



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 LVC MOS Output
- Frequency stabilities to include ±100ppb over -40°C to +85°C, ±280ppb over -50°C to +90°C and ±500ppb over -55°C to +95°C 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" see note 1 |
| -55 °C to +95 °C | | | ±500 | ppb | Option "5" see note 2 |
| 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 |
| 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 @ 1k Hz |
| | | | -145 | | Offset @ 10 kHz |
| | | | -150 | | Offset @100kHz |

*Note 1: For 10.000MHz carrier, frequency stability of ±280ppb is only guaranteed over -45°C to +90°C operating temperature range.

*Note 2: For 10.000MHz carrier, option "5" is not available.



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OPTIONS & PART IDENTIFICATION: (left blank if standard)

AST3TQ - [] MHz - [] - []

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

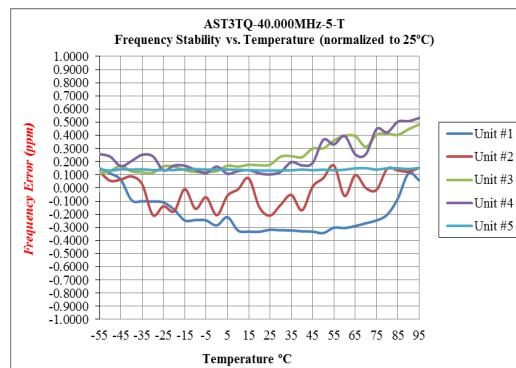
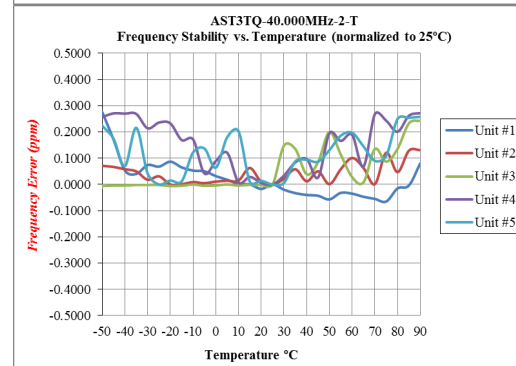
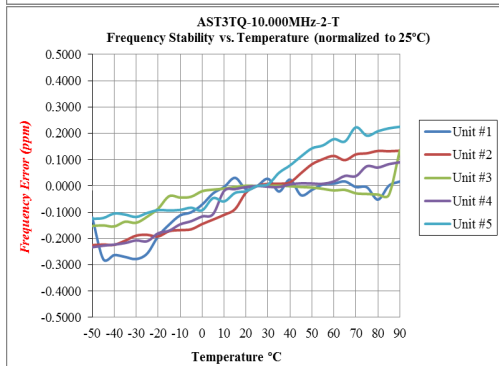
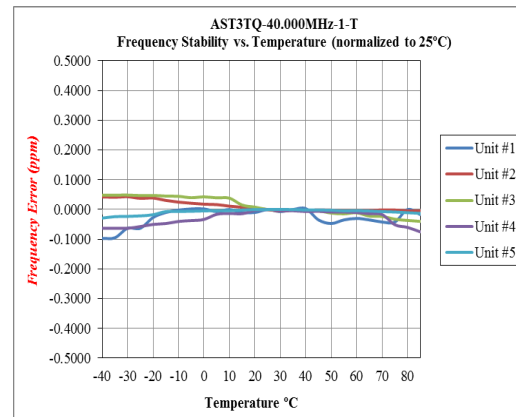
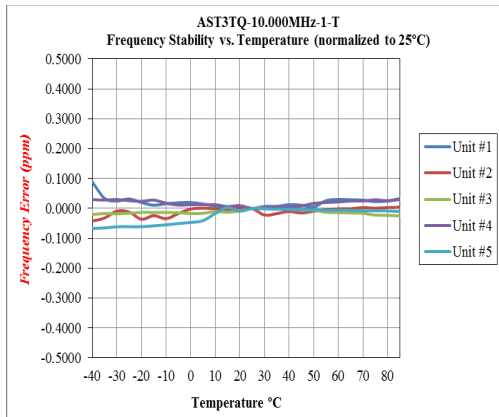
Freq. Stability vs. Operating Temp.
1: ± 100 ppb over -40 to $+85^{\circ}\text{C}$
2: ± 280 ppb over -50 to $+90^{\circ}\text{C}$ *
5: ± 500 ppb over -55 to $+95^{\circ}\text{C}$ **

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

* Note 1: For 10.000MHz carrier, frequency stability of ± 280 ppb is only guaranteed over -45°C to $+90^{\circ}\text{C}$ operating temperature range.

**Note 2: For 10.000MHz carrier, option "5" is not available.

FREQUENCY STABILITY VS. TEMPERATURE



REVISED: 01.05.2017



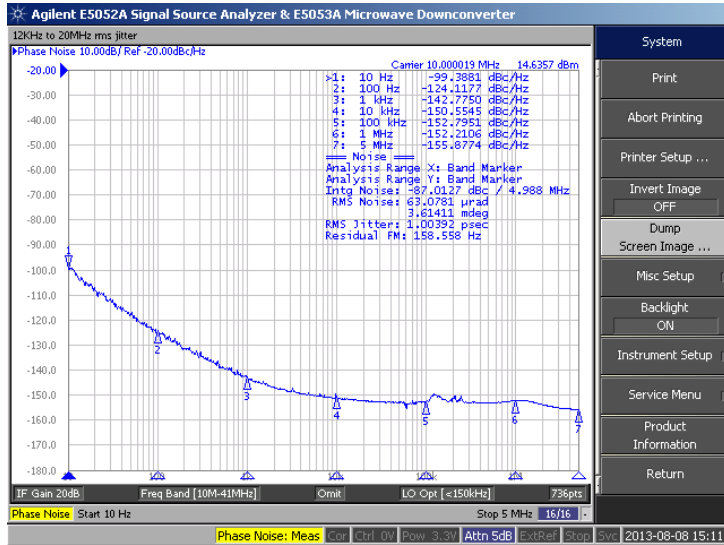
7.0 x 5.0 x 1.9mm

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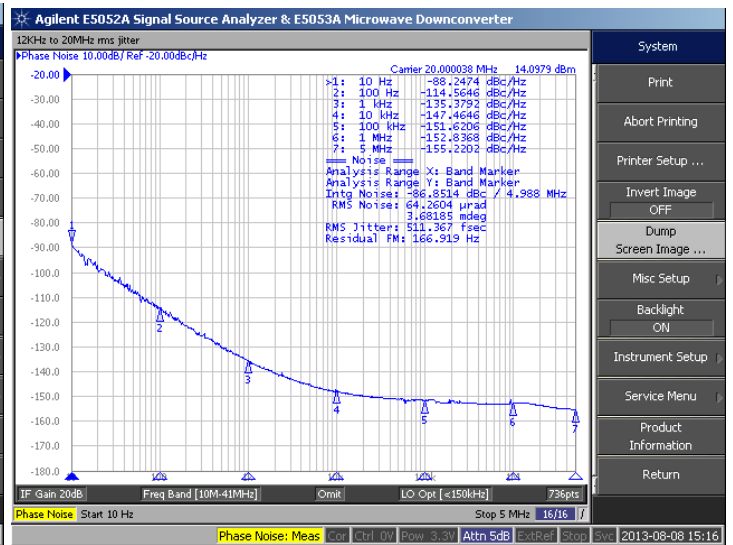
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TYPICAL PHASE NOISE

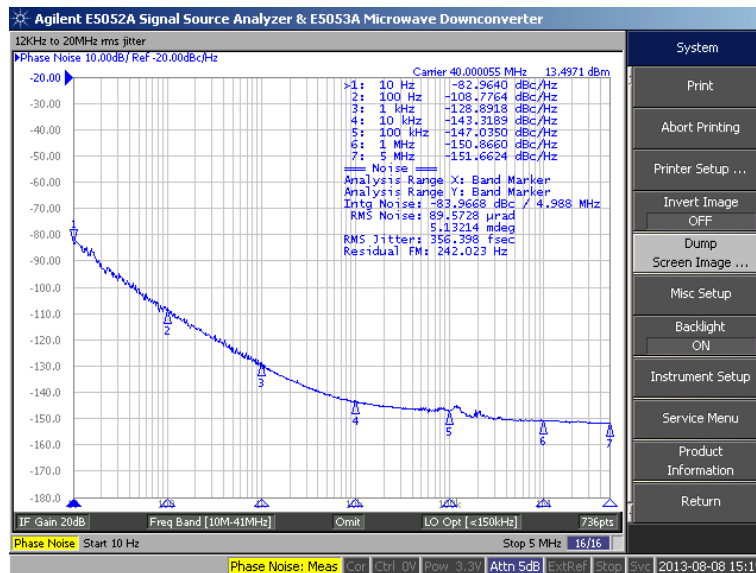
10.00 MHz Carrier



20.00 MHz Carrier



40.00 MHz Carrier





7.0 x 5.0 x 1.9mm

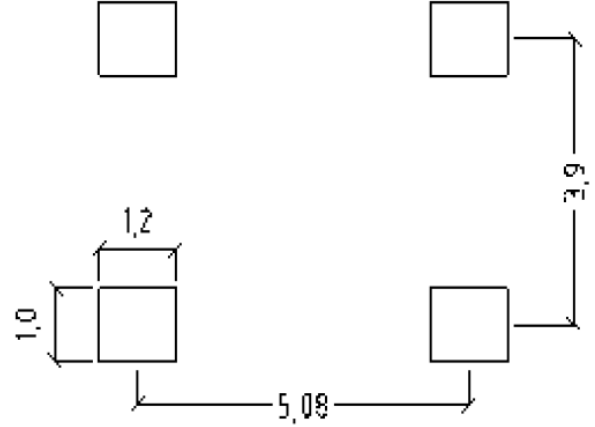
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OUTLINE DIMENSION:



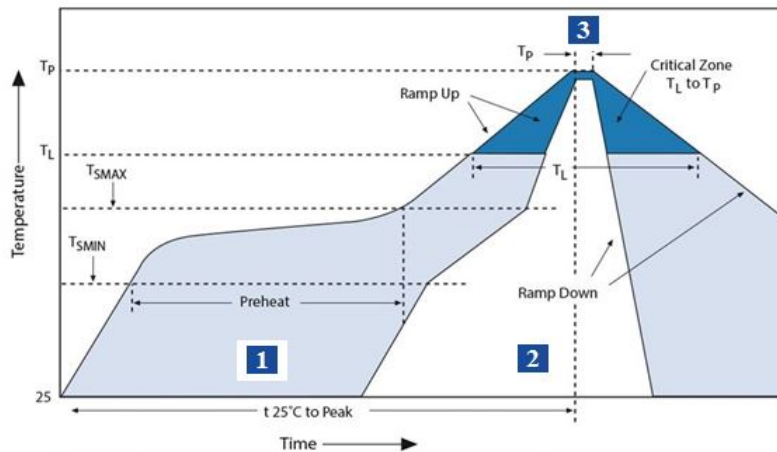
Recommended Land Pattern



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

Dimensions: mm

REFLOW PROFILE:



| Zone | Description | Temperature | Times |
|------|-------------|--|---------------|
| 1 | Preheat | T _{SMIN} ~ T _{SMAX} 150°C ~ 200°C | 60 ~ 120 sec. |
| 2 | Reflow | T _L 220°C | 60 ~ 150 sec. |
| 3 | Peak heat | T _P 260°C | 25 sec. MAX |



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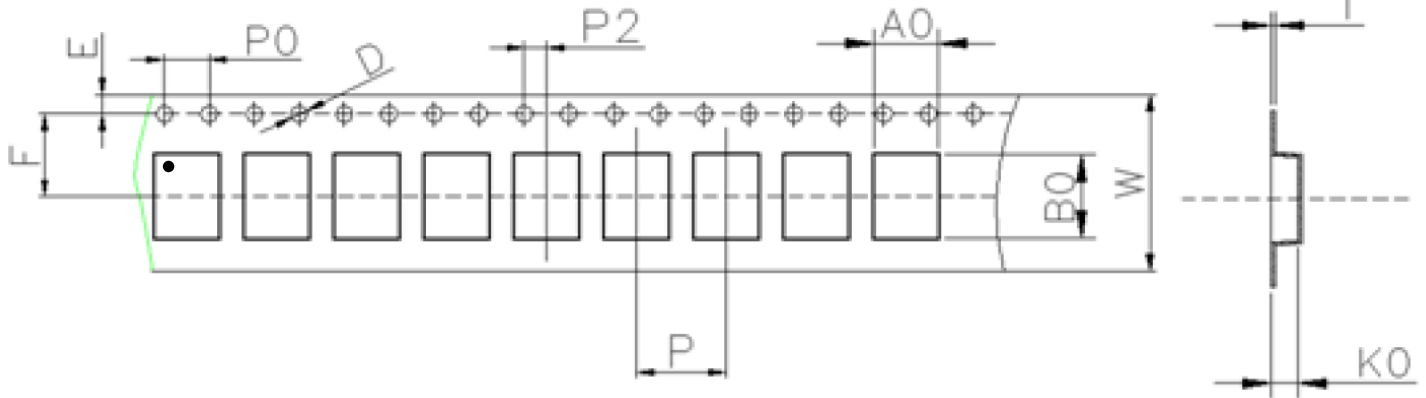
TAPE & REEL:

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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