

# ULTRA MINIATURE SMD VC/TCXO

ASVTX-12/ASTX-12

Moisture Sensitivity Level (MSL) –1



**RoHS**  
Compliant



2.5 X 2.0 X 0.9mm

## FEATURES:

- Ultra miniature and low height 0.9mm.
- Low current consumption 2.5mA.
- Vc function corresponds to PLL circuits.
- Suitable for RoHS reflow profile.
- Low phase noise.

## APPLICATIONS:

- Cellular and cordless phones.
- Standard OSC for exact equipment.
- Mobile communication equipment.
- Portable radio equipment.
- Personal Digital Assistants (PDAs).
- Portable music players.

## STANDARD SPECIFICATIONS:

| Parameters                                                  | Minimum                                    | Typical | Maximum | Units | Notes                                   |
|-------------------------------------------------------------|--------------------------------------------|---------|---------|-------|-----------------------------------------|
| Frequency Range                                             | 13                                         |         | 52      | MHz   |                                         |
| Standard Frequencies                                        | 13, 16.368, 16.369, 19.2, 26, 38.4, 40, 52 |         |         | MHz   |                                         |
| Operating Temperature                                       | -30                                        |         | +85     | °C    | See option (Table 1)                    |
| Storage Temperature                                         | -40                                        |         | +85     | °C    |                                         |
| Frequency Stability $\Delta f/f_0$ vs<br>Tolerance (@+25°C) | -2.0                                       |         | +2.0    | ppm   | +25°C, Vcon=1.4V<br>After 2 time reflow |
| Temperature (ref. to +25°C)                                 | -1.0                                       |         | +1.0    |       | See option (Table 1)                    |
| Supply Voltage Change (Vdd±5%)                              | -0.2                                       |         | +0.2    |       |                                         |
| Load Change (Z <sub>L</sub> ±10%)                           | -0.2                                       |         | +0.2    |       |                                         |
| Control Voltage (Vcon)<br>(ASVTX-12 only)                   | +0.4                                       |         | +2.4    | V     | Option A                                |
|                                                             | +0.4                                       |         | +2.4    |       | Option B                                |
|                                                             | +0.4                                       |         | +2.4    |       | Option C                                |
|                                                             | +0.3                                       |         | +1.5    |       | Option D                                |
| Supply Voltage (Vcc)                                        | +2.85                                      | +3.0    | +3.15   | V     | Option A                                |
|                                                             | +2.66                                      | +2.8    | +2.94   |       | Option B                                |
|                                                             | +2.375                                     | +2.5    | +2.625  |       | Option C                                |
|                                                             | +1.71                                      | +1.8    | +1.89   |       | Option D                                |
| Aging (first year @+25±2°C)                                 | -1.0                                       |         | +1.0    | ppm   |                                         |
| Supply Current (Icc)                                        |                                            |         | 2.0     | mA    | 13MHz ≤ Fo < 26MHz                      |
|                                                             |                                            |         | 2.5     | mA    | 26MHz ≤ Fo ≤ 52MHz                      |
| Startup Time                                                |                                            |         | 2.0     | ms    |                                         |
| Frequency Tuning Range<br>(ASVTX-12 only)                   | ±5.0                                       |         | ±9.5    | ppm   |                                         |
| Vcon Input Impedance<br>(ASVTX-12 only)                     | 500                                        |         |         | kΩ    |                                         |
| Frequency Tuning Transition                                 | Positive                                   |         |         |       |                                         |
| Output Voltage                                              | 0.8                                        |         |         | Vp-p  |                                         |
| Harmonics                                                   |                                            |         | -5.0    | dBc   |                                         |
| Load                                                        | 10kΩ//10pF                                 |         |         |       |                                         |
| Waveform                                                    | Clipped Sine Wave                          |         |         |       |                                         |
| Phase Noise @ 19.2MHz                                       |                                            |         |         |       |                                         |
| 100Hz offset from the carrier                               |                                            | -115    | -100    | dB/Hz |                                         |
| 1kHz offset from the carrier                                |                                            | -135    | -125    |       |                                         |
| 10kHz offset from the carrier                               |                                            | -150    | -140    |       |                                         |



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2.5 X 2.0 X 0.9mm

## OPTIONS & PART IDENTIFICATION: (left blank if standard)

ASVTX-12 or ASTX-12 -  -  MHz -  -

| Vdd (V)    |
|------------|
| A: 3.0V±5% |
| B: 2.8V±5% |
| C: 2.5V±5% |
| D: 1.8V±5% |

| Frequency in MHz                                                    |
|---------------------------------------------------------------------|
| Please specify the frequency in MHz.<br>e.g. 19.200MHz<br>26.000MHz |

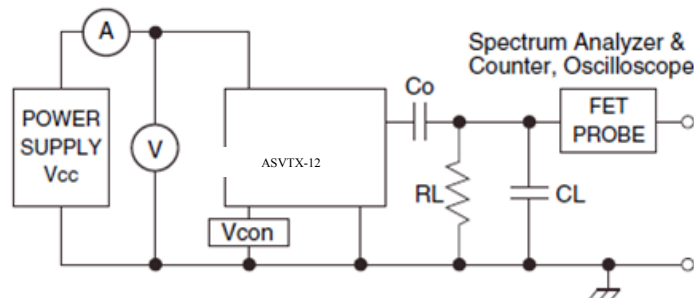
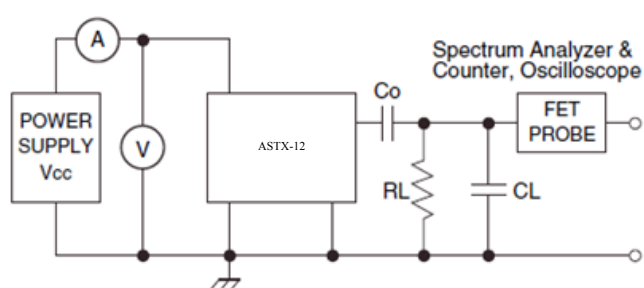
| Packaging        |
|------------------|
| T: 1,000pcs/reel |

Table 1: Frequency Stability vs Operating Temperature

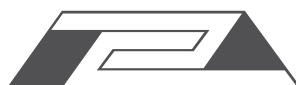
|               | ±0.5ppm | ±1.0ppm | ±1.5ppm | ±2.0ppm        | ±2.5ppm |
|---------------|---------|---------|---------|----------------|---------|
| 0°C ~ +55°C   | D05     | D10     | D15     | D20            | D25     |
| -10°C ~ +60°C | E05     | E10     | E15     | E20            | E25     |
| 0°C ~ +70°C   | F05     | F10     | F15     | F20            | F25     |
| -20°C ~ +70°C | G05     | G10     | G15     | G20            | G25     |
| -30°C ~ +85°C | H05*    | H10     | H15     | STD<br>(Blank) | H25     |
| -40°C ~ +85°C |         | I10*    | I15     | I20            | I25     |

\*Please contact Abracon for availability

## RECOMMENDED TEST CIRCUIT



RL=10kΩ±10% CL=10pF±10%  
• CL include Probe Capacitance  
Co: DC Cut Capacitance



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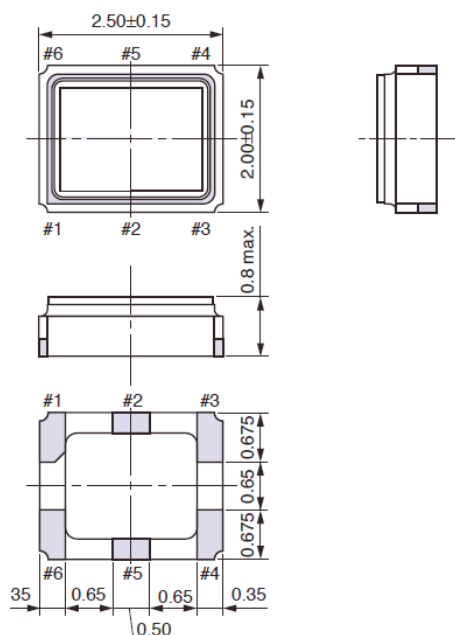


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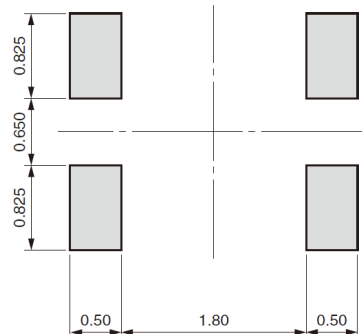


2.5 X 2.0 X 0.9mm

## OUTLINE DIMENSIONS:



Recommended Land Pattern



|         | Pin Configuration |
|---------|-------------------|
| #1pin   | GND               |
| #3pin   | GND               |
| #4pin   | OUTPUT            |
| #6pin   | Vcc               |
| #2/5pin | N.C.              |

|         | Pin Configuration |
|---------|-------------------|
| #1pin   | Vcon              |
| #3pin   | GND               |
| #4pin   | OUTPUT            |
| #6pin   | Vcc               |
| #2/5pin | N.C.              |

ASTX-12 TCXO

ASVTX-12 VCTCXO

Note1:

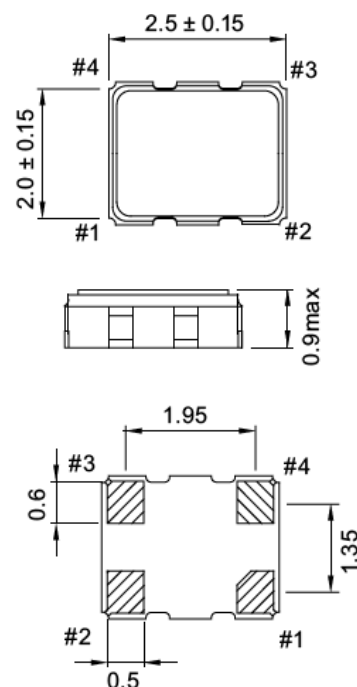
It is recommended that a by-pass capacitor of 0.01uF value be placed between pin #6 and pin #3 and an AC-coupling capacitor of the same value be placed in series with pin#4 for optimal performance.

For ASTX, please connect pin #1 and #3 to GND.

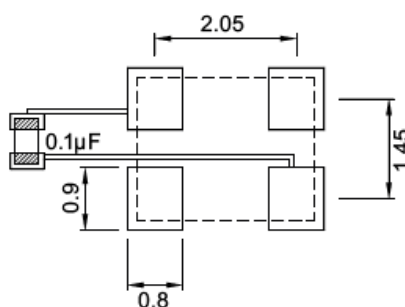
Note2:

Pin#2 and Pin#5 should be left floating (No Connect = N.C.)

Dimensions: mm



Recommended Land Pattern

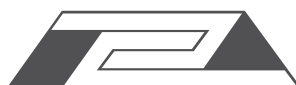


| PIN | FUNCTION |      |
|-----|----------|------|
|     | ASVTX    | ASTX |
| 1   | Vcon     | GND  |
| 2   | GND      |      |
| 3   | OUTPUT   |      |
| 4   | Vcc      |      |

Note:

It is recommended that a by-pass capacitor of 0.1uF 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.

Dimensions: mm



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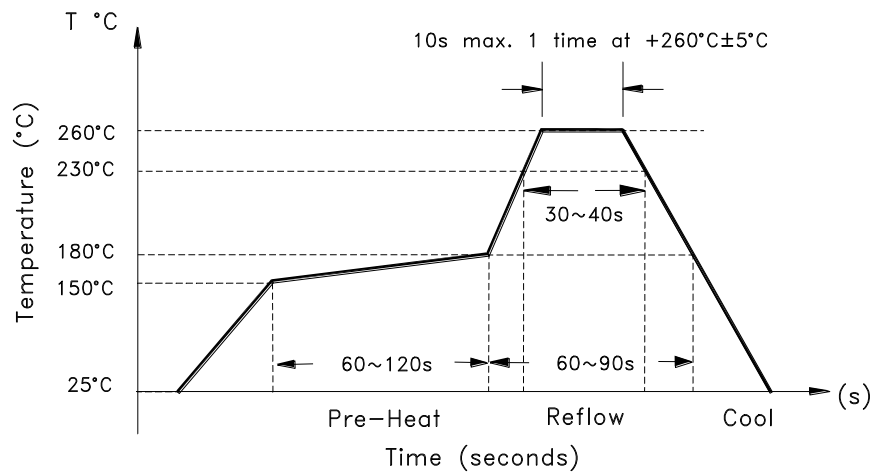


RoHS  
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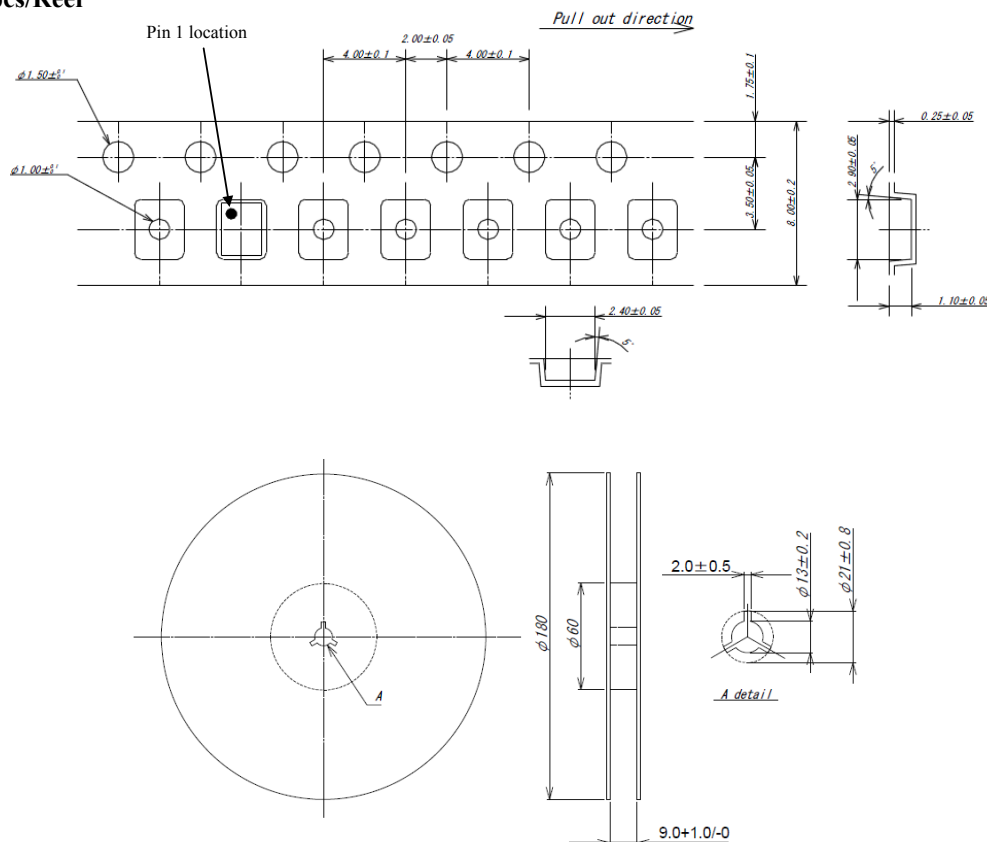
2.5 X 2.0 X 0.9mm

## REFLOW PROFILE



## TAPE & REEL:

T: 1,000pcs/Reel



Dimensions: mm

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