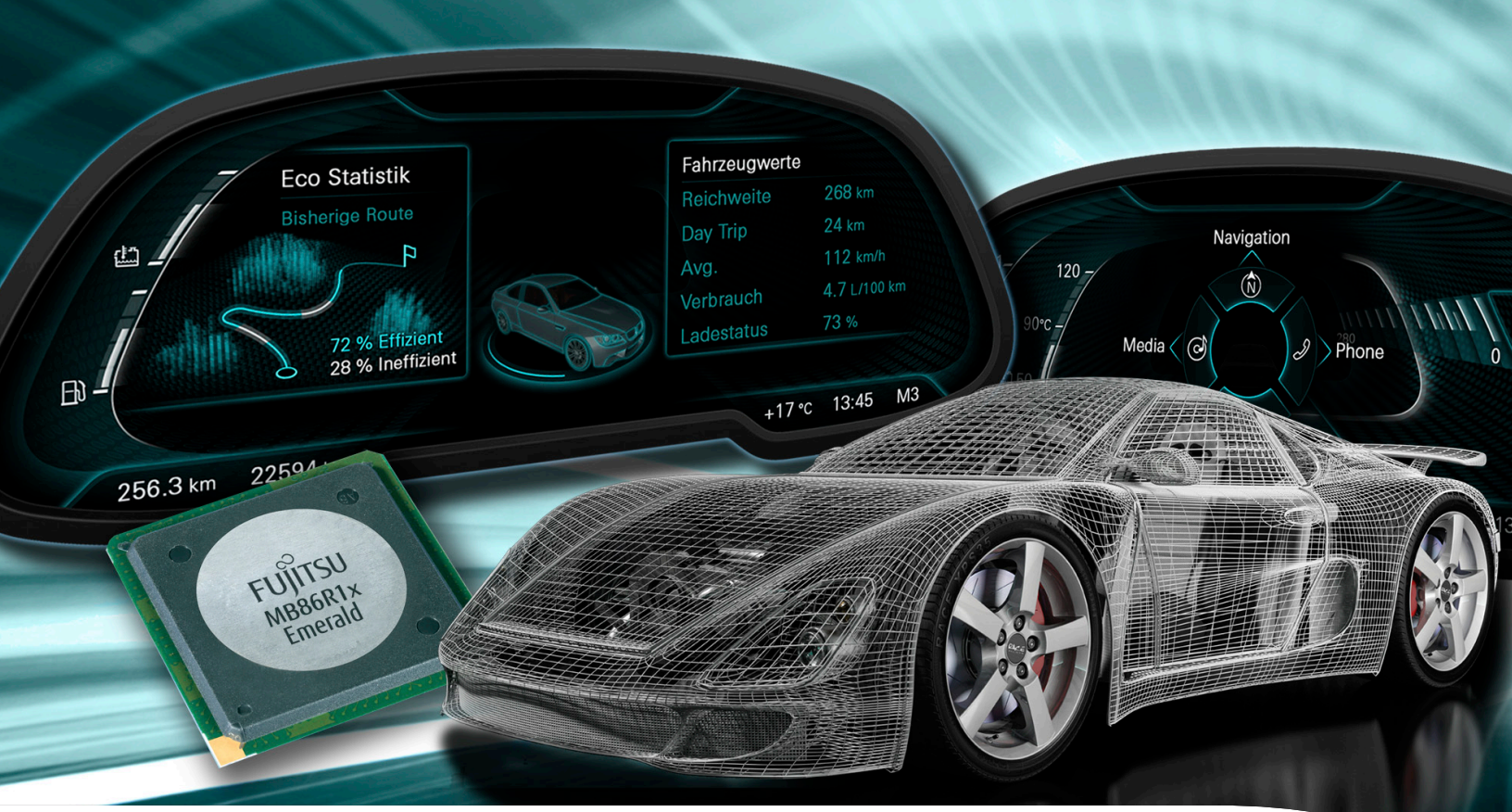

FujitsuFocus

Volume 12, Issue 1

2D/3D GDCs Facilitate High-end Graphics

The "Emerald" graphics display controllers deliver cutting-edge 2D and 3D graphics, making the devices the leading GDCs for high-end embedded graphical automotive applications such as demanding cluster, center information display, navigation and in-car multimedia graphics applications.

These SoCs combine the ARM® Cortex™ A9 CPU core with four video inputs, up to three parallel display outputs, various other standard and automotive-specific peripheral interfaces, and an optional integrated APIX®2 interface, for a wide range of applications.

The "Emerald" family enables Fujitsu's 360-degree Wrap-around Video-imaging Technology for the automotive sector.

Information about Fujitsu's entire GDC product line is available at http://us.fujitsu.com/semi/gdc.

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shaping tomorrow with you

FUJITSU

Advanced Automotive Semiconductor Solutions Available from Fujitsu!

Our Latest Automotive Microcontrollers

FCR4 – Fujitsu's ARM® Cortex™-R4 based SoCs

The FCR4 family of devices has been especially designed to offer an innovative, scalable solution for hybrid clusters, which combine traditional meters and graphical displays. FCR4 devices offer a powerful architecture based on the ARM® Cortex™-R4 core and Fujitsu's 2D "Iris" graphics engine. They include the safety, power-saving and security features (specifically SHE) automotive customers expect today. This series, which supports the latest AUTOSAR specifications, meets today's highest automotive quality standards.

32-bit MCU Provides a Complete Solution for Automotive Color Display, Meter Control and Video Input Systems

The MB91590 "Sapphire" microcontroller is designed for applications that require dynamic color display and video input capabilities, such as automotive instrument clusters, center consoles using color displays, and vehicle camera systems.

"Sapphire" features a powerful, high-performance FR81S CPU core; a GDC with sprite functionality; a rendering engine; and external video-capture capabilities with internal VRAM. The MCU features both CAN and LIN interfaces.

More information is available at:
http://us.fujitsu.com/semi/gdc/sapphire.

MCUs Enable Inverter Motor Control in Electric and Hybrid Vehicles

Fujitsu's 32-bit MB91580 series microcontrollers enable optimal, high-speed, 3-phase inverter motor control in electric and hybrid vehicles.

The MB91580 series provides for efficient loopback control by using a dedicated 12-bit Analog to Digital Converter (ADC) and a 12-bit Resolver to Digital Converter (RDC) to detect motor current and position at high speed and with high resolution. This system delivers real-time controllability for EV and HV motors with fast and efficient loopback operation and the best torque control possible.

More information is available at:
http://us.fujitsu.com/semi/mcu/HEV-EV.

CGISTUDIO Design Suite Speeds Development of Advanced Automotive Applications

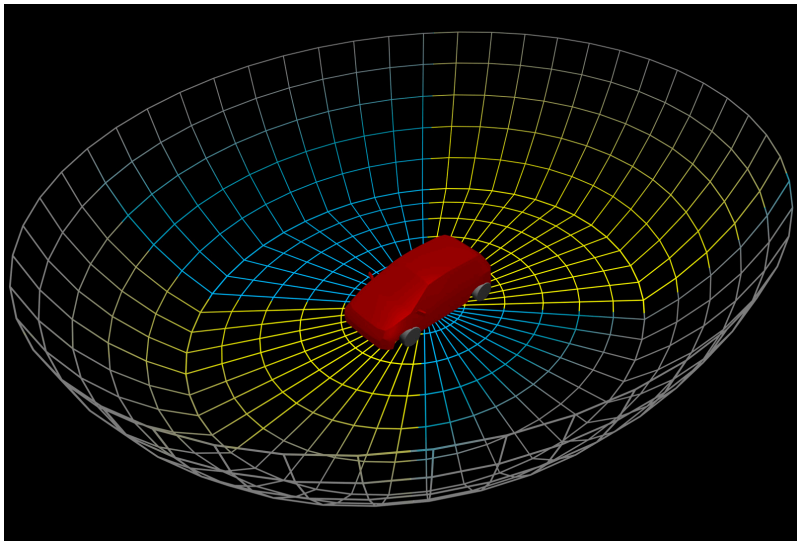
The CGI Studio design application enables automotive system developers to design, prototype and develop 2D and 3D advanced automotive applications on a Microsoft Windows® platform. This complete software-design application shortens development time for graphical human machine interfaces (HMI/GUI) for instrument clusters and infotainment systems.

More information is available at:
http://us.fujitsu.com/semi/gdc/autografx.

360-degree Wrap-around Video-imaging Technology for 3D Visibility Around a Vehicle

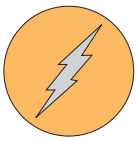
Fujitsu's breakthrough 360-degree Wrap-around Video-imaging Technology provides a complete 3D view of a vehicle's surroundings for unmatched driver visibility, safety and convenience. The technology enhances visibility while drivers are backing up, merging or turning corners, and eliminates "blind spots" to a degree that cannot be matched by two-dimensional technologies. Applications include driver vision-assistance camera systems, parking aid and reverse view, and vehicle cameras for active or passive safety systems. The technology is available as a middleware toolset for Fujitsu's advanced GDCs.

More information is available at: http://us.fujitsu.com/semi/gdc/360.



ON THE HORIZON

Upcoming Technology Will Increase Efficiency for Power Devices



Fujitsu is developing a Gallium Nitride (GaN) high-electron mobility transistor (HEMT) technology that can significantly increase efficiency for power devices, including EVs and HVs.

Today even the most efficient technologies lose significant energy at each stage of power delivery–generation, transmission and consumption – because of the power-conversion process. The enhanced GaN HEMT technology Fujitsu is developing takes advantage of the superior energy-handling material characteristics of GaN to improve energy efficiency and speed up switching. GaN devices also hold out the promise of being more efficient and smaller.

One exciting application for GaN HEMT is for use in HVs and EVs. Its support for higher currents during high temperature operation and its high-speed characteristics make GaN ideal for battery control systems and inverter-motor control systems f or HVs and EVs.

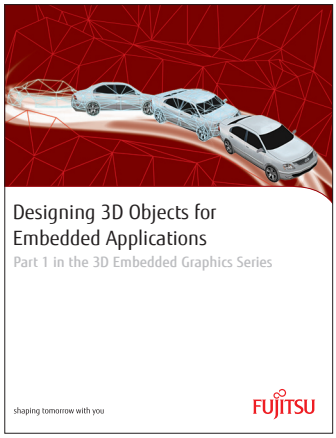
GaN HEMT is also well-suited for a variety of other electronic products including mobile phones, servers, telecommunication products, and PCs. Other applications include switching power supplies, UPS and industrial motor control, clean tech (solar, wind and smart grid), and power-factor-correction controllers (PFC).

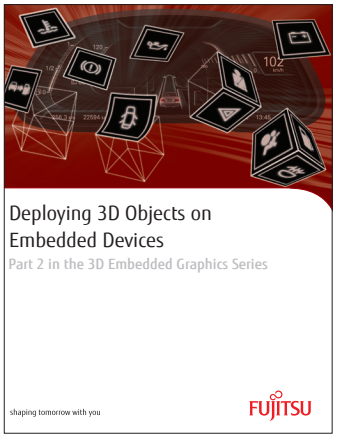
Security IC for Automotive Applications

The Fujitsu general-purpose security LSI enhances the efficiency of automotive applications such as electronic control units (ECUs). The device provides support for multiple industry-standard encryption methodologies–including encrypting and decrypting SHA-2, RSA2048, and AES128/256–with minimum host CPU workload. A standard parallel interface makes it easy to integrate the device into new or existing ECU system designs. Secured command processing within the device and encrypted communication with the host's CPU provide the anti-tampering capabilities security applications require. Design-support software allows system designers to easily take advantage of the device's features. Available now for limited sampling.

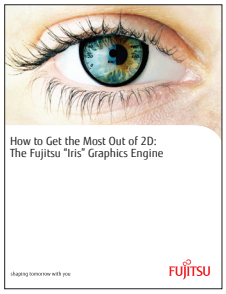
Highlights of Technical Papers

To download the papers below, as well as get more information about the graphics display controller technology from Fujitsu, please visit http://us.fujitsu.com/semi/gdc/docs.



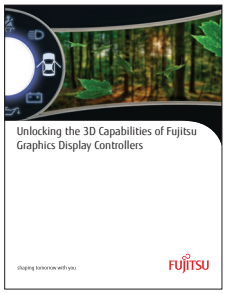


Designing and Deploying 3D Graphics for Embedded Applications series – Part 1 of the series, "Designing 3D Graphics for Embedded Applications," discusses tips and techniques for creating high-quality 3D models suitable for use in embedded applications. Part 2 in the series, "Deploying 3D Graphics for Embedded Applications," de-mystifies the implementation process so that programmers can easily add 3D objects to their applications. The paper discusses the framework of 3D objects, their organization and other fundamentals developers need to know. Both papers in the series describe how to get the most out of Fujitsu's 3D graphics chips.



How to Get the Most Out of 2D: The Fujitsu "Iris" Graphics Engine discusses two common approaches to 2D graphics in embedded applications: raster and vector graphics. The paper compares the two techniques and presents a custom approach, the Fujitsu "Iris" 2D graphics engine, which combines their benefits. The subject is approached only from the point of view of embedded applications, including automotive applications.

Selecting the Right Graphics Display Controller: Key Factors in Designing Embedded Graphics Architecture provides the information needed to make an appropriate choice. The paper describes basic, mid-level and advanced graphics functionality; and analyzes factors such as display resolution, cost pressures, and special requirements. An overview of Fujitsu's extensive GDC family and its 360-degree Wrap-around Video-imaging Technology is also presented.



Unlocking the 3D Capabilities of Fujitsu Graphics Display Controllers examines how 3D significantly improves 2D user interfaces and the end-user experience; provides an overview of Fujitsu's 3D GDCs; and explains how to unlock the power of 3D with Fujitsu GDCs, including the MB86R0x "Jade" and MB86R1x "Emerald" series. Finally the paper describes how Fujitsu can help companies develop 3D user interfaces.

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