



Nuvoton Releases Industry-leading-class High-power Violet Laser Diode (402 nm, 4.5 W) 1.5 times Higher Output Than Its Conventional Product

Descrizione

COMUNICATO STAMPA 1.5 times Higher Output Than Its Conventional Product

KYOTO, Japan, April 15, 2026 /PRNewswire/ Nuvoton Technology Corporation Japan (hereinafter NTCJ) announced on April 15 that it will start mass production of a high-power violet laser diode (402 nm, 4.5 W) that achieves industry-leading-class (*1) optical output in a 9.0 mm diameter CAN package (TO-9) in May. This product achieves 1.5 times the optical output compared to NTCJ's conventional product (*2) through its proprietary device structure and heat dissipation design technology, and contributes to improving production throughput in optical equipment such as maskless lithography systems. Furthermore, adding this product to NTCJ's lineup enables its product portfolio to support major photosensitive materials used in advanced semiconductor packaging.

(*1) As of April 15, 2026, based on NTCJ's research of laser diodes emitting at 402 nm in a TO-9 CAN package under continuous-wave (CW) operation at a case temperature (Tc) of 25C.

(*2) NTCJ's conventional product KLC432FL01WW (402 nm, 3.0 W, TO-9 CAN package)

Key visual:

https://cdn.kyodonewsprwire.jp/prwfile/release/M108245/202604087113/_prw_PI1fl_XY4583C0.png

Image2:

https://cdn.kyodonewsprwire.jp/prwfile/release/M108245/202604087113/_prw_PI2fl_5u4N7B22.jpg

Violet 402-nm laser diodes generally face relatively low wall-plug efficiency (WPE), self-heating, and short wavelength-induced degradation, limiting stable high-power operation. To address these challenges, the device structure that enhances WPE and the high thermal conduction package technology that effectively dissipates heat, used in the high-power ultraviolet laser diode announced in January 2026, were expanded to the violet band. As a result, NTCJ is launching a high-

power violet laser diode achieving 1.5 times the optical output of NTCJ's conventional product, with improved lifetime at high-power operation and enhanced heat dissipation, contributing to higher production throughput in industrial optical equipment.

Figure1:

https://cdn.kyodonewsprwire.jp/prwfile/release/M108245/202604087113/_prw_PI3fl_HKi1hBb1.png

This product delivers significant value in maskless lithography for advanced semiconductor packaging, a rapidly growing market driven by AI demand. Maskless lithography directly exposes wiring patterns from design data, reducing cost and development time while enabling high-precision correction of substrate warpage and distortion. Laser diodes are increasingly required to support wavelengths close to the mercury lamp i-line 365nm and h-line 405nm, and higher optical output to improve throughput. Following the 379nm, 1.0W high-power ultraviolet laser diode for i-line applications announced in January 2026, NTCJ is adding a 402nm, 4.5W high-power violet laser diode for h-line applications, strengthening its maskless lithography light source lineup to support multiple major photosensitive materials and higher throughput.

Table1:

https://cdn.kyodonewsprwire.jp/prwfile/release/M108245/202604087113/_prw_PI4fl_k57YN02p.png

In addition, this product expands NTCJ's semiconductor laser-based alternatives to mercury lamps, providing a new h-line light source option for photocuring, 3D printing, sensing, biomedical, and marking. This contributes to improving process efficiency and enabling new optical applications.

Figure2:

https://cdn.kyodonewsprwire.jp/prwfile/release/M108245/202604087113/_prw_PI5fl_sKw00fyg.jpg

This product is scheduled to be exhibited at NTCJ's booth at OPIE 2026 to be held in Yokohama, Japan, on April 22-24, 2026.

For more information about the product, please visit: <https://nuvoton.co.jp/semi-spt/apl/rd/?id=1100-0268>

About Nuvoton Technology Corporation Japan: <https://www.nuvoton.co.jp/en/>

OPIE (OPTICS & PHOTONICS International Exhibition): <https://www.opie.jp/en/>

View original content: <https://www.prnewswire.co.uk/news-releases/nuvoton-releases-industry-leading-class-high-power-violet-laser-diode-402-nm-4-5-w-1-5-times-higher-output-than-its-conventional-product-302742561.html>

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