

# VOLTAGE CONTROLLED TEMPERATURE COMPENSATED CRYSTAL OSCILLATOR



5.0 X 3.2 X 1.5mm

ASTX-09/ASVTX-09



## FEATURES:

- Low height 1.5mm
- Low phase noise -135dBc typical / 1kHz
- Low current 1.5mA / ~20MHz
- Clipped sine wave output.
- Suitable for RoHS reflow

## APPLICATIONS:

- Cellular and cordless phones.
- GPS
- Mobile communication equipment.
- Portable radio equipment and music player.

## STANDARD SPECIFICATIONS:

### PARAMETERS

|                               |  |                        |                                 |                    |   |          |                 |                   |                       |         |                        |
|-------------------------------|--|------------------------|---------------------------------|--------------------|---|----------|-----------------|-------------------|-----------------------|---------|------------------------|
| ABRACON P/N                   | ASTX-09/ASVTX-09 Series  |                        |                                 |                    |   |          |                 |                   |                       |         |                        |
| Frequency:                    | 6.000MHz to 45.000MHz  |                        |                                 |                    |   |          |                 |                   |                       |         |                        |
| Nominal Frequencies:          | 8, 10, 12, 12.8, 13, 14.4, 16.368, 19.2, 19.8, 20, 22, 24.5535, 26.40  |                        |                                 |                    |   |          |                 |                   |                       |         |                        |
| Operating Temperature:        | -30°C to +75°C (See Table 1 for options)   |                        |                                 |                    |   |          |                 |                   |                       |         |                        |
| Storage Temperature:          | -40°C to +85°C   |                        |                                 |                    |   |          |                 |                   |                       |         |                        |
| Frequency Stability:          | <table border="0"> <tr> <td>vs +25°C before reflow</td> <td>± 0.5ppm standard ( See option)</td> </tr> <tr> <td>vs Operating Temp.</td> <td>±2.5ppm standard (See Table1 for options)</td> </tr> <tr> <td>vs Aging</td> <td>± 1ppm/1st year</td> </tr> <tr> <td>vs Supply Voltage</td> <td>±0.2ppm (± 5% change)</td> </tr> <tr> <td>vs Load</td> <td>±0.2ppm (± 10% change)</td> </tr> </table> | vs +25°C before reflow | ± 0.5ppm standard ( See option) | vs Operating Temp. | ±2.5ppm standard (See Table1 for options) | vs Aging | ± 1ppm/1st year | vs Supply Voltage | ±0.2ppm (± 5% change) | vs Load | ±0.2ppm (± 10% change) |
| vs +25°C before reflow        | ± 0.5ppm standard ( See option)  |                        |                                 |                    |   |          |                 |                   |                       |         |                        |
| vs Operating Temp.            | ±2.5ppm standard (See Table1 for options)  |                        |                                 |                    |   |          |                 |                   |                       |         |                        |
| vs Aging                      | ± 1ppm/1st year  |                        |                                 |                    |   |          |                 |                   |                       |         |                        |
| vs Supply Voltage             | ±0.2ppm (± 5% change)  |                        |                                 |                    |   |          |                 |                   |                       |         |                        |
| vs Load                       | ±0.2ppm (± 10% change)   |                        |                                 |                    |   |          |                 |                   |                       |         |                        |
| Voltage Control Range (Vcc):  | 1.5V ±1.0V   |                        |                                 |                    |   |          |                 |                   |                       |         |                        |
| Supply Voltage (Vdd):         | 3.0V ± 5%Standard (See options)  |                        |                                 |                    |   |          |                 |                   |                       |         |                        |
| Supply Current:               | 1.5mA max (~20MHz), 2.0mA max (~32MHz), 2.5mA max (~45MHz)   |                        |                                 |                    |   |          |                 |                   |                       |         |                        |
| Output Type:                  | Clipped Sine   |                        |                                 |                    |   |          |                 |                   |                       |         |                        |
| Output Voltage                | 0.8Vp-p min  |                        |                                 |                    |   |          |                 |                   |                       |         |                        |
| Output Load:                  | 10 kohm // 10 pF   |                        |                                 |                    |   |          |                 |                   |                       |         |                        |
| Pullability:                  | ± 8ppm min   |                        |                                 |                    |   |          |                 |                   |                       |         |                        |
| Transfer function:            | Positive   |                        |                                 |                    |   |          |                 |                   |                       |         |                        |
| Phase Noise (Reference only): | -135dBc typical @ 1KHz (Frequency dependent.)<br>e.g. -131dBc typical @ 1KHz (32MHz), Please contact ABRACON for each frequencies.   |                        |                                 |                    |   |          |                 |                   |                       |         |                        |

## OPTIONS & PART IDENTIFICATION:

(Left blank if standard)

ASTX- 09/ASVTX - 09 -  - Frequency -  -  -

|        | Supply Voltage (Vdd) |
|--------|----------------------|
| A      | 2.5V±0.1 V           |
| Blank* | 3.0V±5%              |
| B      | 3.3V±5%              |
| C      | 5.0V±5%              |

\*3.0V±5% : Standard

| Frequency Stability vs +25°C |         |
|------------------------------|---------|
| Blank*                       | ±0.5ppm |
| J                            | ±1.5ppm |

\* Standard

| Packaging |               |
|-----------|---------------|
| Blank     | Bulk          |
| T         | Tape and Reel |

(1,000 or 2,000pcs/reel)

Table 1: Frequency Stability vs Operating Temp.

|                | ±1ppm | ±1.5ppm | ±2ppm | ±2.5ppm | ±3ppm | ±4ppm | ±5ppm |
|----------------|-------|---------|-------|---------|-------|-------|-------|
| 0°C-50°C       | D10   | D15     | D20   | D25     | D30   | D40   | D50   |
| -10°C to 60°C  | E10   | E15     | E20   | E25     | E30   | E40   | E50   |
| 0°C to 70°C    |       | F15     | F20   | F25     | F30   | F40   | F50   |
| -20°C to +75°C |       |         | G20   | G25     | G30   | G40   | G50   |
| -30°C to 75°C  |       |         |       | STD     | H30   | H40   | H50   |
| -40°C to 85°C  |       |         |       |         | I30   | I40   | I50   |

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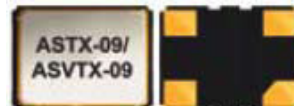


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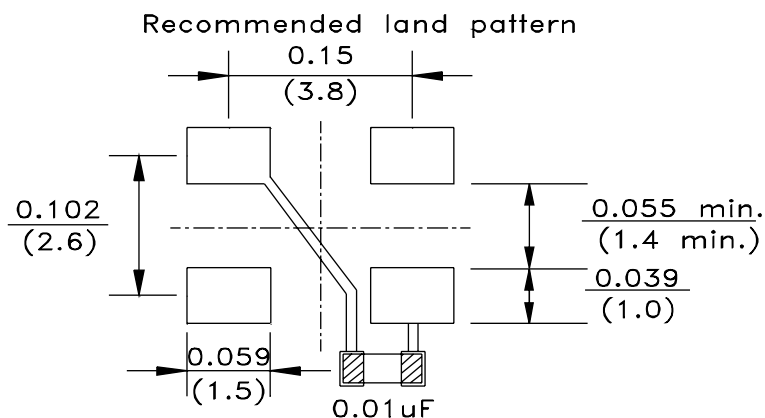
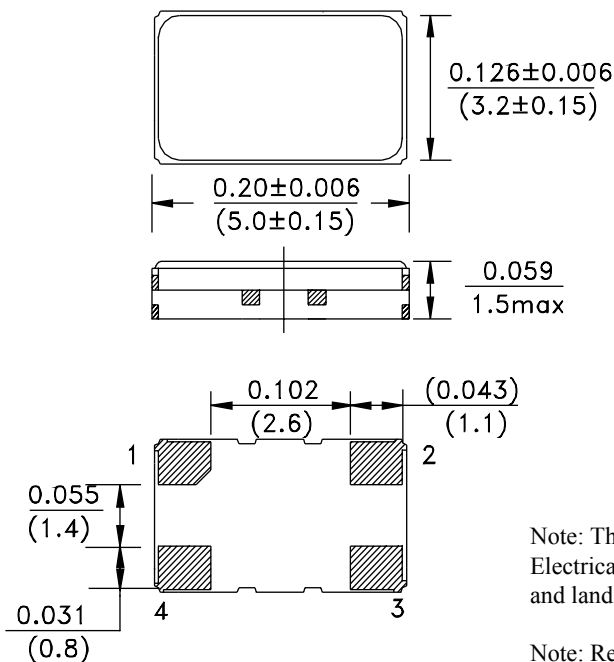


5.0 X 3.2 X 1.5mm

ASTX-09/ASVTX-09



## OUTLINE DIMENSIONS:



Note: The outline package may vary. Electrical properties, pin configuration, and land pattern are the same.

Note: Recommend using an approximately  $0.01 \mu F$  bypass capacitor between PIN 2 and 4.

| PIN | FUNCTION |
|-----|----------|
| 1   | Vc/NC*   |
| 2   | GND      |
| 3   | Output   |
| 4   | Vdd      |

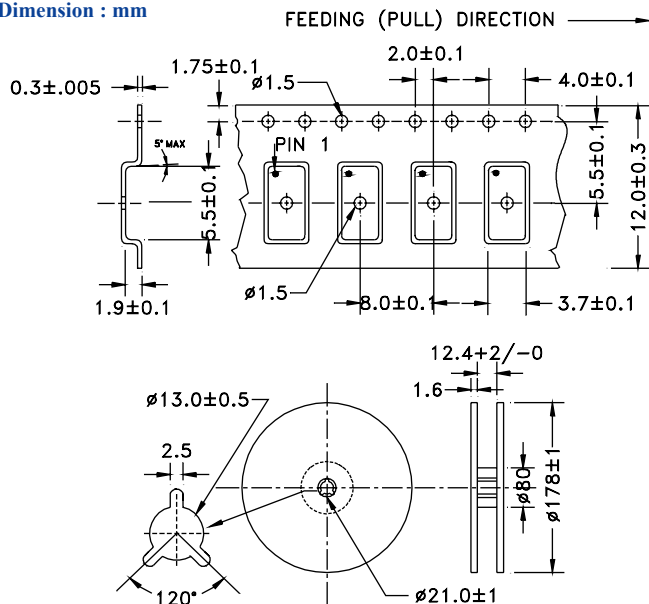
\*NC for ASTX-09 only

Dimension : Inches (mm)

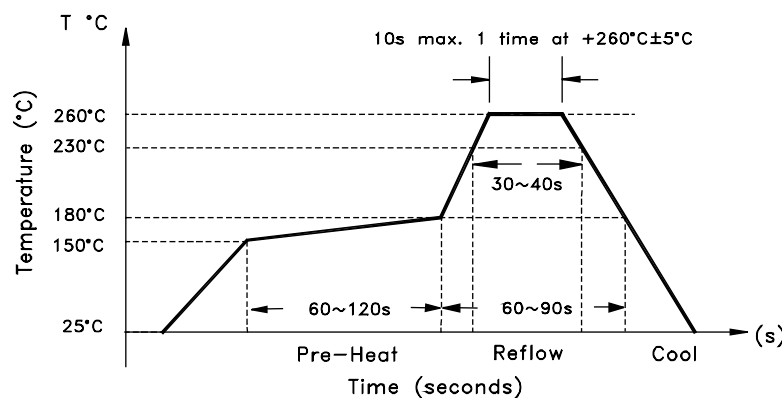
## TAPE & REEL:

T= tape and reel (1,000 or 2,000pcs/reel)

Dimension : mm



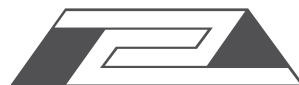
## REFLOW PROFILE:



Need a test socket for the ASTX-09/ASVTX-09 Series? To view compatible **PRECISION TEST & BURN-IN SOCKETS** for these parts, [click here](#).

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