# Precision SMD TCXO

7.0 x 5.0 x 1.9mm

## AST3TQ

ESD Sensitive

RoHS/RoHS II Compliant

Moisture Sensitivity Level (MSL) – 3

## FEATURES:

- Standard available frequencies: 10.00, 12.80, 19.20, 20.00, 25.00, 26.00, 30.72, 38.40 & 40.00MHz
- Standard LVCMOS Output
- Frequency stabilities to include ±100ppb over -40ºC to +85ºC, ±280ppb over –50ºC to +90ºC and ±500ppb over -55ºC to +95ºC operating temperature range
- Excellent Phase Noise, Harmonics and Spurious content
- Typical rms jitter of 400fs @ 40MHz carrier & 1.0ps @ 10MHz carrier over 12kHz to 20MHz BW

## APPLICATIONS:

- COTS Military Radios & other Communication Hardware
- WiMax,
- LTE, BTS
- CATV, LAN, LMDS
- GPS Tracking with Hold-Over accuracy
- Test & Measurement Equipment
- Point-to-Point communication networks

## STANDARD SPECIFICATIONS:

### Maximum Rating

| Parameters | Rating |
|---|---|
| Storage Temperature Range | -55 to +125°C |
| Supply Voltage | -0.5 to 6V |
| ESD, HBM/CDM/MM | 4kV/2kV/200V |

| Parameters | Minimum | Typical | Maximum | Units | Notes |
|---|---|---|---|---|---|
| Frequency Range | 10 | | 40 | MHz | |
| Standard Frequencies: | 10.00, 12.80, 19.20, 20.00, 25.00, 26.00, 30.72, 38.40, 40.00 | | | MHz | |
| Initial Frequency Tolerance (@+25°C) at shipping | | | ±0.3 | ppm | Relative to carrier |
| **Frequency Stability Options** | | | | | |
| -40°C to +85°C | | | ±100 | ppb | Option "1" |
| -50°C to +90°C | | | ±280 | ppb | Option "2" |
| -55°C to +95°C | | | ±500 | ppb | Option "5" |
| Frequency Stability vs. Supply Voltage Change (Vdd±5%): | | | ±100 | ppb | |
| Frequency Stability vs. Load Change (Load±5%): | | | ±200 | ppb | |
| Supply Voltage (Vdd): | +3.135 | +3.3 | +3.465 | V | |
| Aging (first year @+25°C): | | | ±1.0 | ppm | |
| Aging (20 years @+25°C): | | ±3.0 | ±4.6 | ppm | |
| Supply Current (Icc) (into 15pF load): | | 3.0 | 4.0 | mA | @10MHz carrier |
| | | 5.5 | 7.0 | | @40MHz carrier |
| **CMOS Output** | | | | | |
| $V_{OH}$: | 2.4 | | | V | Load=15pF |
| $V_{OL}$: | | | 0.4 | V | Load=15pF |
| Load: | | | 15 | pF | |
| Duty Cycle: | 45 | | 55 | % | @( $V_{OH}$ - $V_{OL}$)/2 |
| Rise/Fall Time: | | | 4 | ns | Load=15pF |
| Waveform: | Square Wave | | | | |
| RMS Jitter (12kHz to 20MHz BW) | 0.4 | | 1.3 | ps | Carrier dependent |
| Phase Noise (10MHz carrier frequency @25°C): | | | -95 | dBc/Hz | Offset @10Hz |
| | | | -120 | | Offset @100Hz |
| | | | -140 | | Offset @1kHz |
| | | | -145 | | Offset @10kHz |
| | | | -150 | | Offset @100kHz |




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## AST3TQ

Pb RoHS/RoHS II Compliant

7.0 x 5.0 x 1.9mm

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

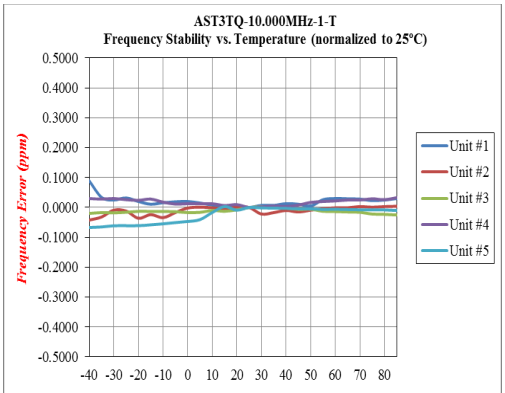
AST3TQ - [ ] MHz - [ ] - [ ]

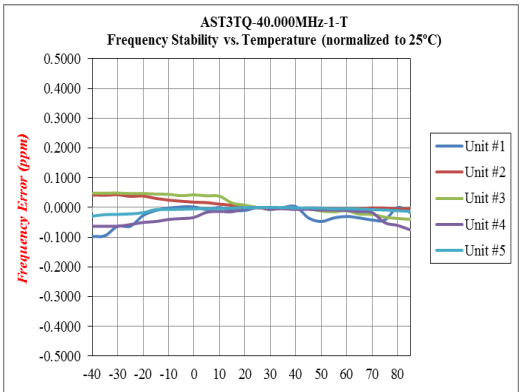
| Frequency in MHz |
|---|
| Please specify the frequency in MHz. e.g. 19.200MHz |

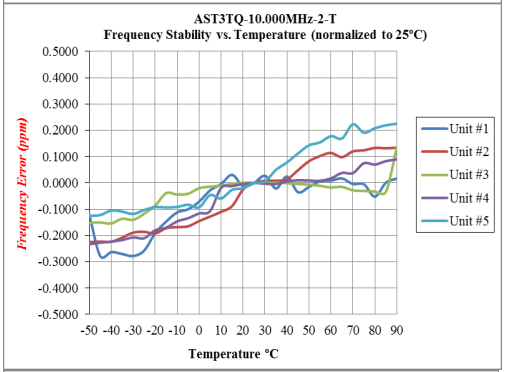
| Freq. Stability vs. Operating Temp. |
|---|
| 1: ±100ppb over -40 to +85°C |
| 2: ±280ppb over -50 to +90°C |
| 5: ±500ppb over -55 to +95°C |

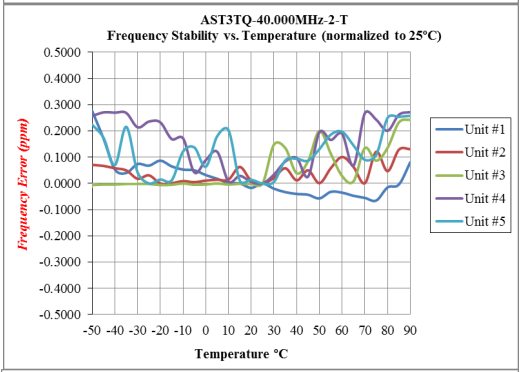
| Packaging |
|---|
| Blank: Bulk |
| T: 500pcs/reel |
| T2: 2000pcs/reel |

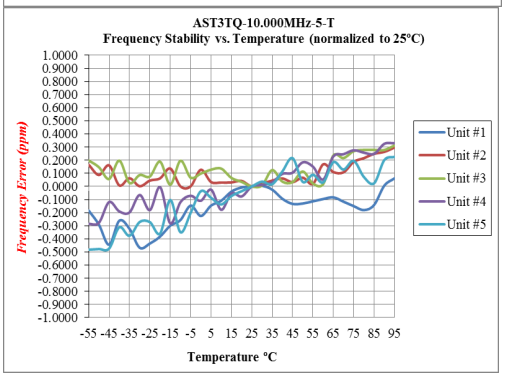
## FREQUENCY STABILITY VS. TEMPERATURE

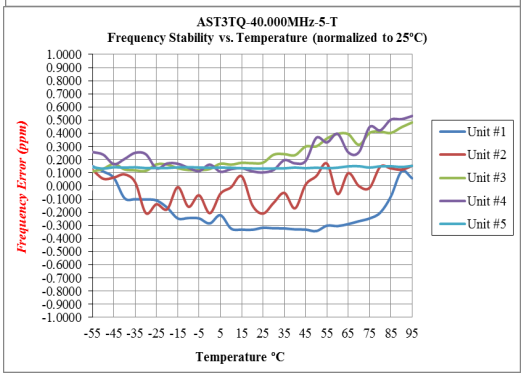


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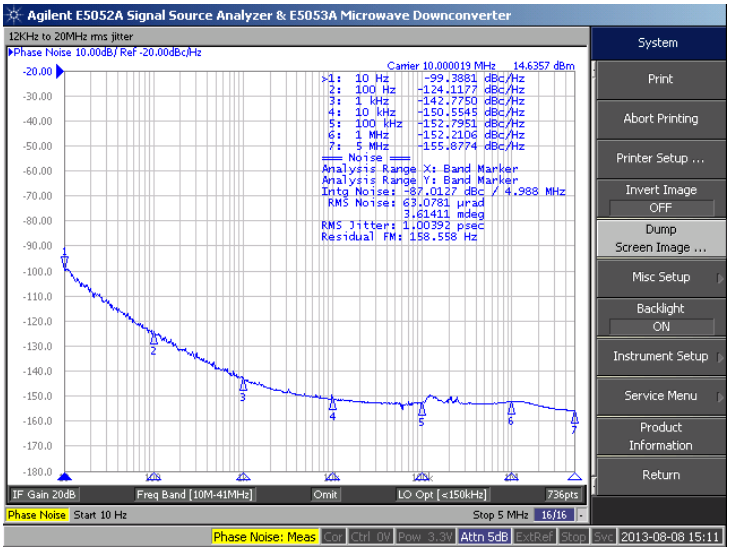
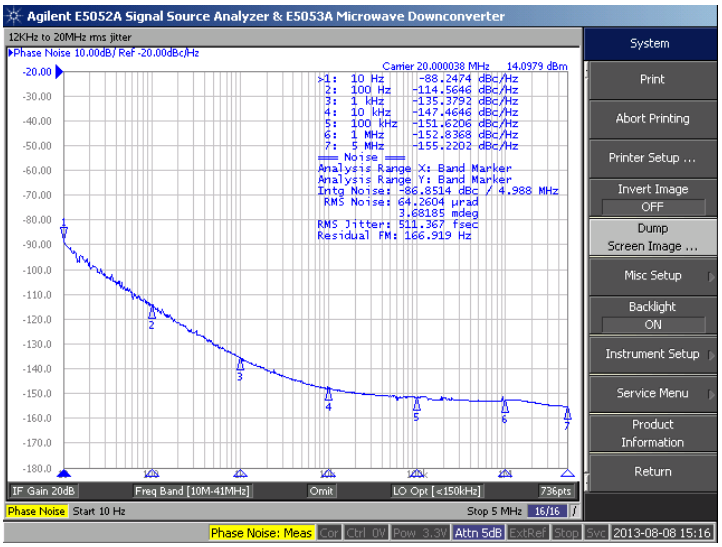
## TYPICAL PHASE NOISE

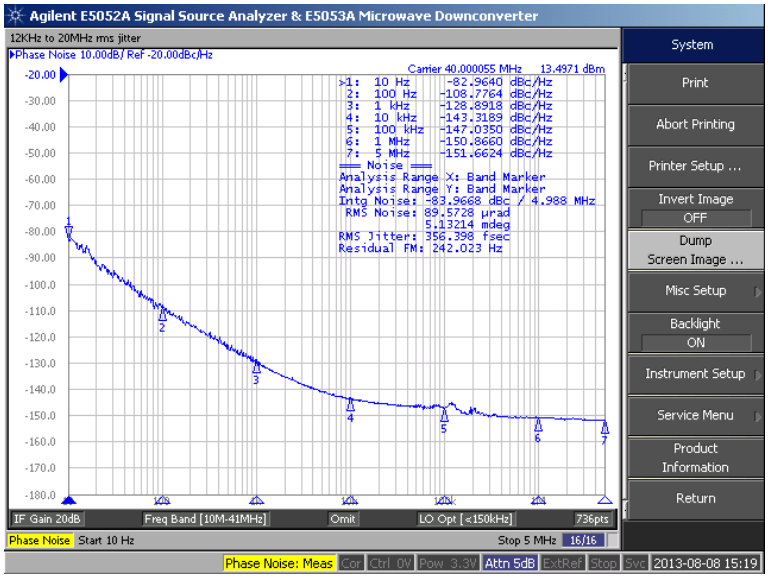
### 10.00 MHz Carrier




### 20.00 MHz Carrier




### 40.00 MHz Carrier



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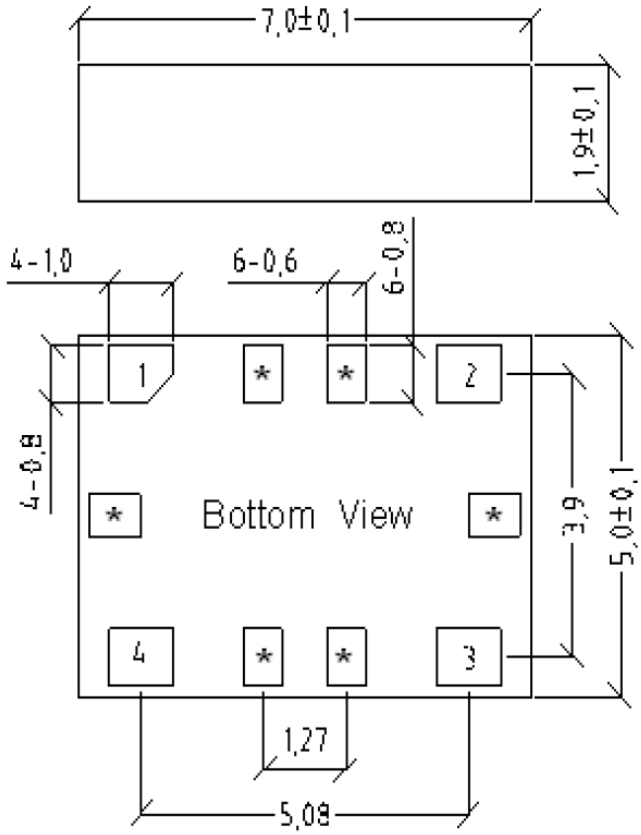
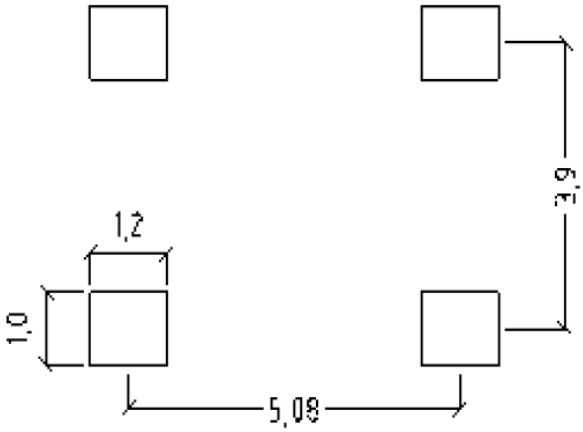
7.0 x 5.0 x 1.9mm

## OUTLINE DIMENSION:



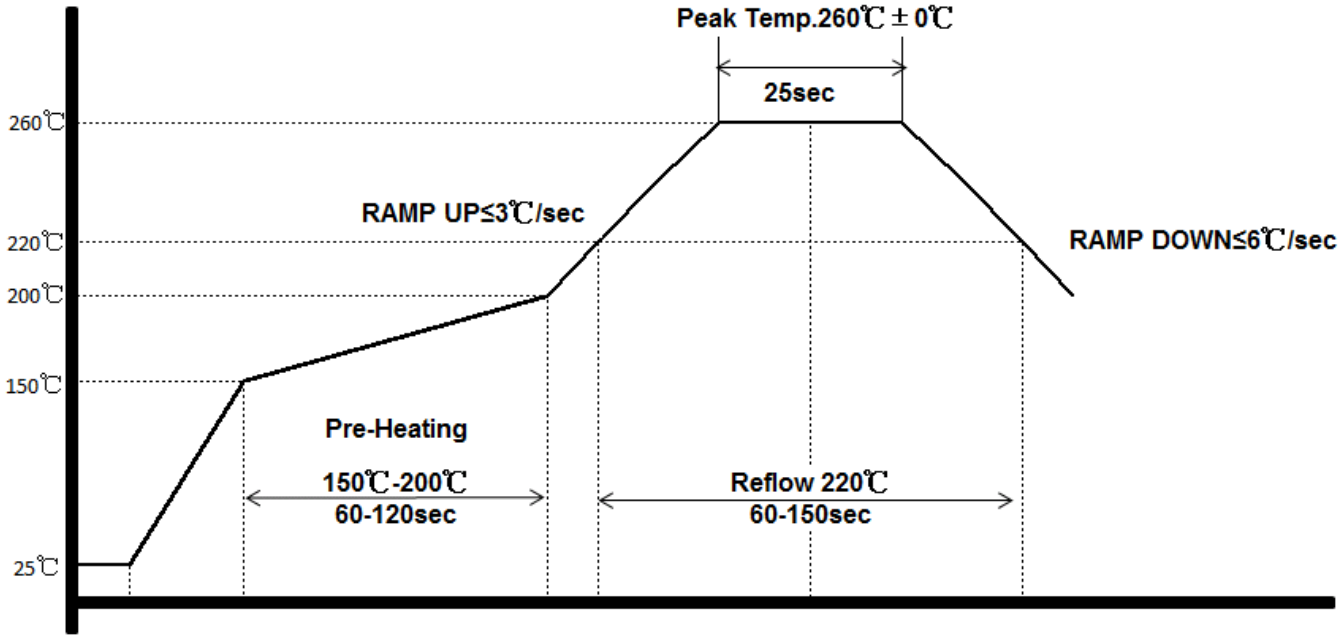

Recommended Land Pattern




| Pin | Function |
|---|---|
| 1 | NC |
| 2 | GND |
| 3 | Output |
| 4 | Vdd |
| * | For factory test only |

**Dimensions: mm**

## REFLOW PROFILE:



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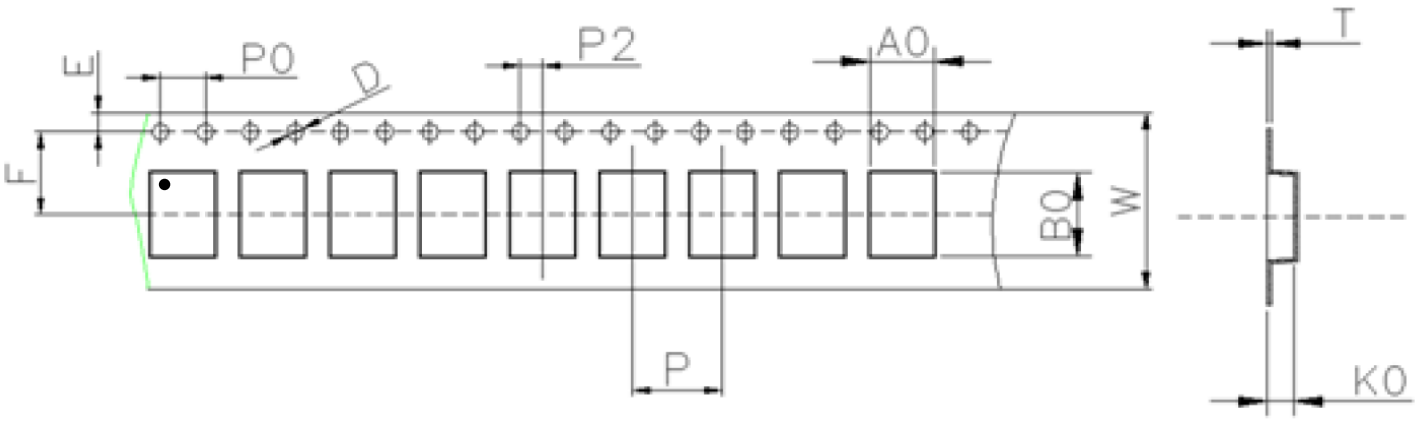
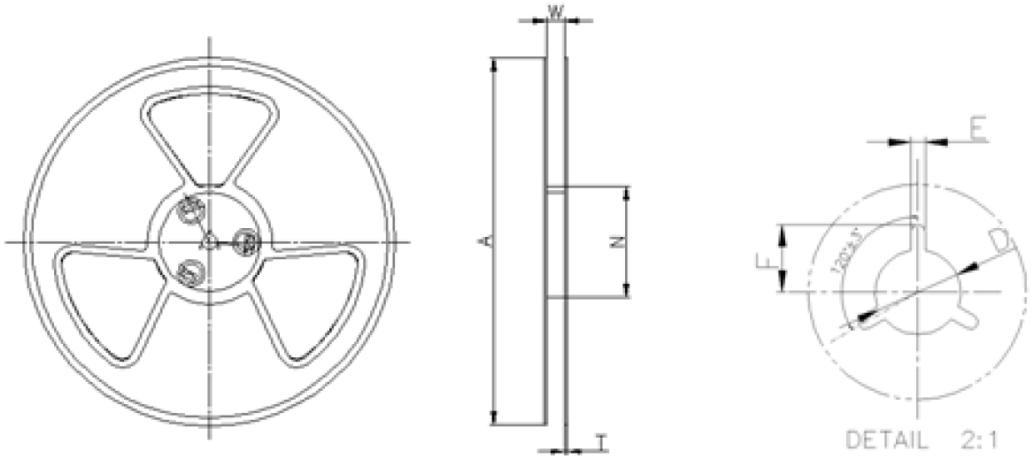
7.0 x 5.0 x 1.9mm

## TAPE & REEL:

**Packaging:**
**T: 500pcs/reel**
**T2: 2000pcs/reel**
**MSL-3 packaging applies to MOQ=25 units (cut tape) & T and T2.**




| W | A0 | B0 | K0 | P | F |
|---|---|---|---|---|---|
| 16.0±0.3 | 5.7±0.15 | 7.6±0.15 | 2.4±0.15 | 8.0±0.1 | 7.5±0.1 |
| **E** | **D** | **P0** | **P2** | **T** | |
| 1.75±0.1 | 1.5+0.1/-0.0 | 4.0±0.1 | 2.0±0.1 | 0.3±0.05 | |




| W | A | N | T | E | F | D |
|---|---|---|---|---|---|---|
| 16.5±0.4 | 330±0.5 | 100±0.3 | 1.8±0.2 | 2.1±0.3 | 10.75±0.3 | 13.5+0.5/-0.2 |

**Dimensions: mm**

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