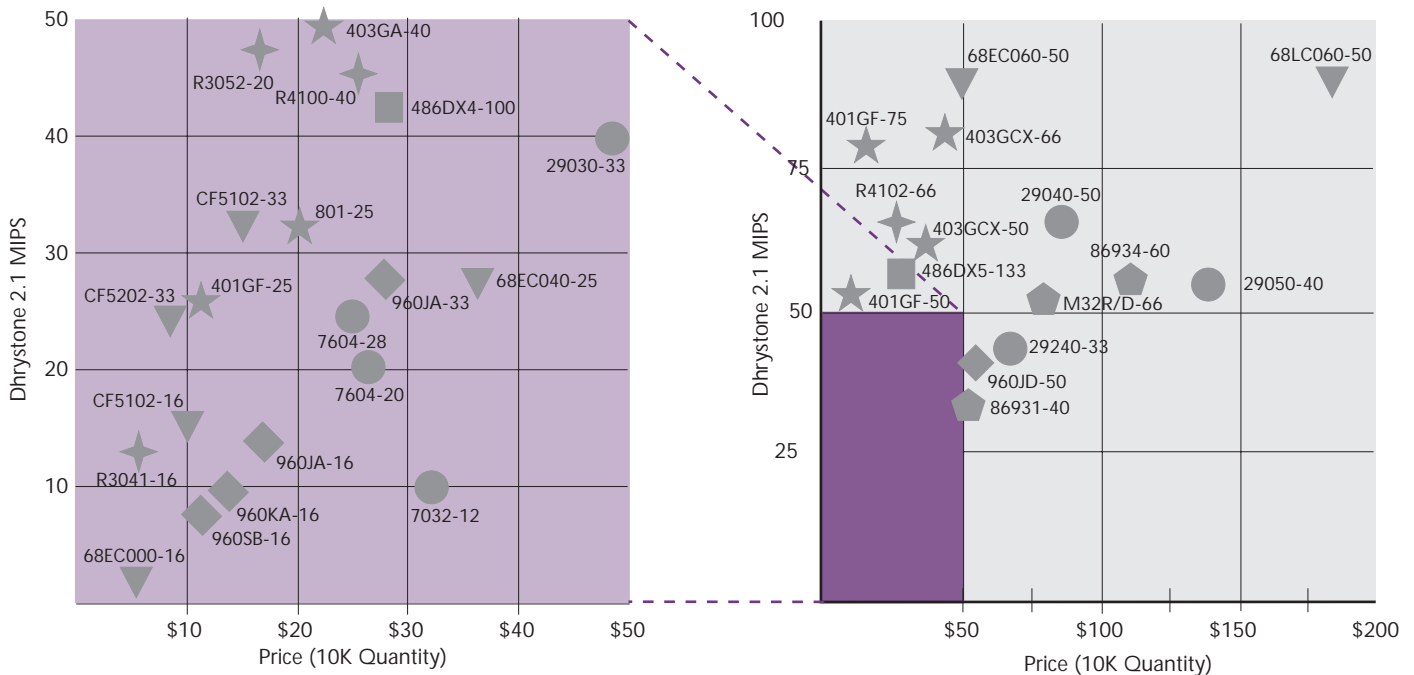
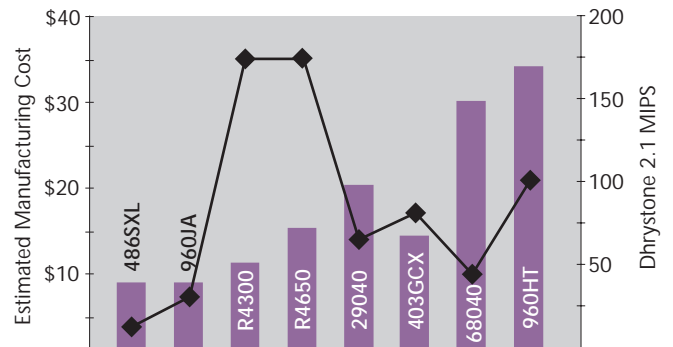


CHART WATCH: EMBEDDED PROCESSORS



This Chart Watch covers 32-bit embedded microprocessors, excluding low-power processors (see MPR 8/25/97, p. 31). 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 | AMD 486DX5 | Intel 960JA | Motorola 68EC040 | Motorola 68EC060 | AMD 29040 | IBM 403GCX |
|---------------|--------------------|--------------------|-----------------|--------------------|--------------------|---------------------|---------------------|---------------------|------------|
| Architecture | MIPS | MIPS | x86 | x86 | i960 | 68K | 68K | 29K | PowerPC |
| Clock rate | 133 MHz | 133 MHz | 25 MHz | 133 MHz | 33 MHz | 40 MHz | 50 MHz | 50 MHz | 66 MHz |
| I/D cache | 16K/8K | 8K/8K | 1K | 16K | 2K/1K | 4K/4K | 8K/8K | 8K/4K | 16K/8K |
| FPU? | Yes | Yes | No | Yes | No | No | No | No | No |
| MMU? | Yes | Yes | No | Yes | 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 | 33 MHz | 40 MHz | 25 MHz | 25 MHz | 33 MHz |
| MIPS | 175 MIPS | 175 MIPS | 12 MIPS | 57 MIPS | 28 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 | 1.9 W | 0.5 W | 4.5 W | 3.0 W | 1.7 W | 0.4 W |
| MIPS/watt | 73 | 81 | 20 | 31 | 56 | 10 | 30 | 39 | 194 |
| MIPS/price | 5.00 | 5.83 | 0.8 | 1.90 | 0.76 | 0.66 | 1.76 | 0.78 | 1.83 |
| Transistors | 1,700,000 | 1,050,000 | 350,000* | 1,200,000 | 750,000 | 1,170,000 | 2,130,000 | 1,200,000 | 1,820,000 |
| IC process | 0.35µ 3M | 0.6µ 3M | 0.65µ 3M | 0.35µ 3M | 0.8µ 3M | 0.65µ 3M | 0.42µ 3M | 0.7µ 3M | 0.45µ 3M |
| Die size | 45 mm ² | 56 mm ² | n/a | 43 mm ² | 64 mm ² | 163 mm ² | 103 mm ² | 119 mm ² | n/a |
| Est mfg cost* | \$11 | \$15 | \$8 | \$11 | \$8 | \$30 | \$43 | \$20 | \$14 |
| Availability | Now | Now | Now | Now | Now | Now | Now | Now | Now |
| Price (10K) | \$32 | \$30 | \$15 | \$30 | \$37 | \$67 | \$51 | \$86 | \$45 |

n/a: information not available

(Source: vendors except *MDR estimates)