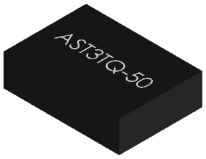
Precision SMD TCXO/VCTCXO



7.0 x 5.0 x 1.9mm

AST3TQ-50

ESD Sensitive

RoHS/RoHS II Compliant

Moisture Sensitivity Level (MSL) – 3

FEATURES:

- Standard available frequencies: 10.00, 12.80, 16.384, 19.20, 19.44, 20.00, 24.576, 25.00, 26.00, 30.72, 40.00 MHz
- LVCMOS Output or Clippled Sine Wave output
- Frequency stability: ±50ppb over -40ºC to +85ºC 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
Control Voltage	0 to 3V
ESD, HBM/CDM/MM	4kV/2kV/200V

Key Electrical Specifications

Parameters	Minimum	Typical	Maximum	Units	Notes
Frequency Range	10		40	MHz	
Standard Frequencies	10.00, 12.80, 16.384, 19.20, 19.44, 20.00, 24.576, 25.00, 26.00, 30.72, 40.00			MHz	
Initial Frequency Tolerance (@+25°C) at shipping			±500	ppb	Relative to carrier
Frequency Stability Options					
-40°C to +85°C			±50	ppb	
Frequency Stability vs. Supply Voltage Change (Vdd±5%)			±100	ppb	
Frequency Stability vs. Load Change (Load±5%)			±200	ppb	
Aging (first year @+25°C)			±1.0	ppm	
Aging (20 years @+25°C)		±3.0	±4.6	ppm	
Supply Voltage (Vdd)	+3.135	+3.3	+3.465	V	
Supply Current (Icc)		3.0	4.0	mA	@10MHz carrier
		5.5	7.0		@40MHz carrier
Control Port (*Applicable for VCTCXO only*)					
Control Voltage Range (Vc)	+0.5	+1.5	+2.5	V	
Center Control Voltage (Vc)		+1.5		V	To be with-in ±500 ppb of Fc @ 25°C (at shipping)
Frequency Tuning Range	±5.00	±7.00	<±13.00	ppm	(Vc = 1.5V±1.0V)
Tuning Slope		Positive			
Linearity			±1	%	
Port Impedance	100			kΩ	

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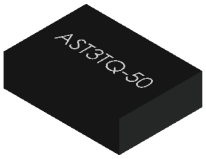

7.0 x 5.0 x 1.9mm

STANDARD SPECIFICATIONS:

(Continued)

Parameters	Minimum	Typical	Maximum	Unites	Notes
Phase Noise (10MHz carrier frequency @25℃):			-95	dBc/Hz	Offset @10Hz
			-120		Offset @100Hz
			-140		Offset @1kHz
			-145		Offset @10kHz
			-150		Offset @100kHz
RMS Jitter (@12kHz~5MHz BW)	0.4		1.3	ps	Carrier Dependent
Clipped Sine Wave					
Output Level	0.8			Vp-p	
Output Load	10kΩ//10pF				
LVCMOS Output (Square Wave)					
V_{OH}	2.4			V	Output Load=15pF
V_{OL}			0.4	V	Output Load=15pF
Output Load			15	pF	
Duty Cycle	45		55	%	@(V_{OH} - V_{OL})/2
Rise/Fall Time			6	ns	Output Load=15pF

PART IDENTIFICATION:

AST3TQ-□- [ ] MHz - 50 -□-□

Pull-Ability
T = TCXO
V = VCTCXO

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

Output Type
C: LVCMOS
SW: Clipped Sine Wave

Packaging
Blank: Bulk
T5: 500pcs/reel
T2: 2000pcs/reel

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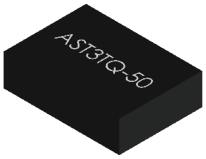
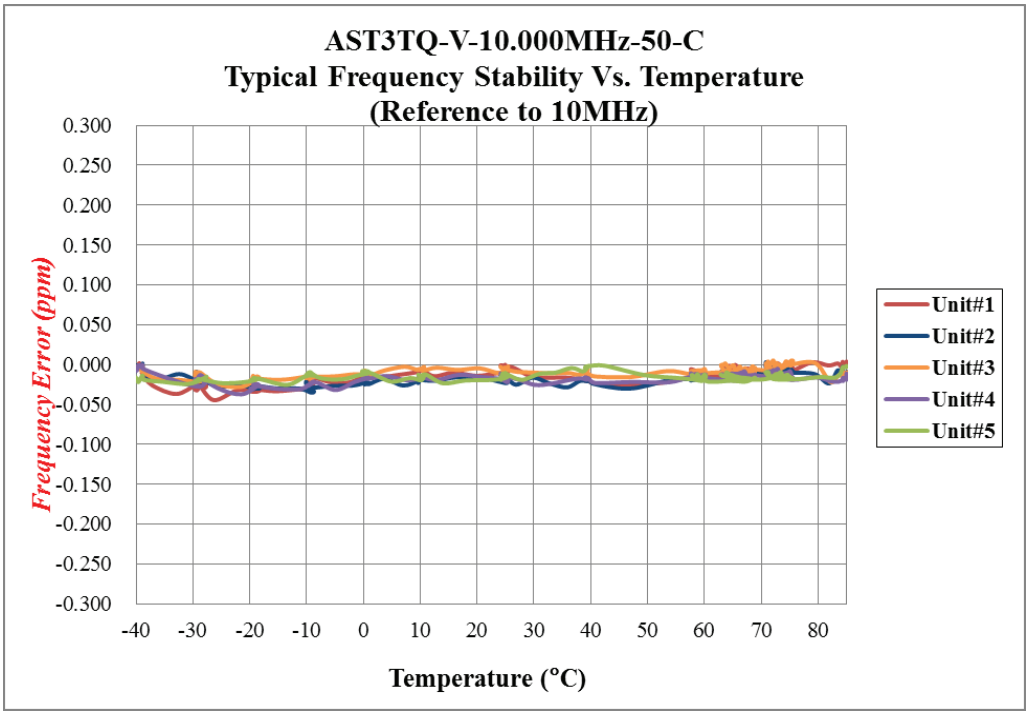
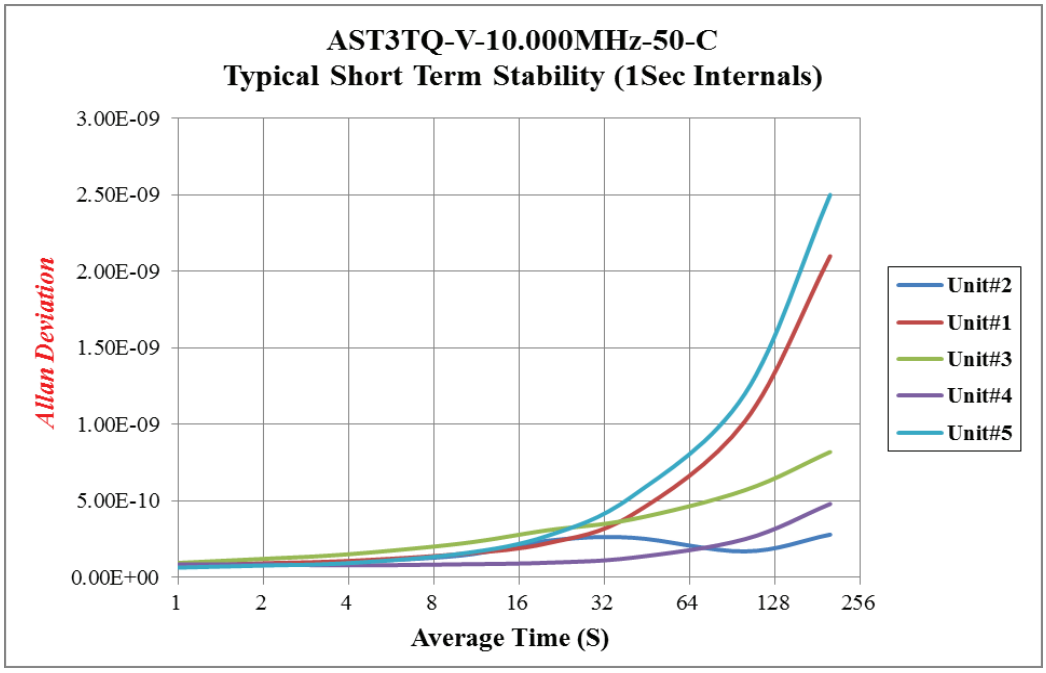


7.0 x 5.0 x 1.9mm

TYPICAL FREQUENCY STABILITY VS. TEMPERATURE



TYPICAL SHORT TERM STABILITY



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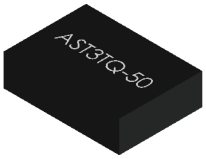
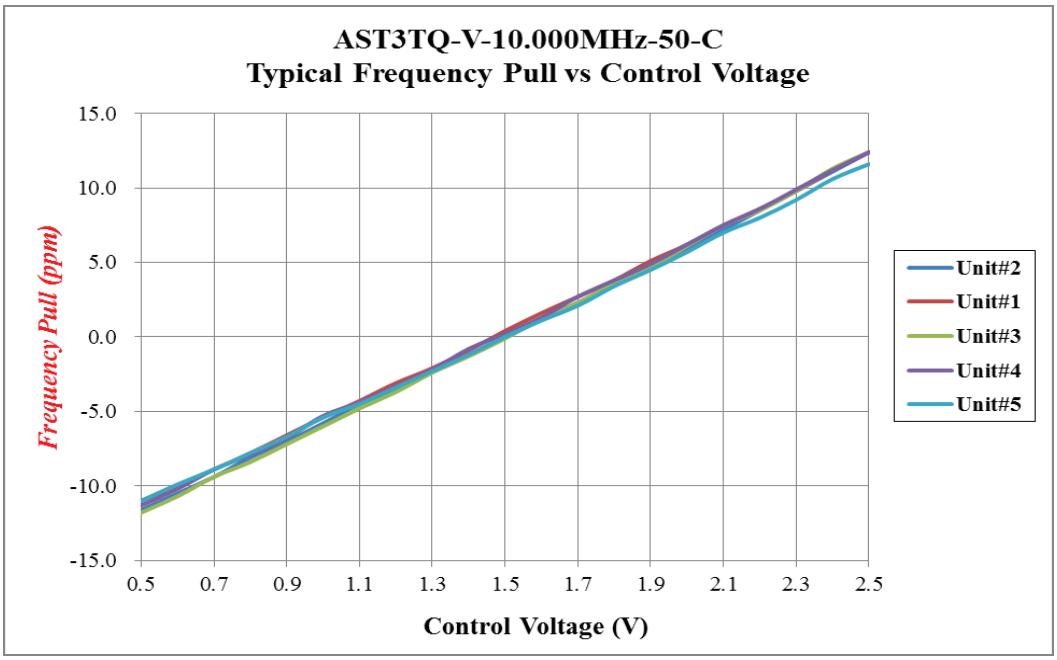


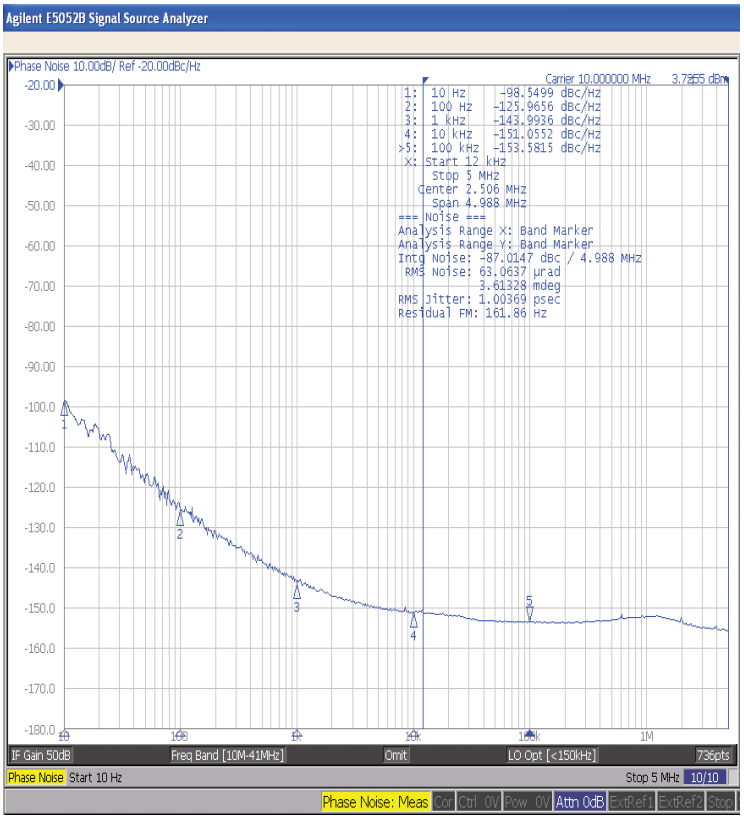
7.0 x 5.0 x 1.9mm

TYPICAL FREQUENCY PULL VS. CONTROL VOLTAGE



TYPICAL PHASE NOISE

10.00 MHz Carrier



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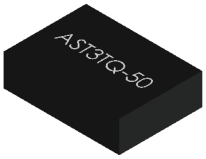
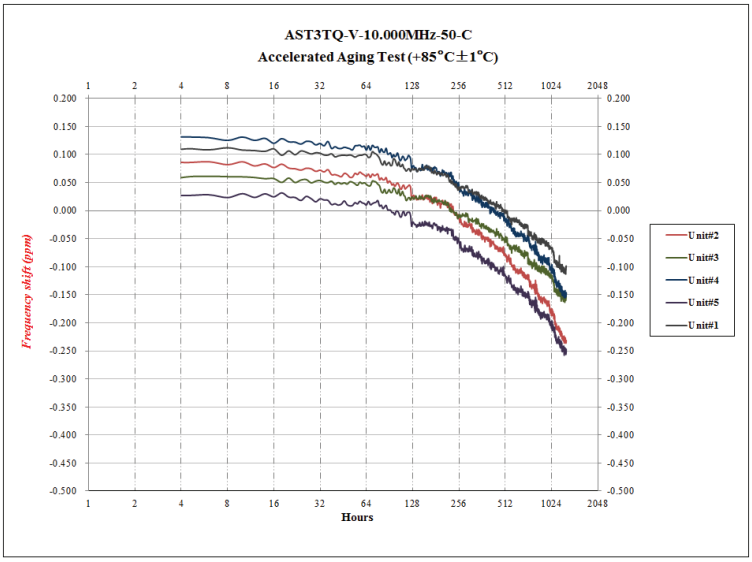


7.0 x 5.0 x 1.9mm

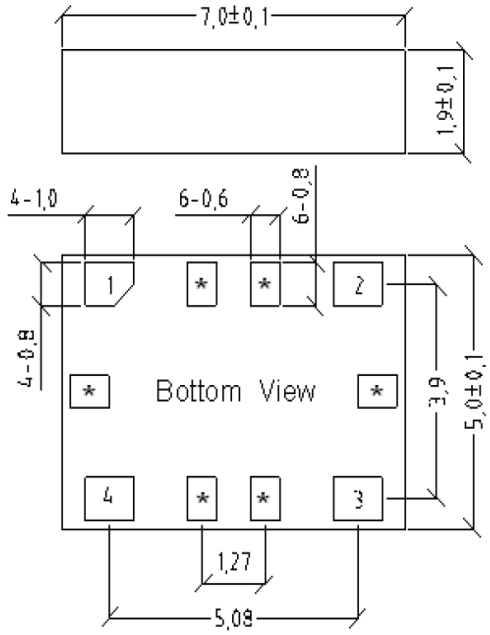
TYPICAL AGING:



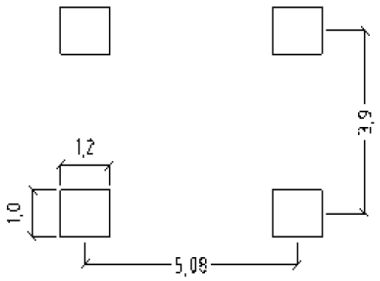
Aging Test Conditions	
Series	AST3TQ-50
Frequency	10MHz
Acquisition Mode	Cycle
Acquisition Time	1129 hours
Test Temperature	+85°C ± 1°C
Number of Samples	5pcs

Aging Data			
No.	Aging Time (hrs)	Aging/Day (ppm)	Projected Aging/year (ppm)
#1	1129	-0.0039	-0.3896
#2	1129	-0.0059	-0.5925
#3	1129	-0.0042	-0.4202
#4	1129	-0.0056	-0.5555
#5	1129	-0.0055	-0.5492

OUTLINE DIMENSION:



Recommended Land Pattern



Pin	Function
1	NC *(for TCXO)* Vc (*for VCTCXO*)
2	GND
3	Output
4	Vdd
*	For factory test only

Dimensions: mm

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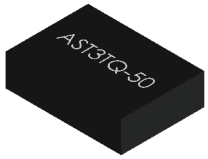
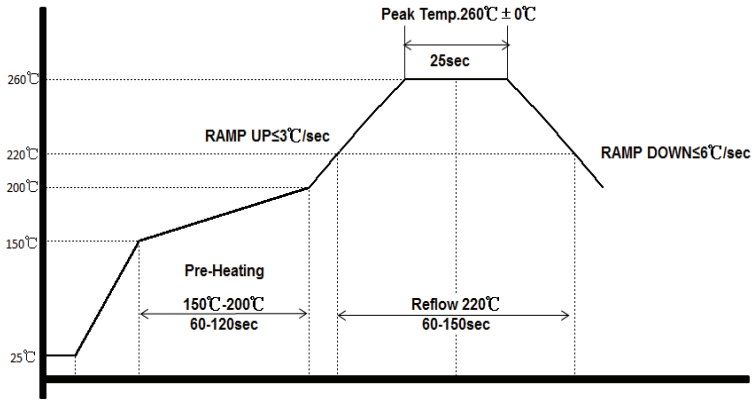


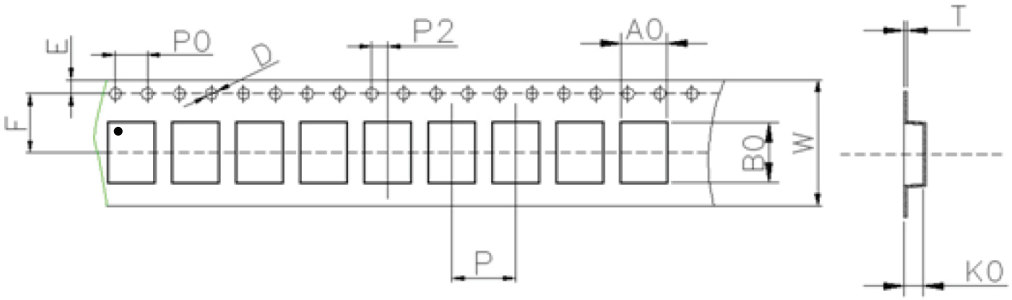
7.0 x 5.0 x 1.9mm

REFLOW PROFILE:

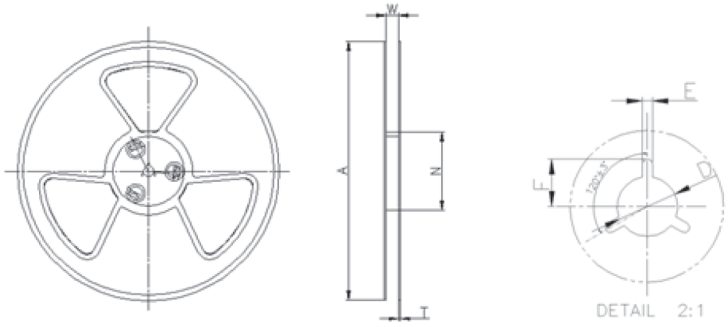


TAPE & REEL:

Packaging:
T5: 500pcs/reel
T2: 2,000pcs/reel
MSL-3 packaging applies to MOQ=25 units (cut tape) & T5 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	



Dimensions: mm

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

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