

Moisture Sensitivity Level (MSL) – 1

OVERVIEW:

Abracon's ASTXR series of Temperature Compensated Crystal Oscillators are based on an Advanced-Analog Temperature Compensation Integrated Circuit, incorporated with Rakon's Precision TCXO processing techniques.

This composite enables exceptional frequency stability over temperature ($\leq \pm 0.50$ ppm over -40°C to $+85^{\circ}\text{C}$). Additionally, high-resolution screening algorithms are employed during the production verification process, ensuring that 100% of these devices are fully compliant to the stringent frequency stability specifications.

For Power Sensitive applications, the ASTXR series provides the ability to preserve consumed power by placing the device in shut-down mode; when not used. This series of devices are ideally suited for GPS and other mobile applications where performance, size, cost and power management are of critical importance.

FEATURES:

- Excellent phase noise performance
- Low power consumption
- Miniature size: 2.5 x 2.0 x 0.8mm SMD
- RoHS compliant
- Temperature stability: ± 0.5 ppm over $-30 \sim +85^{\circ}\text{C}$

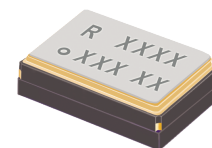
APPLICATIONS:

- GPS
- Smartphone
- PND
- Communications
- Consumer electronics
- Wi-Fi
- WiMAX/W-LAN

STANDARD SPECIFICATIONS:

| Parameters | Minimum | Typical | Maximum | Units | Notes |
|---|------------------------------|---------|-----------|-------------------------|--|
| Nominal Frequency | 26.000 | | | MHz | |
| Supply Voltage (Vdd) | 1.71 | 1.8 | 1.89 | V | |
| Current Consumption (@Vdd max) | | | 1.5 | mA | See Note 2 |
| Operable Temperature Range | -30 | | +85 | $^{\circ}\text{C}$ | |
| Storage Temperature Range | -40 | | +85 | $^{\circ}\text{C}$ | |
| Initial Frequency Tolerance @ $+25^{\circ}\text{C} \pm 2^{\circ}\text{C}$ at time of shipment | | | ± 1 | ppm | |
| Reflow Shift | | | ± 1 | ppm | After 2 consecutive reflows and 1hr recovery @ $+25^{\circ}\text{C}$ |
| Frequency Stability over Operating Temperature Range | | | ± 0.5 | ppm | Ref. to $(F_{\text{MAX}} + F_{\text{MIN}})/2$. See Note 1 |
| Frequency Slope (tested to a minimum of 1 freq. reading every 2°C over -20°C to $+70^{\circ}\text{C}$) | | | 0.05 | ppm/ $^{\circ}\text{C}$ | See Note 1 |
| Frequency Slope (tested to a minimum of 1 freq. reading every 2°C over -30°C to -20°C and $+70^{\circ}\text{C}$ to $+85^{\circ}\text{C}$) | | | 0.1 | ppm/ $^{\circ}\text{C}$ | See Note 1 |
| Static Temperature Hysteresis (Frequency change after reciprocal temperature ramped over the operating range. Frequency measured before and after at $+25^{\circ}\text{C}$) | | | 0.6 | ppm | |
| Sensitivity vs. Supply Voltage Variations (Vdd $\pm 5\%$ @ $+25^{\circ}\text{C}$) | | | ± 0.1 | ppm | |
| Sensitivity vs. Load Variations ($\pm 10\%$ load change @ $+25^{\circ}\text{C}$) | | | ± 0.2 | ppm | See Note 2 |
| Long Term Stability (frequency drift over 1 year @ $+25^{\circ}\text{C}$) | | | ± 1 | ppm | |
| Output Type | DC Coupled Clipped Sine-wave | | | | See Note 3 |
| Output Voltage Level (@ minimum Vdd) | 0.8 | | | V | See Note 2 |
| Output Load Resistance | 9 | 10 | 11 | k Ω | |
| Output Load Capacitance | 9 | 10 | 11 | pF | |
| Startup Time (amplitude) | | | 0.5 | ms | Within 90% of specified output level |
| Startup Time (frequency) | | | 2 | ms | Within ± 0.5 ppm of steady state frequency |





| Parameters | Minimum | Typical | Maximum | Units | Notes |
|--------------------------------------|---------|---------|---------|----------|-------|
| Phase Noise @ 26MHz Carrier (@+25°C) | | | | | |
| @ 1 Hz offset | | -64 | | dBc / Hz | |
| @ 10 Hz offset | | -92 | | dBc / Hz | |
| @ 100 Hz offset | | -115 | | dBc / Hz | |
| @ 1,000 Hz offset | | -136 | | dBc / Hz | |
| @ 10,000 Hz offset | | -149 | | dBc / Hz | |
| @ 100,000 Hz offset | | -150 | | dBc / Hz | |

Note:

1. Parts should be shielded from drafts causing unexpected thermal gradients. Temperature changes due to ambient air currents on the oscillator can lead to short term frequency drift
2. Specified for load stated in the Oscillator Output section at +25°C
3. AC-Coupled outputs require an external capacitor, $\geq 1\text{nF}$ recommended
4. Frequency shift $\leq 1\text{ppm}$ after reliability test conditions (see section 7.0)

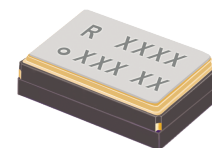
CROSS REFERENCE INFORMATION:

ASTXR-12-26.000MHZ-512883 is equivalent to Rakon P/N 512883.

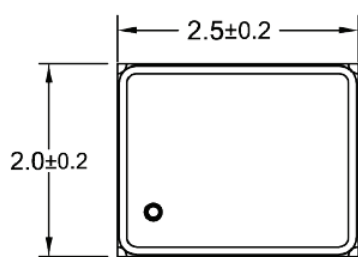
PART IDENTIFICATIONS:

ASTXR-12-26.000MHz -512883 - 

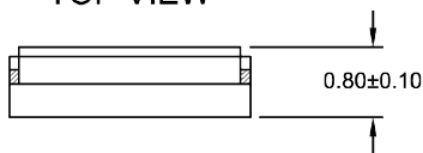
| Packing |
|--------------------------|
| Blank: Bulk |
| T: Tape & Reel (3k/reel) |



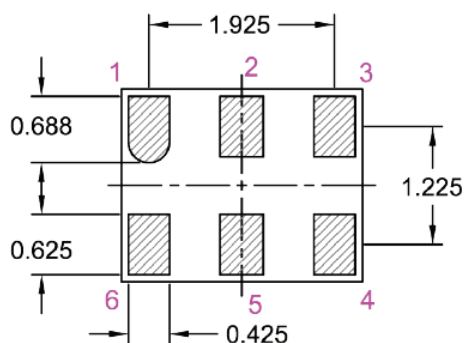
OUTLINE DIMENSION:



TOP VIEW

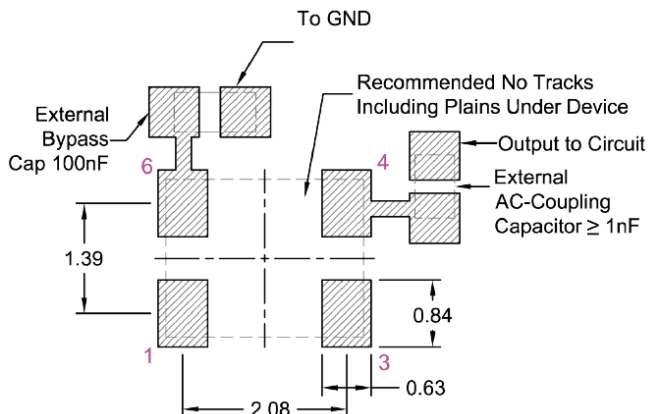


FRONT VIEW



BOTTOM VIEW

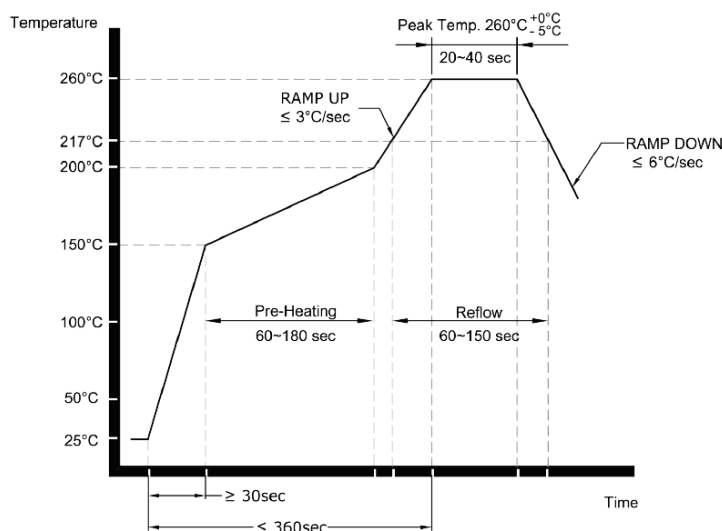
Recommended Land Pattern

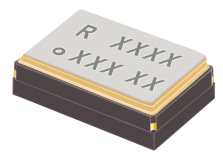


| Pin | Function |
|-----|----------|
| 1 | NC/GND |
| 2 | NC/GND |
| 3 | GND |
| 4 | Output |
| 5 | NC/GND |
| 6 | Vdd |

Dimensions: mm

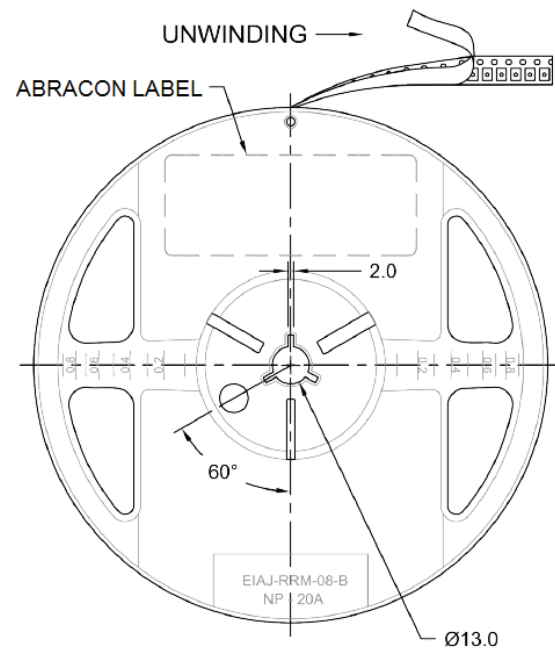
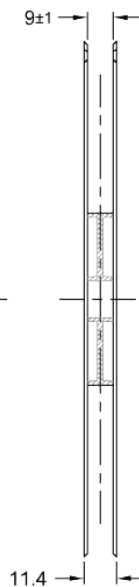
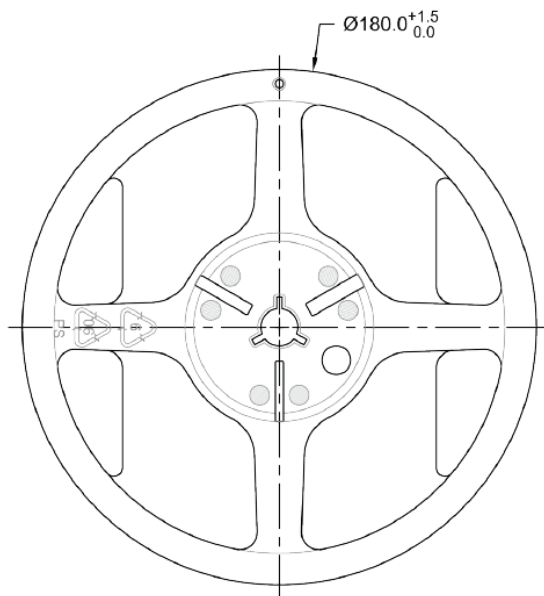
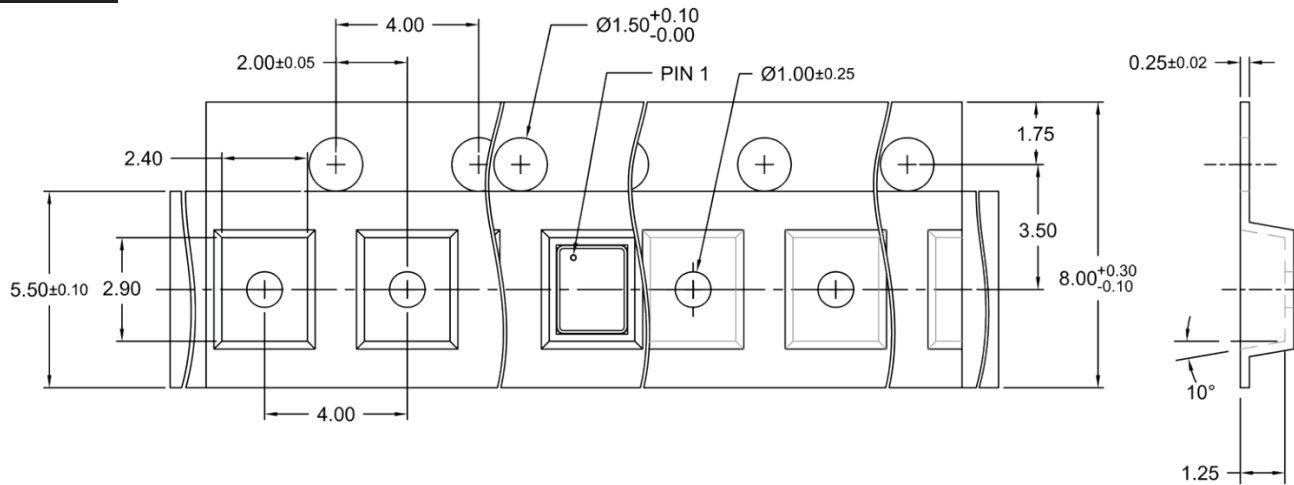
REFLOW PROFILE:





TAPE & REEL:

3000pcs/reel



Dimensions: mm

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