

# Crystal Oscillator

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

### Main Application

- Mobile communication base station
- Exchanger
- Measuring instrument
- Synthesizer
- 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

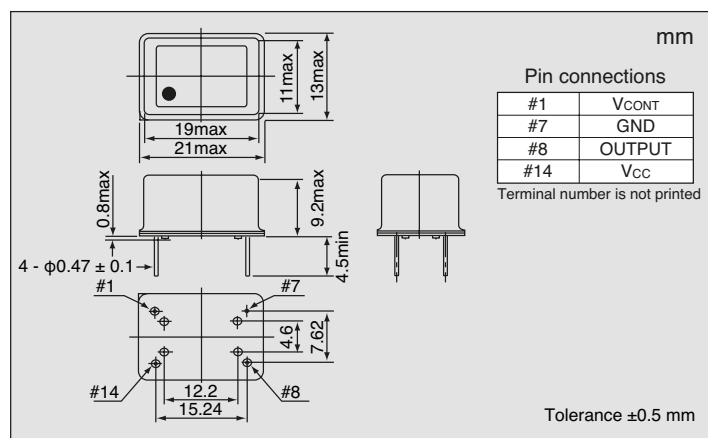
Item	Measurement condition	Model	NH21M13LA
Nominal frequency (MHz)			10, 13
Supply voltage [V <sub>CC</sub> ] (V)			+12 ±5 %
Power consumption (W)	at start		Max. 2
	when stable (+25 °C)		Max. 1.1
Output voltage			HCMOS level (V <sub>OL</sub> Max. 0.5 V, V <sub>OH</sub> Min. 4.5 V)
Symmetry (%)	at +2.5 V		40 to 60
Load impedance (pF)			15
Operating temperature range (°C)			0 to +70
Frequency tolerance	Stabilization time	Stabilization Time (Frequency Stability) within ±500 ×10 <sup>-9</sup> after power on at +25°C, based on frequency after 60minutes operation.	5 minutes
	Long-term frequency stability	Based on frequency after 30 days operation	Max. ±10×10 <sup>-9</sup> /day
		Based on frequency after 30 days operation	Max. ±500×10 <sup>-9</sup> /year
	Frequency/Temperature characteristics	0 °C to +70 °C	Max. ±100×10 <sup>-9</sup>
Frequency/Voltage coefficient	V <sub>CC</sub> +12 V ±5 %	Max. ±50×10 <sup>-9</sup>	
Frequency control range	+4.5 ±4.5 V		Min. ±6×10 <sup>-6</sup>
Frequency change polarity			Positive

### Reference Value

Phase noise (at 13 MHz)	Offset frequency	dBc/Hz
	1 Hz	Max. -70
	10 Hz	Max. -100
	100 Hz	Max. -120
	1 kHz	Max. -140
	10 kHz	Max. -140

The value of phase noise changes when the frequency changes.

### Dimensions



### List of Options

Power supply voltage [V <sub>CC</sub> ] (V)	+3.3, +5
Nominal frequency range (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.