



March 11th, 2024
Nihon Dempa Kogyo Co., Ltd.

The industry's smallest class ^(*1) 2016-size small differential output crystal oscillator

Nihon Dempa Kogyo Co., Ltd. has developed a differential-output crystal oscillator that realizes $2.0 \times 1.6 \times 0.7\text{mm}$ for small optical communication modules.

We have begun shipping samples from February 2024.

In recent years, with the development of network systems such as the fifth generation mobile communication system (5G), communication traffic has increased, and infrastructure facilities such as data centers are becoming faster and larger in capacity.

In addition, with the rapid demand for higher-capacity applications, mainly for AI and machine-learning, optical transmission modules in data-centers are shifting from 800Gbps to 1.6Tbps for high-speed standards. As a reference clock source for high-speed transmission, demand for crystals products are expected to continue to grow.

As optical transmission modules become smaller and faster, the number of components increases and the size of circuit boards decreases. As a result, smaller components are required for surface mount components, and the temperature inside the modules that handle high-speed, large-capacity data rises. As a result, there is an increasing demand for reliable performance that can withstand high temperatures.

Also, for high-speed data communication quality, a reference clock source with low phase jitter ^(*2) is required.

Against this background, we have developed high-frequency crystal resonator for high-temperature applications, developed compact IC and small packages with low phase jitter, and developed the industry's smallest $2.0\text{mm} \times 1.6\text{mm}$ size low jitter differential-output oscillator for high-temperature 105°C .

We also handle differential output crystal oscillators in 3225 size and 2520 size. The characteristics are as excellent as the developed product, so if you are in trouble with the existing circuit, we will propose a solution without size change.

We will continue to contribute to the realization of a safe, secure, and comfortable society through our crystal device business, with a lineup of products that achieve further miniaturization, higher frequency, and lower noise.

(*1) Our survey as of March 2024

(*2) Shift or fluctuation of the time axis that occurs in the waveform when a digital signal is transmitted

[Sample and mass production]

Mass production is scheduled to begin in January 2025 while the sample is being handled.

[Product appearance]



{ Specification }

Model Number	NP2016SA	NP2016SB
Output waveform	LVPECL	LVDS
Dimension	2.0 × 1.6 × 0.7 mm	
Nominal frequency range	100MHz ~ 170MHz	
Operating temperature range	-40°C ~ +105°C	
Phase jitter	Typ.70 fs	
Total frequency tolerance	Max. ± 50 × 10 ⁻⁶	
Power supply voltage[V _{CC}]	+2.5V/+3.3V	

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