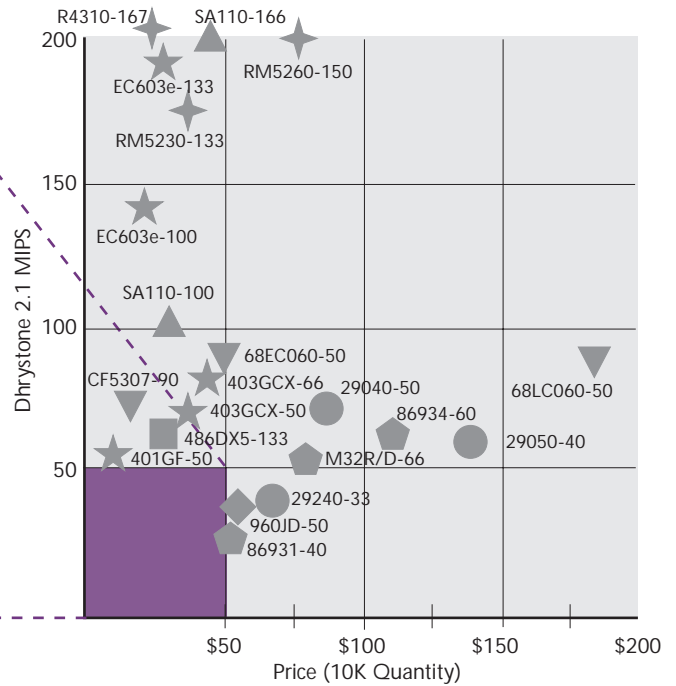
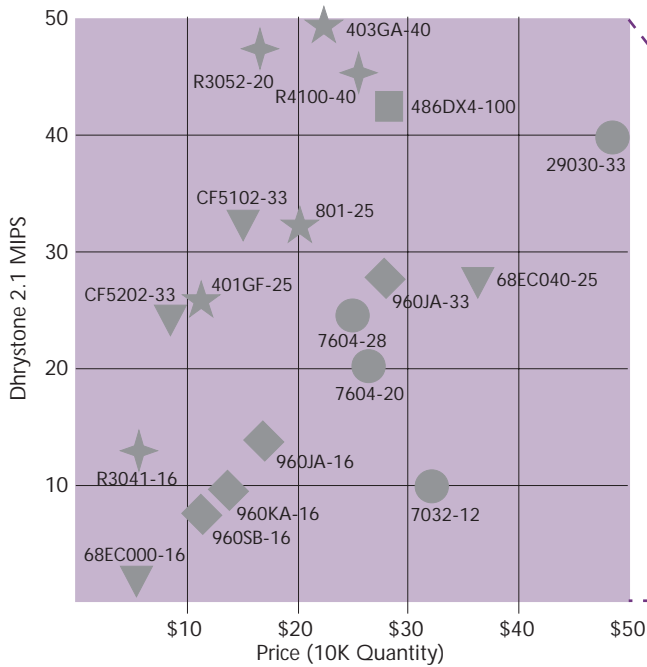
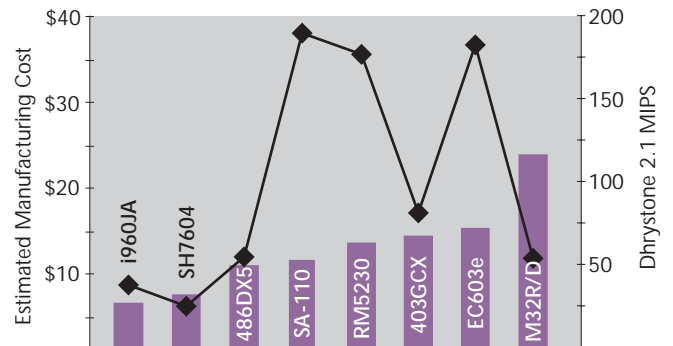


## CHART WATCH: EMBEDDED PROCESSORS



This Chart Watch covers 32-bit embedded microprocessors, excluding low-power processors (see previous issue). The table below and the chart at the upper right show the price/performance of a number of embedded CPUs; the chart above is an inset for the lowest priced of these processors.

The chart on the right compares integer performance (diamonds) and estimated manufacturing costs (bars) for a number of embedded microprocessors, according to the MDR Cost Model.



	NEC R4310	QED RM5230	National 486SXL	AMD 486DX5	Intel 960JA	Motorola 68EC060	Motorola EC603e	IBM 403GCX	AMD 29040
Architecture	MIPS	MIPS	x86	x86	i960	68K	PowerPC	PowerPC	29K
Clock rate	167 MHz	133 MHz	25 MHz	133 MHz	33 MHz	50 MHz	200 MHz	66 MHz	50 MHz
I/D cache	16K/8K	16K/16K	1K	16K	2K/1K	8K/8K	16K/16K	16K/8K	8K/4K
FPU?	Yes	Yes	No	Yes	No	No	No	No	No
MMU?	Yes	Yes	No	Yes	No	No	Yes	Yes	Yes
Bus width	32 bits	32 bits	16 bits	32 bits	32 bits	32 bits	64 bits	32 bits	32 bits
Bus frequency	66 MHz	66 MHz	25 MHz	33 MHz	33 MHz	25 MHz	100 MHz	33 MHz	25 MHz
MIPS	207 MIPS*	175 MIPS	12 MIPS	57 MIPS	28 MIPS	90 MIPS	282 MIPS	81 MIPS	67 MIPS
Voltage	3.3 V	3.3 V	5 V	3.3 V	3.3 V	3.3 V	2.5/3.3 V	3.3 V	3.3 V
Power (typ)	1.8 W	2.5 W	0.6 W	n/a	0.5 W	3.0 W	3.6 W	0.4 W	1.7 W
MIPS/watt	115	70	20	n/a	56	30	78	202	39
MIPS/price	8.28	7.95	0.8	1.90	0.76	1.76	6.27	1.80	0.78
Transistors	1,700,000	3,000,000	350,000*	n/a	750,000	2,130,000	2,600,000	1,820,000	1,200,000
IC process	0.28μ 3M	0.35μ 3M	0.65μ 3M	0.35μ 3M	0.8μ 3M	0.42μ 3M	0.35μ 5M	0.45μ 3M	0.7μ 3M
Die size	29 mm <sup>2</sup>	59 mm <sup>2</sup>	n/a	43 mm <sup>2</sup>	64 mm <sup>2</sup>	103 mm <sup>2</sup>	79 mm <sup>2</sup>	n/a	119 mm <sup>2</sup>
Est mfg cost*	\$8	\$13	\$8	\$11	\$8	\$43	\$18	\$14	\$20
Availability	2Q98	Now	Now	Now	Now	Now	Now	Now	Now
Price (10K)	\$25	\$22	\$15	\$30	\$37	\$51	\$45	\$45	\$86

n/a: information not available

(Source: vendors except \*MDR estimates)