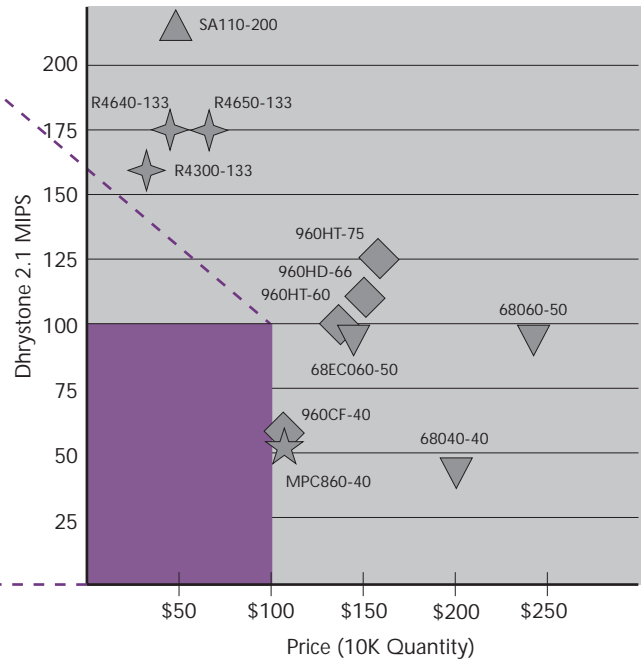
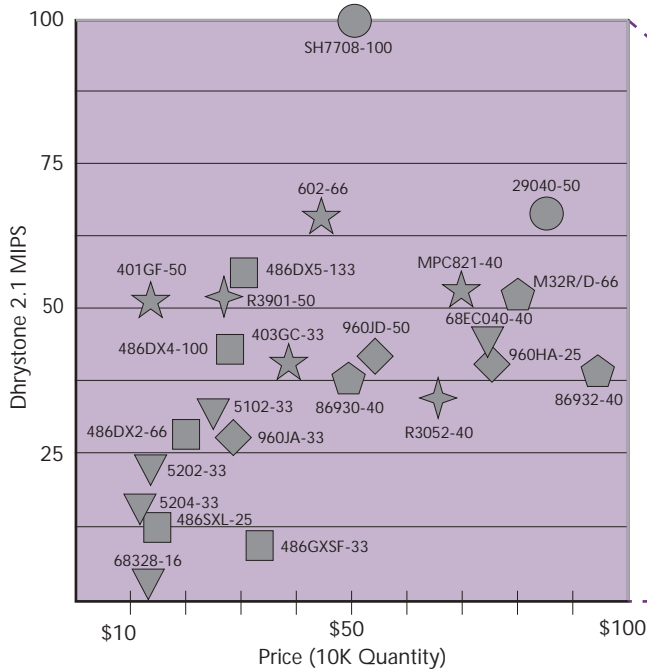
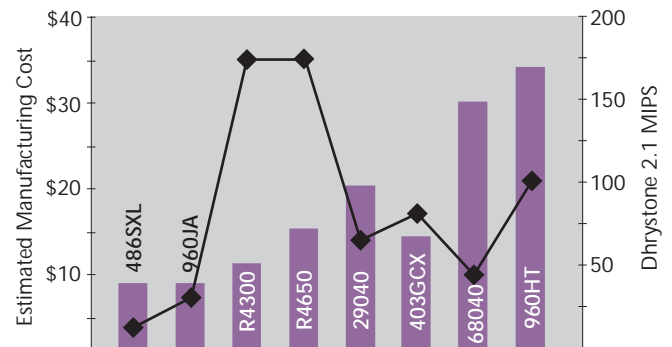


CHART WATCH: EMBEDDED PROCESSORS



This Chart Watch covers 32-bit and 64-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 R4300	IDT RV4640	National 486SXL	Intel 960JA	Intel 960HT	Motorola 68EC040	Motorola 68EC060	AMD 29040	IBM 403GCX
Architecture	MIPS	MIPS	x86	i960	i960	68K	68K	29K	PowerPC
Clock rate	133 MHz	133 MHz	25 MHz	33 MHz	60 MHz	40 MHz	50 MHz	50 MHz	66 MHz
I/D cache	16K/8K	8K/8K	1K	2K/1K	16K/8K	4K/4K	8K/8K	8K/4K	16K/8K
FPU?	Yes	Yes	No	No	No	No	No	No	No
MMU?	Yes	Yes	No	No	No	No	No	Yes	Yes
Bus width	32 bits	32 bits	16 bits	32 bits	32 bits	32 bits	32 bits	32 bits	32 bits
Bus frequency	66 MHz	44 MHz	25 MHz	33 MHz	20 MHz	40 MHz	25 MHz	25 MHz	33 MHz
MIPS	160 MIPS*	175 MIPS	12 MIPS	28 MIPS	100 MIPS*	44 MIPS	90 MIPS	67 MIPS	81 MIPS
Voltage	3.3 V	3.3 V	5 V	3.3 V	3.3 V	5 V	3.3 V	3.3 V	3.3 V
Power (typ)	2.2 W	2.1 W	0.6 W	0.5 W	4.5 W	4.5 W	3.0 W	1.7 W	0.4 W
MIPS/watt	73	81	20	56	22	10	30	39	194
MIPS/price	5.00	4.17	0.8	0.76	0.79	0.59	1.20	0.78	1.83
Transistors	1,700,000	1,050,000	350,000*	750,000	2,300,000	1,170,000	2,130,000	1,200,000	1,820,000
IC process	0.35µ 3M	0.6µ 3M	0.65µ 3M	0.8µ 3M	0.6µ 4M	0.65µ 3M	0.42µ 3M	0.7µ 3M	0.45µ 3M
Die size	45 mm ²	56 mm ²	n/d	64 mm ²	100 mm ²	163 mm ²	103 mm ²	119 mm ²	n/d
Est mfg cost*	\$11	\$15	\$8	\$8	\$34	\$30	\$43	\$20	\$14
Availability	2Q96	Now	Now	Now	2Q96	Now	Now	Now	Now
Price (10K)	\$32	\$42	\$15	\$37	\$126	\$75	\$75	\$86	\$45

n/d: information not disclosed

(Source: vendors except *MDR estimates)