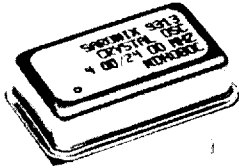


### Technical Data

NPH / NDH Series



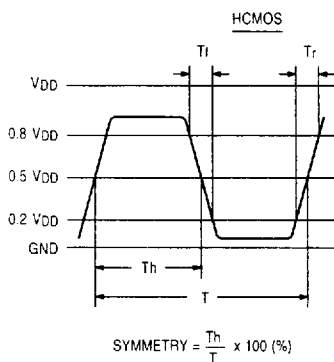
### Description

A crystal controlled clock oscillator with two dependent or independent frequency HCMOS outputs in one package. This device allows for a choice of any two exact frequencies. Each unit contains an internal by-pass supply capacitor which minimizes "cross-talk" and EMI.

### Applications & Features

- NPH provides two independent frequencies on two outputs in one package
- NDH provides two dependent frequencies on two outputs in one package. The two frequencies can have a ratio of 2, 4, 8, 16, 64 or 128
- CMOS and TTL compatible
- Saves board space, power and cost over two oscillator packages.

### Output Waveform



**Frequency Range:** 250 kHz to 80 MHz ( NPH )  
250 kHz to 30 MHz ( NDH )

**Frequency Stability:** ±25, ±50 or ±100 ppm over all conditions: calibration tolerance, operating temperature, input voltage change, load change, aging, shock and vibration.

**Temperature Range:**  
Operating: 0°C to +70°C  
Storage: -55°C to +125°C

**Supply Voltage:**  
Rated: +5 VDC ±10%  
Operating: +7 VDC max

**Supply Current:**

per output	typ	max
to 24 MHz	10	20
24 ~ 60 MHz	20	35
60 MHz up	30	45

For total current, add current of both outputs.

**Dual Output:**

Symmetry: 50% ±5% at 50% VDD  
 Rise & Fall Times: Tr = 4 ns max, Tr = 4 ns max  
 "0" Level: VSS +0.5V max  
 "1" Level: VDD -0.5V min  
 Output Load: 50 pF max to 50 MHz, 30 pF > 50 MHz

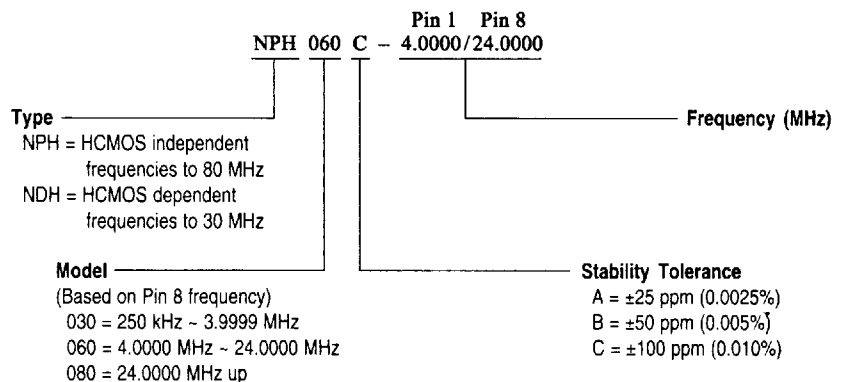
**Mechanical:**

Shock: MIL-STD-883, Method 2002, Condition B  
 Solderability: MIL-STD-883, Method 2003  
 Terminal Strength: MIL-STD-202, Method 211, Conditions A and C  
 Vibration: MIL-STD-883, Method 2007, Condition A  
 Solvent Resistance: MIL-STD-202, Method 215  
 Resistance to Soldering Heat: MIL-STD-202, Method 210, Condition B

**Environmental:**

Gross Leak Test: MIL-STD-883, Method 1014, Condition C  
 Fine Leak Test: MIL-STD-883, Method 1014, Condition A2  
 <math>5 \times 10^{-8}</math> ATM cc/sec  
 Thermal Shock: MIL-STD-883, Method 1011, Condition A  
 Moisture Resistance: MIL-STD-883, Method 1004

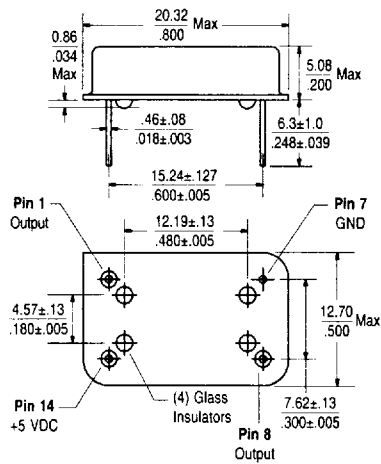
### Part Numbering Guide



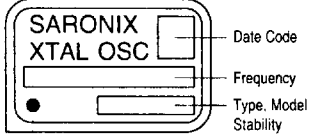
### Technical Data

NPH / NDH Series

#### Package Details



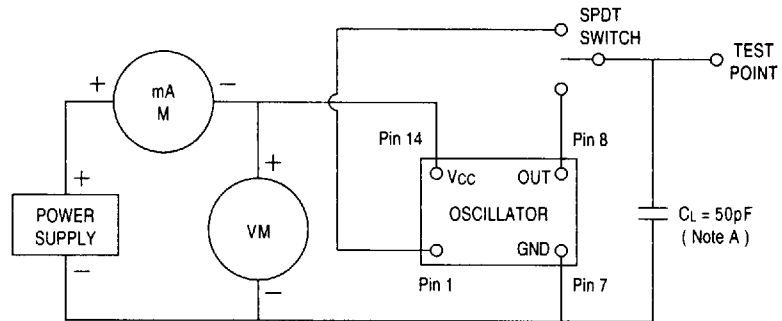
#### Standard Marking Format



Denotes Pin 1

Scale: None (Dimensions in  $\frac{mm}{inches}$ )

#### Test Circuit



NOTE A:  $C_L$  includes probe and fixture capacitance  
50 pF to 50 MHz, 30 pF > 50 MHz

All specifications are subject to change without notice.

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