

# Development of a Crystal Timing Device That Realizes Both Miniaturization and Cost-Cutting by Considerable Reduction in Direct Material Costs and Introduction of Wafer-Level Production

May 7, 2020

**DAISHINKU CORP.**

Daishinku Corp. (President: Sohei Hasegawa) announces the development of a crystal timing device that achieves the small size of 1.2×1.0 mm at a low cost.

With the dissemination of IoT and the growth of the data storage market, the role of timing devices is becoming increasingly important. The demand for crystal timing devices, in particular, is expected to grow drastically because of their superiority in noise performance, costs, and availability.

However, the release of similar products by other companies poses an issue of profitability. Moreover, there are increasing demands for small and thin products targeting wireless earbuds and other miniature devices that require high-density implementation. On the other hand, due to the surge in direct material costs and requirement for new investments, the prices of 1.2×1.0 mm or smaller products tend to rise.

Under these circumstances, Daishinku has been working toward the development of products that realize both miniaturization and cost reduction by introducing new materials and WLP (Wafer Level Package) technology. While inheriting the basic technology of the “Ark.3G Series”, which was released in June 2017, our latest development has reduced costs by cutting down on the direct material expenses and streamlining the production process through the replacement of the upper and lower layers, or the two layers other than the oscillating layer, of the three-layer crystal wafer bonded structure with organic films.

The new wafer structure has achieved substantial cost reduction while adding a new value, thinness, compared to the conventional structure with the same footprint. This product is one of the new Ark Series products addressing “the Cost-Reduction Challenges”, which represent one of the seven basic strategies of the 10-year long-term management plan, “OCEAN+2”, introduced in the last fiscal year. We will also focus our efforts on process development to expand the frequency range covered by the device and further reduce costs by increasing the wafer diameter, aiming towards releasing a crystal device with the world’s lowest cost.

## ■ Electrical specification

Size	1.2×1.0mm
Height (max.)	0.20mm
Frequency Range	40 / 48 / 50 / 52 /64MHz etc. *Under development: 32MHz
Sample Shipments	After June, 2020
Mass Production Date	April, 2021
Applications	Short-range wireless modules, storage equipment, embedded in IC/SiP

## ■ Comparison with conventional products

	New design crystal devices		Conventional Product
Type	Undecided	Ark.3G	DSX1210A
Size	1.2×1.0mm	1.0×0.8mm	1.2×1.0mm
Height (max.)	0.20mm	0.13mm	0.30mm
Cost	✓		
Mass Production Date	April, 2021	In mass production	In mass production

(Reference)

Commercialization of the world’s smallest and thinnest crystal timing device with a product thickness of 1/2 or less than conventional products

(<https://www.kds.info/wp-content/uploads/2017/06/arch.3g-series-en-170613.pdf>)