

Ultra Low Phase Noise XO / VCXO

ABLNO



RoHS Compliant



9.2 x 14.8 x 5.5 mm SMT

FEATURES:

- High "Q", 3rd Overtone Crystal Technology
- Ultra Low Phase Noise -162 dBc/Hz Typ. @ 10kHz offset, 100MHz carrier
- Standard LVC MOS RF Output
- Wide Operating Temperature (-40°C to +85°C) standard
- ± 28 ppm Max. All inclusive Stability (including Aging) over 10-years
- Available Frequency range from 50MHz to 156.25MHz
- 9.2 x 14.8mm RoHS Compliant SMT package

APPLICATIONS:

- Satellite Modem Communication Systems
- COTS - Military communications
- Avionics
- Low Phase Noise Signal Sources
- High Definition TV
- Test & Measurement
- Ultra Low Jitter RF Communication Circuitry

STANDARD SPECIFICATIONS

Parameters	Minimum	Typical	Maximum	Units	Notes
RF Output Frequency Range	50.00		156.250	MHz	
Standard Available Frequencies	50.00MHz, 80.00MHz, 81.92MHz, 92.16MHz, 96.00MHz, 98.304MHz, 100MHz, 104.00MHz, 106.25MHz, 120.00MHz, 122.88MHz, 125.00MHz, 150.00MHz, 155.52MHz & 156.250MHz				Custom frequencies available upon request
Supply Voltage (Vdd)	3.135	3.300	3.465	Volts	
Current Drain 50MHz ~ 99.999MHz 100MHz ~ 149.999MHz ≥ 150.00 MHz			25.00 35.00 40.00	mA mA mA	
Waveform	LVC MOS				
V _{OH}	0.9*Vdd			Volts	
V _{OL}			0.1*Vdd	Ω	
Symmetry	45	50	55	%	
Rise & Fall Times			3.0	ns	
Operating Temperature Range	-40		+85	°C	
Frequency Stability					
Over (-40° C to +85°C)		± 12.00	± 18.00	ppm	Relative to measured frequency @ 25°C
ALL effects, including Aging			± 28.00	ppm	
Storage Temperature Range	-40		+90	°C	
Aging					
First Year			± 2.00	ppm	
5-Years			± 5.00	ppm	
10-Years			± 7.00	ppm	
Phase Noise (50MHz Carrier)					Vdd=3.3V
@ 10 Hz offset		-90	-82	dBc/Hz	<i>Note #1 & #2</i>
@ 100 Hz offset		-120	-115	dBc/Hz	
@ 1,000 Hz offset		-145	-140	dBc/Hz	
@ 10,000 Hz offset		-165	-160	dBc/Hz	
@ 100,000 Hz offset		-166	-165	dBc/Hz	
@ 1,000,000 Hz offset		-166	-165	dBc/Hz	
rms Jitter (12kHz ~ 20MHz BW)		< 100	125	<i>Femto Seconds</i>	0.125 ps Max.



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Parameters	Minimum	Typical	Maximum	Units	Notes
Phase Noise (100MHz Carrier)					
					Vdd=3.3V
@ 10 Hz offset		-88	-82	dBc/Hz	<i>Note #1 & #2</i>
@ 100 Hz offset		-118	-115	dBc/Hz	
@ 1,000 Hz offset		-141	-138	dBc/Hz	
@ 10,000 Hz offset		-160	-155	dBc/Hz	
@ 100,000 Hz offset		-161	-160	dBc/Hz	
@ 1,000,000 Hz offset		-165	-160	dBc/Hz	
rms Jitter (12kHz ~ 20MHz BW)		< 50	75	<i>Femto Seconds</i>	0.075 ps Max.
Phase Noise (156.25MHz Carrier)					
					Vdd=3.3V
@ 10 Hz offset		-75	-70	dBc/Hz	<i>Note #1 & #2</i>
@ 100 Hz offset		-110	-105	dBc/Hz	
@ 1,000 Hz offset		-140	-135	dBc/Hz	
@ 10,000 Hz offset		-155	-150	dBc/Hz	
@ 100,000 Hz offset		-161	-160	dBc/Hz	
@ 1,000,000 Hz offset		-165	-160	dBc/Hz	
rms Jitter (12kHz ~ 20MHz BW)		< 50	75	<i>Femto Seconds</i>	0.075 ps Max.
Electrical Frequency Adjustment					
Control Voltage Range (Vc)	0.0	1.65	3.30	Volts	
Frequency Pull Range	±28.00		±55.00	ppm	Referenced to the carrier
Frequency Pull Slope		Positive			
Control Voltage Port Impedance	10			kΩ	
Control Port Linearity			±10	%	

Note #1: Maximum Phase Noise is verified on 100% of the parts at 25°C ± 3°C.

Note #2: The above specified Phase Noise & Jitter is with the oscillator device configured as a VCXO. In XO configuration, the Phase Noise will be slightly better at each offset between 10Hz and 10 kHz, by approximately -3dB to -5dB.



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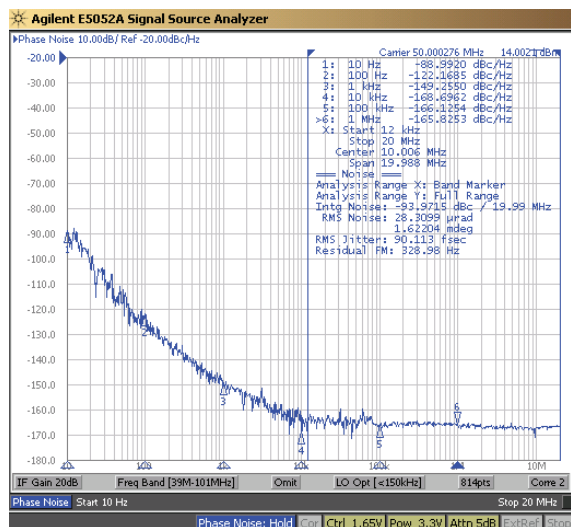


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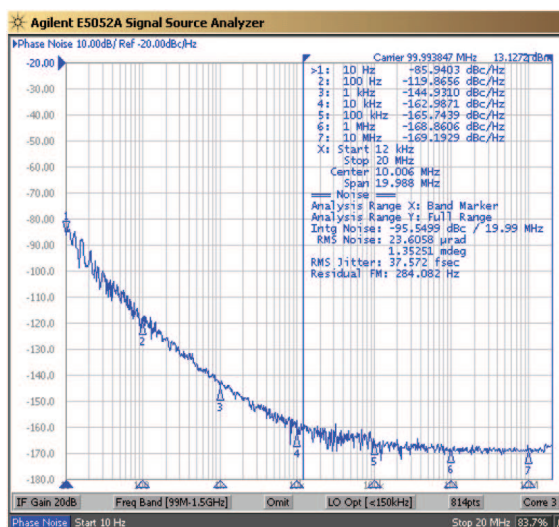


9.2 x 14.8 x 5.5 mm SMT

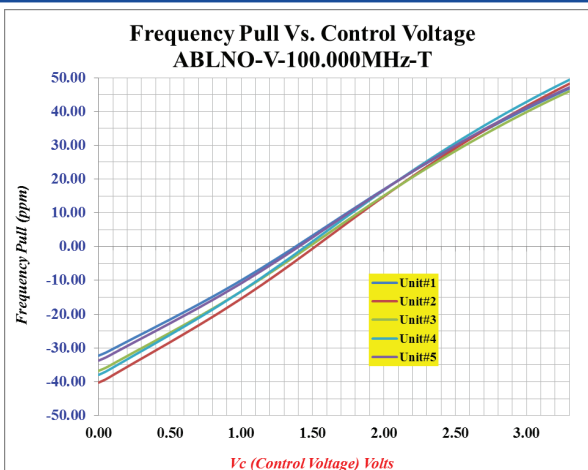
TYPICAL PHASE NOISE PERFORMANCE @ 50.00 MHz CARRIER



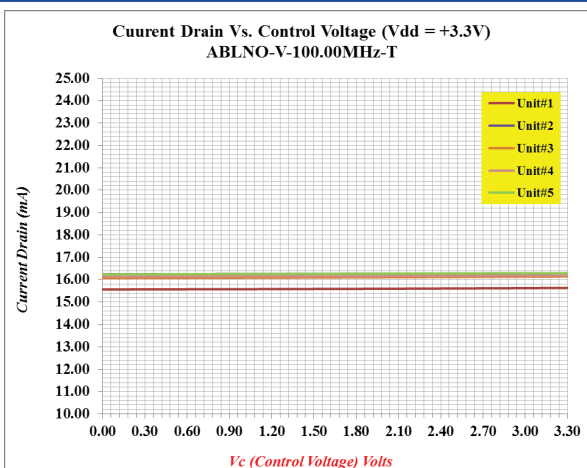
TYPICAL PHASE NOISE PERFORMANCE @ 100.00 MHz CARRIER



FREQUENCY PULL VERSUS CONTROL VOLTAGE (REFERENCED TO 100.000MHz)



CURRENT DRAIN VERSUS CONTROL VOLTAGE @ VDD = +3.3V



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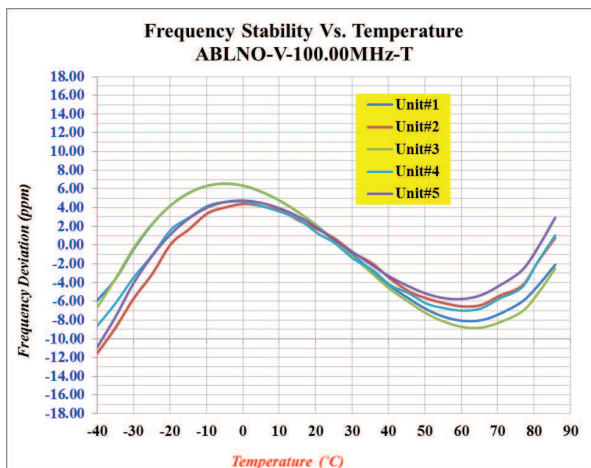


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FREQUENCY STABILITY VS. TEMPERATURE @ VDD = +3.3V (REFERENCED TO MEASURED FREQUENCY @ 25°C)



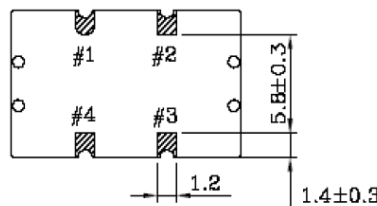
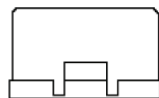
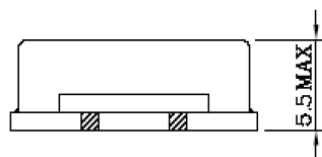
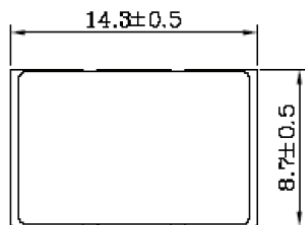
PART IDENTIFICATION:

ABLNO - Frequency (MHz) -

Fixed Clock Vs. VCXO Option	
Blank	Fixed Clock Oscillator
V	VCXO (± 28 ppm min. Pull)

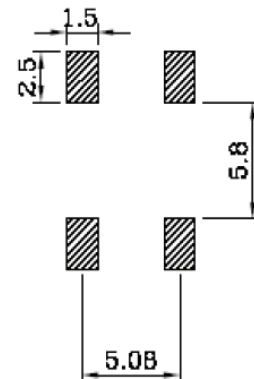
Tape & Reel Options	
Blank	< 250 units on cut tape
T2	250 units per reel
T	1,000 units per reel

OUTLINE DIMENSIONS:



Pin #	Functionality
1	Voltage Control (Vc) for VCXO No Connect (N/C) for XO
2	Ground
3	RF Output
4	Vdd

Recommended Land Pattern



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4°C/sec max

PRE-HEATING 183°C

60~120Sec

4°C/sec max

Reflow 260°C max

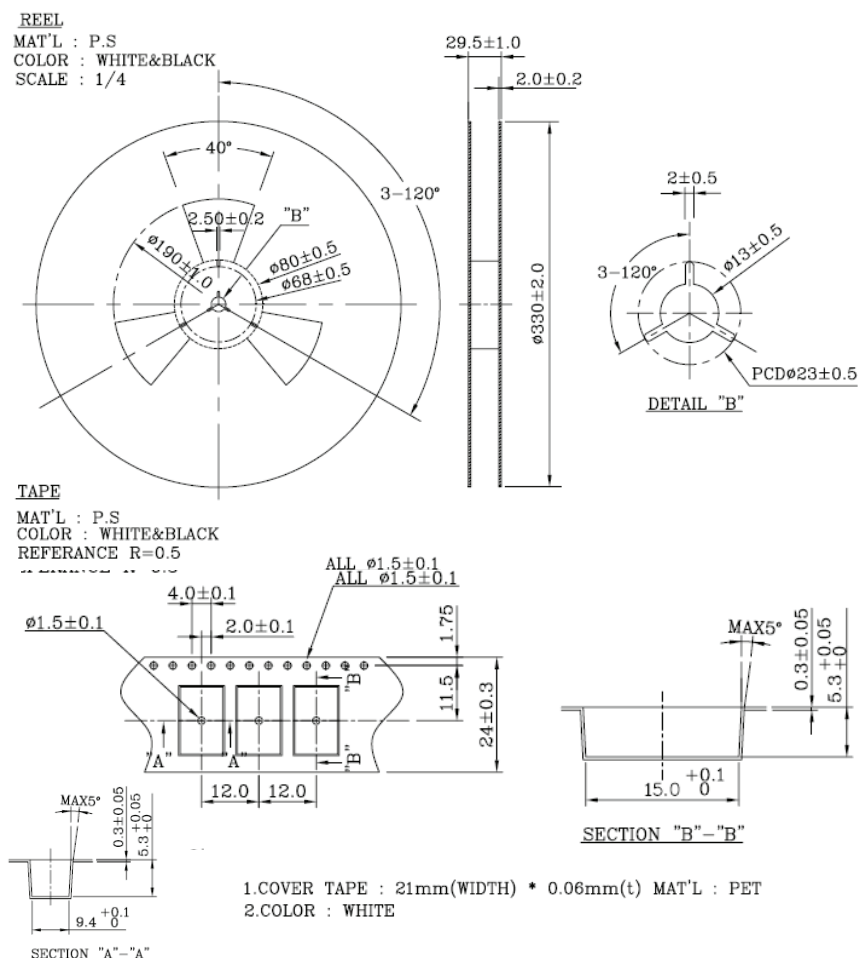
10Sec

Cooling

TOTAL TIME 210 Sec MAX

SOLDER MELTING FUSED 220°C

(1,000) units per reel standard, (250) units per reel available (option # T2)



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