DIOPSIS 940HF

Atmel brings floating point DSP platform to consumer market

Atmel's Diopsis® 940HF is designed for data-intensive applications requiring the combination of a high performance microcontroller unit and floating point DSP capablities. Its parallel architecture incorporates a VLIW floating point processor, Magic DSP™, delivering up to 10 floating point operations per cycle and an ARM926EJ-S™ ARM® Thumb® RISC CPU. The ARM926EJ-S supports the Jazelle® technology for Java® acceleration. A rich set of peripherals and internal memory provide a highly flexible and integrated system solution. The system-on-chip embeds distributed DMA to support data moves related to the on chip peripherals and to the processing performed by mAgic. The availability of on-chip memory for Magic and ARM reduces the data traffic on the external bus and allows an effective usage of the available processing and I/O resources.

System Integration

- ARM core with 16+16 KB I&D caches and 48KB on chip SRAM
- Magic DSP with 370 KB on chip SRAM
- 10/100 Mbps Ethernet MAC
- Host & Device USB 2.0 Full Speed
- Timers, USARTs, SPIs, TWIs, SSCs, MCI/SD, CANs
- Boot from Parallel Flash, SD or Serial Flash

High Performance

- ARM9™: 1.1 MIPS/MHz
- Magic: up to 10 floating point operations/cycle
- Multilayer AHB matrix for parallel data path
- Multiple memory accesses per cycles
- 52 Gbit/s on chip data bandwidth
- ARM/Magic shared memory architecture for fast data transfers
- 29 DMA channels

High Precision

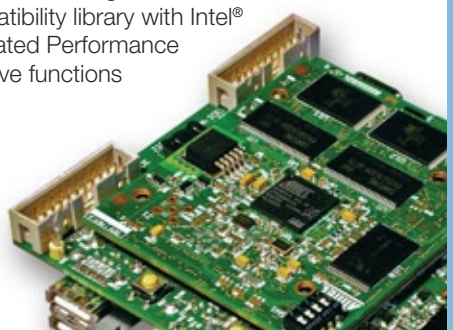
- 40 bit floating point for high quality audio
- High dynamic range with extended linearity
- Native complex domain arithmetic instructions
- Lower application development time using floating point arithmetic

Easy To Use

- Porting of Operating Systems available for ARM
- 80-90% efficiency for Magic DSP programming in C
- C callable libraries for math DSP and I/O functions for mAgic
- Compatibility library with Intel® Integrated Performance Primitive functions

Key Applications

- High precision professional audio
- Acoustic signal processing
- Speach/speaker recognition
- Image analysis
- Robotics
- Radar



Development Tools

Development and evaluation board

- Provides full support for fast application prototyping
- The board comes with 4+4 analog stereo I/O channels, 1 Ethernet port, 2 USB host and 1 USB device connectors, serial I/O ports (1 RS232, 2 LVTTL , 2 SPI, 3 SSC), 2 CAN ports, 1 Debug unit connector, 1 Secure Digital slot, 2 JTAG ports (Magic DSP and ARM), and a total of 336 MByte of memory

Free Atmel tools for software development

- Board-specific Bootloader
- Board-specific Linux device drivers

Free third-party software

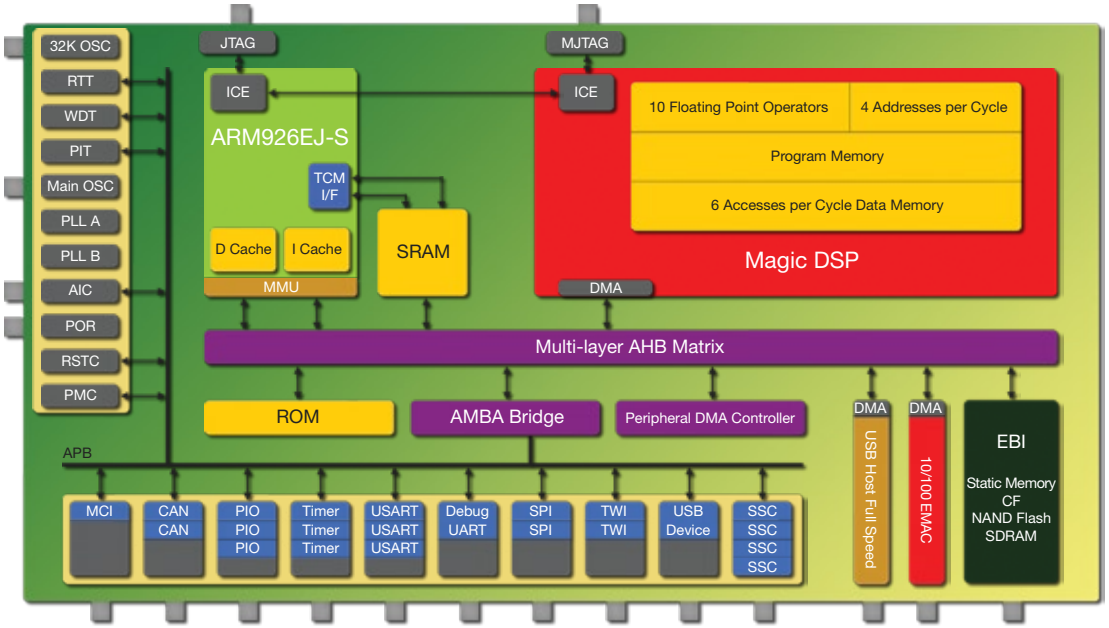
- Linux® OS 2.6 real-time kernel
  www.linux.org
- ARM GNU toolchain
  www.gnu.org

Commercial tools for Magic DSP

- Target Technologies Checkmate C Tool Chain (C compiler, Linker Archiver)
- Target Technologies Graphical Hardware Debugger
  www.retarget.com

Atmel Diopsis Software Libraries

- Extensive, high-performance DSP library (C callable)
- DBIOS low level peripherals access library (C callable)



Ordering Info

Part Number	Temp. Range	Frequency	Operating Voltage	Package	Status
AT572D940HF[1]	0ºC to 70ºC	160 MHz	3.3V I/O 1.1V core	CA324BGA RoHS	Sampling
AT572D940HF-CL[2]	0ºC to 70ºC	160 MHz	1.8V-2.5V-3.3V I/O 1.2V core	CA324BGA RoHS	Contact: diopsis@atmel.com
AT572D940HF-CJ[1]	-40ºC to 85ºC	200 MHz	1.8V-2.5V-3.3V I/O 1.2V core	CA324BGA RoHS	Contact: diopsis@atmel.com

1. Full Peripheral Set.
2. Some peripherals are not accessible by the user in this low-cost version. Reduced Peripheral Set = Full Peripheral Set - 2 CANs - 3 SSCs - 1 SPI - 1 TWI - 2 USARTs. Consequently the related PIO lines can be used only as SW controlled PIO lines (not linked to any peripherals).

DIOPSIS®

ARM® POWERED®

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