

# ULTRA MINIATURE SMD VC/TCXO

ASVTX-13/ASTX-13

Moisture Sensitivity Level (MSL) -1



**RoHS**  
Compliant



2.0 x 1.6 x 0.8mm

## FEATURES:

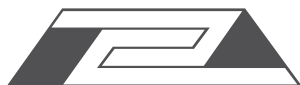
- Industry smallest 2.0 x 1.6 x 0.8mm
- Low current consumption 1.5mA at 26MHz
- Vc function ideal for PLL application
- Suitable for RoHS complaint reflow

## APPLICATIONS:

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

## 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 is available only as a TCXO |                         |
| Operating Temperature                 | -30                            | -----   | +75     | °C    |                                       |                         |
| Storage Temperature                   | -40                            | -----   | +85     | °C    |                                       |                         |
| Frequency Stability $\Delta f/f_0$ vs |                                |         |         |       | +25°C, Vcon=1.4V<br>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                          | +2.8    | +2.94   |       | Option B                              |                         |
|                                       | +1.71                          | +1.8    | +1.89   |       | Option C (ASTX only)                  |                         |
| Aging (first year @+25±2°C)           | -1.0                           | -----   | +1.0    | ppm   |                                       |                         |
| Supply Current (Icc)                  | Vdd=3.0V                       | -----   | -----   | 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 |
|                                       | Vdd=2.8V                       | -----   | -----   | 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 |
|                                       |                                | -----   | -----   | 1.5   |                                       | 38.400MHz, -30 to +85°C |
|                                       | Vdd=1.8V                       | -----   | -----   | 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 |
|                                       |                                | -----   | -----   | 1.5   |                                       | 38.400MHz, -30 to +85°C |
| Startup Time                          | -----                          | -----   | 3.0     | ms    | 90% Vp-p ±0.5ppm                      |                         |





2.0 x 1.6 x 0.8mm

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| Parameters   |             | Minimum           | Typical | Maximum | Units  | Notes   |
|--|-------------|-------------------|---------|---------|--------|---|
| Voltage Control Function<br>(for ASVTX-13)<br>Control Voltage (Vcon) | Vdd=3.0V    | +0.4              | +1.4    | +2.4    | Vdc    | 19.2MHz<br>26.0MHz<br>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   |
| 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 & +3.3V |
| 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% |

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

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

\*16.368MHz is only for ASTX-13 (TCXO)

\*\*1.8V is only for ASTX-13 (TCXO)

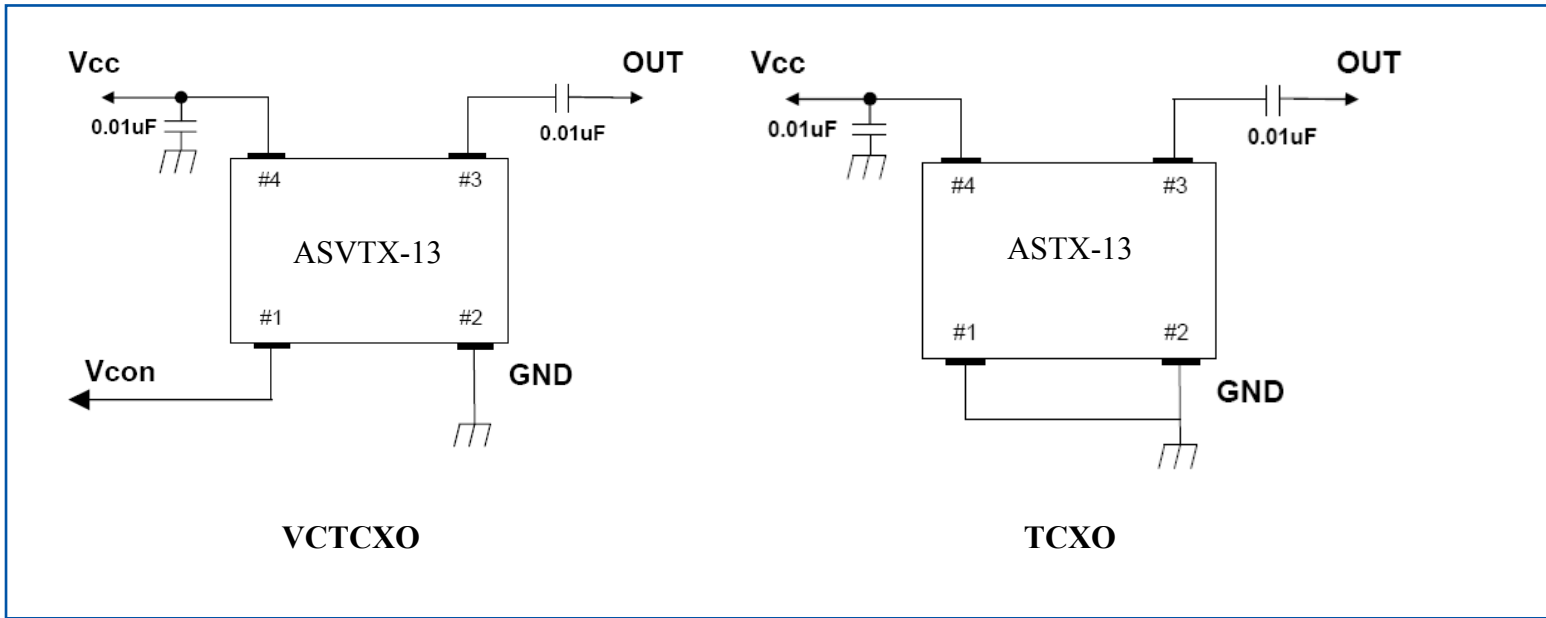
**Table 1: Frequency Stability vs Operating Temperature**

|               | ±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     |

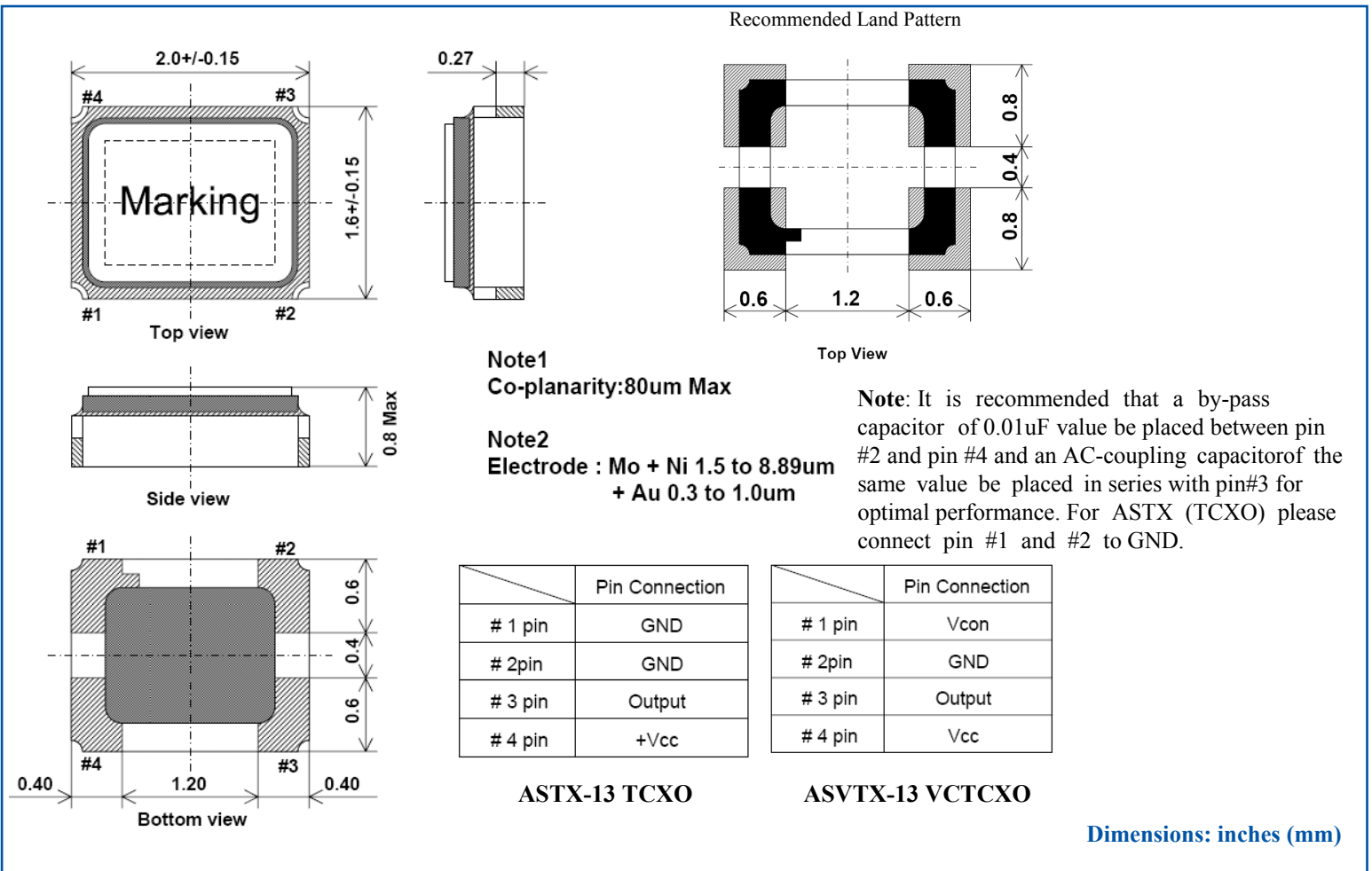


2.0 x 1.6 x 0.8mm

### RECOMMENDED TEST CIRCUIT



### OUTLINE DIMENSION:



Dimensions: inches (mm)

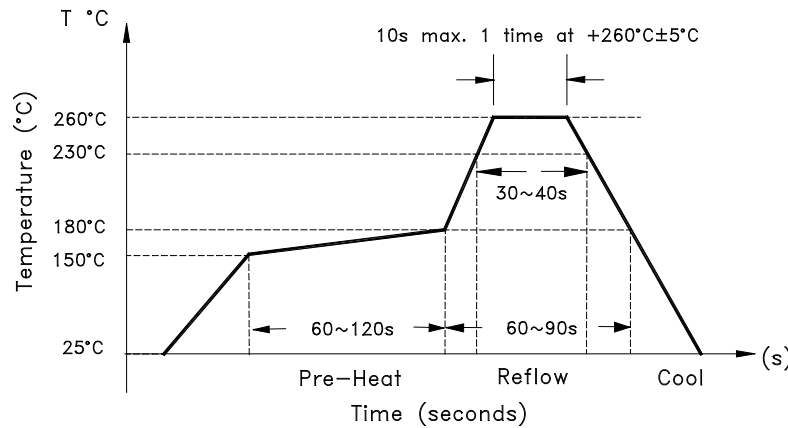


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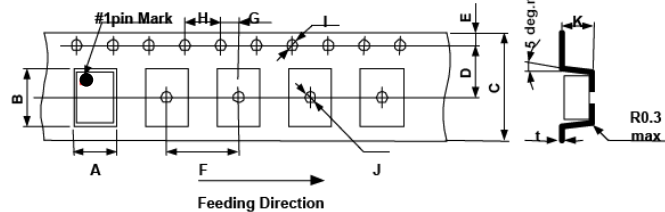
### REFLOW PROFILE:



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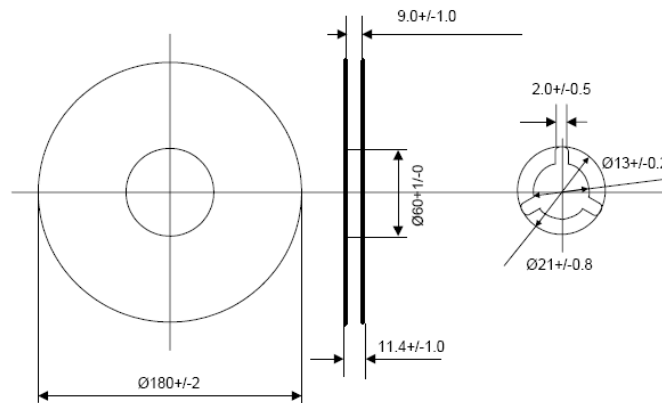
T: 1000pcs/reel  
T3: 3000pcs/reel  
T4: 4000pcs/reel (STD)

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

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- Техническую поддержку проекта.
- Защиту от снятия компонента с производства.
- Оценку стоимости проекта по компонентам.
- Изготовление тестовой платы монтаж и пусконаладочные работы.



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