

致尊敬的顾客

关于产品目录等资料中的旧公司名称

NEC电子公司与株式会社瑞萨科技于2010年4月1日进行业务整合（合并），整合后的新公司暨“瑞萨电子公司”继承两家公司的所有业务。因此，本资料中虽还保留有旧公司名称等标识，但是并不妨碍本资料的有效性，敬请谅解。

瑞萨电子公司网址：<http://www.renesas.com>

2010年4月1日
瑞萨电子公司

【发行】瑞萨电子公司（<http://www.renesas.com>）

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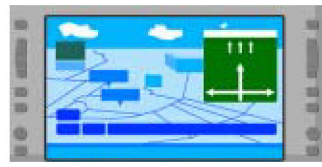
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汽车音响

CD ▶ (DVD) ▶ HDD



后排座位·娱乐系统

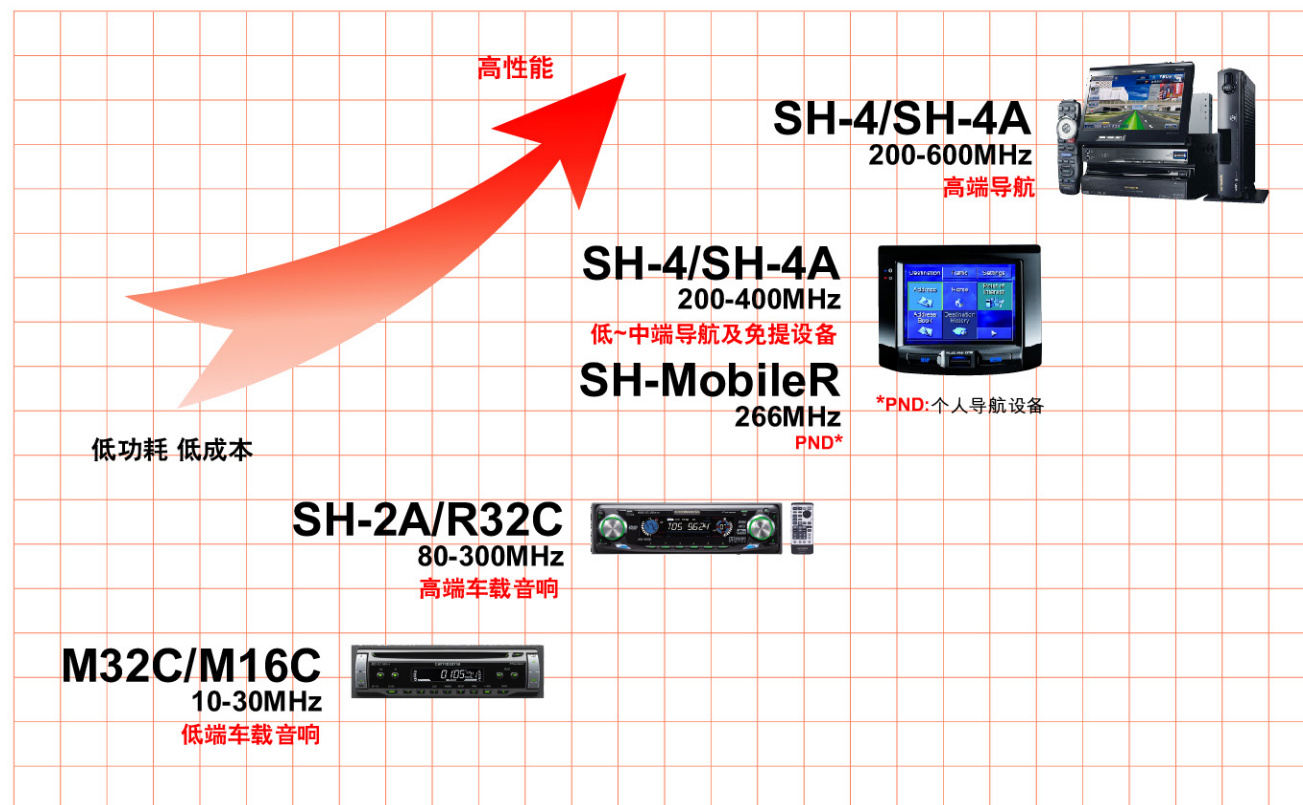
DVD ▶ TV ▶ Game ▶ Net



LBS: 基于位置的服务 FWA: 固定无线接入

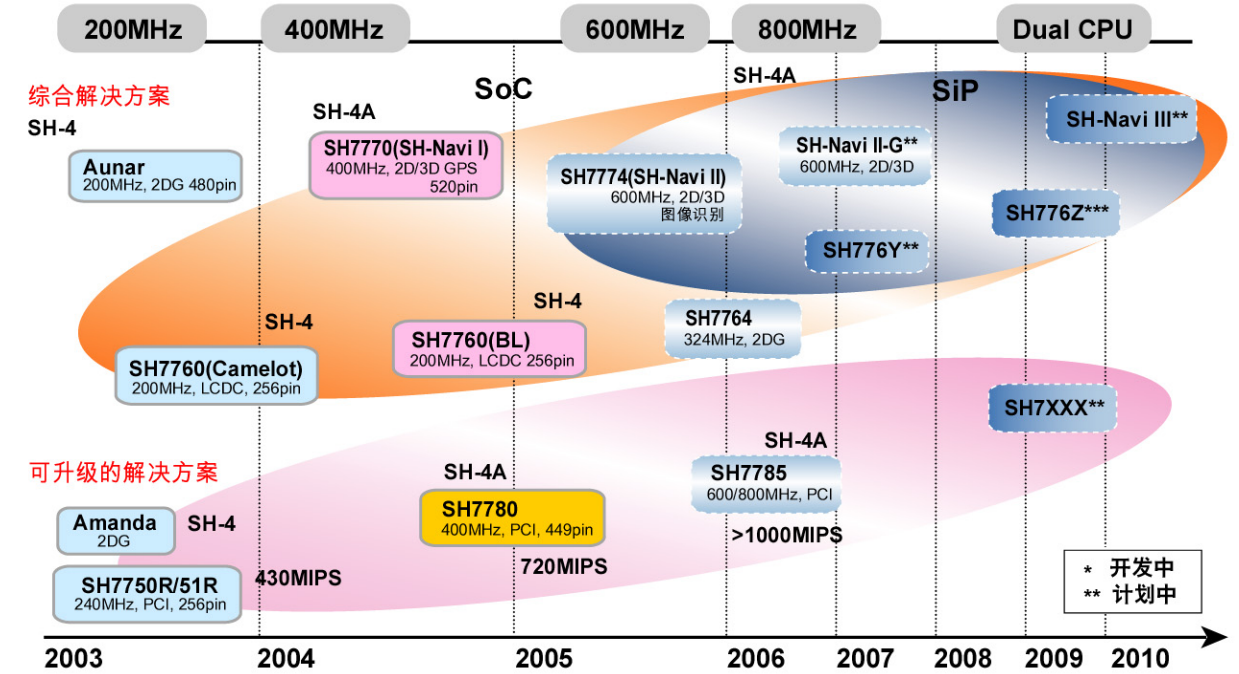
瑞萨的车载导航系统

完整的产品线可以支持从低端车载音响到高端导航系统



瑞萨导航用SH产品的开发计划

根据导航用户的需求和反馈不断开发有竞争力的产品



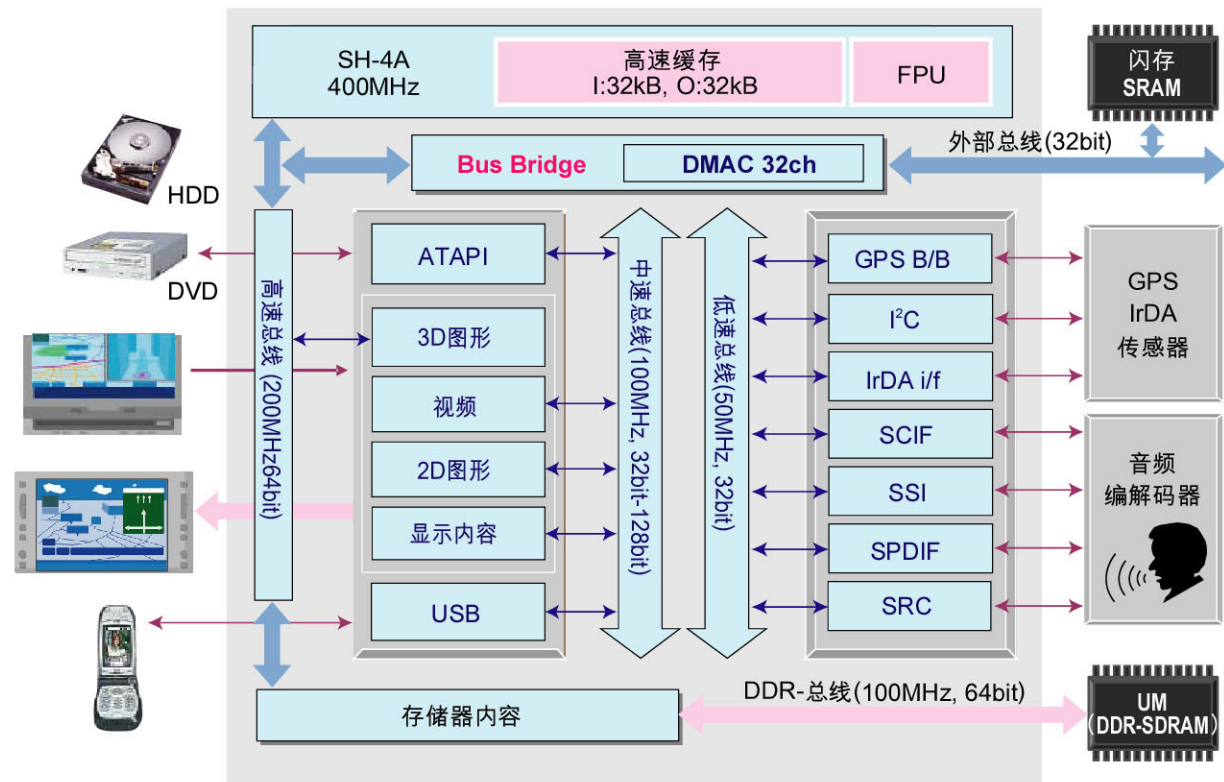
SH7770

一个将3D、GPS和AV外围设备整合于CIS SoC中的事实标准

SH-4A 400MHz	DMAC	HCAN2
FPU	CPG	HSPI
UBC MMU	3D Graphics	HAC
32KB I-cache	2D Graphics	SPDIF
32KB O-cache	Display Unit	SRC
INTC/INTC2	YUV	SSI
WDT	Video In	TMU
EX-Bus Controller	ATAPI	SCIF
DDR-SDRAM Controller	USB(H/F)	RTC
	GPS	PWM
	A/D	IrDA

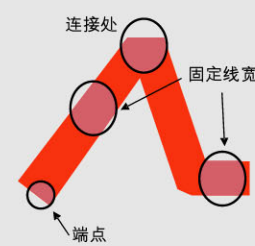
- CPU** SH4A内核
- 工作频率** 400MHz
- 性能** 整数720MIPS
浮点数2.8GFLOPS
- 工作电压** 1.25V(核)/2.5V(DDR-SDRAM)/3.3V(外围接口)
- 内部存储器** RAM: 16K字节
Cache: 指令=32K字节, 数据=32K字节
- 总线接口** SRAM, Flash, DDR-SDRAM
- 图形/视频** DU 854 × 480(16bit像素), 6层输出
VIN 720 × 288视频输入
2DG 800M像素/秒
3DG 3.1M多边形/秒, YUV彩色空间转换
- GPS** 基带
- 音频接口** HAC, SSI(4通道), SPDIF
- USB** USB主/设备
- CAN2.0** HCAN2
- ATAPI** 主/从支持
- 其他接口** I²C, HSPI(2通道), SCIF(10通道), IrDA, GPIO
- 其他内部模块** RTC, PWM, TMU(32bit, 9通道)
ADC(32bit, 4通道), SRC(采样率转换)
- 工作环境温度** -40~85°C
- 封装** BGA520

采用SH7770构成的导航仪系统框图

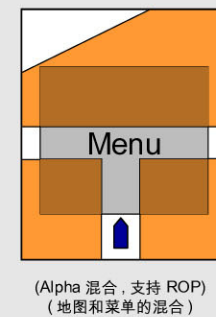


2D图形加速器

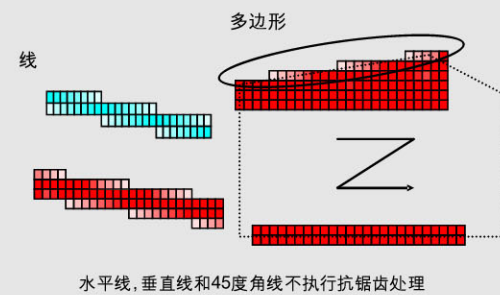
• 高性能的粗线命令



• BitBLT命令

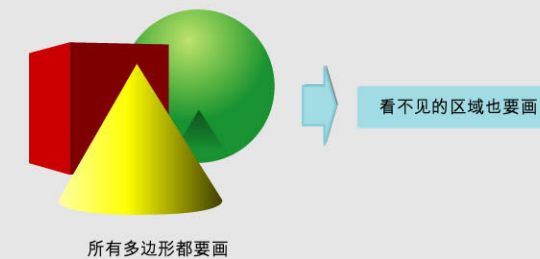


• 抗锯齿(Anti-aliasing)

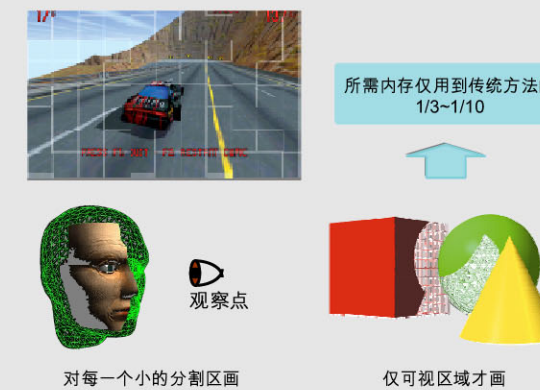


3D图形加速器

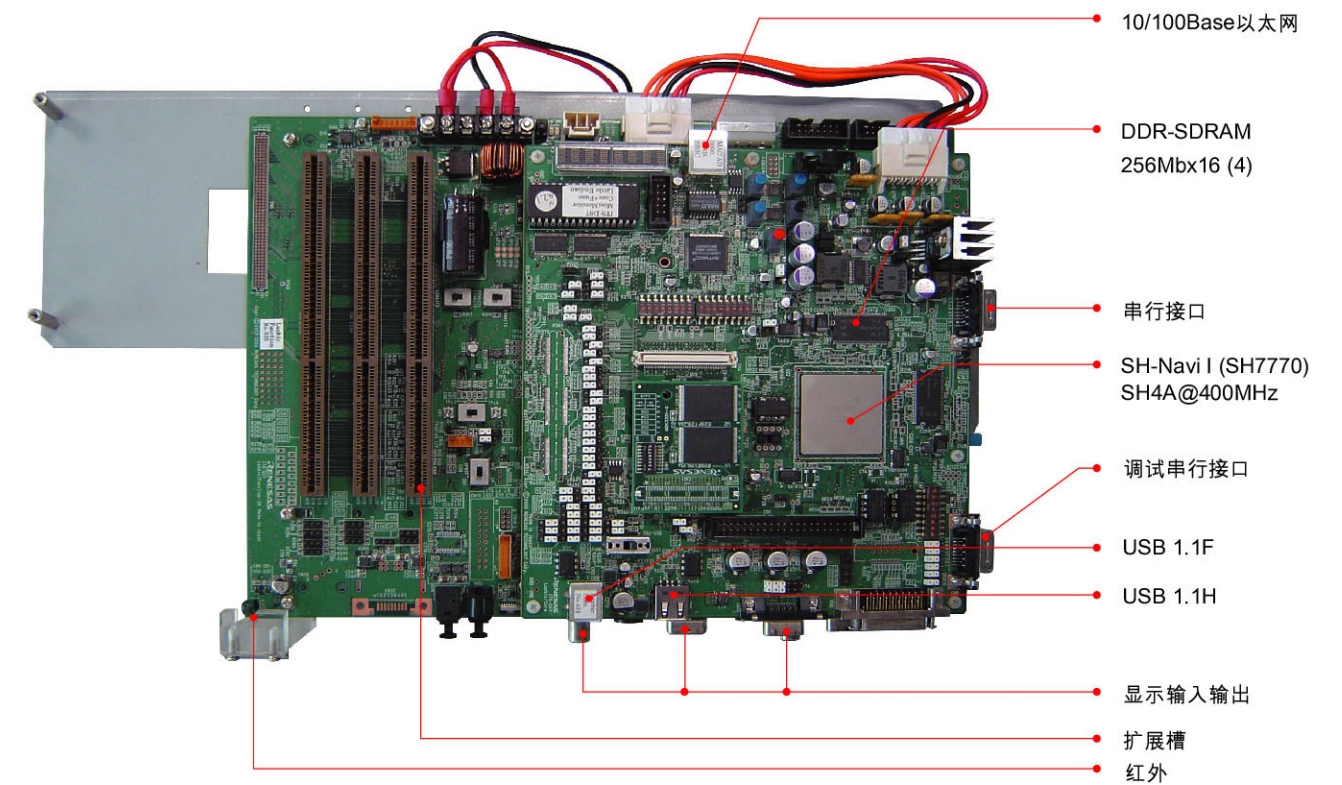
• 传统方法



• SH7770



SH7770导航系统参考平台(Lanbic)



SH7770导航系统参考平台(Lanbic) 介绍

• 操作频率

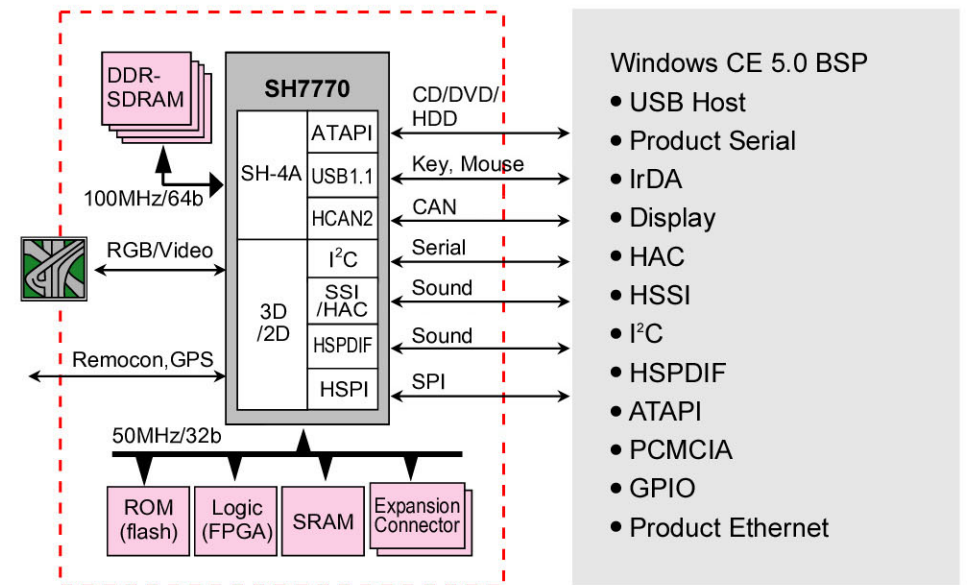
CPU : 400MHz
 DDR-SDRAM: 100MHz
 (128MB, 4pcs)
 外部总线: 50MHz

• 功能模块

CPU : SH-4A
 Flash : 64MB NOR
 图形: 2D/3D硬件加速
 声音: SSI(3ch), HAC
 存储接口: ATAPI
 串行接口: USB, IrDA, SCIF(9ch)等
 网络: HCAN2, I²C, 以太网

• 操作系统

Windows CE 4.2/5.0/6.0



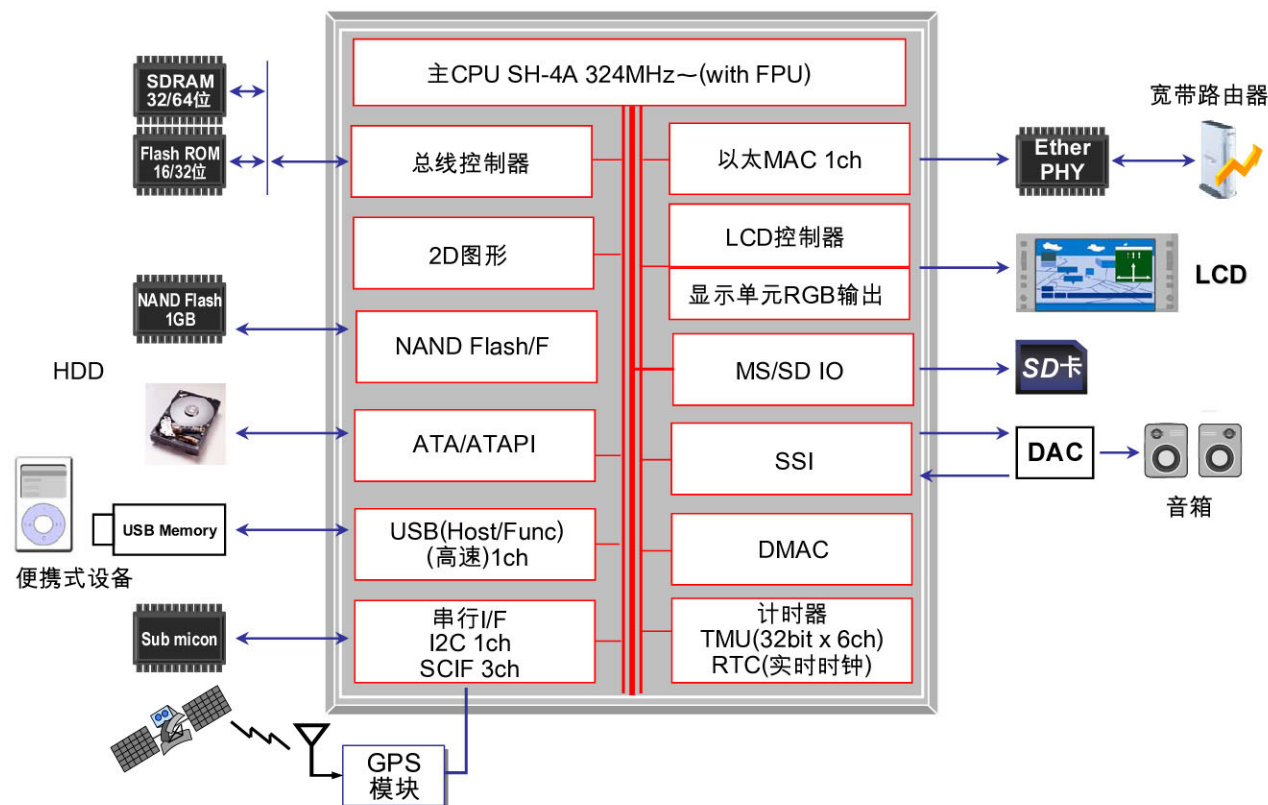
SH7764

具备丰富外围接口功能的中低端导航仪解决方案

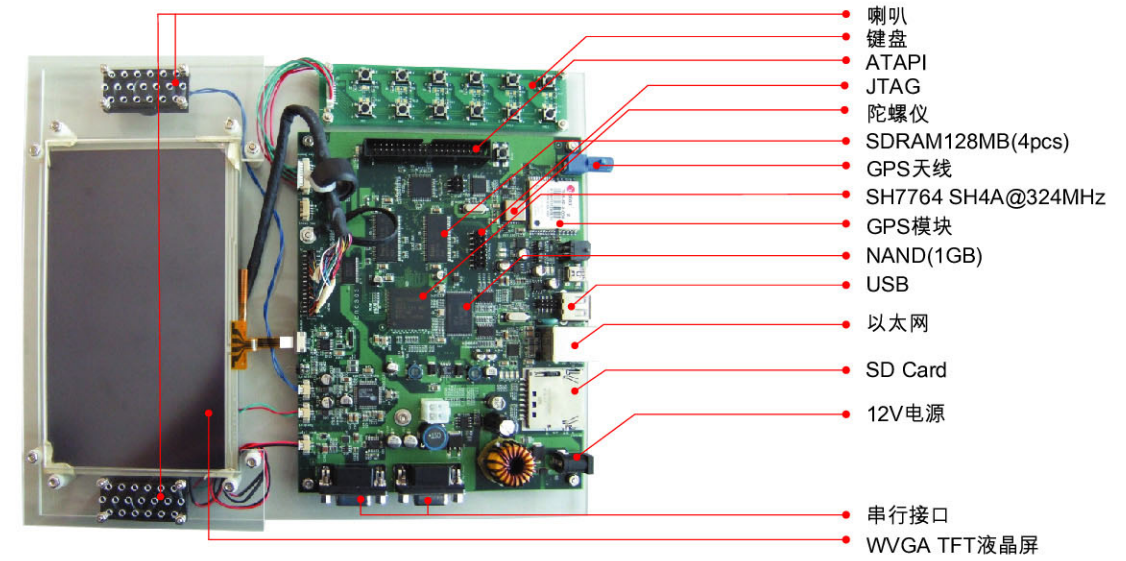
SH-4A 324MHz	MMU	I-Cache 32kB	Data Cache 32kB	RAM 16kB
MCU ROM,SRAM,SDRAM	FPU	INTC	DMAC 6ch	SRC 2ch
12C 1ch	GPIO	TMU 23bit 6ch	WDT	H-UDI Flash I/F
SCIF 3ch	SSI 6ch	IDE controller 1ch	USB 2.0 host/function (HS)1ch	
Ether MAC 1ch	MS/SD IO	AES	2D Graphic	VDC2 Digital RGB
				LCDC

- CPU** SH-4A内核
- 工作频率** 324MHz
- 性能** 整数583MIPS
浮点数2.3GFLOPS
- 工作电压** 1.2V(核)/3.3V(外围接口)
- 内部存储器** RAM:16K字节
Cache:指令=32K字节,数据=32K字节
- 总线接口** SRAM, Flash, SDRAM
- 图形/视频** VDC2, 数字RGB接口, 四层输出
LCDC(LCD控制器)
2D图形加速器
- 音频接口** SSI(6通道)
- IDE Controller(1通道)** IDE控制器
- Ether MAC(1通道)** 以太网控制器
- NAND Flash接口** 支持8G bit, SLC NAND
- MS/SDIO** SD卡控制器,支持SDHC, 16G字节
- USB2.0** 支持主/设备功能和HUB
- 其他接口** I²C(1通道), SCIF(3通道), GPIO
- 其他内部模块** TMU(32bit,6通道), WDT(看门狗, 1通道),
DMA控制器(6通道), SRC(采样率转换, 2通道)
INTC(中断控制器), H-UDI(用户调试接口)
- 工作环境温度** -40~85°C
- 封装** BGA404

采用SH7764构成的中低端导航仪系统框图

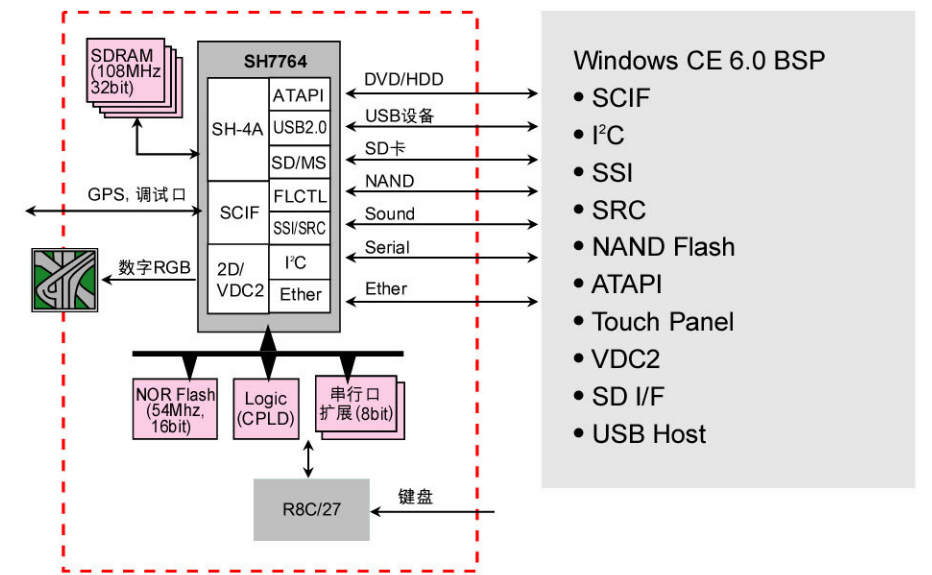


SH7764导航系统参考平台

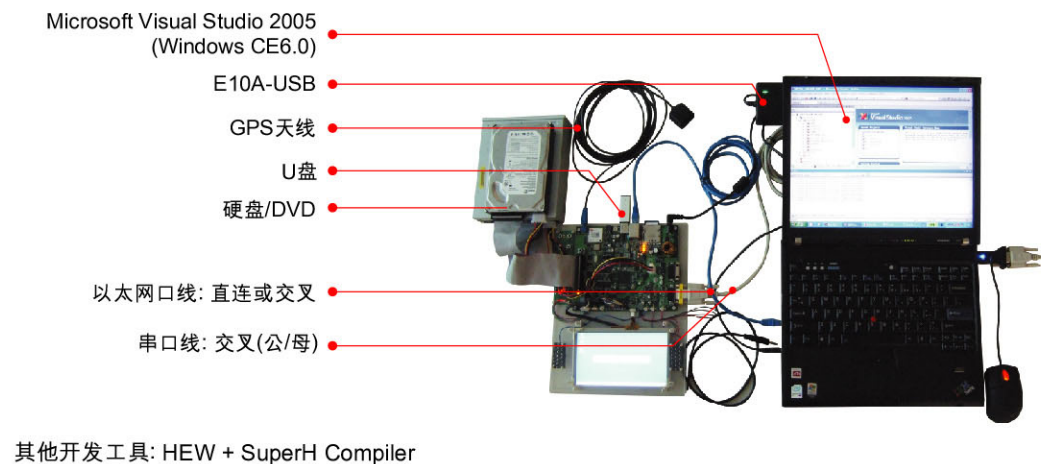


SH7764导航系统参考平台介绍

- 操作频率**
CPU : 324MHz
SDRAM : 108MHz(128MB, 4pcs)
外部总线: 54MHz
- 功能模块**
CPU : SH7764(SH4A)
Flash : 32MB NOR, 1GB NAND
图形显示: WVGA TFT LCD液晶屏
2D硬件加速
声音: SSI, SRC
存储接口: ATAPI, SD卡
串行接口: USB(2个, 采用Hub),
串口(2个)等
输入: 触摸屏, 键盘
网络接口: 以太网, I²C
SubMCU: R8C/27
导航: GPS和陀螺仪
电源: 12V直流输入
JTAG : H-UDI Connector(14-pin)
- 操作系统**
Windows CE 6.0



SH7764参考平台开发环境



其他开发工具: HEW + SuperH Compiler