New Logic Family Offers Three Times Faster Performance of HCMOS

DALLAS (March 4, 1996) – With a new logic family from Texas Instruments, designers of telecommunications equipment, portable and desktop PCs, networking hubs and routers, and other high-performance systems will be able to increase system performance without increasing cost.

The new Advanced High Speed CMOS (AHC) logic devices are pin for pin compatible with HCMOS logic, but AHC technology is three times faster. Higher-speed logic is particularly important as next-generation telecommunication and computer systems are developed with ever increasing speeds, such as the new V.34 modems.

"HCMOS has become very prevalent in the industry because it has certain advantages such as low power consumption and reduced noise. AHC shares these characteristics," said Ed Drew, TI's marketing specialist for AHC logic. "In today's end-equipment markets, system speed is increasing exponentially. Telecommunication switches and cellular base stations, next-generation PCs, as well as networking hubs and routers cannot be competitive if the logic used in these systems slows down their throughput. That's where AHC steps in and offers an easy and very cost-effective migration path to higher performance without greater costs."

The initial introduction of the AHC family is comprised of 19 devices which come in CMOS and TTL compatible versions. The first AHC devices include a range of gate, flip-flop and bus-related functions. A typical propagation delay for an AHC device is just 5.2 nanoseconds (ns) while the maximum propagation delay for any device in the family is only 8.5 ns. Both AHC and HCMOS exhibit very low levels of electrical noise and both types of logic have the same electrical drive characteristics. With a 5-volt power supply, AHC logic has an output current of eight milli-amps.

Because of its low noise and reduced power consumption, the AHC family of logic is particularly well suited to various telecommunications applications as well as portable, battery-operated systems such as laptop and notebook computers, personal digital assistants and handheld scanners. AHC devices are based on CMOS technology, which is a low-power process. In a quiescent or static state, AHC logic consumes just 40 micro-amps of current, half the power consumption of standard HCMOS logic.

Alternate Sources

To assure an adequate supply of AHC logic, the Logic Products Group of Philips Semiconductor has announced its intention to alternate source the AHC logic family. Both TI and Philips devices will have matching specifications, performance features, packaging and pinouts, but each company will use its own advanced processing and mask set to produce actual silicon. First production from Philips is expected to start in mid-1996. TI and Philips plan to independently release over 40 devices with different functions this year. The AHC family will be expanded to achieve a similar product range as is currently offered in HCMOS.

Pricing and Availability

The AHC logic family, which is designated SN74AHCXXX, features the following packaging options: 14- and 20-pin TSSOP (Thin Shrink Small Outline Package), SSOP (Shrink Small-Outline Package), SOIC (Small-Outline Integrated Circuit) and PDIP (Plastic Dual-In-Line Package). The AHC family is fabricated in 1.2-micron silicon using TI's advanced EPIC™; 1-S process. Twenty-three of the AHC devices are available now through TI and its authorized distributors at a suggested resale price of 20-40 cents in 1,000 unit quantities. Another 20 AHC devices are scheduled to be available by the end of this year.

Trademark:

EPIC is a trademark of Texas Instruments Incorporated.

Texas Instruments Advanced High Speed CMOS (AHC) Logic Family

Device Types Initially Available:

AHC Device (CMOS)	AHCT Device (TTL)	Function
SN74AHC00	SN74AHCT00	Quad 2-input NAND gate
SN74AHC04	SN74AHCT04	Hex inverter
SN74AHCU04	NA	Unbuffered hex inverter
SN74AHC08	SN74AHCT08	Quad 2-input AND gate
SN74AHC14	SN74AHCT14	Hex Schmitt inverter
SN74AHC32	SN74AHCT32	Quad 2-input OR gate
SN74AHC74	SN74AHCT74	Dual D-type flip-flop with preset
SN74AHC86	SN74AHCT86	Quad XOR gate
SN74AHC125	SN74AHCT125	Quad bus buffer
SN74AHC126	SN74AHCT126	Quad bus buffer
SN74AHC240	SN74AHCT240	Inverting octal bus buffer
SN74AHC244	SN74AHCT244	Octal bus buffer
SN74AHC245	SN74AHCT245	Octal bus transceiver
SN74AHC373	SN74AHCT373	Octal D-type latch
SN74AHC374	SN74AHCT374	Octal D-type flip-flop
SN74AHC540	SN74AHCT540	Inverting octal bus buffer
SN74AHC541	SN74AHCT541	Octal bus buffer
SN74AHC573	SN74AHCT573	Octal D-type latch
SN74AHC574	SN74AHCT574	Octal D-type flip-flop