

April 21<sup>st</sup>, 2022  
Nihon Dempa Kogyo Co., Ltd.  
Representative Director and President  
Hiromi Katoh

**Developed the industry's first <sup>(\*1)</sup> 3225-size differential output crystal oscillator <sup>(\*2)</sup>  
for automotive safety applications**

Nihon Dempa Kogyo Co., Ltd. has begun mass production of 3225-size differential output crystal oscillators for safety applications in the automotive market.

ADAS for realizing autonomous driving <sup>(\*3)</sup> performance improvements and AEBS <sup>(\*4)</sup> mandatory installation of standardized equipment are becoming mandatory for the installation of several sensing devices to improve safety. As a result, the number of crystal devices installed is expected to increase.

Among them, in-vehicle cameras are essential for ADAS, and the need for high-speed transmission of video data is increasing as a result of multiple cameras installed in each vehicle due to higher image quality.

High-definition video data obtained by cameras is transmitted on circuit boards using high-speed communication standards such as "SerDes", "Ethernet" and "PCI Express<sup>®</sup>", and is increasingly being diverted to automotive applications based on standards conventionally used in the consumer market.

Since noise-induced errors are a major enemy in this high-speed communication, a high-quality, highly reliable differential output oscillator is required for high-speed reference clock sources in automotive applications where a lot of noise is generated.

Against this situation, we developed a differential output oscillator for automotive safety applications, which can be used as a reference clock source for high-speed transmission, ahead of the industry, and has a long track record in the automotive market.

This product is compatible with high temperatures (105°C) and complies with AEC-Q100/AEC-Q200 <sup>(\*5)</sup>, which is a reliability standard for automotive electronic components.

Designed to achieve high robustness for automotive safety applications, strict process control is implemented on a dedicated production line for automotive applications, and high-reliability mass production quality is achieved.

We will continue to refine our technologies aimed at improving the quality of quartz devices for automotive applications in order to respond to the needs for further miniaturization and noise reduction of each sensor module, as well as to meet customer needs by offering a product lineup that realizes further miniaturization and high frequency.

(\*1) Our survey as of April 2022

(\*2) Differential transmission: It is mainly used for high-speed communication, and by transmitting data by the potential difference between two signal lines even if external noise is applied to the signal line, it is cancelled and it is less likely to malfunction

(\*3) ADAS(Advanced Driver Assistance Systems) : Advanced driving support system

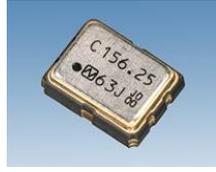
(\*4) AEBS(Advanced Emergency Braking System) : Advanced emergency braking system.

(\*5) Reliability standards for automotive components defined by AEC-Q100/AEC-Q200 Automotive Electronic Components Council's AEC (Automotive Electronics Council)  
(AEC-Q100 stands for integrated circuits, and AEC-Q200 stands for passive components)

[Sample and mass production]

Mass production is scheduled for April 2022, and sample is available.

[Specifications/Characteristics]

|                                   | NP3225SAA   | NP3225SBA  | NP3225SCA   |
|-----------------------------------|---|--|---|
| Product appearance                |  |  |  |
| Size                              | 3.2×2.5×Max.1.0 mm  |  |   |
| Nominal Frequency Range           | 100MHz~170MHz   |  |   |
| Output Response                   | LVPECL  | LVDS   | HCSL  |
| Operating Temperature Range       | -40°C to +105°C<br>(Option : - 40°C to +125°C)                                    |  |   |
| Overall Frequency Tolerance       | Max. $\pm 50 \times 10^{-6}$  |  |   |
| Supply Voltage [V <sub>CC</sub> ] | +2.5V / +3.3V   |  |   |
| Reliability Standards             | AEC-Q100/AEC-Q200 compliant   |  |   |

For inquiries regarding products, please contact [Contact Information] below.

[Contact Information]

Nihon Dempa Kogyo Co., Ltd.

e-mail: [newsrelease@ndk.com](mailto:newsrelease@ndk.com)