



# Crystal Oscillator

## CXO 301

### Features

- All metal welded package
- Wide frequency range from 1 MHz ~ 70 MHz
- HCMOS/ TTL compatible in general application
- Random Vibration: Operating

### Mechanical Specifications

	ALL 14 PINS	4 PINS
Top View		
Front View		
Bottom View		

▲ All dimensions are in mm. Tolerance is ± 0.1 mm, unless otherwise specified. Sharp edges indicates Pin 1.

Pin Configuration for Full Size-DIL 14	
1	No Connection (or) E/ D Control (Optional)
7	Ground
8	Output
14	DC Input

**Table 1: Electrical Specifications**

Parameters	Variant	
	HCMOS	TTL
Series:	CXO-301 (DIL14)	
Frequency Range:	1 MHz ~ 70 MHz	
Output Drive:	50 pF (max.) 10 TTL gates for < 20 MHz 6 TTL gates > 20 MHz	
Logic Levels:	'0' = 0.4 V (max.) '1' = 2.4 V (min.) '0' = 0.1 Vcc (max.) '1' = 0.9 Vcc (min.)	
Rise/ Fall Time:	10 ns (max.) (Between Logic '0' & Logic '1' Level)	
Start up Time:	10 ms (max.)	
Duty Cycle:	40% to 60% @ 1.4 V dc 40% to 60% @ ½ Vcc	
Output Waveform:	Square Wave	
Frequency Stability: with respect to (25°C ± 2°C)	Select from Table 2	
Operating Temperature Range (OTR):	Select from Table 2	
Supply Current: For 5 Volts,	30 mA (max.) (256 KHz ~ 24 MHz) 40 mA (max.) (24 MHz ~ 50 MHz) 50 mA (max.) (50 MHz ~ 70 MHz)	
Supply Current: For 3.3 Volts,	15 mA (max.) (256 KHz ~ 24 MHz) 20 mA (max.) (24 MHz ~ 50 MHz) 25 mA (max.) (50 MHz ~ 70 MHz)	
Tristate Function:	Output is Enabled when Pin 1 is 2 V dc (min.) or 'Open' Output is Disabled when Pin 1 is 0.8 V dc (max.) or Ground	
Aging @ 25°C:	± 5 ppm (max.) for First Year	
Storage Temperature Range:	-55°C to +125°C	

■ Standard, □ Optional – please specify required code(s) when ordering.

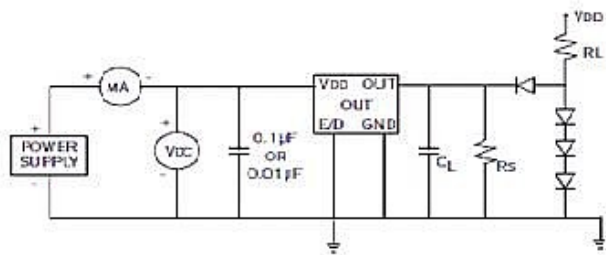
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**Table 2: Frequency Stability/ OTR Code**

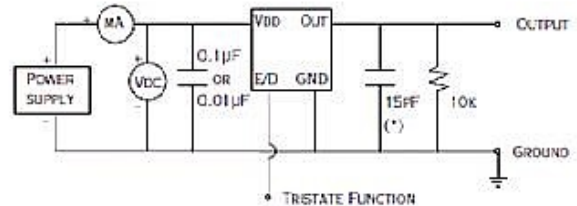
OTR Code	Stability Codes		D	E	F	G	M	K
	Frequency Stability		± 10 ppm	± 15 ppm	± 20 ppm	± 25 ppm	± 50 ppm	± 100 ppm
A	Operating Temperature Range	0°C to +50°C	■	■	■	■	■	■
B		0°C to +60°C	■	■	■	■	■	■
F		0°C to +70°C	■	■	■	■	■	■
D		-10°C to +60°C	■	■	■	■	■	■
E		-10°C to +70°C	■	■	■	■	■	■
C		-20°C to +70°C	■	■	■	■	■	■
G		-30°C to +80°C	□	□	■	■	■	■
H		-30°C to +85°C	□	□	■	■	■	■
I		-40°C to +85°C	□	□	■	■	■	■
J		-40°C to +90°C	□	□	■	■	■	■
K		-55°C to +105°C	□	□	■	■	■	■
L		-55°C to +125°C	□	□	■	■	■	■

■ Denotes Available □ Denotes not Available

**Typical Test Circuit For TTL Logic**



**Typical Test Circuit For HCMOS Logic**



(\*CL INCLUDES PROBE AND JIG CAPACITANCE

(\*CL INCLUDES THE LOADING EFFECT OF THE OSCILLOSCOPE PROBE

LOAD	CL(*)	RL	RS
6 TTL	12 pF	430 Ω	10 kΩ
10 TTL	20 pF	270 Ω	6 kΩ

**Marking Details:**

Example 1: CXO301LMN001M000000A5T  
 AE CXO 301 LM  
 1.000 MHz  
 A5T YEARWEEK SI.No.  
 Example 2: CXO301LMT001M000000A5T  
 AE CXO 301 LMT  
 1.000 MHz  
 A5T YEARWEEK SI.No.

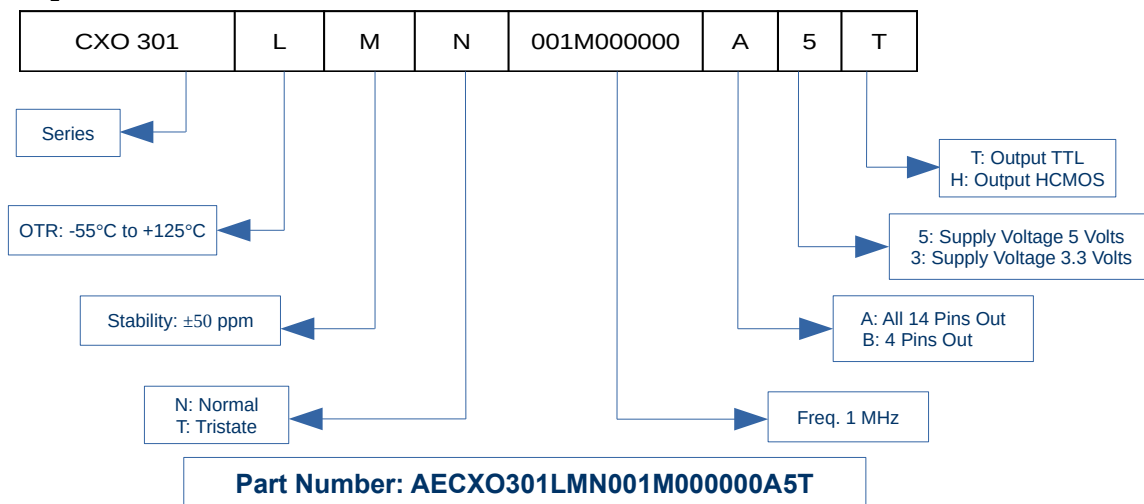
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## SCREENING TESTS

TEST DESCRIPTION	TEST CONDITION
External visual inspection	Visually inspect the device by using 40X Magnification for contact, body damages, marking etc.
Initial electrical measurements	Measure all the electrical parameters as per the device specifications and shall meet the requirements (tolerance limits) as per the device specifications.
Thermal shock (non operating)	MIL-STD-202, method 107, condition A1 -40°C+0,-3---1/2hr 25°C+10,-5---5mins max 85°C+3,-0-----1/2hr 25°C+10,-5-----5mins max No. of cycles: 25
Electrical test:	MIL-PRF-55310E-Methods Measure all the electrical parameters as per the device specifications and shall meet the requirements (tolerance limits) as per the device specifications.
Burn-in (load)	Maximum specified operating temperature, nominal supply voltage and burn – in load, 160 hours minimum
Electrical test:	MIL-PRF-55310E-Methods Measure all the electrical parameters as per the device specifications and shall meet the requirements (tolerance limits) as per the device specifications.
Random Vibration	Level: 0.2g2/Hz Frequency: 20-2000Hz Duration: 360 seconds No. of axes: Critical single axis (Z axis) (Note: the response on the device should not exceed 1.5 times the input value)
Seal test	MIL-STD-202, method 112 a. Fine leak: (1) Test condition C. b. Gross leak: Test condition D.

## Ordering Information

### Example



Specifications subject to change without notice

Rev. Date: 22<sup>nd</sup> March 2021

Note: Not all combination of options are available. Other specifications may be available upon request.

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