

## Sprite-based Graphics Controller for Automotive Applications

ECN Europe

Fujitsu Semiconductor Europe is pleased to announce the extension of its graphics controller family with the addition of MB88F333 'Indigo-L' – a highly integrated single-chip graphics solution for automotive display systems.

The [MB88F333 'Indigo-L'](#) [1] is a new sprite-based graphics controller, which incorporates the APIX1 interface and is optimised for CID (Central Information Display) and HUD (Head-up displays) of next-generation automotive applications. A key feature is the APIX serial gigabit interface from Inova Semiconductors. This new standard for the transmission of image and peripheral data will meet the requirements of the latest display applications in vehicles, leading to higher performance and low implementation costs.



[2] *Picture: Fujitsu*

Automotive peripherals such as stepper motor controllers, pulse width modulators, ADCs, I2C, UARTs and sound generator are also integrated into the MB88F333 'Indigo-L'. This allows the device to control all the peripheral functions in a display sub-system. Typical applications for these interfaces include driving dashboard gauges, backlight circuits, LEDs, sensors and on-board communications.

The MB88F333 'Indigo-L' optimises the BoM (bill-of-materials) for CID and other display-based systems as it runs without external memories. The graphics processing is based on a line-buffer principle, which eliminates the need for expensive (internal or external) frame-buffer memory. In addition, integrated flash memory can be used to store a set of sprites (fonts, bitmap objects, etc) without any additional external devices. Direct display connection via RSDS or RGB, 5V automotive interfaces and an analogue front-end for the APIX link are also included to reduce system costs.

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The built-in graphics engine can generate up to 512 sprites from 4×4 up to 512×512 pixels in size. Sprites can be animated and stored in a variety of colour modes (direct and indirect colour formats). Alpha-blending is possible between several graphic layers and overlapping sprites while the graphics engine is controlled via command lists, which allow pre-loaded sequences of actions to be triggered automatically.

The MB88F333 'Indigo-L' can be freely programmed for panels from 320×160 up to 1280×480 pixels resolution. A built-in TCON unit allows panels to be attached without the need for further controller logic, which is a significant cost benefit. A signature unit for security and dither, and gamma units for picture quality optimisation are available as well as layer blending and automatic fade-in/out. The physical interface to a display panel can be RGB digital or RSDS.

With its embedded memories, automotive I/Os, inexpensive QFP-package and extended temperature range of -40 to +105°C, the MB88F333 'Indigo-L' reduces the number of external components and saves significant system costs. Sample quantities of MB88F333 'Indigo-L' will be available from Q1 2011. A dedicated evaluation board, software drivers and sample programs will also be offered in this timeframe.

[SOURCE](#) [3]

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### Links:

[1] <http://www.fujitsu.com/emea/services/microelectronics/gdc/>

[2] <http://ecneurope.files.wordpress.com/2011/03/kl-pr987.jpg>

[3] <http://ecneurope.wordpress.com/2011/03/02/sprite-based-graphics-controller-for-automotive-applications/>