

Renesas Digital Dash Board

瑞萨汽车数码仪表盘

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2007年6月18日 --

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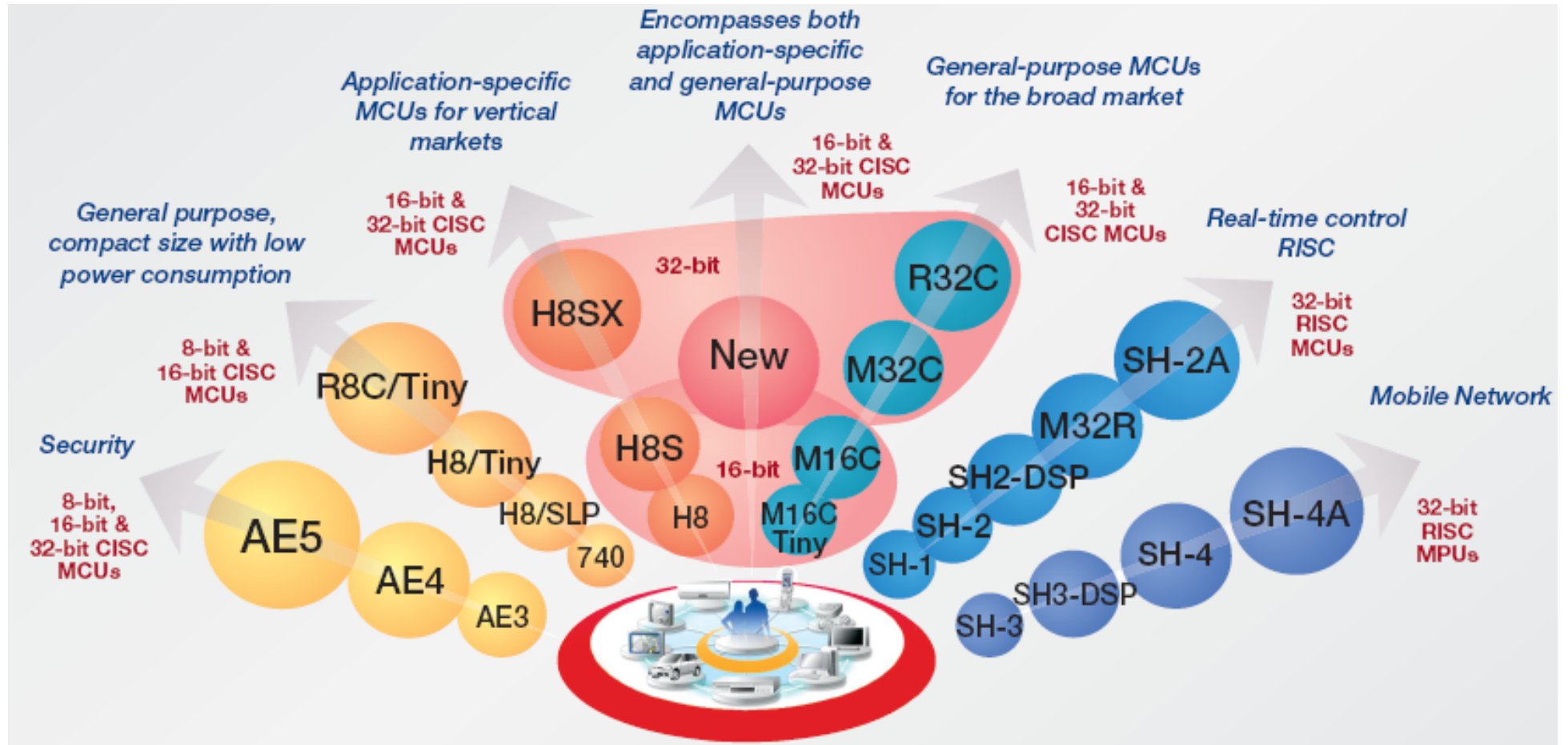
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瑞萨MCU蓝图



瑞萨MCU的发展蓝图

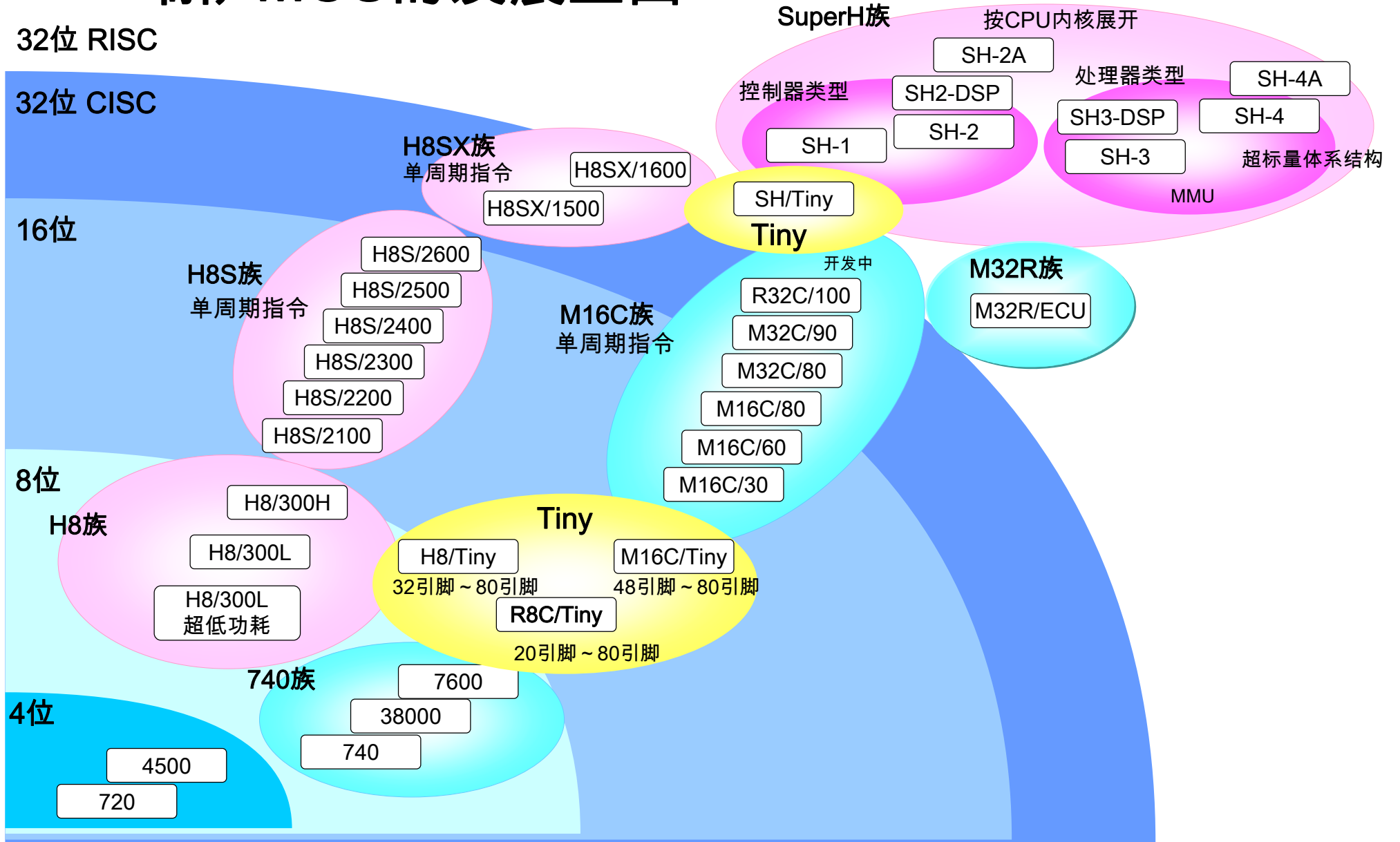
32位 RISC

32位 CISC

16位

8位

4位



汽车仪表盘

2009 奥迪 A4 Avant 1.8T

- Semi-digi Dash Board
 - TFT + 4 Gauges + Light



2009 Ford Focus RS

- Semi-digi Dash Board
 - TFT + 4 Gauges + Light

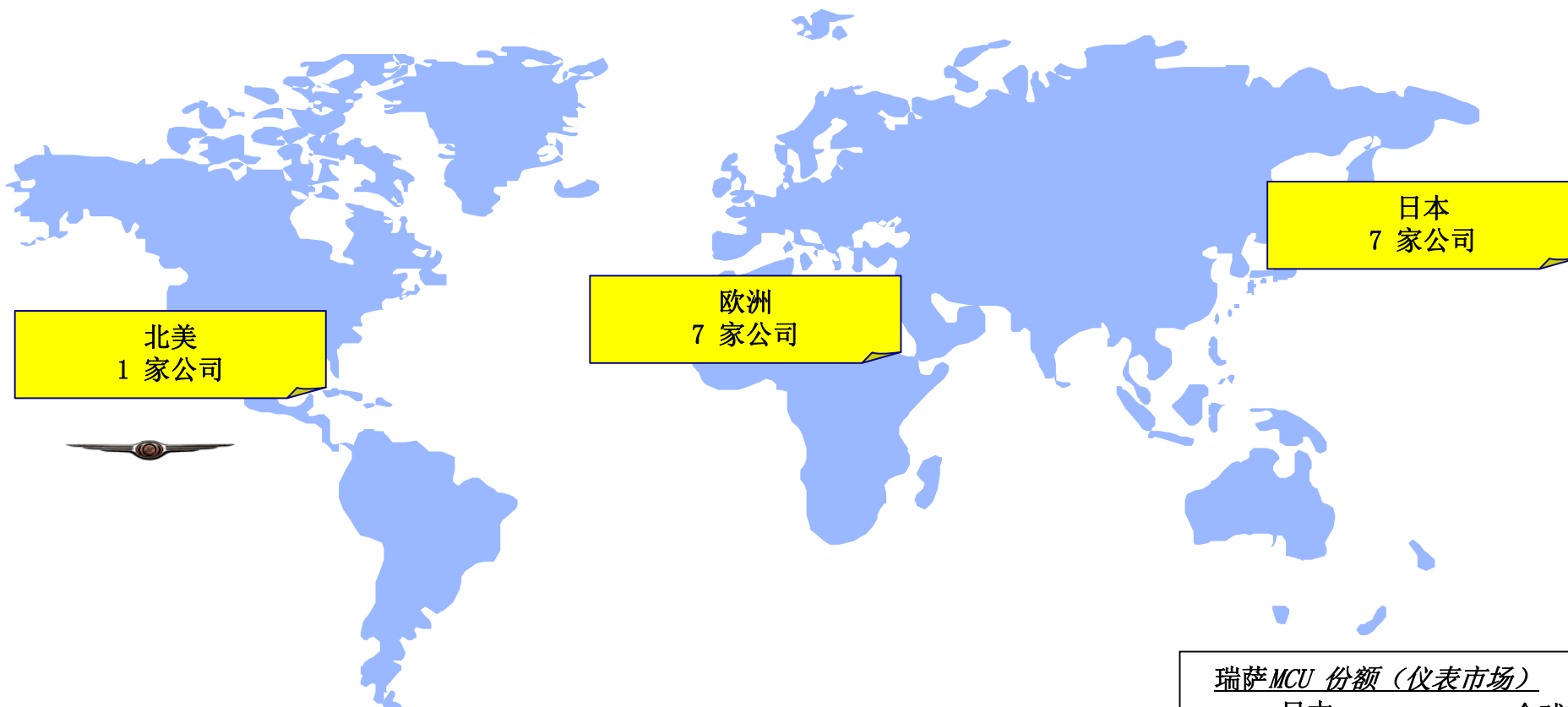


Alfa 159 Sportwagon Ti

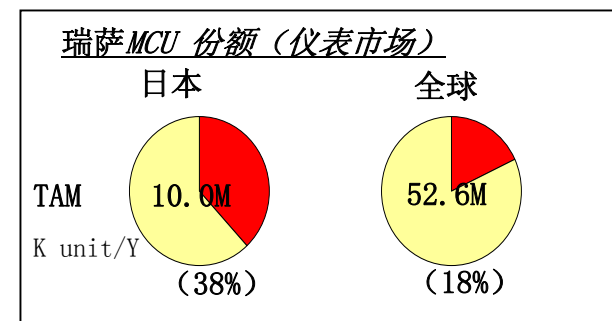
- Semi-digi Dash Board
 - TFT + 4 Gauges + Light



汽车仪表MCU的市场占有率



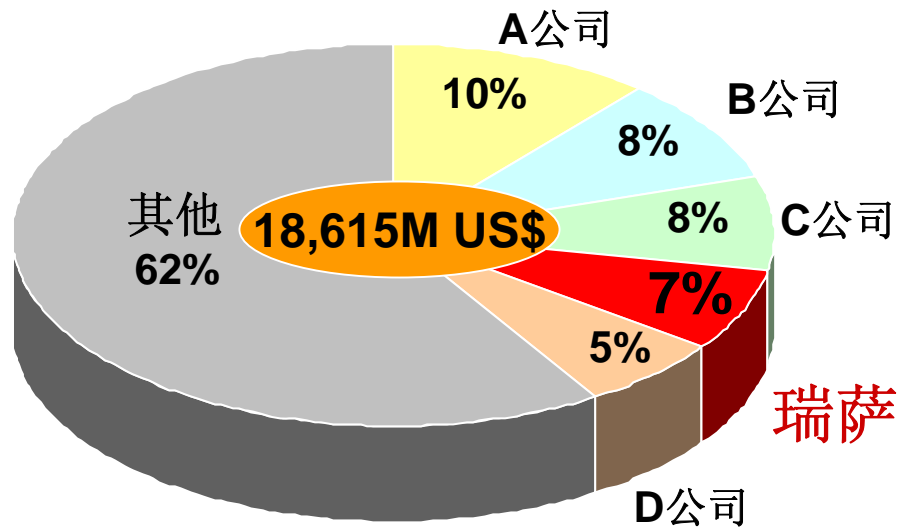
⇒ 全球15家OEM车厂采用了瑞萨MCU



瑞萨科技汽车事业的现状及地位

- 现在处于全球市场第4位，日本市场第1位的领先地位
- 尤其在以全球No.1 MCU为核心的各汽车电子应用
- 领域中占据优势

W/W汽车电子半导体市场份额(CY06)



出处: Gartner Dataquest (2007年3月) GJ07162

06年事业稳步上升，继05年后继续保持高市场份额

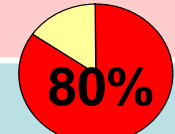
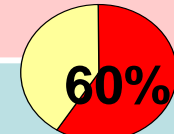
MCU 份额

世界范围

日本



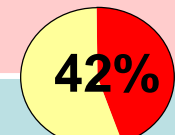
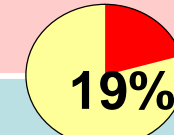
信息&娱乐系



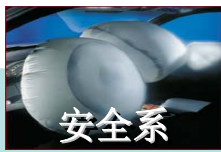
(汽车导航系统)



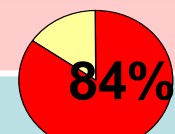
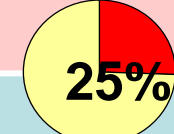
车身系&防盗



(仪表盘)



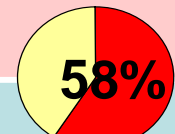
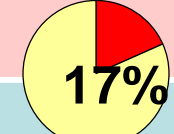
安全系



(安全气囊)



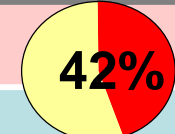
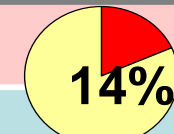
动力系



(引擎、变速箱)



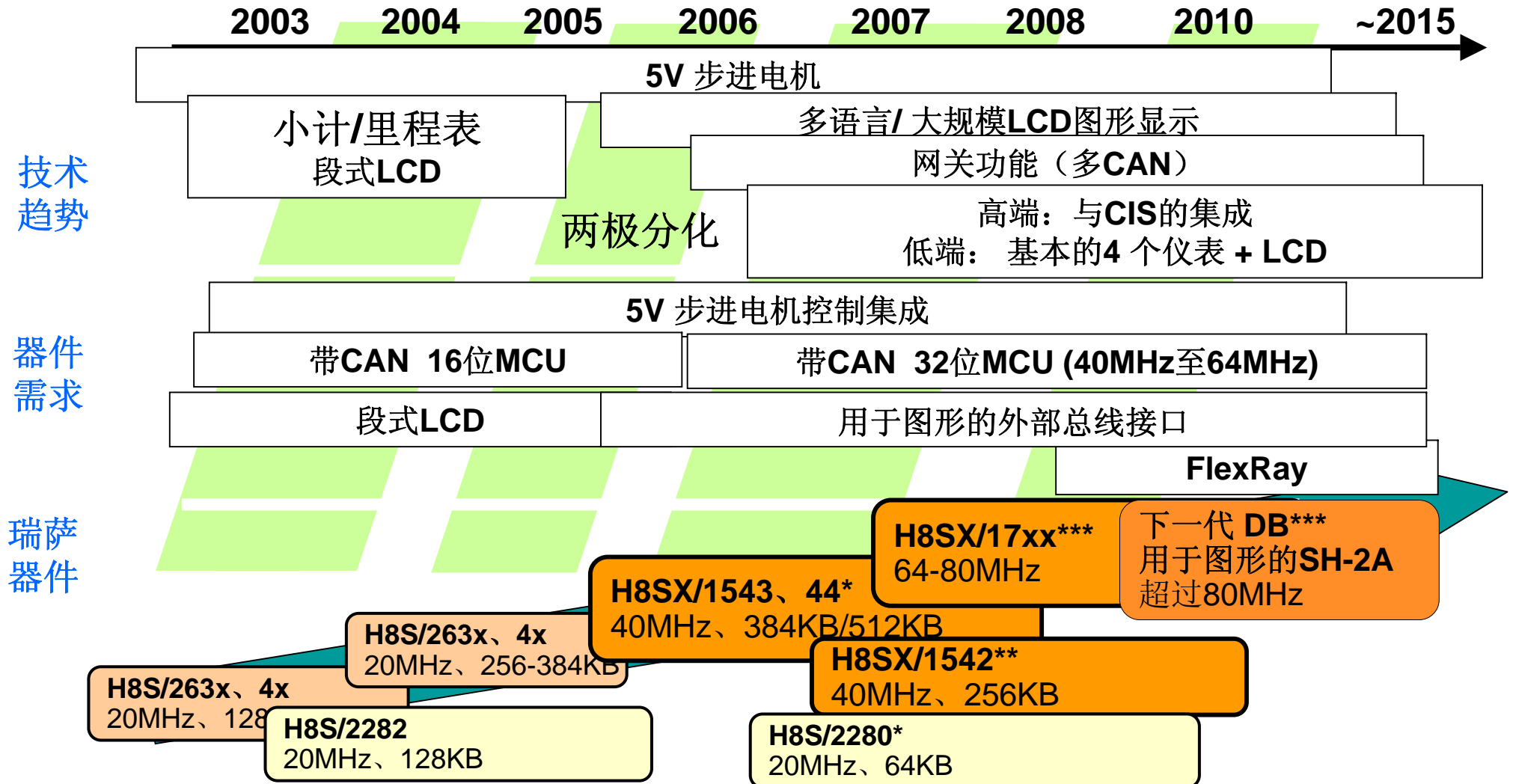
底盘系



(电子助力转向系统)

出处: Strategy Analytics

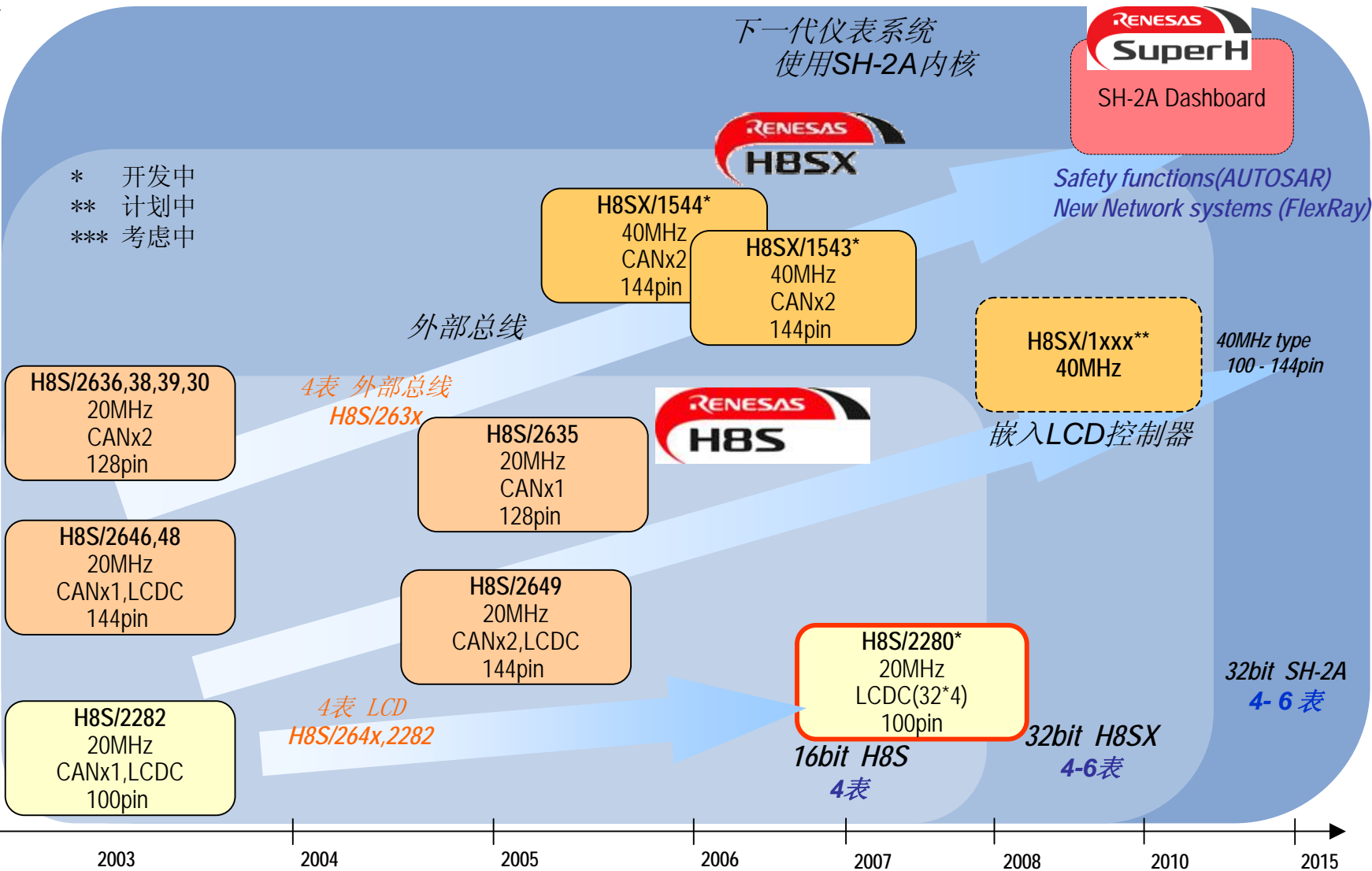
仪表板市场发展趋势



仪表盘MCU产品线路图

内嵌步进电机控制器

性能和功能

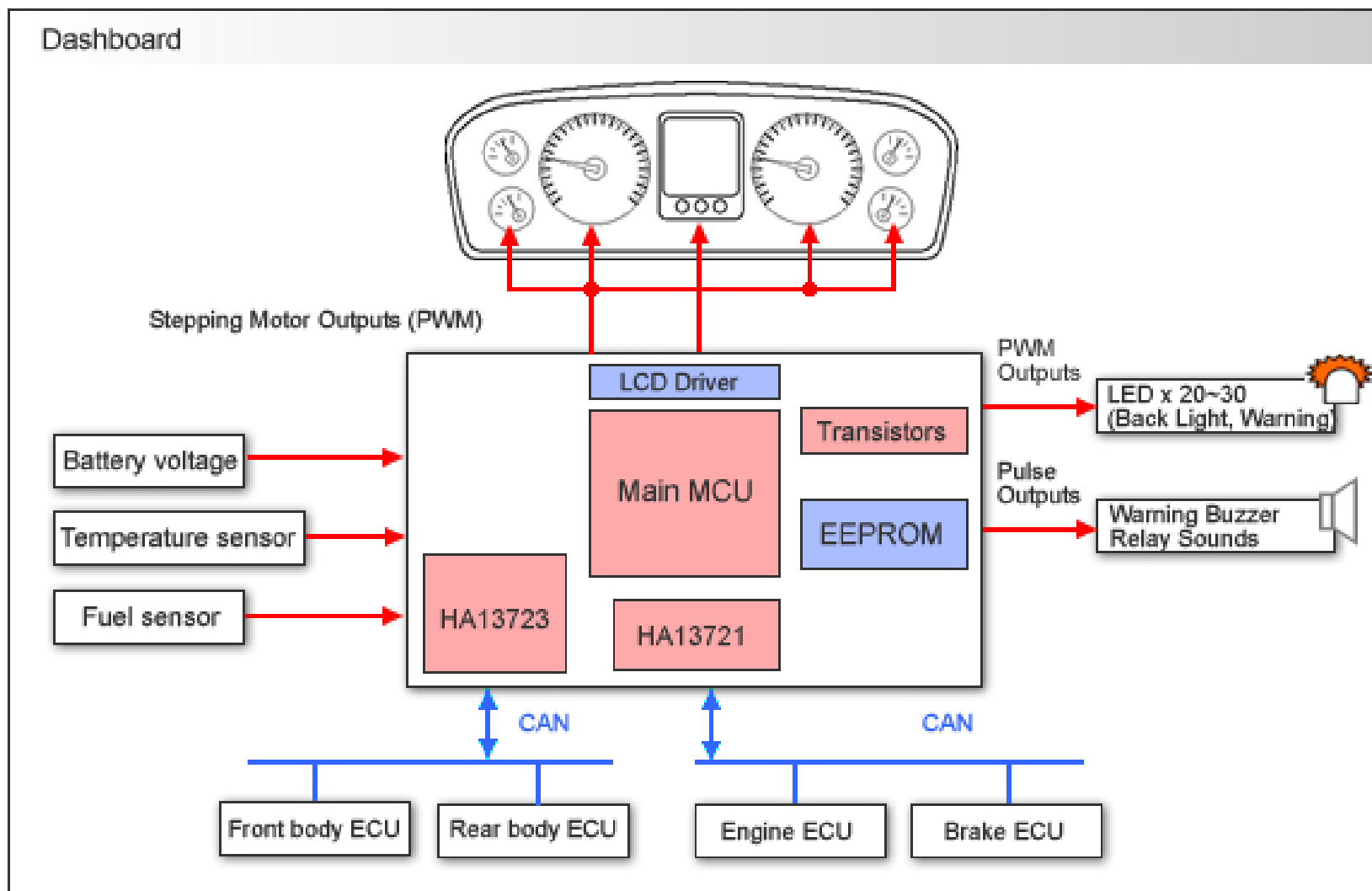


MCU for Dashboard 汽车仪表板用的单片机

- H8SX/1500 series, H8S/2600 series, H8S/2200 series

Application :

- Car Network, Door system, Power window, Adaptive front lighting system, power sliding door, body computer, wiper.



Besides MCU, we also offer **CAN Transceiver IC**

■ HA13721FP, HA13721RP **Overview :**

- HA13721RP/FP is a Interface IC between CAN protocol controller and CAN bus.

This IC provides functions that transmit data from Microcontroller to CAN bus and receive data through CAN bus to Microcontroller.

■ **Product Information:**

- “ISO-11898” compliant
- High speed CAN (up to 1 Mbps)
- Active ⇔ Standby mode
- Over temperature detection
- Over current detection (Vcc short / GND short detection)
- Optimized EMI performance
- Txd, MODE input pin ; 3.3 V compatible


重点推介


SH7263 (SuperH-2A)

- CPU core
 - SH-2A (SuperH RISC Engine) FPU
- Operating frequency
 - CPU clock: 200 MHz (max.)
 - Bus clock: 66 MHz (max.)
- Power-supply voltage: dual power supply
 - Internal 1.2 V/external 3.3 V
- Internal memory
 - URAM: 64 KB
 - RAM with standby retention: 16 KB
 - Cache: I = 8 KB, D = 8 KB
- External memory interfaces
 - SRAM, SDRAM, PCMCIA interface
 - External data-bus width selectable as 8, 16, or 32 bits
 - External memory space can be divided into seven areas (64 MB max.)
- Internal functions
 - 16-bit multifunctional timers: 5 ch (MTU2)
 - 16-bit timers (CMT): 2
 - Watchdog timer: 1
 - CAN interfaces: 2 (2.0A, 2.0B)
 - I²C bus interfaces: 4
 - DMA controller: 8 ch (includes 4 ch that can be activated by external requests)
 - 10-bit A/D converter: 8 ch
 - SCIF: 4 (16-stage transmit/receive FIFO included)
 - SSI: 4
 - SSU: 2
 - SRC (sampling-rate converter)
 - USB2.0 (high-speed): Host or Function selectable
 - SD-card interface
 - NAND flash I/F
 - CD-ROM decoder
 - LCD controller (equivalent to that of the SH7760)
 - I/O ports
 - JTAG interface
- Package
 - 240-pin QFP

* Specifications are subject to change.

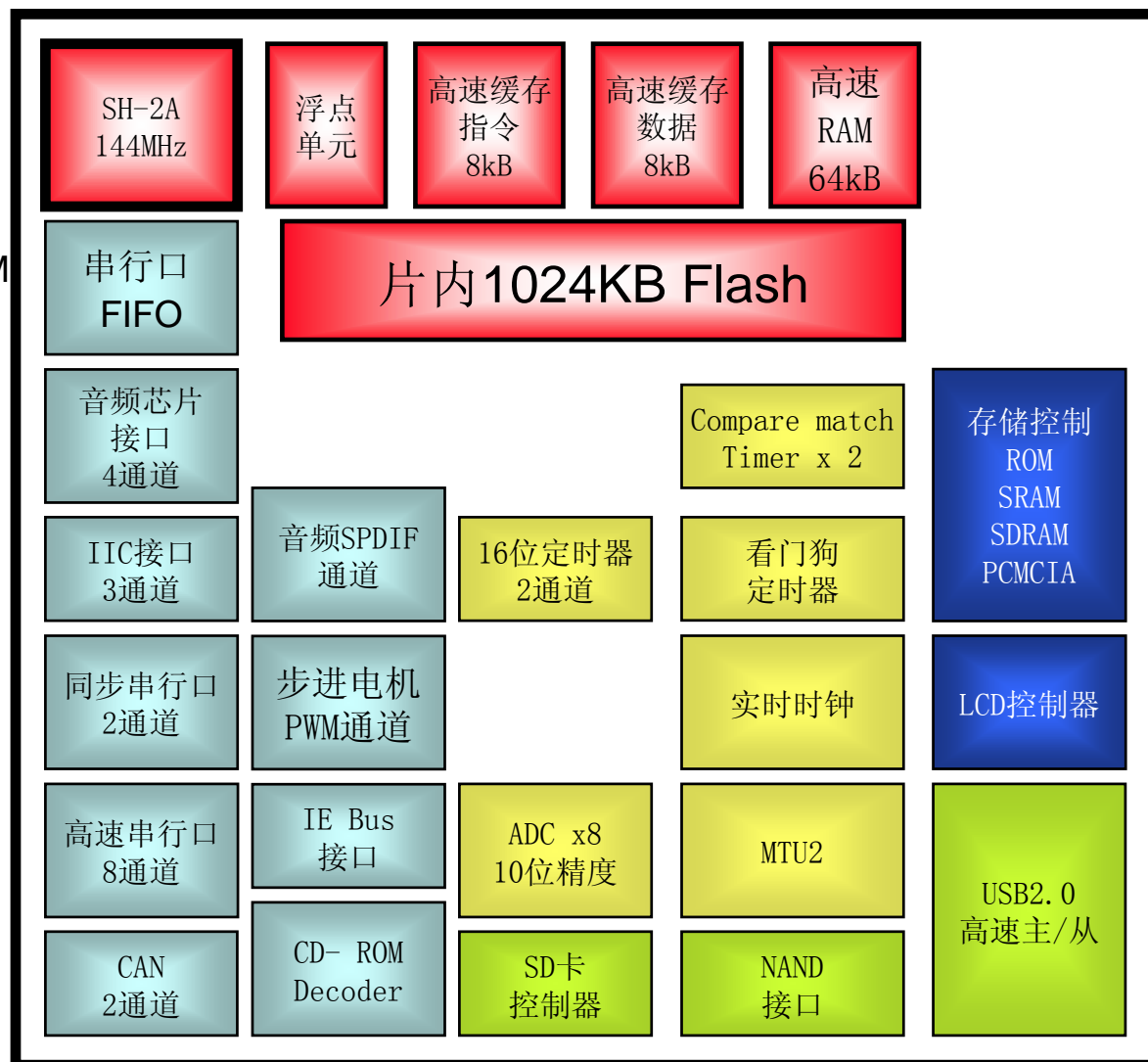
SH-2A 200 MHz		FPU	Instruction cache: 8 KB	Data cache: 8 KB	URAM 64 KB 16 KB
BSC ROM, SRAM, SDRAM, PCMCIA		DMAC 8 ch	INTC	PIO	SRC
I ² C: 4	16-bit CMT: 2	MTU2: 5	WDT	RTC	NAND Flash I/F
Fast SCIF: 4	SSI: 4	CAN: 2	SSU: 2	USB2.0 HOST/FUNC (HS): 1	
A/D 10-bit 8 ch	D/A 8-bit 2 ch	CD-ROM DEC	LCDC	IE-Bus	SD card I/F

 : Function added to the SH7261

 : Function changed from the SH7261

SH7264 (SH-2A)

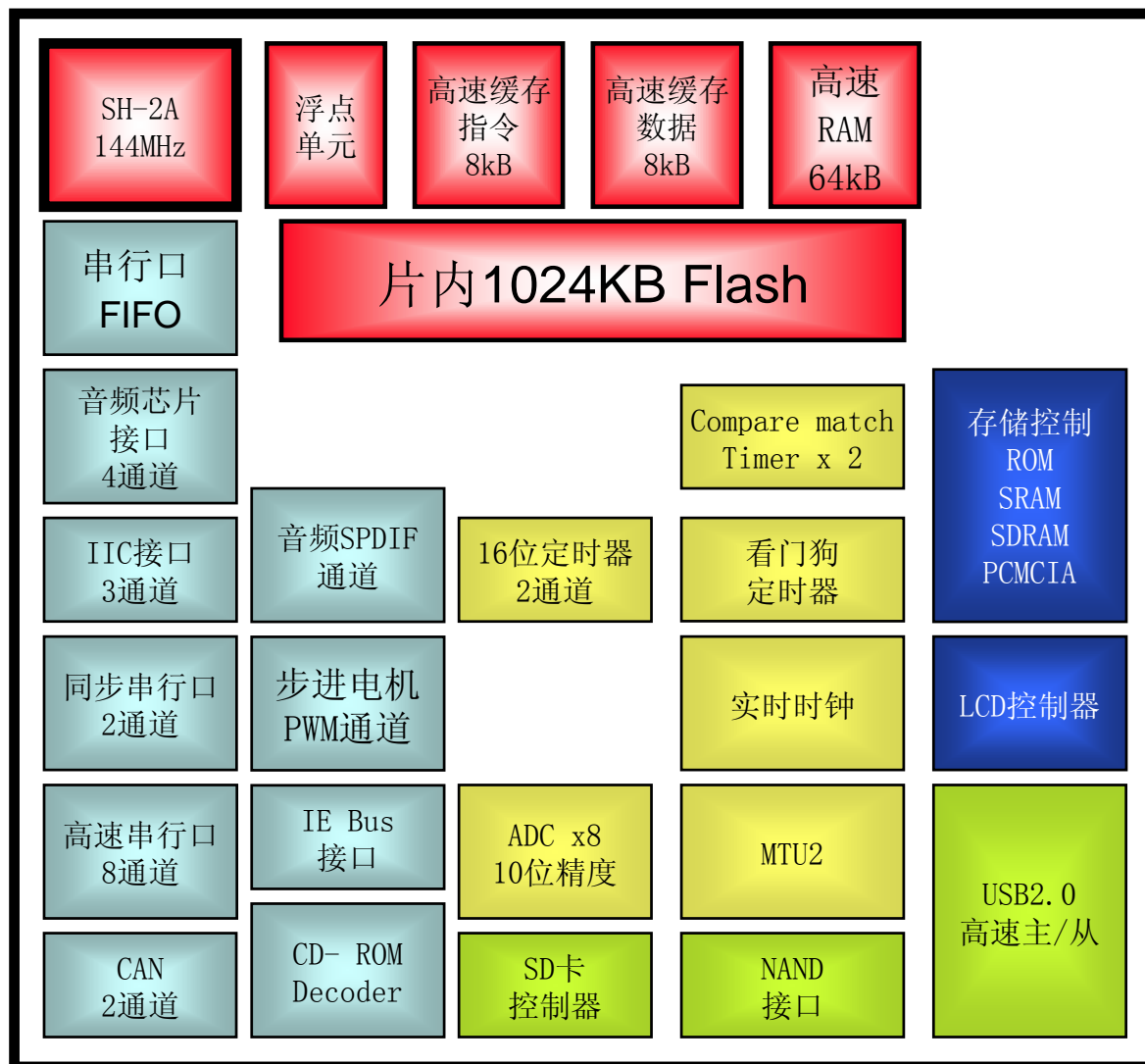
- SH2A-FPU内核 144MHz
- 片内集成16K字节高速缓存
 - 8K指令 + 8K数据
 - 64K高速RAM, 可以实现高速数据处理
- 片内集成 1024K Bytes Flash
- 48MHz外部总线, 8/16/32位可选 ROM, SRAM, SDRAM, PCMCIA. 最大支持512M字节外部寻址
- LCD控制器, 支持数字RGB接口
- 115 GPIO
- 多功能定时器(MTU2) – 16 lines of 5通道
- 16位定时器 – 2通道
- CAN (2.0B) - 2通道
- 音频CODEC接口 (SSI) – 4通道
- 多功能串行口 FIFO
- 同步串行口 (RSPI) – 2通道
- SCI 高速串行口 8通道
- IIC接口 – 3通道
- 步进电机PWM通道
- IE Bus 接口
- CD- ROM Decoder
- 208 pin QFP



■ 内核模块
 ■ 通信模块
 ■ 存储支持
 ■ 外部总线
 ■ 一般外设

SH7262 (SH-2A)

- SH2A-FPU内核 144MHz
- 片内集成16K字节高速缓存
 - 8K指令 + 8K数据
 - 64K高速RAM, 可以实现高速数据处理
- 片内集成 1024K Bytes Flash
- 48MHz外部总线, 8/16/32位可选 ROM, SRAM, SDRAM, PCMCIA. 最大支持512M字节外部寻址
- LCD控制器, 支持数字RGB接口
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- 多功能定时器(MTU2) – 16 lines of 5通道
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- 同步串行口 (RSPI) – 2通道
- SCI 高速串行口 8通道
- IIC接口 – 3通道
- 步进电机PWM通道
- IE Bus 接口
- CD- ROM Decoder
- 176 pin QFP

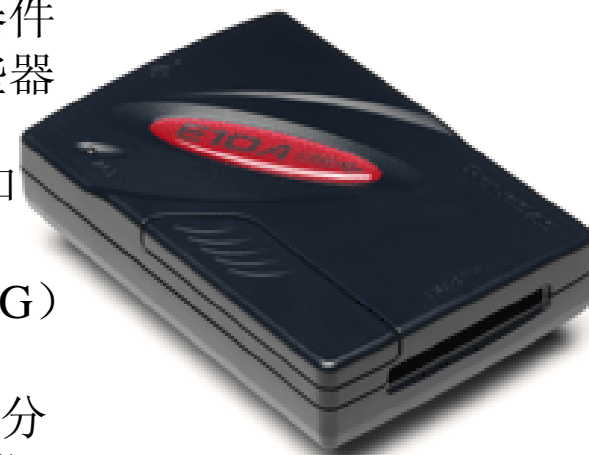


■ 内核模块
 ■ 通信模块
 ■ 存储支持
 ■ 外部总线
 ■ 一般外设

开发所需要的硬件

E10A-USB: 低成本片上调试器

- E10A-USB 器件组新增产品（器件组新增产品的许可工具）
 - 如果用户想为现有的 E10A-USB 产品增加第二个、第三个甚至更多器件组，来让该单元除了支持首次安装时选定的原始器件组，还支持那些新增加的器件组，那么用户就可以购买这些器件组新增产品。
- * E10A-USB 仿真器并不支持全部带有专用调试接口（H-UDI 和 AUD）的微型计算机。请参照目标器件列表。
- * H-UDI（用户调试接口）是一种符合联合测试行动小组（JTAG）规范要求的接口。
- * AUD（高级用户调试器）是调试器功能中的一种。AUD 具有分支跟踪功能和 RAM 监控功能。由于仿真器的功能取决于仿真器，所以请参照仿真器手册来弄清楚仿真器是否具有 AUD 功能。



P/N	元件		
	硬件		软件
HS0005KCU01H	E10A-USB (无 AUD)	14路电缆	E10A-USB 软件 (包含1份器件组新增产品许可证)
HS0005KCU02H	E10A-USB (带 AUD)	14路电缆 36路电缆	E10A-USB 软件 (包含1份器件组新增产品许可证)

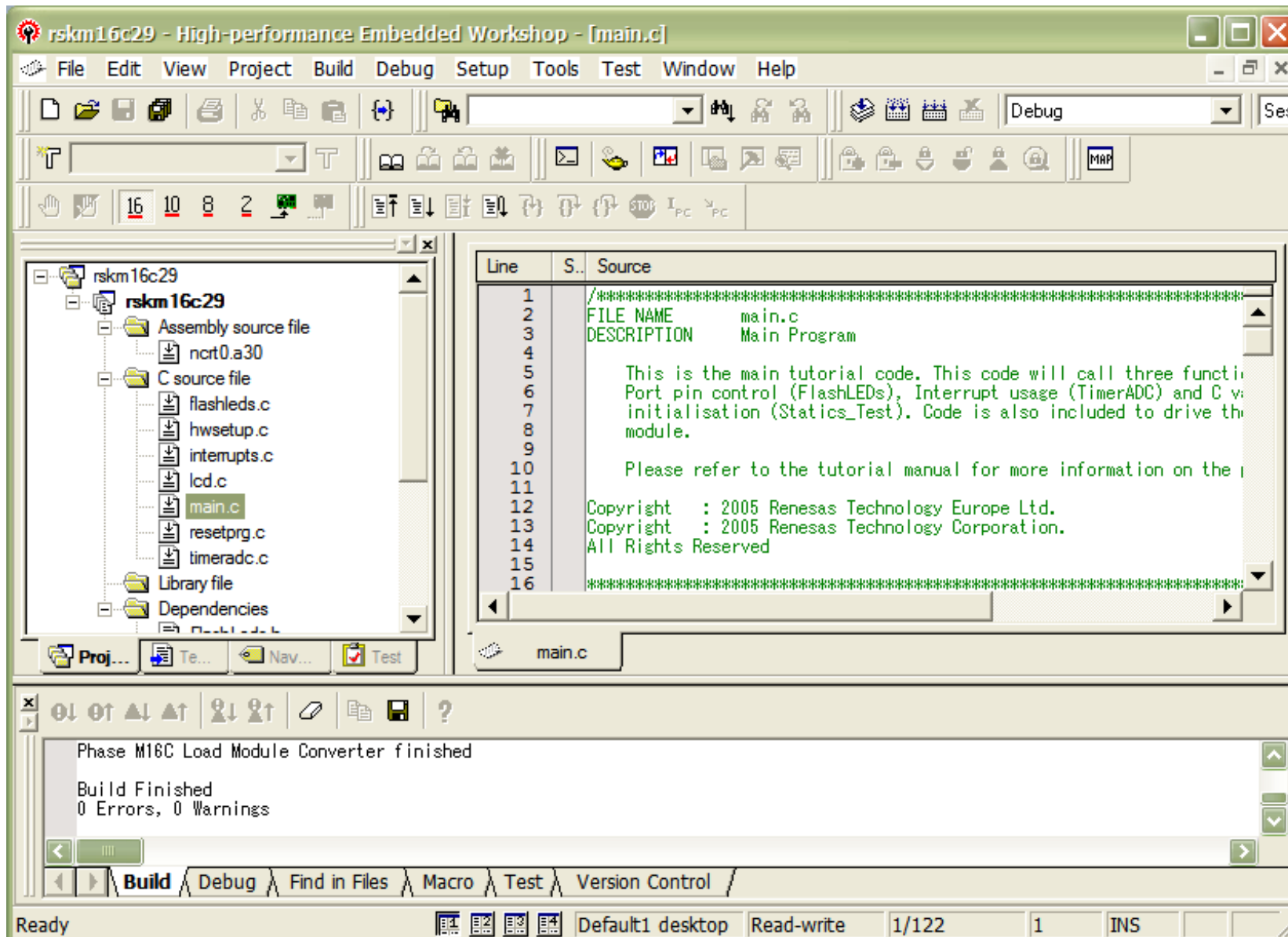
E10A-USB

■ Devices supported :

Device group	Part number	Description
H8S	HS2339KCU01SR	H8S device group addition
H8SX	HS1527KCU01SR	H8SX device group addition
SH-2	HS7047KCU01SR	SH-2 device group addition
SH-2A	HS7206KCU01SR	SH-2A device group addition
SH-3	HS7729KCU01SR	SH-3 device group addition
SH-Mobile	HS7290KCU01SR	SH-Mobile device group addition
New SH-Mobile	HS7318KCU01SR	New SH-Mobile device group addition
SH-4	HS7751KCU01SR	SH-4 device group addition
SH-4A	HS7780KCU01SR	SH-4A device group addition

开发所需要的软件

HEW 高性能嵌入式专区



- Free to try for <64KB code size of H8,M16C,R8C
- Free to try for <256KB code size of H8S,SuperH

Debugging Extension 窗口界面

The screenshot displays the Highperformance Embedded Workshop (HEW) interface. The main window shows the RTOS Trace Statistics (RTOS トレース統計) window, which provides a summary of program execution. Below this, the Task State window is visible, showing a list of tasks and their states, along with a task state diagram and an event log.

RTOS トレース統計 (RTOS Trace Statistics) Data:

プログラム	実行時間	実行比率	カウント	実行時間(グラフ)
KNL_IDLE	0 (*100Cycle)	0 %	0	
KERNEL	34 (*100Cycle)	59 %	7	
OTHERS	5 (*100Cycle)	8 %	1	
TSK D'0006	15 (*100Cycle)	26 %	5	
TSK D'0007	3 (*100Cycle)	5 %	1	

Task State Window Data:

T...	Symbol	Pri...	State
0001			NOEDCS
0002			NOEDCS
0003			NOEDCS
0004			NOEDCS
0005			NOEDCS
0006	MainTask	D'0006	DORMANT
0007	_task7	D'0007	SUN
0008			NOEDCS
0009			NOEDCS

Event Log Data:

Task...	PC	Event
00007	D'0006	H'8000cfe6 E_OK
00008	D'0006	H'8000d000 wai_flg
00009	D'0007	H'8000d026 Task_st
00010	D'0007	H'8000d038 set_flg
00011	D'0006	H'8000d000 E_OK
00012	D'0006	H'8000d00e del_flg
00013	D'0006	H'8000d00e E_OK
00014	D'0006	H'8000d018 ext_tsk
00015	D'0007	H'8000d038 E_OK

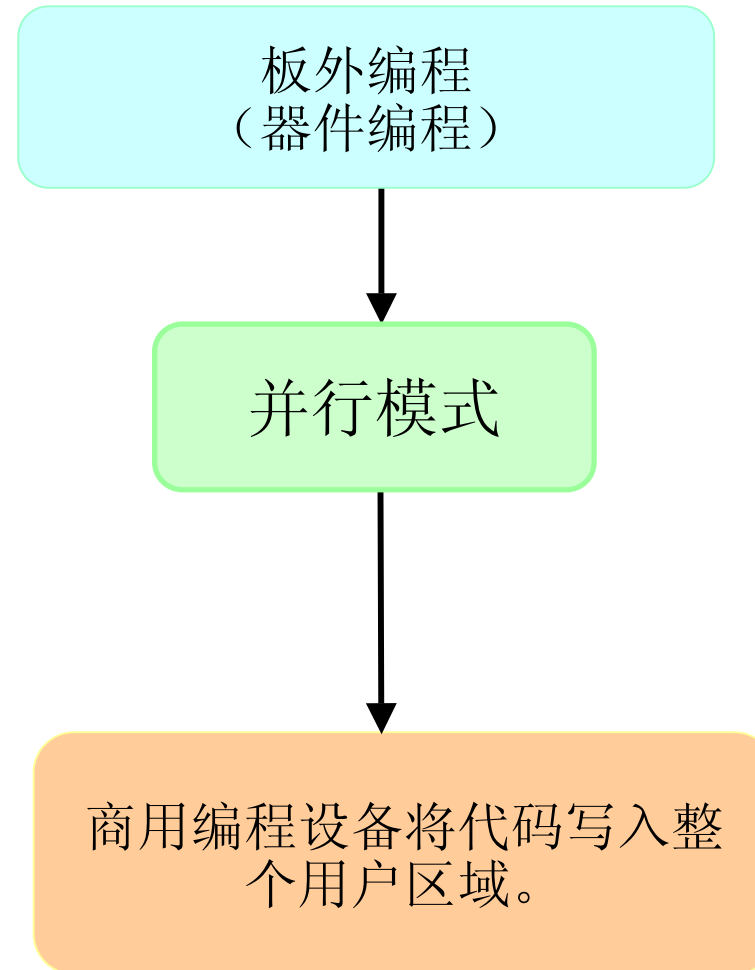
使用効率

系统调用跟踪

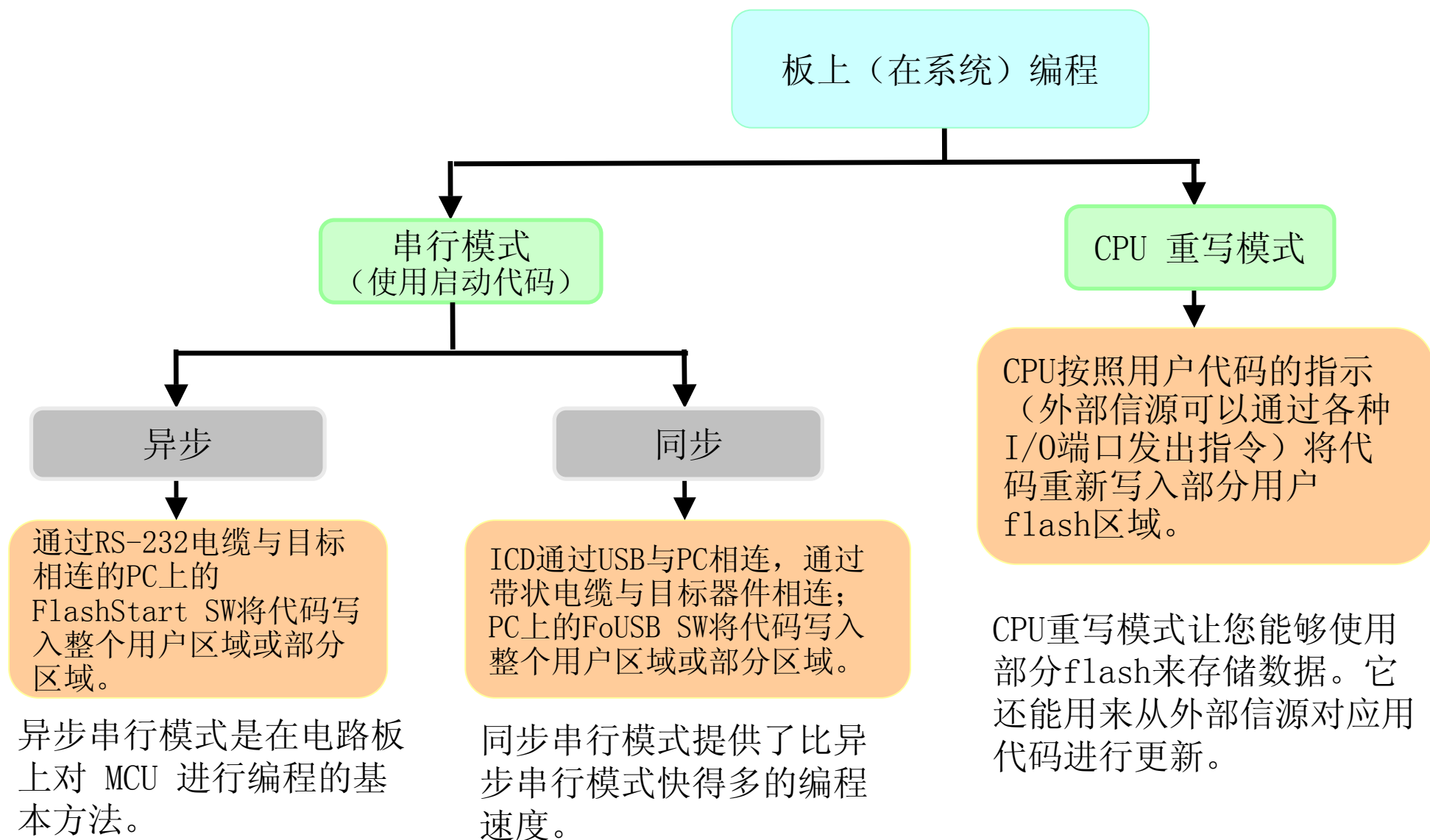
任务状态

Off-board Flash Write 板外编程模式

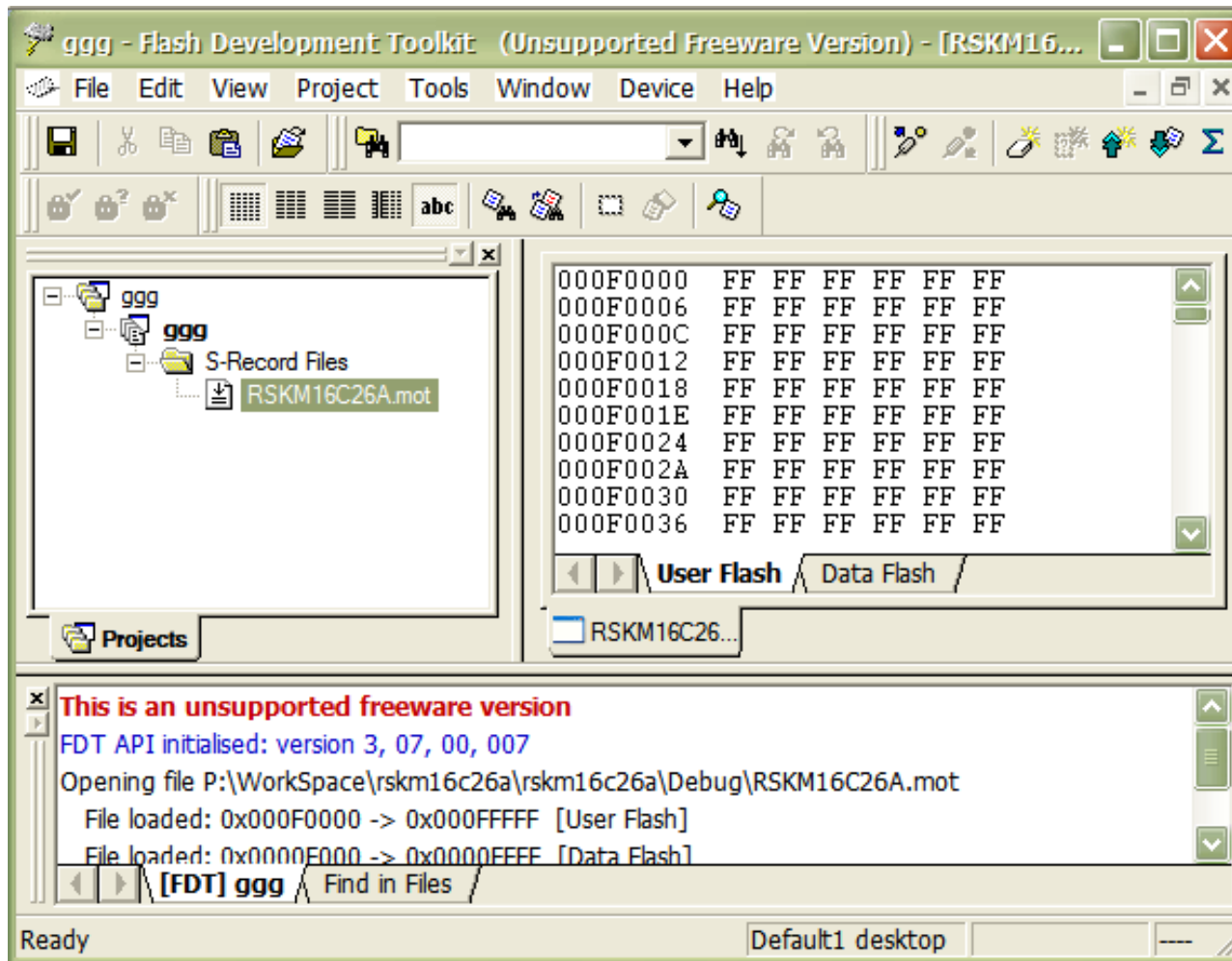
并行编程模式最适于在它们被安装到电路板上之前将代码写入大批量MCU 中。



In-Circuit Flash Write 板上编程模式

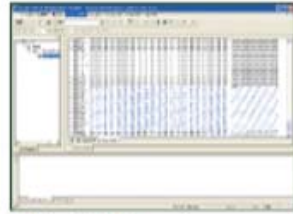


Flash 开发工具套件 (FDT)



E8a with
Flash Development Toolkit

Programming as Programmer



740	R8C/ Tiny	H8S
Super Low Power	M16C	H8SX
H8	M32C	SuperH

Flash Development Toolkit

E8a emulator offers two ways of flash memory programming. One is by using Flash Development Toolkit, a flash programming software tool for Renesas flash memories, and another is by using the Writing flash memory mode of which the E8a includes.

- 用于板上编程的 GUI 软件
- FDT 是一种软件, 用于规定要下载的文件和控制各种微型计算机的通信协议。

操作系统 (OS)

Renesas & uTRON

Target Devices	μITRON4.0 Specification	μITRON4.0/PX Specification
SH-4, SH-4A	HI7750/4	HI7300/PX ^{#2}
SH4AL-DSP, SH-3, SH3-DSP	HI7700/4	
SH2A-DUAL	HI7200/MP	
SH2-DSP	HI7000/4 ^{#1}	
SH-1, SH-2, SH-2A		
M32R	M3T-MR32R/4 ^{★★}	
R32C/100	M3T-MR100/4	
M32C/80	M3T-MR308/4	
M16C/80		
M16C/60,50,30,20,10,Tiny, R8C/Tiny	M3T-MR30/4	
H8SX	HI1000/4	
H8S		

★★ Under development.

*1: FPU of SH-2E including SH7055 is not supported.

*2: SH-4A and SH4A-DSP are supported.

The kernel object production of μITRON4.0/PX Specification is not supported.

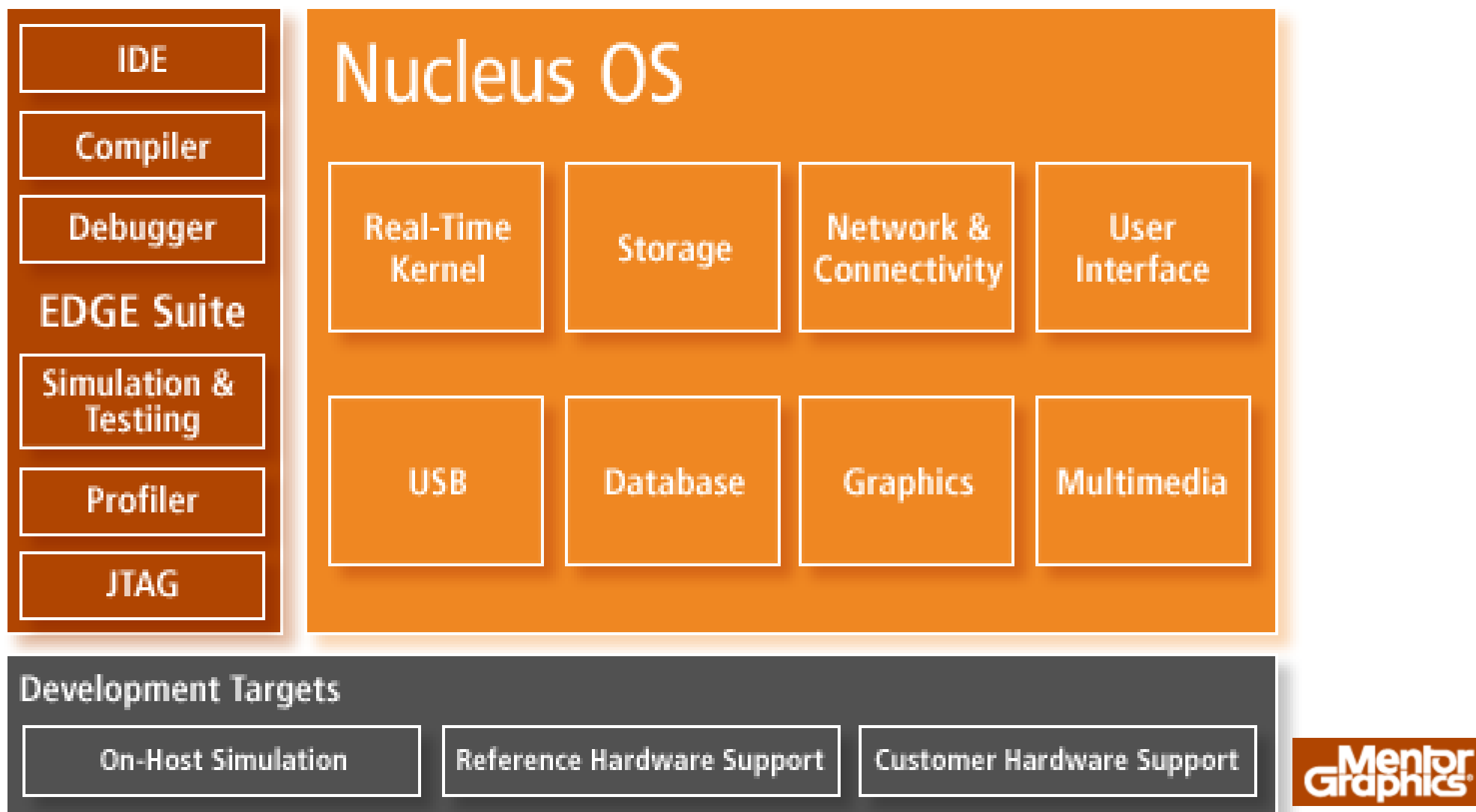
What is TRON, ITRON, μ ITRON

- TRON is an abbreviation of "The Real-time Operating system Nucleus.", launched by Prof. Dr. Ken Sakamura of the University of Tokyo in 1984
- The ITRON specification is a standard real-time OS kernel that can be tailored to any embedded system.
- The ITRON Project is promoted by the ITRON Specification Group in the TRON Association
- The ITRON-specification kernel has been adopted by many Japanese manufacturers. ITRON runs on mobile phones, digital cameras, CD players, automotive, ... etc.
- Steven Searle, who worked on developing TRON's multilingual environment, "RTLinux switches tasks in milliseconds, while ITRON switches tasks in microseconds," he said. "RTLinux' footprint is measured in megabytes; ITRON is measured in kilobytes."
- μ ITRON与其他RTOS之间的基本差别在于，其他RTOS用软件中断来自内核程序库的调用功能； μ ITRON则是规定使用标准的C-格式调用。把层次结构与执行过程分开， μ ITRON所提供的方法就优于其他的RTOS
- ITRON技术规范，"任务（task）"是指并行处理的一个单元。ITRON规范采用优先权调度方式。每项任务都被指定一个优先级；优先数值越小，优先级别越高。ITRON规范采用一个叫做任务身份证（ID）的号码指定作业。任务控制块（TCB）含有用以管理作业的信息。ITRON OS规范通过系统调用指令按TCB的数值来处理设定和修改。
- μ ITRON规范包括五种作业状态：运行、准备、等待、静止和非存在（虚拟）状态。
- ITRON is an abbreviation of "Industrial TRON."
- μ ITRON is an abbreviation of "Micro Industrial TRON."
- μ ITRON4.0 Specification (Ver. 4.02.00)
- ITRON TCP/IP API Specification
- ITRON Debugging Interface Specification

日本成立开放原始码ITRON团体

- 从事依据 μ ITRON4.0规格的OS--“TOPPERS”开发的日本名古屋大学教授高田广章等人，2003 June 成立了旨在开发和普及该OS的团体--“TOPPERS计划”。
- TOPPERS采用被称为“TOPPERS授权”的自主授权方式。在产品中采用TOPPERS的设备厂商，必须向TOPPERS计划通报已在产品中采用了该OS。高田等人将其称为“Report Ware（报告义务）”。“考虑到设备厂商的使用情况，把报告义务定成了唯一限制。与Linux等开放原始码采用的GPL方式相比，制定了相当宽松的授权条件”（高田）。不过，涉及到GPL软体时，则采用既可选择GPL授权方式，也可选择GPL和TOPPERS授权的双授权方式。该措施主要针对包括该OS 和Linux在内的混合OS的开发等情况。
- 目前TRON协会计划成员和已宣布参加的单位包括名古屋大学和丰桥技术科学大学高田研究室、日本RENESAS科技、理光、富士通设备、日本创智（DENSO CREATE）、日立系统和服务、日本Sophia系统、日本AI、日本高级数据控制（Advanced Data Controls）和日本东阳技术公司等。

Nucleus real-time OS (with 30 days trial from Mentor)



Nucleus : Accelerated Technology, Inc.



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At Accelerated Technology™, we want to supply the software foundation that empowers you and your embedded device and we want to remain your key partner, one you depend on. We've done this for thousands of different embedded systems designers, the best throughout the world, in markets such as networking, avionics, medical systems, telecommunications, industrial control, handheld devices, ... you name it, we're in it!

www.superh-linux.org



SuperH
Linux Open site

SH7712 / Solution Engine
linux-MS7712SE01-2.6.8.1-20061108.tgz
rootfs-MS7712SE01.tgz
toolchain_345 (toolchain.tar.gz)
sh-ipl+g-MS7712SE01-20061108.tgz
readme.txt
ms7712se01_srpm.tar
SH7722 / Solution Engine
linux-2.6.10-mobileR-060919.tgz
userland_shmr_060919.tgz
toolchain_345.tar.bz2
sh-boot-ms7722se01-060919.tgz
mtddimage_mobileR_060919.tgz
busybox-1.00.tar.gz



Welcome to the MPC Data SHLinux support site

This site is dedicated to providing support for embedded Linux running on SH-based processors and development boards from Renesas Technology Europe. We provide a small embedded Linux distribution tailored for Renesas development boards. This includes pre-built binaries, documentation and (of course) full source code.

Getting started with embedded Linux can either involve purchasing an expensive commercial board support package or spending a lot of time piecing together your own components to form your own embedded Linux distribution and board support package. The aim of this site is to provide a documented and working embedded Linux mini-distribution to save you time in evaluating embedded Linux on a Renesas development board. You can then use this as the basis for your own embedded Linux project.

For each supported board our package includes a precompiled toolchain, a bootloader, a precompiled kernel and a disk image so you can start running Linux straight away. Installation documentation and instructions for recreating the system components from source are also included.

Renesas Supported Boards:

SK7203plus NEW

MS7712SE01 NEW

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- instant free downloads
- email support
- access to specific updates
- training

RTOS : euros



- The company EUROS Embedded Systems, a registered Renesas alliance partner, announces the availability of its Real-Time Operating System EUROS including the Stand-Alone Cross Development Environment
- Especially for the Starter Kit RSK SH7201 in combination with the RSK ComsBoard (Ethernet and USB Application Board) EUROS Embedded Systems offers all needed device driver packages and network protocols like Serial, Ethernet, TCP/IP and USB.
- Support for the Starter Kit RSK SH7203 is under development.

<http://www.euros-embedded.com/index.php?pageid=2&subpageid=501>

ThreadX for SuperH



Total Solutions for Embedded Development

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ThreadX for SH



[» Download ThreadX SH datasheet \(PDF\)](#)

ThreadX

Express Logic's ThreadX® Real-Time Operating System (RTOS) is available from and supported by Green Hills Software. ThreadX is fully integrated with the Green Hills Software [MULTI® Integrated Development Environment](#), providing Optimizing Compilers, Source Debugger, Graphical Project Builder and many other powerful tools for development of embedded application.

SH Family Supported

- SH1
- SH2
- SH3
- SH4
- SH3-DSP

Highlights

- Reasonable pricing
- Royalty-Free



http://www.ghs.com/products/rtos/threadx_sh.html

RTOS : QNX (www.qnx.com)



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QNX Software
Systems



QNX Software Systems

Company

A 20-year leader in the embedded market, QNX Software Systems recently launched the QNX® realtime platform, the first self-hosted, graphical platform for embedded developers. Available free for non-commercial use at <http://get.qnx.com>, the platform features a POSIX microkernel RTOS, full memory protection, a customizable and embeddable GUI, Internet and multimedia technologies, vertical market source kits, and more.

The superior reliability, tiny footprint, and high availability that are inherent in the unique architecture of the QNX RTOS make it one of the best-selling and most-trusted RTOSs in the embedded market. Microkernel design means products can be upgraded on the fly with new applications, drivers, and protocols - without system downtime. The QNX RTOS can also recover from software faults without having to reboot, since every driver, OS component, and application runs in its own memory-protected address space.

Micrium : uC/OSII on SuperH



» μC/OS-II ports

All μC/OS ports can easily be ported to μC/OS-II. If you port μC/OS-II to a processor not listed and want to include your port on this web site, please contact Micrium at [Micrium](http://www.micrium.com). Note that the ports are provided as is with the exception of the Micrium ports which are supported by Micrium.. Note that in most cases only the PORT is provided and it is assumed that you have the rest of the source for μC/OS-II from the book or the upgrade. In cases where the μC/OS-II source code is included, you will need to be a registered member and be logged in before you can download the file.

Download	Processor	OS version	Compiler	Contributor
Download	SH-2		GNU	Shaun Parsons
Download	SH-2	v2.76	Renesas HEW3	Ian Hall
Download (See AN-1761 Below)	SH2-7619		Renesas HEW	Micrium
Download (See AN-Renesas-SH7201 Below)	SH2A-7201	v2.86	Renesas HEW v4.03	Micrium
Download (See AN-Renesas-SH7203 Below)	SH2A-7203	v2.86	Renesas HEW v4.03	Micrium
Download	SH-3		Renesas SH C Compiler	Kuan, Yeou-Fuh

<http://www.micrium.com/renesas/shrisc.html>

<http://msdn2.microsoft.com/en-us/library/aa924073.aspx>



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 - What's New in Windows Embedded CE
 - Terminology in Windows Embedded CE
 - How-to Topics
 - Getting Assistance
 - Catalog Changes from Windows CE 5
 - Migrating from an Earlier Version of Windows Embedded CE
 - FAQs About Submitting Feedback for Windows Embedded CE
 - What's New for Windows Embedded CE
- Bringing Up a Hardware Platform
- Developing an Operating System
- Developing a Device Driver
- Developing an Application
- Samples
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6/13/2007

Windows Mobile



Windows Embedded CE

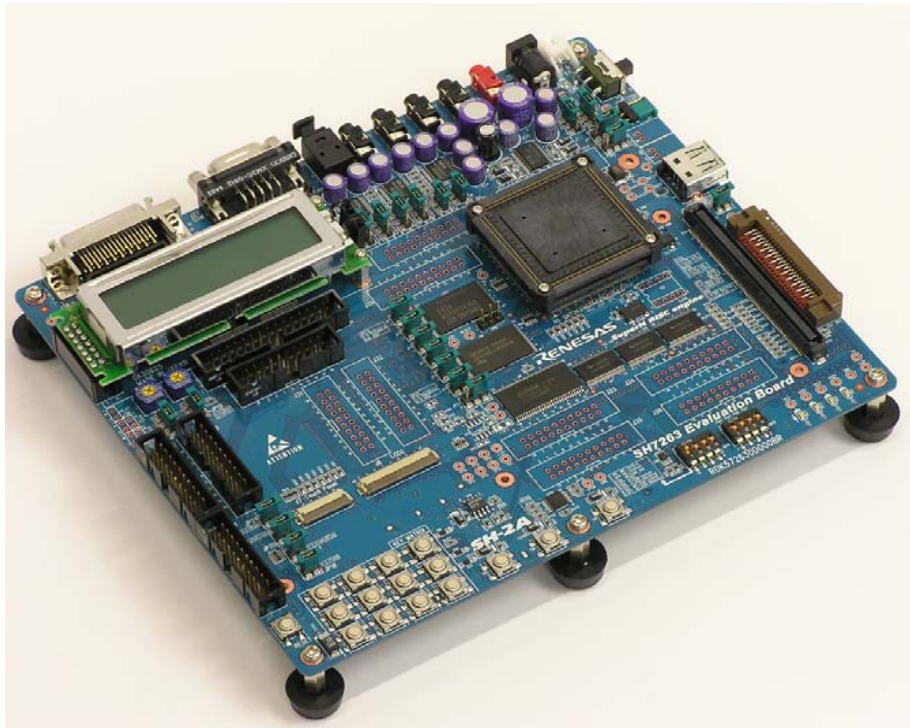


Windows Embedded CE 6.0

Windows Embedded CE 6.0 is designed specifically for the professional embedded developer who needs software to bring a device to market. CE 6.0 helps a device maker be successful by providing a hard real-time, small-footprint operating system (OS) with a redesigned kernel and embedded-specific development tools.

开发板

SH7263 评估板



SH7263 评估板

SH7263 评估规范

项目	技术规范
CPU	<ul style="list-style-type: none"> • SH7263 (SH-2A CPU 核) - 输入 (XIN) 时钟: 16.67MHz - 总线时钟: 66.67MHz (最大值) - CPU 时钟: 200MHz (最大值)
存储器	4M字节 (M5M29KT331AVP) 512M字节 (K9F4G08U0M-Y、P) • SDRAM: 16M字节 (16位总线宽度)
I/F	<ul style="list-style-type: none"> • USB 连接器 (串联 A 插座) • SD 存储器卡接口插槽 • IDE 连接器 • 串行端口连接器 (D-sub 9引脚) • H-UDI 连接器 (14引脚/36引脚型) • 扩展板连接器 • SH7263 用户 I/O 连接器: 9 • LCD 触摸板连接器: 1 • 串行连接器: 1 • LCD 连接器 (用于实现 LCD 模块连接): 1
LED	<ul style="list-style-type: none"> • 功率 LED (1) • 用户 LED (4)
开关	<ul style="list-style-type: none"> • 复位、NMI、IRQ0 开关 • 用于实现模式设置的 DIP 开关 (1-六极) • 用户 DIP 开关 (1-四极) • 用于 SH7263 键盘扫描的开关 (3 x 4 = 12 个开关)
板尺寸	<ul style="list-style-type: none"> • 160mm x 190mm

RSK+7203 (Bootloader + uClinux BSP ready now)

320x240 QVGA TFT (max. 1024x1024)

E10A or E10A Lite (H-UDI & AUD)

LEDs

SH7203

IO connectors

USB device

USB host

FLASH and SDRAM
on back of board

Configuration
switches

User switches

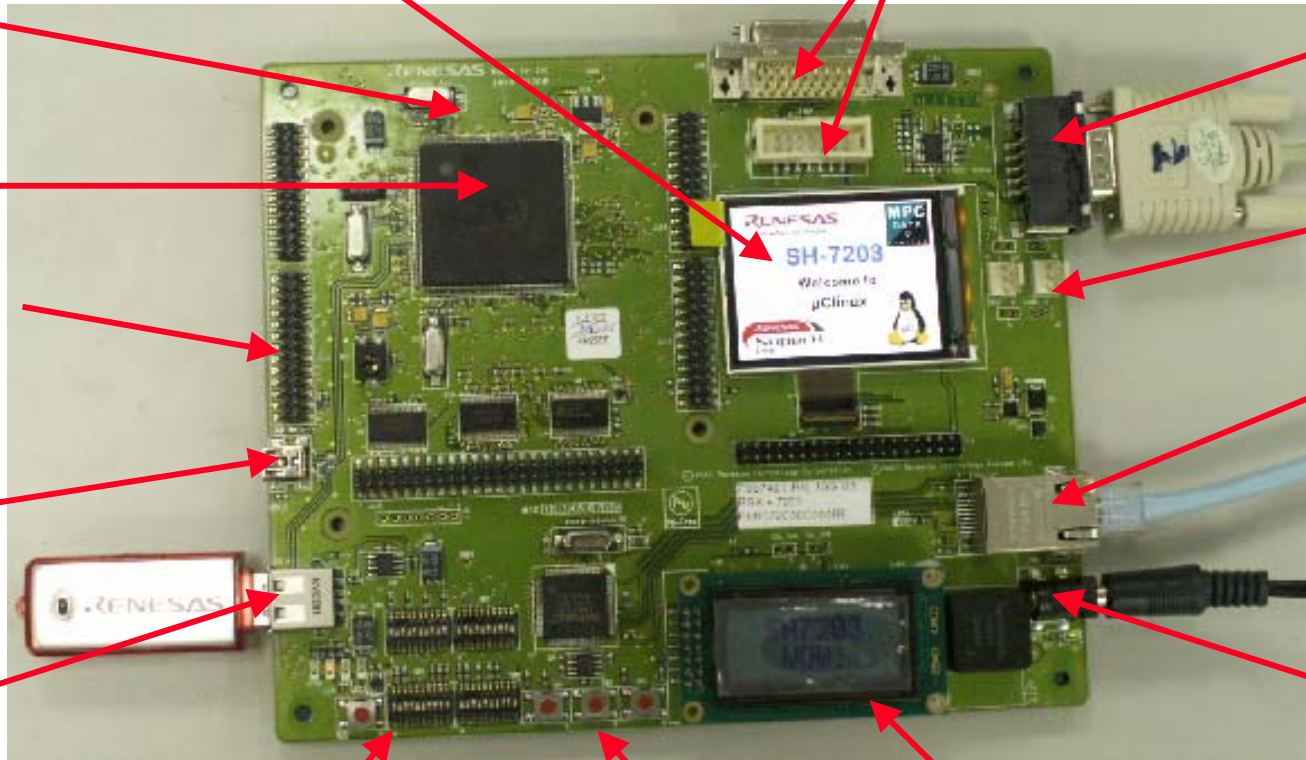
LCD display

Serial

2 x CAN

Ethernet

Up to 12V DC

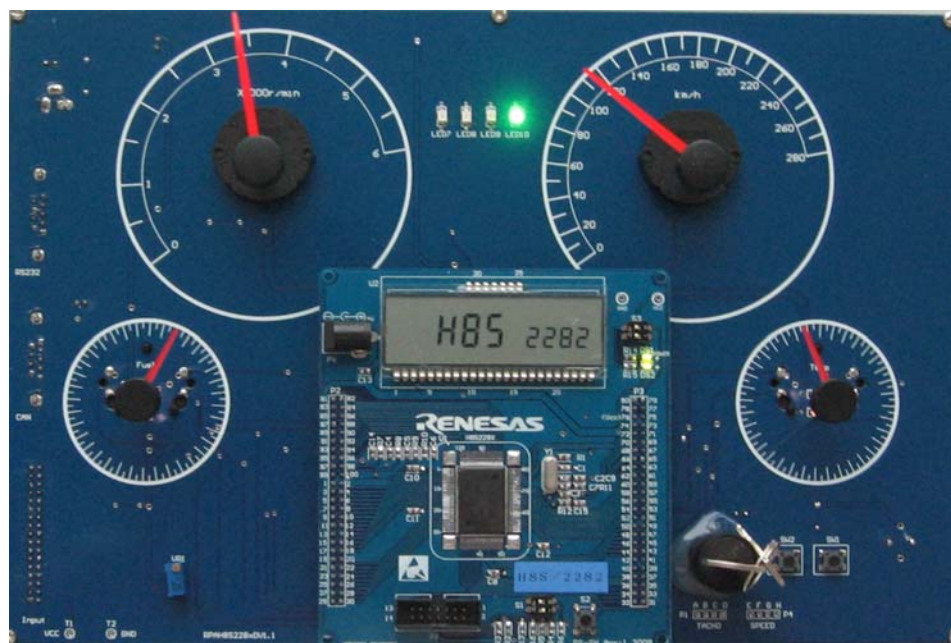


方案及应用

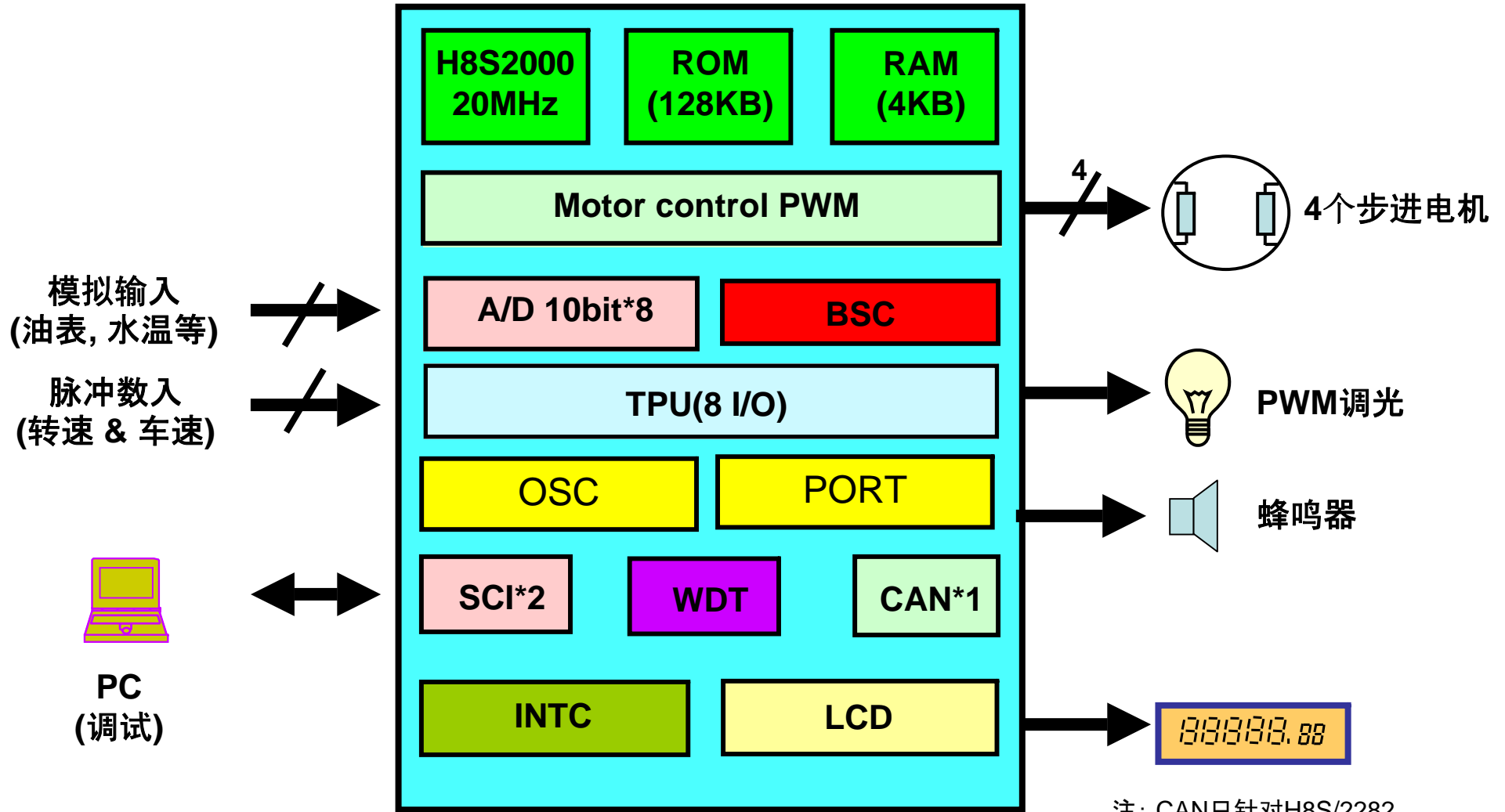
H8S/228x仪表板方案

基本特点:

- 步进电机PWM控制
- 16通道10位PWM: 4表
- LCD 控制
- 28segx4com
- PWM调光
- CAN: 1通道 (仅对H8S/2282)
- 兼容H8S/2282和H8S/2280
- 嵌入HMON软件调试工具



H8S/228x仪表板系统框图



注：CAN只针对H8S/2282

瑞萨MCU的H8S/2282汽车仪表盘方案

- H8S/228X高性能汽车仪表专用MCU与大正软件平台的结合，通过在线可编程方案，缩短仪表开发周期，降低开发成本。H8S/228X 是款硬件资源较为齐全的典型汽车仪表专用MCU，集4 电机驱动、28X4 LCD 液晶驱动为一体的单片专用MCU。满足车速、转速、油量、冷却水液位的信号采集、指针指示，以及里程、行车电脑的计算、显示。是款具有汽车工业级品质、高速运算能力的16位MCU。随着国内汽车仪表技术发展，对仪表的性能及可靠性要求进一步提高，H8S/228X 的设计方案具有明显优势。
- 在H8S/228X MCU 中嵌入“大正软件平台”，使之开发周期大为缩短。“大正软件平台”作为汽车（摩托车）通用技术平台，应具有最大的应用灵活性，以及高可靠性、高性价比。它采用功能可编程的组态方式，完成多种仪表设计。即通过在线调试设备修改设置参数来满足仪表各项功能要求。如：步进电机/ 十字线圈选择，各种样式LCD输出，电阻/ PWM 信号源的参数自适应匹配，指针刻度在线修正等，都无需重新编制软件。
 - 1. 28X4 LCD直接驱动
 - 2. 4 步进电机/ 十字线圈直接驱动
 - 3. PWM 调光输出控制
 - 4. 行车电脑计算输出
 - 5. 任意输入信号对应任意刻度的可编程软件控制



大正电子技术研究所 Dazheng IC Software Laboratory TEL : 86-574-86988566 E-MAIL : dzics@dzics.com

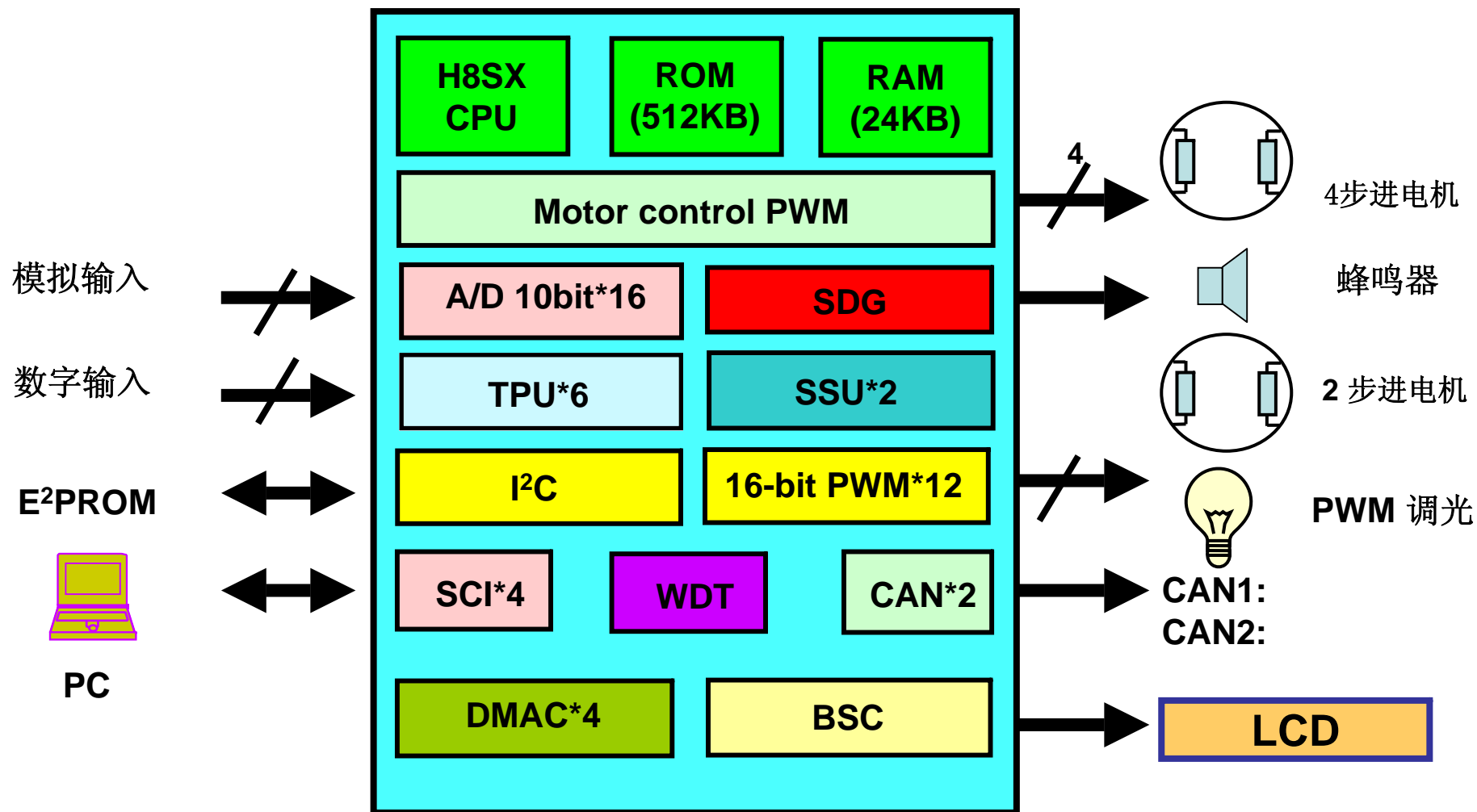
H8SX/1544 CAN仪表盘方案

基本特点:

- 32位高性能CPU
- 步进电机控制: 6表
- CAN: 2通道
- 总线控制器
- PWM 调光
- 声音发生器
- LCD: 128*64点阵

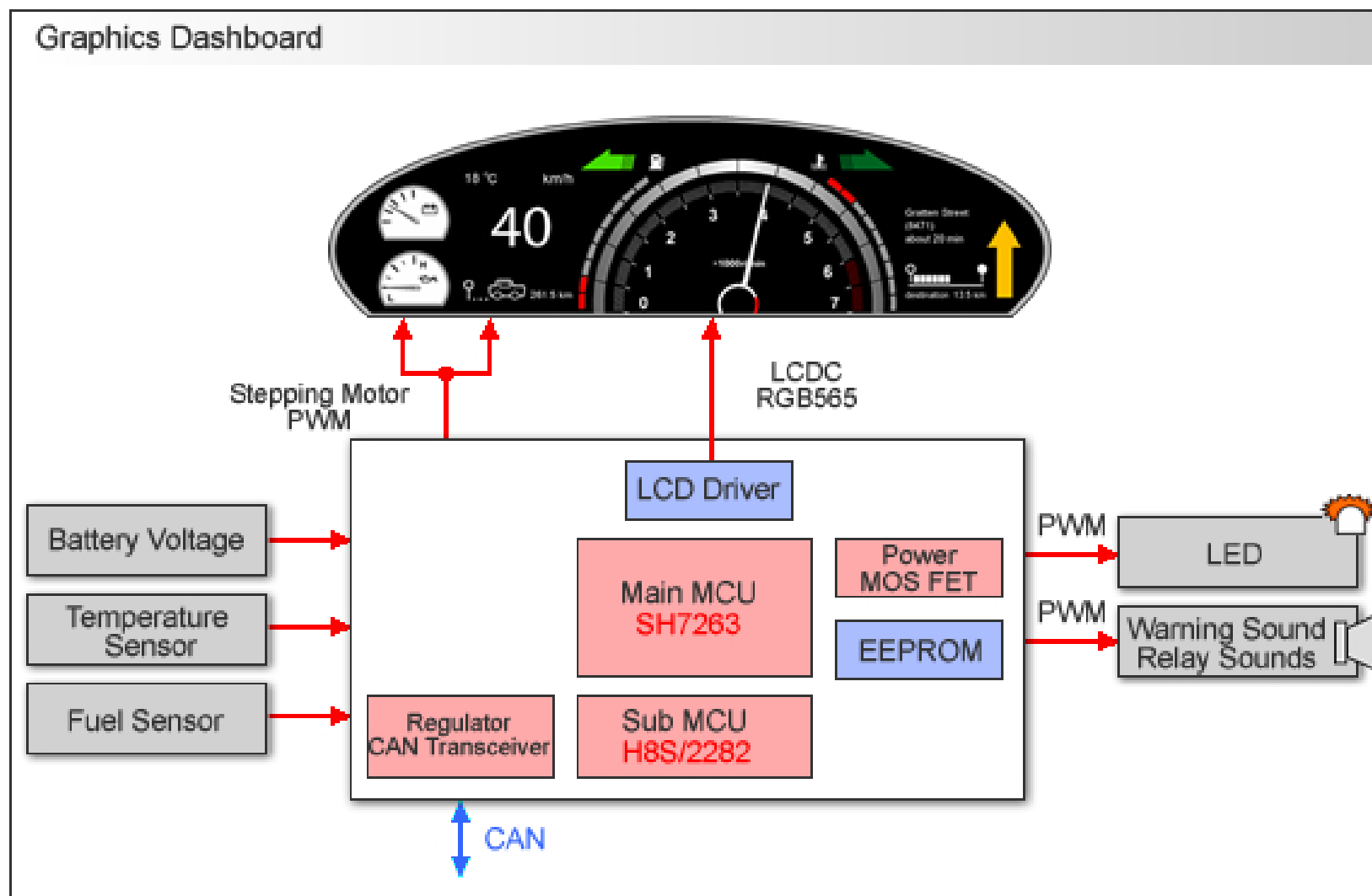


H8SX/1544 CAN仪表盘系统框图

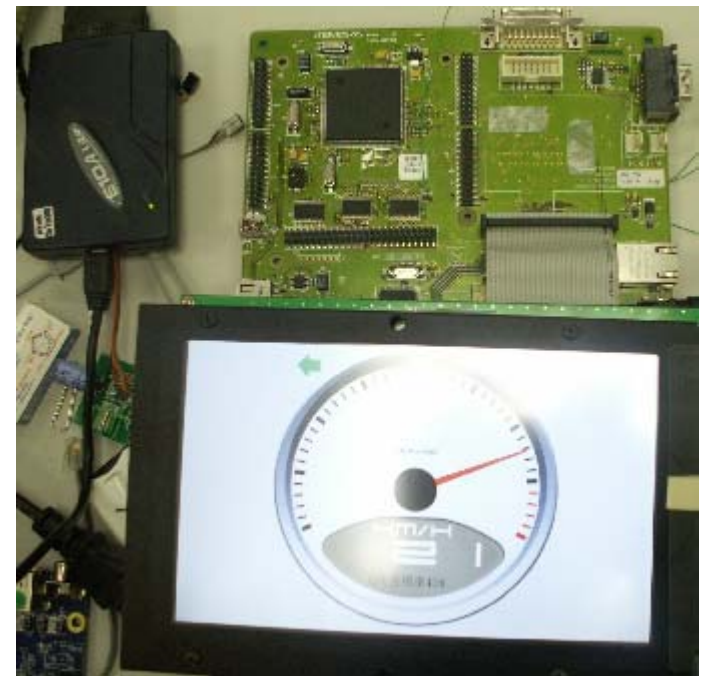
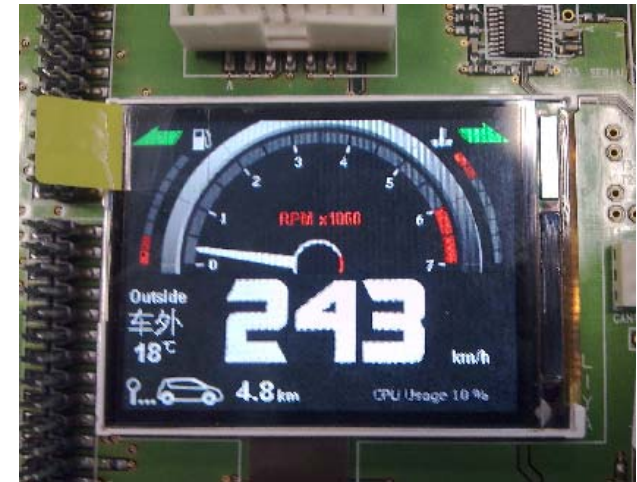


SH7263 汽车数码仪表盘方案

- SH7263 automotive grade 200MHz.



汽车数码仪表盘方案



FFB Graphics library

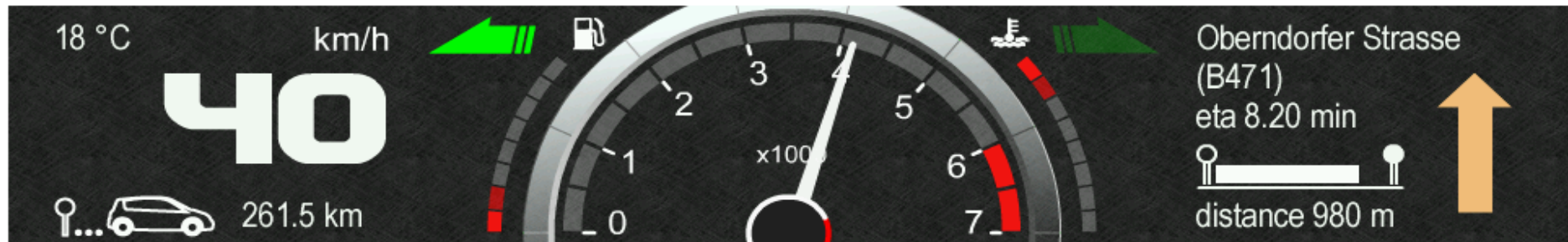
Components

Flat frame buffer components

- Bitmap frame drawing (BLIT)
- Alpha blending and transparency
- Vector graphics buffer
- Anti-aliased vectors
- Font blending
- Bitmap rotation
- Colour space conversion
- Direct frame draw mode
- Double buffer frame mode

Features

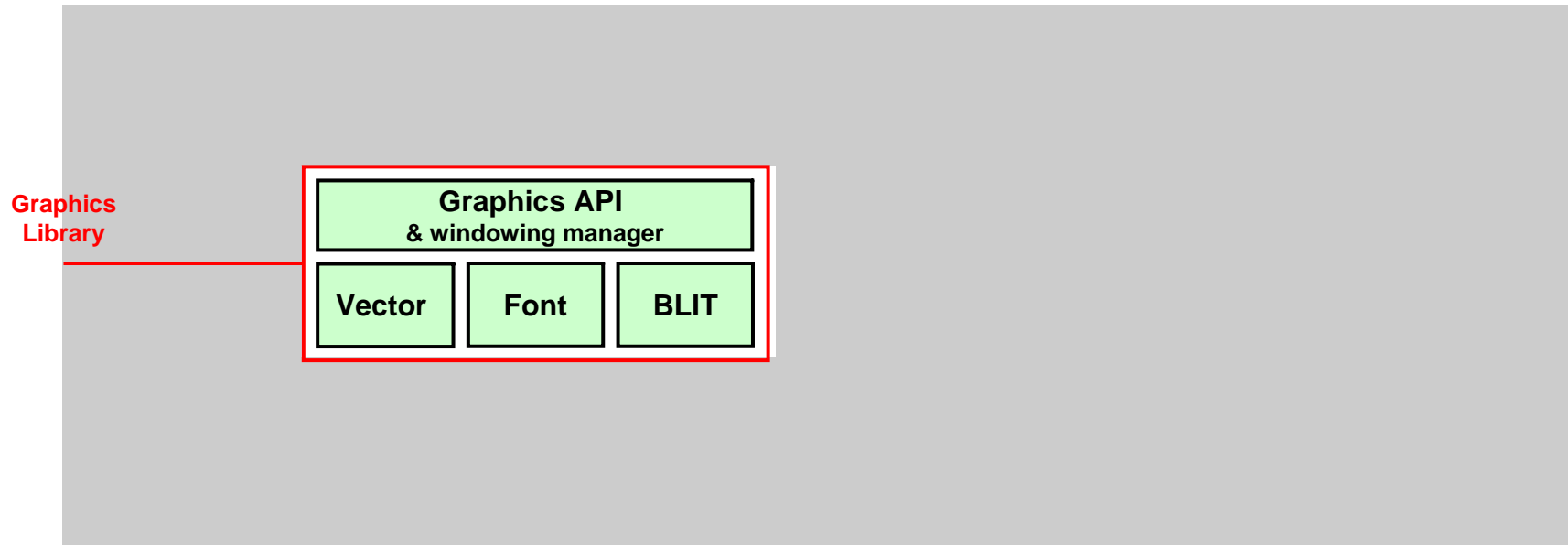
- Only 24KB of P code
- Flexible memory requirements
- 16bit (565) frame buffer support or
- 8bit (256 palette) frame buffer support
- 1024x1024 LCD size supported



Electronica 2006 demonstration - RTE graphics library on SH7263

Graphics library in-system view

Software layer model



The graphics library sits on the IOIF layer and has a provides a simple API for applications.

- Light weight framework designed for Low Power CPU
- POSIX compatible LCD driver interface
- Simple windowing manager and graphics API

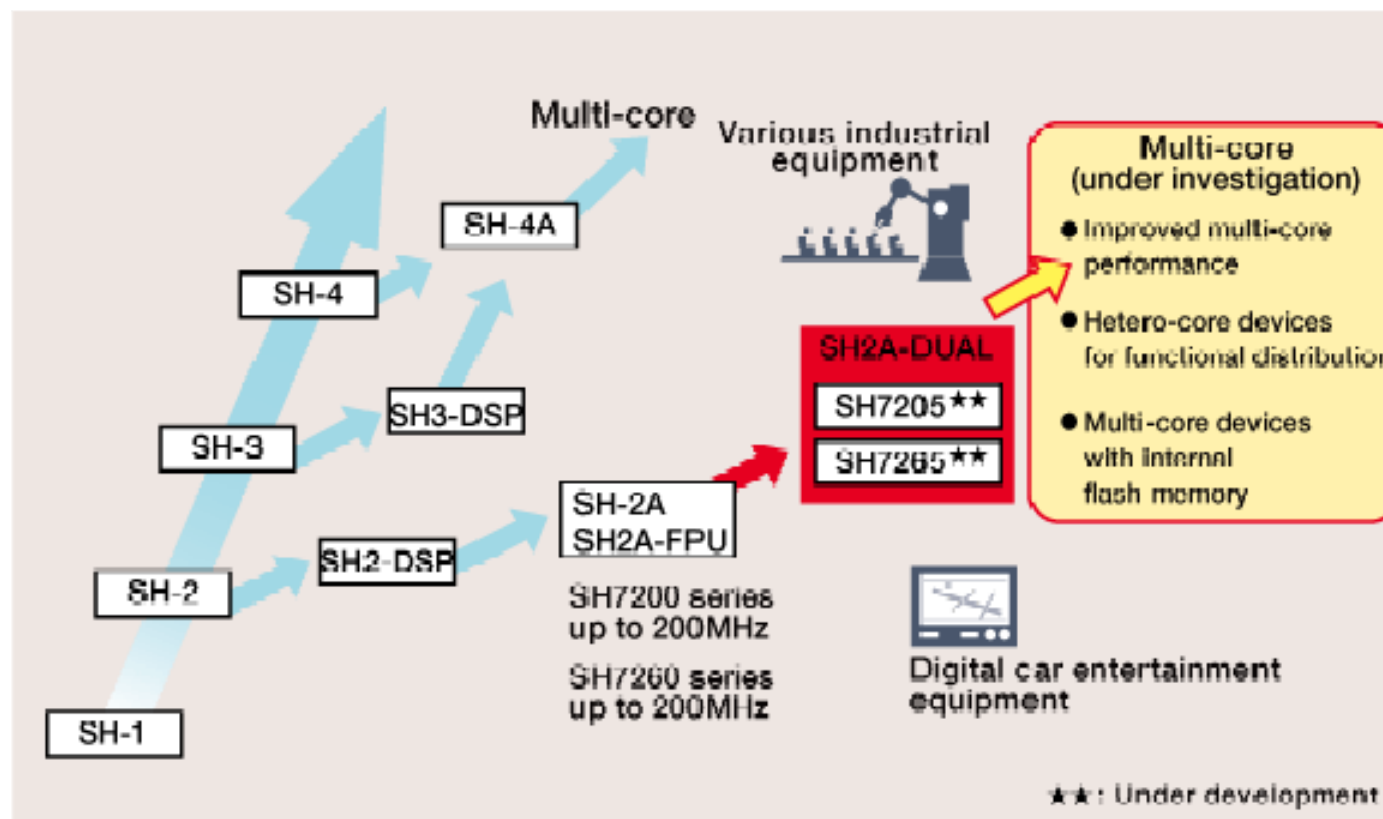
Everywhere you imagine. **RENESAS**
瑞 萨

Updated News 最新情报

双核 SH-2A MCU

应用:

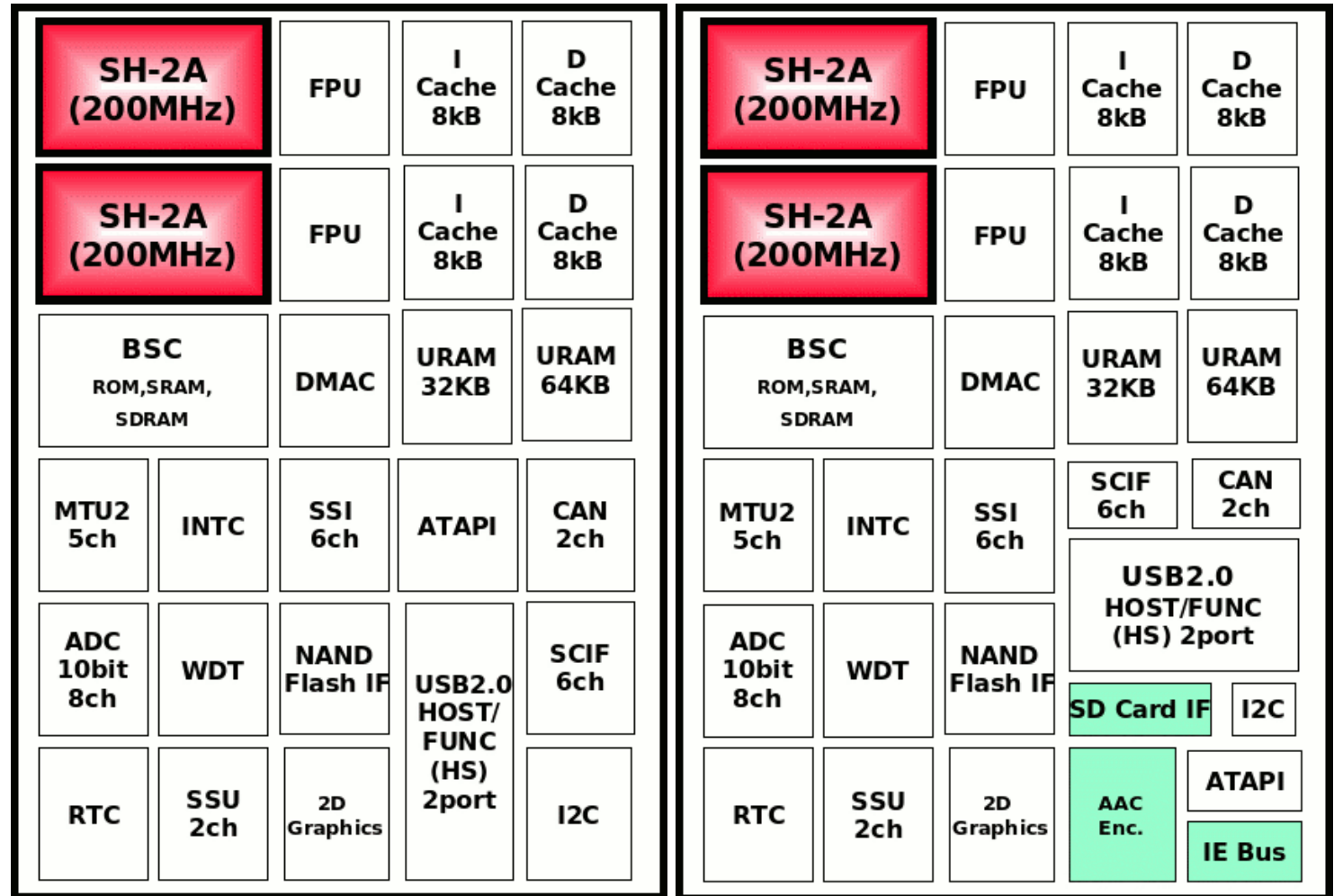
- 汽车音响: 汽车 CD/DVD 播放器、配有 HDD 的汽车音响系统等
- 车载信息终端: 汽车导航模型等
- 家庭音响: 网络音频系统、配有 HDD 的音频系统等
- 工业设备: 定序器、机器人等



- 2007年4月16日 日本东京讯 -- 瑞萨科技公司今天宣布利用面向 SuperH™*1 族的 SH2A-FPU CPU 核开发多核技术。即将发布5个整合了2个 SH2A-FPU CPU 核、最大工作频率为 200MHz 的 SH7205 和 SH7265 模型。2007年7月开始在日本发售样片。
- SH7205 设计用于消费类和工业应用, 而 SH7265 产品则面向汽车音响、汽车导航模型和多媒体器件。

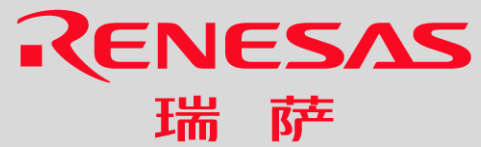
双核：SH7205、SH7265

- 瑞萨正在为其首款基于其32位 SuperH 架构的双核处理器做准备。预计7月将发行样品 - SH7205 和 4款 SH7265
- USB v2.0 高速（480-Mbps）规范接口
- 2D 图形引擎和1个用于实现图形处理的数字视频输入引脚
- 尺寸为 WQVA（480x234像素）和 QVA（320x240像素）的模拟 RGB 输出引脚



并行执行相同或不同的 OS，如一个核上的 uClinux 和另一个核上的 iTron

Q&A 问答时间



谢谢!

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(+852) 9836-1651