

Press Release

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FOR IMMEDIATE RELEASE

NeuroMatrix® Architecture Opens the Door to High Class DSP World

MOSCOW, Russia December 21, 1998 - MODULE Research Center designed the NeuroMatrix® architecture (patent pending) for best support of artificial neural networks emulation. The first hardware implementation of the architecture appeared in VECTOR core of NM6403 processor designed using 0.5-um CMOS technology in 1998. It provides a programmable operand width and scaleable performance from 50 MMAC (32-bit data) up to 51.2 GMAC (1-bit data) at 50 MHz clock rate. The flexible operand width and ability to scale performance allows designers trade-off precision and performance.

Due to the fact of massive parallelism of multiply-accumulate operations (MACs), the architecture provides the best support of matrix-matrix, matrix-vector multiplication and vector-vector addition/subtraction. These capabilities make possible to use the NeuroMatrix® architecture not only for neural nets support, but for DSP applications too. The 256-point complex Fast-Fourier Transform (FFT) performs in 4070 clock cycles and require only 80 microseconds at 50 MHz clock rate. Most significant results are achievable with Walsh-Hadamard Transform (WHT). The 21step WHT with 5-bit initial data require only 0.34 seconds at 50 MHz clock rate. The usage of NM6403 processor for 2D image filter allows dramatically reduces system space. Now a real time gray-scale image processing system can be built using only one NM6403 DSP, as opposed to 6 TMS320C40 DSPs previously.

The first NM6403 products appearing are designed using Samsung 0.5-um CMOS technology, with a roadmap to 0.24-um CMOS based on Fujitsu's ASIC technology. Because NM6403 processes are very thrifty in power consumption (120 mA typ.), NM6403-based systems will run cool and be less expensive to operate.

RC MODULE created the NM6403 DSP core to be used with its customizable IP design methodology, allowing the company to license the cores to semiconductor companies and add on-chip memory to meet the requirements of individual applications, and also customize the dimension of NeuroMatrix® Engine to improve the matrix-matrix calculation performance.

RC MODULE provides a wide range of products and services to support its processor family, including software development tools, development boards, models, applications software, training, and consulting services.

About RC MODULE

MODULE Research Center designs high-end processors architecture, embedded computers and application software for artificial neural networks. RC MODULE also provides system and ASIC design consulting services to a variety of telecommunication and computer system OEMs.

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