PRESS RELEASE

Fraunhofer IPMS develops compact 2K OLED microdisplay package with MIPI DSI-2

Researchers at the Fraunhofer Institute for Photonic Microsystems IPMS have developed a new compact package for their 2K OLED microdisplay. The microdisplay package integrates MIPI DSI-2 control and the generation of all required display voltages. The new solution will be presented for the first time at SEMICON Europa 2026 from November 10 to 13, 2026, in Munich – at the Silicon Saxony joint booth in Hall B1, Booth B1-221-25.

OLED microdisplays are frequently used in portable applications such as helmets and smart glasses as well as in optical devices. The new microdisplay package simplifies the integration of Fraunhofer IPMS's 2K microdisplays into such systems, as it combines the microdisplay with the complete electronics required for its control. An integrated 20 mm x 20 mm system-on-module (SoM) implements the MIPI DSI-2 interface via D-PHY, which is widely used in mobile processors and transmits image data and control commands serially at high speeds. The microdisplay package supports up to four data lanes with a data rate of up to 2.5 Gbit/s per lane.

At the same time, the SoM generates all required display voltages, so that a single external 5 V power supply is sufficient. This considerably reduces the effort required by system integrators.

"In wearables such as smart glasses or helmets with integrated displays, every millimeter of space counts. That is why the new microdisplay package was designed to accommodate the additional electronics without increasing the previous package dimensions. It combines this compact form factor with simpler electrical connection: system designers only need to provide a single 5 V supply, and the integrated control via MIPI DSI-2 eliminates the need for external interface conversion," explains Florian Schuster, project manager at Fraunhofer IPMS.

With the MIPI DSI-2 interface, Fraunhofer IPMS is expanding its previously available control options LVDS and DPI (Display Pixel Interface) for the 2K microdisplay.

A central challenge in developing the new microdisplay package was integrating the additional electronics without increasing the previous package dimensions. The integrated SoM therefore required a particularly compact circuit board with a very high

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component integration density. Fraunhofer IPMS is now working on transferring the new package concept to other microdisplays in its display family.

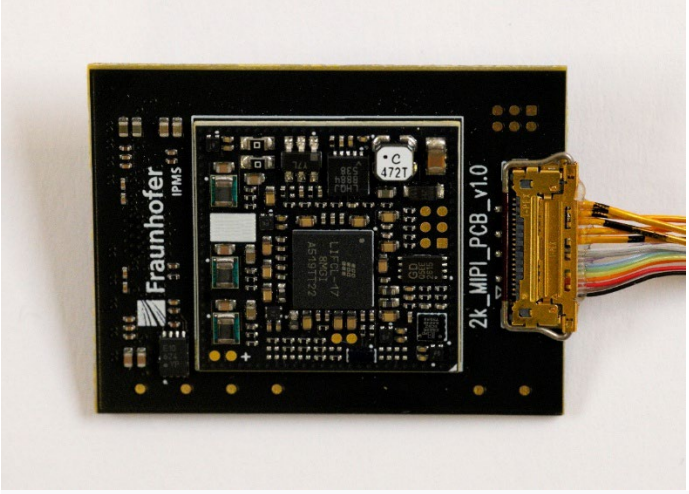
The functionality of the new package was demonstrated in tests with a Raspberry Pi 5. Building on this, Fraunhofer IPMS offers evaluation kits with the new 2K OLED microdisplay package. They contain the complete microdisplay package, a Raspberry Pi for control with a suitable preinstalled driver, and all cables required for operation.

Image Material



2K OLED microdisplay package with integrated MIPI DSI-2 control (2048 x 2048 pixels, 1.07 inches) © Fraunhofer IPMS

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2K OLED microdisplay package with integrated MIPI DSI-2 control (20 x 20 mm SoM) © Fraunhofer IPMS

Fraunhofer IPMS at SEMICON Europa 2026:
Exhibition stand: Silicon Saxony joint booth, Hall B1, Booth number B1-221-25

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About Fraunhofer IPMS

The Fraunhofer IPMS is a leading international research and development service provider for electronic and photonic microsystems in the application fields of Intelligent Industrial Solutions, Medical Technology and Health, Mobility, Green and Sustainable Microelectronics, Aerospace, and Security. The institute works on electronic, mechanical, and optical components and their integration into miniaturized devices and systems. The service range includes everything from concept development to product development and pilot manufacturing in its own laboratories and clean rooms.

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