



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, 40.00, 50.00MHz
- Standard LVC MOS Output
- Frequency stabilities to include  $\pm 100$ ppb over  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$ ,  $\pm 280$ ppb over  $-50^{\circ}\text{C}$  to  $+90^{\circ}\text{C}$  and  $\pm 500$ ppb over  $-55^{\circ}\text{C}$  to  $+95^{\circ}\text{C}$  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		51.2	MHz	
Standard Frequencies:	10.00, 12.80, 19.20, 20.00, 25.00, 26.00, 30.72, 40.00, 50.00			MHz	
Initial Frequency Tolerance (@+25°C) at shipping			$\pm 0.3$	ppm	Relative to carrier
<b>Frequency Stability Options</b>					
-40°C to +85°C			$\pm 100$	ppb	Option "1"
-50°C to +90°C			$\pm 280$	ppb	Option "2"* <b>Note 1</b>
-55°C to +95°C			$\pm 500$	ppb	Option "5"* <b>Note 2</b>
Frequency Stability vs. Supply Voltage Change (Vdd $\pm 5\%$ ):			$\pm 100$	ppb	
Frequency Stability vs. Load Change (Load $\pm 5\%$ ):			$\pm 200$	ppb	
Supply Voltage (Vdd):	+3.135	+3.3	+3.465	V	
Aging (first year @+25°C):			$\pm 1.0$	ppm	
Aging (20 years @+25°C):		$\pm 3.0$	$\pm 4.6$	ppm	
Supply Current (Icc) (into 15pF load):		7.8	8.5	mA	@10MHz carrier
		8.7	9.5		@16.384MHz carrier
		13.7	14.5		@51.2MHz carrier
<b>CMOS Output</b>					
V <sub>OH</sub> :	2.4			V	Load=15pF
V <sub>OL</sub> :			0.4	V	Load=15pF
Load:			15	pF	
Duty Cycle:	45		55	%	@(V <sub>OH</sub> - V <sub>OL</sub> )/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  $\pm 280$ ppb is only guaranteed over  $-45^{\circ}\text{C}$  to  $+90^{\circ}\text{C}$  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: $\pm 100$ ppb over $-40$ to $+85^{\circ}\text{C}$
2: $\pm 280$ ppb over $-50$ to $+90^{\circ}\text{C}$ *
5: $\pm 500$ ppb over $-55$ to $+95^{\circ}\text{C}$ **

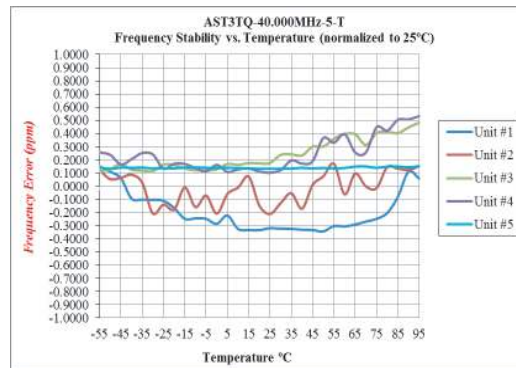
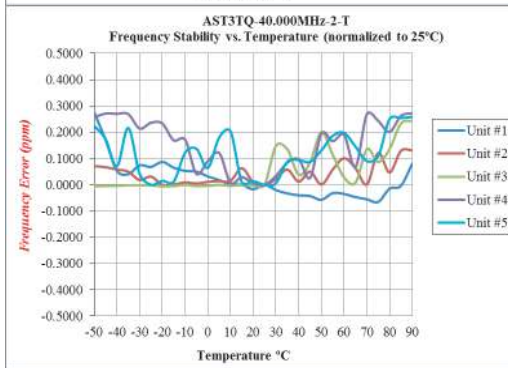
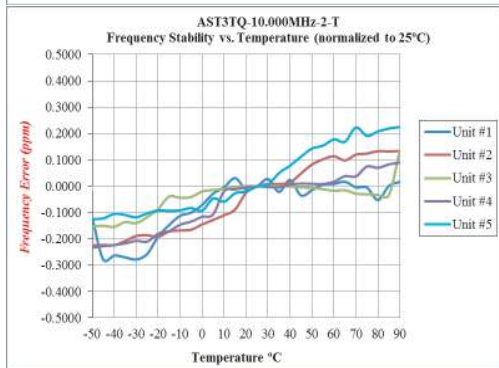
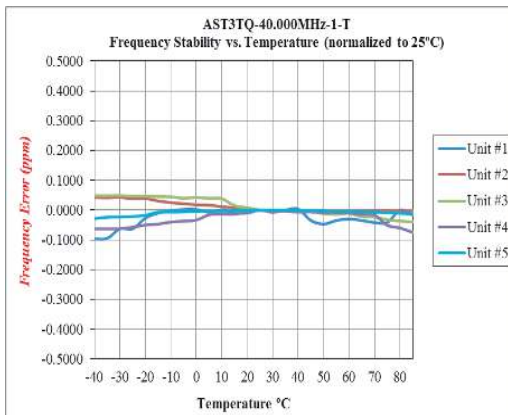
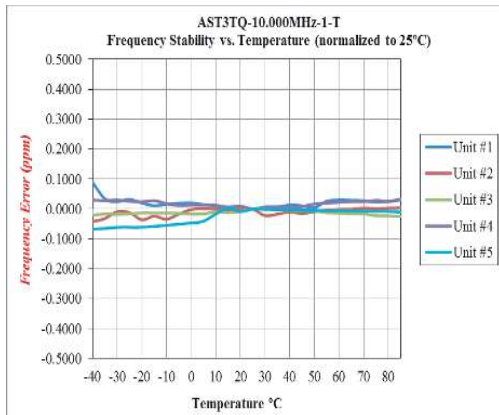
**Packaging**

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

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

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

## FREQUENCY STABILITY VS. TEMPERATURE





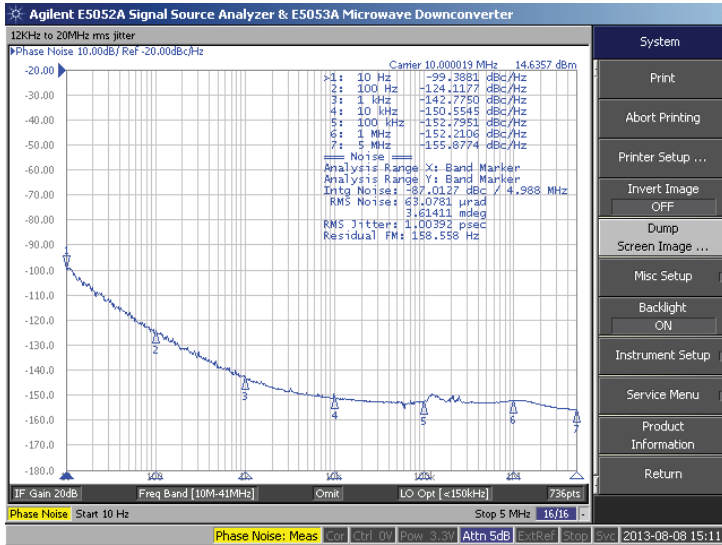
7.0 x 5.0 x 1.9mm

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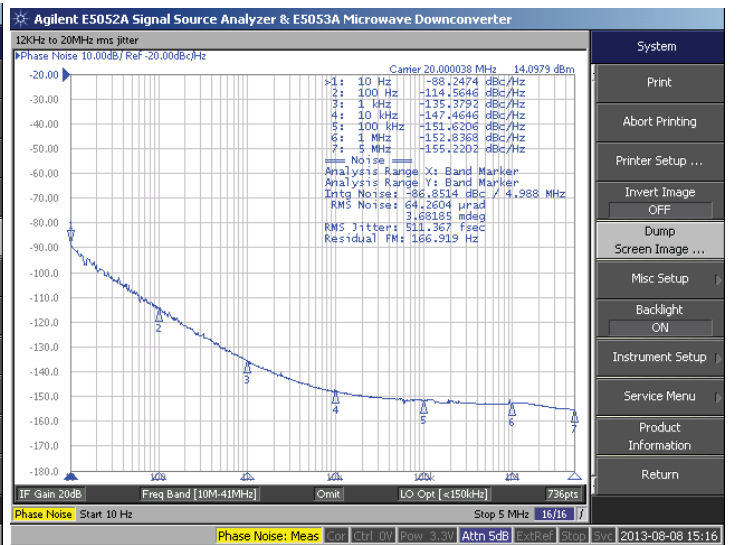
**Pb** RoHS/RoHS II Compliant

## TYPICAL PHASE NOISE

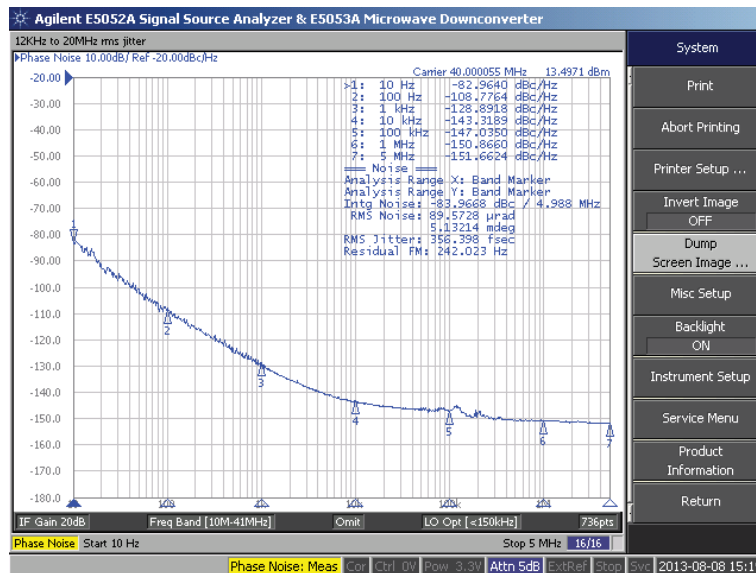
### 10.00 MHz Carrier



### 20.00 MHz Carrier



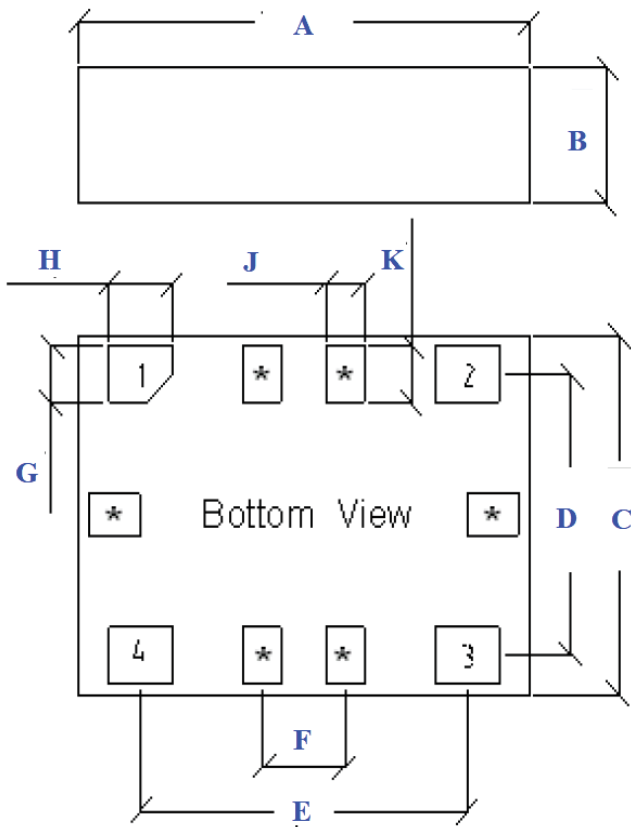
### 40.00 MHz Carrier





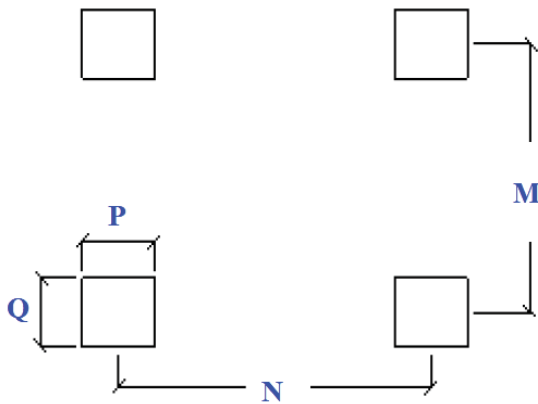
7.0 x 5.0 x 1.9mm

### OUTLINE DIMENSION:



Letter	Dimension
A	7.1±0.2
B	1.9±0.2
C	5.0±0.2
D	3.90
E	5.08
F	1.27
G	1.00
H	1.50
J	0.60
K	1.00
M	3.90
N	5.08
P	4-1.2
Q	4-1.0

### Recommended Land Pattern



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

Dimensions: mm

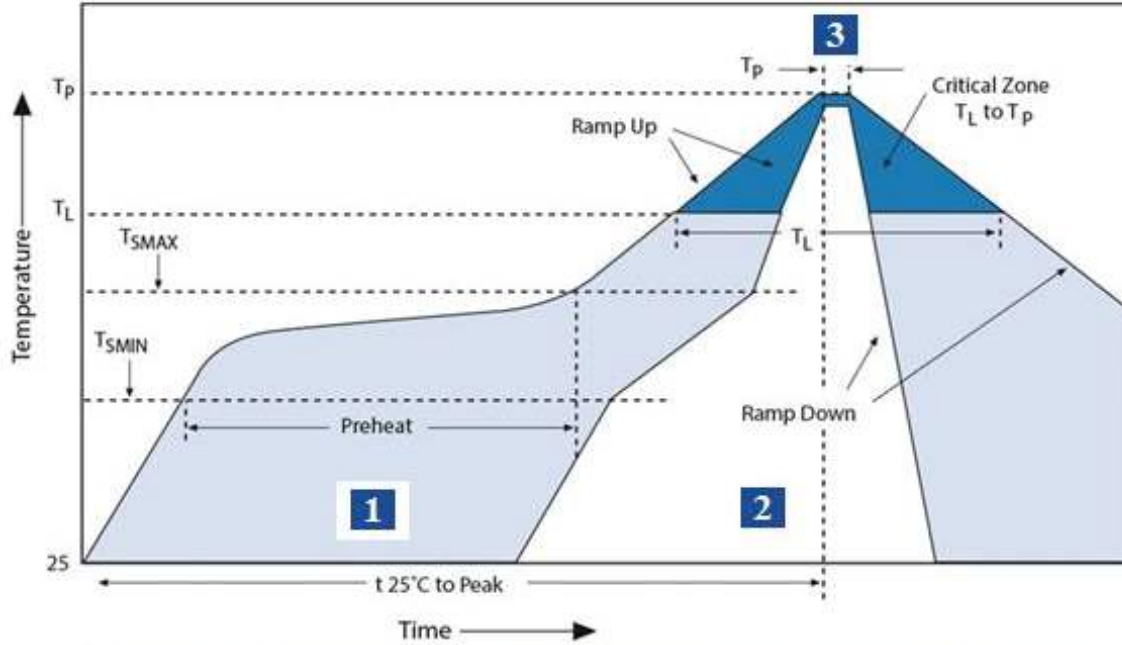


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## REFLOW PROFILE:



Zone	Description	Temperature	Times
1	Preheat	$T_{SMIN} \sim T_{SMAX}$ 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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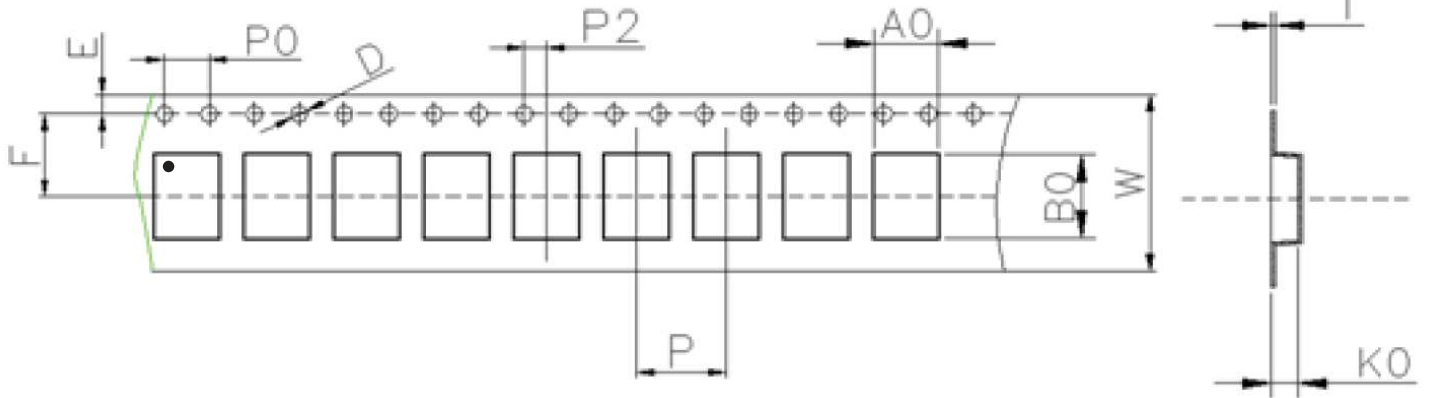
## TAPE & REEL:

**Packaging:**

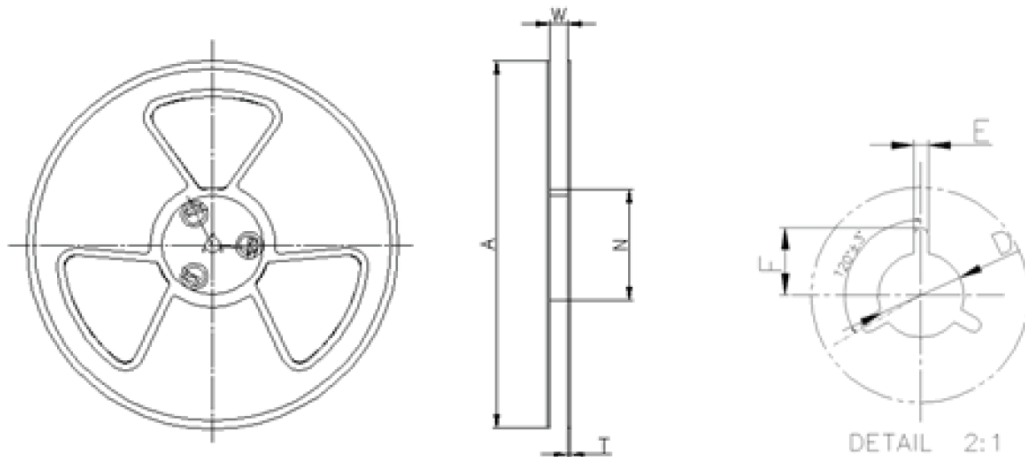
**T: 500pcs/reel**

**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

**ATTENTION:** Abracon LLC products are COTS – Commercial-Off-The-Shelf products; suitable for Commercial, Industrial and, where designated, Automotive Applications. Abracon's products are not specifically designed for Military, Aviation, Aerospace, Life-dependant Medical applications or any application requiring high reliability where component failure could result in loss of life and/or property. For applications requiring high reliability and/or presenting an extreme operating environment, written consent and authorization from Abracon LLC is required. Please contact Abracon LLC for more information.