

# Crystal Oscillator

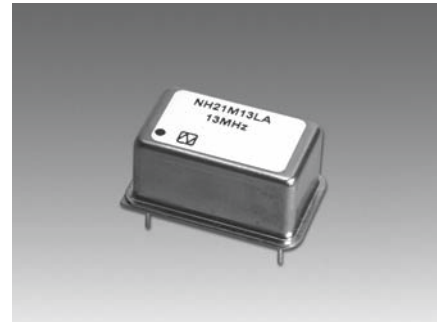
## Model Name NH21M13LA Oven-Controlled Crystal Oscillator (OCXO) for Fixed Communication Equipment

### Main Application

- Mobile communication base station
- Measuring instrument
- Synthesizer
- Exchanger
- High-end router

### Features

- Compact, with a low height. (Compatible with 14-pin Dip)
- Excellent rise characteristics.
- Excellent phase noise characteristics.
- Excellent aging characteristics.
- Excellent short-term stability  
(can be used instead of a TCXO because of its higher precision).



**RoHS Compliant**  
Directive 2002/95/EC

### Specifications

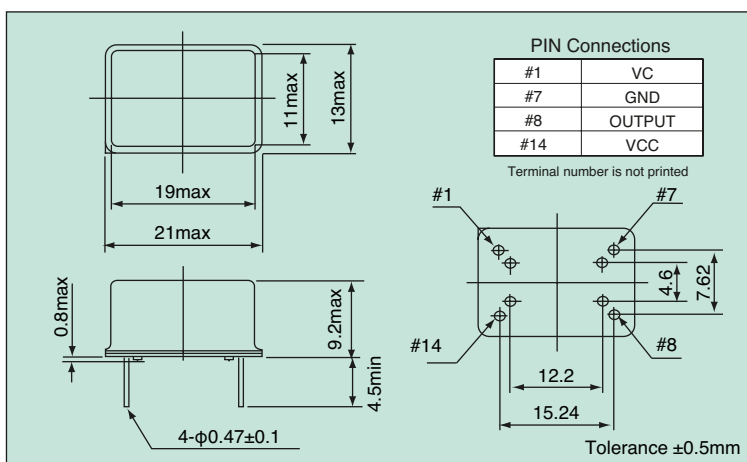
Item	Measurement condition	Model	NH21M13LA
Standard nominal frequency (MHz)			10, 13
Power supply voltage			DC +12V
Power consumption			2 W max. at start and 1.1 W max. when stable (+25°C)
Output level			HC MOS ( $V_{OL}$ : 0.5V max., $V_{OH}$ : 4.5V min.)
Load			15pF
Duty Cycle (+2.5V)			45 to 55%
Operating temperature range			0 to +70°C
Frequency stability	Frequency warm-up characteristic	+25°C five minutes after power is on	$\pm 500 \times 10^{-9}$ max.
	Aging	Based on frequency after 30 days operation	$\pm 10 \times 10^{-9}$ /day max.
		Based on frequency after 30 days operation	$\pm 500 \times 10^{-9}$ /year max.
	Frequency / temperature characteristic	0 to +70°C	$\pm 100 \times 10^{-9}$ max.
	Power supply variation characteristics	DC +12V $\pm 5\%$	$\pm 50 \times 10^{-9}$ max.
Frequency control characteristic	0 to +9 V, positive polarity		$\pm 6 \times 10^{-6}$ min.

### Reference Value

Phase noise (@13MHz)	Offset frequency	dBc/Hz
	1 Hz	-70 max.
	10 Hz	-100 max.
	100 Hz	-120 max.
	1k Hz	-140 max.
	10k Hz	-140 max.

The value of phase noise changes when the frequency changes.

### Dimensions



### List of Options

Power supply voltage	DC +3.3V, +5.0V
Nominal frequency (MHz)	10 to 38.88

For details of options, please feel free to contact our sales representatives.

### List of Ordering Codes

Frequency (MHz)	Ordering Code
10	NH21M13LA-10M-NSA3416A
13	NH21M13LA-13M-NSA3416A

The above frequencies are NDK's standard frequencies. Frequencies other than the above are available. Feel free to contact our sales representatives.