



Crystal Clock Oscillator — Low Power CMOS

by SaRonix

Technical Data

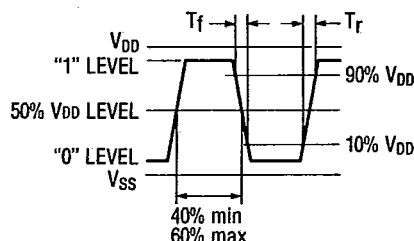
Ref. No. **Series M**
 Date **May 1988**
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Description

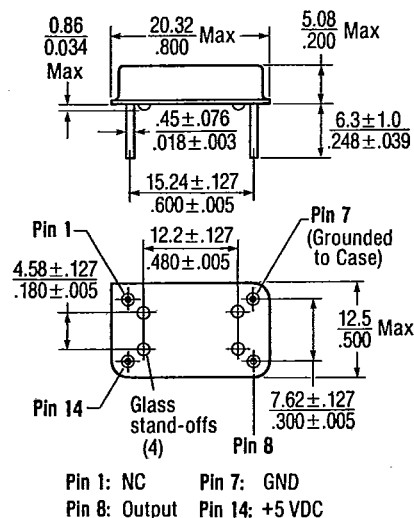
A crystal controlled, highly accurate and stable CMOS compatible oscillator. Device features include low power consumption, low aging, and a hermetically sealed all metal package.

(See "32.768 kHz CMOS" data sheet for real time applications.)

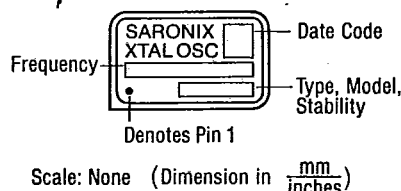
Output Waveform



Package



Standard Marking Format



Frequency Range: 10 kHz - 2.000000 MHz

Frequency Tolerance:

Freq. Range kHz	AA	A	B	C
10-74.9	±0.001%	±0.003%	±0.010%	±0.100%
75-169	±0.003%	±0.005%	±0.010%	±0.100%
170-249	±0.005%	±0.010%	±0.020%	±0.200%
250-499	±0.010%	±0.020%	±0.050%	±0.500%
500-2000	±0.025%	±0.050%	±0.100%	±1.000%

Temperature Characteristic:

$\Delta f/f = K (T_0 - T)^2$ where $T =$ point of temperature comparison, $K = -0.038 \text{ ppm}/^\circ\text{C}^2 \text{ typ.}$

Temperature Range:

Operating: -20°C to $+70^\circ\text{C}$
 Storage: -30°C to $+85^\circ\text{C}$

Input Voltage:

Rated: $+5 \text{ VDC} \pm 10\%$
 Operating: $+3 \text{ VDC min.} + 10 \text{ VDC max.}$

Input Current @ +5.0V:

40 μA typical @ 40.0000 kHz

CMOS Output:

Symmetry: $50\% \pm 10\%$ at $50\% V_{DD}$
 Rise & Fall Times: 40 ns typical, 60 ns max.
 "0" Level: $V_{SS} + 0.5 \text{ V max.}$
 "1" Level: $V_{DD} - 0.5 \text{ V min.}$
 Output Load: 200 k Ω at 15 pF

Mechanical:

Shock: MIL-STD-883C, Method 2002.3, Condition B
 Solderability: MIL-STD-883C, Method 2003.5
 Terminal Strength: MIL-STD-202F, Method 211A, Conditions A and C
 Vibration: MIL-STD-883C, Method 2007.1, Condition A
 Solvent Resistance: MIL-STD-202F, Method 215C
 Resistance to Soldering Heat: MIL-STD-202F, Method 210A, Condition B

Environmental:

Gross Leak Test: MIL-STD-883C, Method 1014.8, Condition C1
 Fine Leak Test: MIL-STD-883C, Method 1014.8, Condition A2, $< 5 \times 10^{-8} \text{ ATM cc/sec.}$
 Thermal Shock: MIL-STD-883C, Method 1011.7, Condition A
 Moisture Resistance: MIL-STD-883C, Method 1004.6

Part Numbering Guide

Type **NCL** 020 C-100.0000
 Model 020 10 kHz to 250 kHz
 030 250 + kHz to 2.0000 MHz
 Frequency in kHz
 Frequency Tolerance (see table above)