

- Miniature 7.0 x 5.0 x 1.4mm hermetically-sealed package
- Frequency Range 500kHz to 125MHz
- Tristate (Enable/Disable) function as standard
- Supply voltage range 1.8, 2.5, 3.3 or 5.0 Volts



### DESCRIPTION

XO91 miniature oscillators consist of a TTL/CMOS-compatible hybrid circuit together with a miniature quartz crystal packaged in a low-profile, industry-standard ceramic package. The high quality design and materials employed provide a highly reliable clock oscillator in a miniature package while mass production methods ensure that the XO91 provides a cost-effective oscillator solution.

### SPECIFICATION

Frequency Range:	500kHz to 125.0MHz
Supply Voltage:	1.8, 2.5, 3.3 or 5.0 Volts $\pm 10\%$
Output Logic:	HCMOS/LSTTL
Frequency Stability*	
Temperature Range	Stability
0° to +50°C:	from $\pm 10$ ppm
-20° to +70°C:	from $\pm 15$ ppm
-40 to +85°C:	from $\pm 25$ ppm
-55° to +105°C:	from $\pm 100$ ppm
Rise/Fall Time:	see table
Output Voltage:	
HIGH '1':	90%V <sub>dd</sub> minimum
LOW '0':	10%V <sub>dd</sub> maximum
Output Load	
CMOS:	15pF (50pF available)
TTL:	10 LSTTL loads
Duty Cycle:	50% $\pm 5\%$ typical
Supply Current:	See table
Operating Temperature	
	0~50°C (Light Commercial)
	0~70°C (Commercial)
	-40~+85 (Industrial)
	-55~+105°C (Military)
Storage Temperature:	-55~+105°C
Startup Time	
500kHz to 32MHz:	5ms max.
32MHz+ to 125MHz:	10ms max.
	(to reach 90% amplitude at 25 $\pm 2$ °C)
Ageing:	$\pm 5$ ppm max. In first year
Phase Jitter RMS:	< 1ps typical
Enable Time:	100ms max.
Disable Time:	100ns max.
Tristate Function (Pad 1):	
	Output (Pad 3) is active if Pad 1 is not connected or a voltage to Pad 1 is 'HIGH'. Output is high impedance when 'LOW' or GROUND is applied to Pad 1.

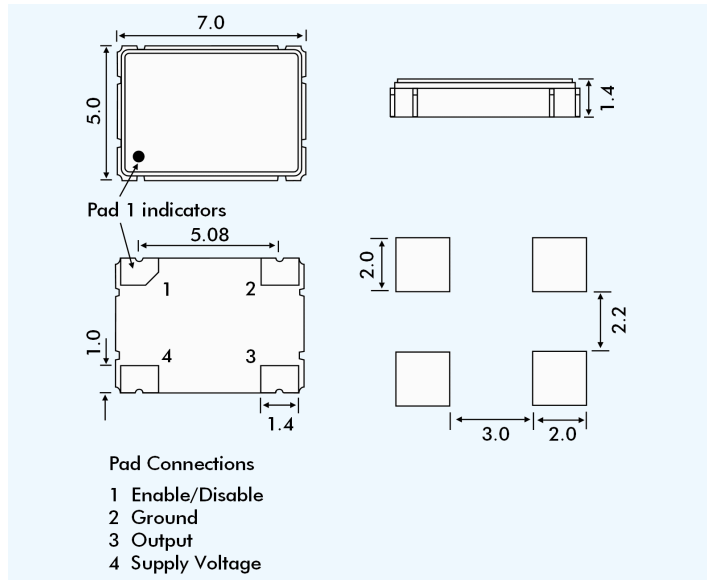
\* Frequency stability is inclusive of calibration tolerance at 25°C, frequency change due to shock & vibration,  $\pm 10$  supply voltage variation and stability over temperature range.

Note: Parameters are measured at ambient temperature of 25°C, supply voltage as stated and a load of 15pF

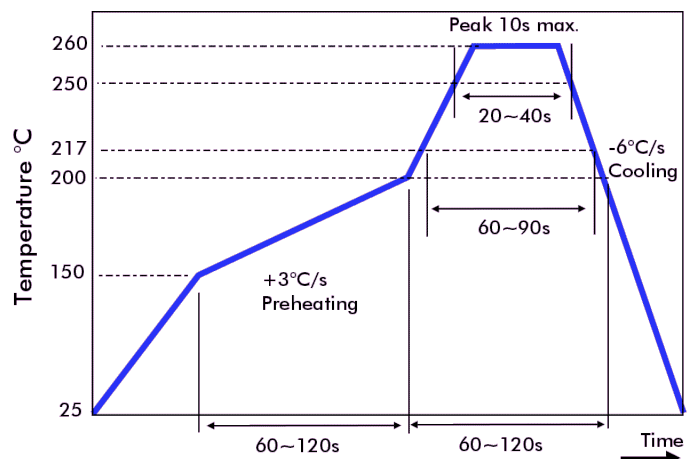
### CURRENT CONSUMPTION & RISE/FALL TIME

Frequency Range	Supply Voltage ( $\pm 10\%$ )				Rise/Fall Time
	+1.8V	+2.5V	+3.3V	+5.0V	
500kHz to 32MHz	8mA	10mA	15mA	25mA	4ns max.
32MHz+ to 50MHz	10mA	14mA	16.5mA	35mA	3ns max.
40MHz+ to 125MHz	25mA	30mA	35mA	40mA	2ns max.

### OUTLINE & DIMENSIONS



### SOLDER TEMPERATURE PROFILE



**ENVIRONMENTAL PERFORMANCE SPECIFICATION**

RoHS Status:	Compliant
Storage Temperature Range:	-50° to +100°C
Humidity:	85% RH, 85°C for 48 hours
Hermetic Seal:	Leak rate $2 \times 10^{-8}$ ATM $\cdot$ cm <sup>3</sup> /s max.
Solderability:	MIL-STD-202F Method 208E
Reflow:	260°C for 10 sec (see diagram)
Vibration:	MIL-STD-202F Method 204, 35g, 50 to 2000Hz
Shock:	MIL-STD-202F Method 213B, test Condition E, 1000g $\frac{1}{2}$ sinewave

**PART NUMBERING**

Example: **16.000MHz XO91050UCTA**

Frequency	16.000MHz
Series Designation	XO91
Stability*	050
Output Universal	U
Operating Temp. Range	C
Tristate Function	T
Supply Voltage	A

100 =  $\pm 100$ ppm  
50 =  $\pm 50$ ppm  
25 =  $\pm 25$ ppm  
C = 0~+70°C  
D = -20~+70°C  
I = -40~+85°C  
M = -55~+105°C  
Blank = 5.0 Volts  
A = 3.3 Volts  
B = 2.5 Volts  
C = 1.8 Volts

\* For other stability requirements enter figure required.