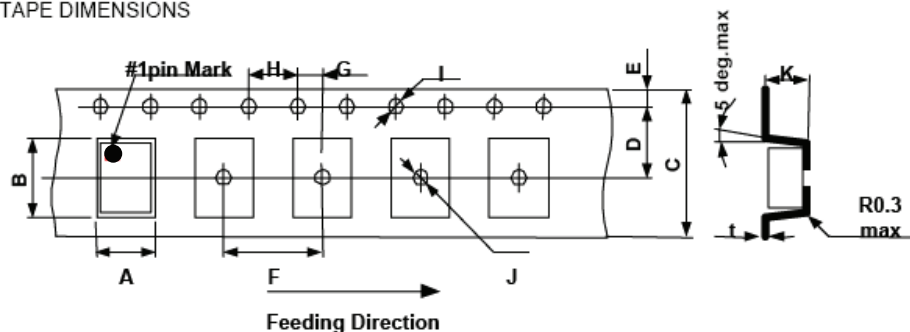
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TAPE & REEL

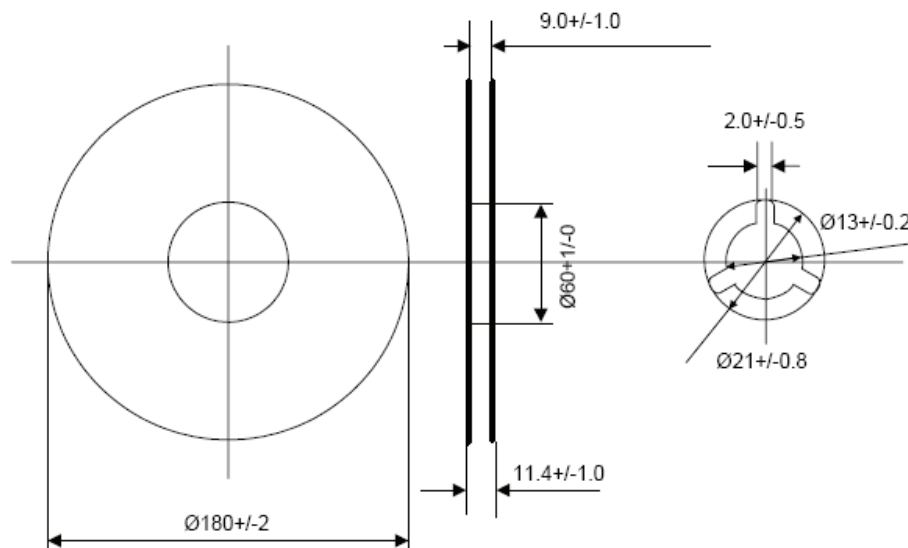
Packaging: T: 1000pcs/reel
T3: 3000pcs/reel
T4: 4000pcs/reel (STD)

1. TAPE DIMENSIONS



Symbol	A	B	C	D	E
Dimension	2.0+/-0.05	2.4+/-0.05	8.0+/-0.2	3.5+/-0.05	1.75+/-0.1
Symbol	F	G	H	I	J
Dimension	4.0+/-0.1	2.0+/-0.05	4.0+/-0.1	Φ1.5+0.1/-0	Φ1.0+0.1/-0
Symbol	K	t			
Dimension	0.9+/-0.05	0.25+/-0.05			

2. REELS DIMENSIONS



Dimensions: mm

ATTENTION: Abracon Corporation's products are COTS – Commercial-Off-The-Shelf products; suitable for Commercial, Industrial and, where designated, Automotive Applications. Abracon's products are not specifically designed for Military, Aviation, Aerospace, Life-dependant Medical applications or any application requiring high reliability where component failure could result in loss of life and/or property. For applications requiring high reliability and/or presenting an extreme operating environment, written consent and authorization from Abracon Corporation is required. Please contact Abracon Corporation for more information.

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Pierce Analyzer System (PAS) Advanced Board Characterization Service

Abracon PAS System enables us to offer Automotive, Medical, and Industrial application customers a comprehensive, automated assessment of the Pierce Oscillator loop, in concert with the customers selected Quartz Crystal. The PAS System Circuit Analysis report is ideally suited for PPAP documentation, design history reporting, and overall assurance of a reliable optimized circuit.

Features:

- Circuit characterization; providing best possible match between Quartz Crystal, oscillator loop and associated components
- Eliminates probability of oscillator start-up issues related to inadequate design or marginal component performance
- Eliminates production launch issues related to crystal oscillator based timing circuit
- Solves design margin uncertainty

Deliverables: A detail Report encompassing:

• Stand alone Quartz Crystal characteristics including:

- Motional parameters (Cm, Lm, ESR & C0)
- Narrow Band Frequency Response Plot
- Wide Band Frequency Response Plot
- Admittance versus Susceptance plot
- Frequency dependence versus load capacitance plot

• Oscillator loop characteristics including:

- Initial frequency accuracy and drive level as seen by the crystal with measured ESR
- Worst case projected drive level with maximum specified ESR
- Safety Factor of the oscillator loop under both typical and maximum ESR
- Recommendation on proper component selection (C1, C2 & Rs when applicable) for best compromise with respect to Safety Factor and Frequency accuracy
- Recommendation on the Abracon Crystal part # with proper plating load and other key attributes to enable the most robust design, specific to the μ controller/processor implemented

Ordering information:

PAS-BC1WK	Analysis & Report with 1-week maximum lead-time
PAS-BC2WK	Analysis & Report with 2-week maximum lead-time
PAS-BC3WK	Analysis & Report with 3-week maximum lead-time

For detailed information, click here:



For additional information, please contact at: tech-support@abracon.com