

Massively Parallel Processors Targeting Digital Signal Processing Applications



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The table below presents key characteristics of massively parallel processors targeting digital signal processing applications. In addition to vendor and product name, the table indicates:

- The number of processing elements (PEs) used in each processor;
- The nature of those processing elements (for example, heterogeneous or homogeneous);
- The primary signal processing data type(s);
- The maximum clock rate claimed by the vendor;
- Whether the processing elements are controlled in a single-instruction, multiple-data (SIMD) or multiple-instruction, multiple-data (MIMD) fashion—or, in some cases, using some other scheme (indicated by “N/A”);
- Whether the processor is offered in the form of a chip or as licensable silicon intellectual property.

Vendor	Product	# of PEs	Type of PEs	Data Type	Clock rate	MIMD or SIMD	Chip or IP
Ambric	AM2045	344	Heterogeneous processors	32-bit fixed	300 MHz	MIMD	Chip
IBM	Cell	9	Heterogeneous processors (Host CPU plus multiple SIMD-oriented processors)	8 to 32-bit fixed 32-bit float	~3 GHz	MIMD + SIMD	Chip
Intelliasys	SEAforth-24A, 24B	24	Homogeneous processors	18-bit fixed	1 GHz	MIMD	Chip
IPFlex	DAPDNA	N/A	2 RISC cores plus reconfigurable FPGA-like fabric	16-bit fixed	200 MHz	N/A	Chip
MathStar	Arrix	400	Medium-grained field-programmable processing elements (e.g., ALUs, MACs)	16-bit fixed	1 GHz	N/A	Chip
Picochip	picoArray PC102	344	Heterogeneous processors plus co-processors	16-bit fixed	160 MHz	MIMD	Chip
Plurality	Hypercore	Initial: 60 Planned: 256	Homogeneous processors	32-bit fixed	100 MHz	MIMD	Chip
Rapport	Kilocore KC-256	256	Homogeneous medium-grained field-programmable processing elements	8-bit fixed	100 MHz	N/A	Chip
Stream Processors	Storm-1 SP16	81	One host CPU plus many ALUs	16-bit fixed	700 MHz	SIMD	Chip
Stretch	S6	N/A	Tensilica CPU with reconfigurable FPGA-like fabric in data path	Arbitrary	300 MHz	N/A	Chip