

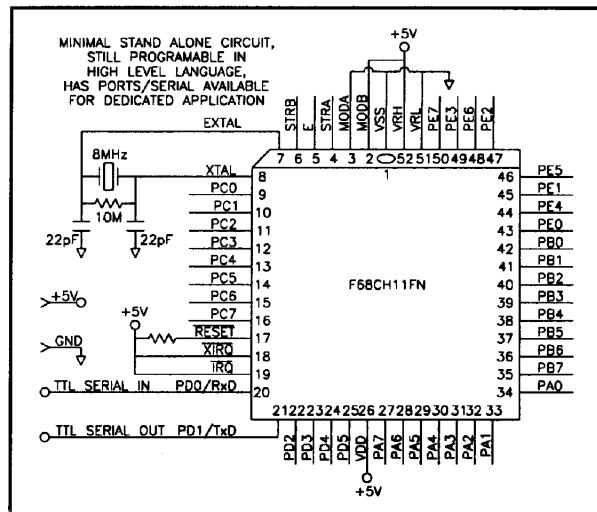
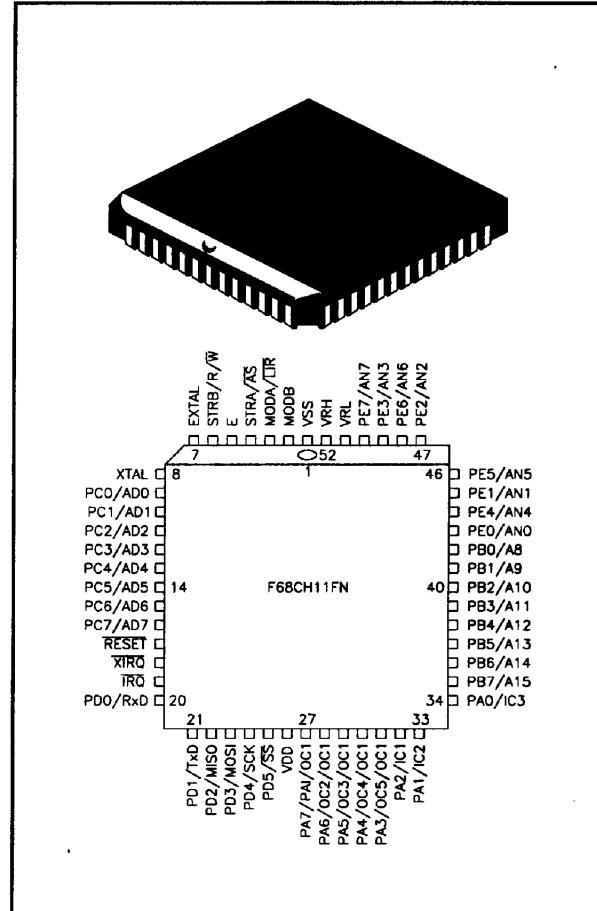
F68HC11 SINGLE-CHIP COMPUTER

The F68HC11 FN V3.5 is a complete computer-on-a-chip. It has Max-FORTH Operating System and High Level Language (HLL) development tools and Floating Point package included in the on-board ROM.

FEATURES

- Processor: MOTOROLA 68HC11, Enhanced 6800/6801
- Max-FORTH™ built-in programming language
 - A superset of the Forth-83 Standard including:
 - 311 predefined words in the language
 - The 83 Standard Word Set
 - The 83 Standard Double Number Extension Word Set
 - The 83 Standard System Extension Word Set
 - All the 83 Standard Controlled Reference Words
 - All the ANSI BASIS Floating Point Words
 - Conforms to IEEE-754 Floating Point Storage Format
 - 24-Bit Mantissa 16-Bit Exponent (>7 decimal digits)
 - Single-Chip System Extensions
- 5 parallel ports
 - one port of 6 configurable lines (some multiplexed w/serial)
 - one port of 8 input lines (multiplexed with A/D converter)
 - one port of 8 output lines
 - one port of 8 configurable lines
 - one port with 2 configurable, 3 input and 3 output lines
- 1 Asynchronous Serial Channel (UART)
 - Enhanced NRZ Serial Communications Interface (SCI)
 - 8 or 9 bits with selectable baud rates:
 - 75, 150, 300, 600, 1200, 2400, 4800 or 9600 baud
 - (default: 9600 baud, 8 data, no parity, 1 stop)
- 1 Synchronous Serial Channel (USART)
 - Serial Peripheral Interface (SPI)
- Analog-to-Digital Converter
 - 8-bit, 8-channel
 - Ratiometric with VRL and VRH inputs
 - 32 clock cycle conversion time per channel
- 8-bit Pulse Accumulator (event counting mode)
- COP Watchdog Timer & Clock Monitor
- 16-bit timer subsystem with:
 - 4-stage programmable prescaler
 - Real Time Interrupt circuit
 - 3 or 4 input captures
 - 5 or 4 output compares
- Memory:
 - Internal 1/2K EEPROM
 - Internal 1/2K RAM
 - Internal 12K ROM (with Max-Forth™ installed)
 - Optional external 64K address space Memory expansion
- Interrupts:
 - 15 maskable interrupts (IRQ)
 - 2 non-maskable interrupts (SWI & XIRQ)
- Power:
 - 10 mA typical (15 max) at 5V, 8 MHz, non expanded mode
 - 20 mA typical (27 max) at 5V, 8 MHz, expanded bus mode
 - 5mA typical (6mA max) in WAIT mode
 - 1.7uA typical (10uA max) in STOP mode.

In minimum configuration, the F68HC11 operates interactively, with a simple crystal circuit, 5 V power, ground and TTL serial-in/serial-out connections.



Application

F68HC11 V3.5 HLL-SINGLE CHIP COMPUTER

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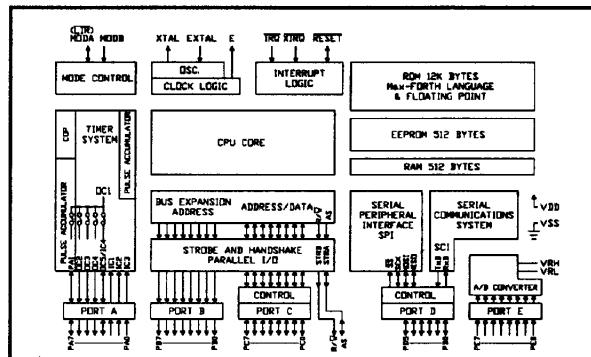
DESCRIPTION

This high speed, low power, CMOS computer-on-a-chip is packaged in a 52 pin PLCC (measuring 0.75" on a side). The chip hosts five, user available, 8-bit parallel ports in the single chip mode. There are three when expanded to have a 64K address and data bus. The asynchronous Serial Communications Interface (SCI) supports the system terminal. The second serial channel, the synchronous Serial Peripheral Interface (SPI), is uncommitted and available to the user. Also included are: a timer subsystem, a computer operating properly (watchdog) circuit, a fast 8-bit 8-channel A/D converter, and the 1/2K bytes of internal EEPROM.

The built-in High Level Language and Operating System, based on the FORTH-83 Standard, interactively gives easy machine access to the user. The Floating Point routines add versatility. The vocabulary contains a total of 311 words. Building on that base, applications can be very compact, some entirely resident on-chip.

Although internal RAM is limited, a large system "feel" is provided by the 80 character input buffer. Non trivial applications can be programmed by defining words in RAM, then moving them to EEPROM, using the built-in EEPROM support functions. This frees the RAM to accept other words. The chip can be used in expanded mode, with programs developed in the 64K external address space, to meet the needs of larger application.

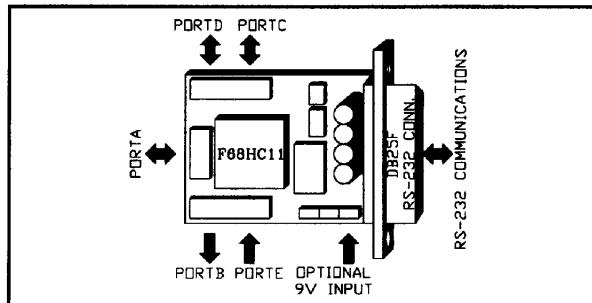
The built-in HLL gives advantages to the hardware designer, as well as the programmer. Direct communication



F68HC11 V3.5 CPU Block Diagram

with the chip allows rapid high level debugging of a new design. Immediate check out can begin, even if only the chip, its crystal circuit and power are working correctly.

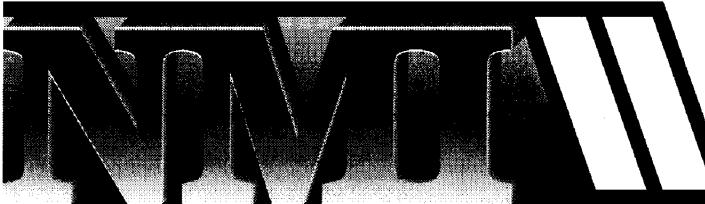
The NMIN-0121 CPU board allows convenient evaluation of the F68HC11 FN V3.5. It can also be used as a stand-alone controller. Operating power can usually be drawn from the host RS-232 with two driven lines.



**NMIN-0121 F68HC11 V3.5
Evaluation/Target System**

WORLD HEADQUARTERS WORLDWIDE REPRESENTATIVES

AMERICA (N, C & S)	CENTRAL EUROPE	SOUTHERN EUROPE	SCANDINAVIA	ASIA	RUSSIA
NEW MICROS, INC. Sales Department 1601 Chalk Hill Road Dallas, TX 75212, USA Phone: (214) 339-2204 Fax: (214) 339-1585 G3, G2, FMG1 User Bulletin Board: (214) 339-2321 24/12, N, 8, 1	MS Microscan Vertriebs GmbH Ueberseering 23 2000 Hamburg 60 GERMANY Phone: 0 40 / 6 32 32 14 Fax: 0 40 / 6 32 37 10	DEMEL G. Demel Handelsges. m.b.H. Hoffmeistergasse 8-10/1/4, A-1120 Vienna, AUSTRIA Phone: (0043) 0222 813 2507-0 Fax: (0043) 0222 85 95 93 Telex: 75311851	FIELD OY ELECTRONIINKARYHMA P O Box 131 SF 00601 Helsinki, FINLAND Phone: 358 0 757 1011 Fax: 358 079 8853 Telex: 12-2022 FIELD SF	CIBI TRADING INT'L 20 Matimtiman Street Teacher's Village, Diliman Quezon City, PHILIPPINES Phone: (632) 922-2988 Fax: (632) 921-8027	TECHNOFORTH 59, Bolshoi Pr., P.S., Leningrad, 197101, USSR Phone: (812) 233-86-21 (812) 233-34-10 Fax: (812) 233-86-21



NEW MICROS, INC.
1601 Chalk Hill Road
Dallas, Texas 75212
Tel: (214)-339-2204