

HITACHI

SH7709 Chip Set for Windows® CE 2.0

Product Brief



Description

The SH7709 chip set for Windows CE 2.0 allows system manufacturers to design the most cost effective Windows CE devices. The two chip set consists of a SH7709 (SH-3 series) high performance 32-bit RISC microprocessor and a HD64461 which directly connects to the SH7709. The *SuperH™* architecture leads the field of RISC processors in code density, which results in lower memory and system costs. Hitachi optimized the SH7709 memory management unit (MMU), cache, and integrated peripheral functions as well as the HD64461 peripheral mix for Windows CE applications.

Application

The SH7709 chip set targets consumer, data processing, industrial and communications markets. Applications include handheld PCs, digital cameras, Internet appliances, security systems, cellular phones and protocol converters. The SH7709 chip set meets the performance, functionality, and cost requirements of the H/PC 2.0 and other vertical market applications for development with the Windows CE 2.0 operating system.

SH7709 Target Features

- General
 - 80 MHz/80MIPS
 - 300 MIPS/watt
 - 3.0 to 3.6 volt operation
- CPU
 - Code compatible with SH-1 and SH-2 series
 - 16 x 32-bit general purpose registers
 - 16-bit fixed instruction length for high code density
 - 32 bits x 32 bits + 64 bits → 64 bits multiply-accumulate supports special functions such as software modems
 - MMU Designed for Windows CE 1 kB and 4 kB page sizes, 128-entry, 4-way set associative TLB
 - 5 stage pipeline
- Instruction set: 68 basic instruction types
- Memory
 - 8 kB cache on-chip: unified instruction and data-write back or write-through cache using pulse word technique to reduce power consumption
 - On-chip bus state controller allows direct connection to DRAM, SDRAM, SRAM, ROM, and Flash
 - 8, 16, or 32-bit data bus support

- Peripherals
 - Timers: 3ch x 32-bits and 1ch x 16-bits compare match
 - Watchdog timer
 - Realtime clock
 - Serial communications interface, 3ch: asynchronous/synchronous operation full duplex;
 - 1 ch - RS232, and smart cards
 - 2 ch - with FIFOs
 - Analog-to-digital converter, 8ch x 10-bits
 - Digital-to-Analog converter, 2ch x 8-bits
 - Direct memory access controller, 4 ch
 - PLL with x1, x2, x3, x4 ext. clock capability
 - Interrupt controller
- Dynamic power controller
 - Low power modes: sleep, and standby
 - Peripheral turn off capability
- General Purpose I/O
 - 10, 8-bit ports multiplexed with other functions
 - 12 when using 16-bit external bus
- User break controller for on-chip debug support
- Package - 208 pin LQFP

Support

- Microsoft VC++ 5.0
- Microsoft Windows CE OS
- Microsoft Windows CE Embedded Toolkit for VC++

Middleware

- V.34 (up to 33.6Kbps) Data/FAX software modem
- Voice recognition
- Text to speech
- Voice compression
- Handwriting recognition
- JPEG video compression
- Image compression for FAX: MH, MR, MMR

HD64461 Features

- CPU Interface
 - Direct connection to SH7709
 - Memory mapped to SH7709
- LCD Controller
 - STN color or monochrome
 - 640 x 240
 - 256/256K colors
 - 32 grayscales

HD64461 Features (continued)

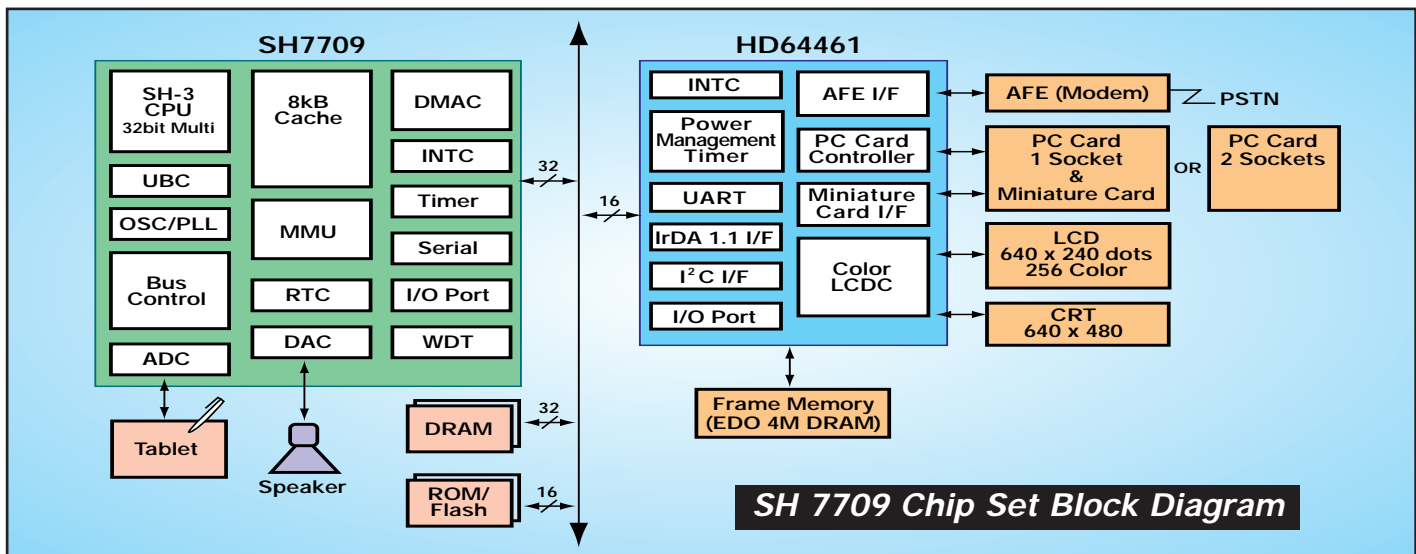
- BitBLT hardware acceleration
- Low power modes: standby and display off
- CRT output control: 640 x 480 VESA VGA
- PC Card Controller
 - Full control signals for PCMCIA interface, (PCMCIA REV 2.1/JEIDA ver 4.2)
 - 2 slot support (32MB byte per slot)
 - Memory card & I/O support
 - Level shifter supports either 3.3V or 5V
- AFE Interface
 - Interface to modem AFE: STLC7546
 - On-chip 48-word data buffer for high speed modem data transfer
 - Built-in 9.216MHz oscillator
- Other
 - Pin function controller
 - IrDA 1.1: 115.2kbps to 4.0Mbps

- UART with FIFO (16550 compatible)
- Miniature card interface
- I²C interface
- I/O port: maximum 32bits
- Interrupt controller
- Peripheral turn off capability
- 2 channel 16-bit timer
- Package – 208 pin LQFP

Ordering Information

Device	Part Number
SH7709	HD6417709F80
Companion Chip	HD64461

More information is available online at:
www.hitachi.com/semiconductor



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