F100-L 16-BIT MICROPROCESSOR SYSTEM

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The Ferranti Computer Systems F100-L is the first Microprocessor to be wholly designed and manufactured in Europe, and has been designed as one part of an overall system concept. The F100-L features a comprehensive instruction set of 153 instructions and its structure has been chosen to provide the facilities necessary to enable fast, real-time systems, as well as less complex applications to be developed in the most simple, straightforward manner possible.

The Ferranti Electronics bipolar process used for this device ensures fast instruction times and has the added advantage of possessing a high degree of radiation tolerance which is of paramount importance in modern military and space orientated projects.

The microprocessor is encapsulated in a 40 lead package (H40) or (K40).

MICROPROCESSOR SUPPORT CHIPS

Complete system implementation can be performed using combinations of the following devices:

CLOCK GENERATOR ZN1001

A general purpose oscillator requiring only a crystal to define the clock rate, and a resistor-capacitor to set the width of the clock pulse. The device can be used to drive both the F100-L and F101-L.

The clock generator is encapsulated in a 16 lead package (H16) or (M16).

MULTIPLY AND DIVIDE UNIT F101-L

A single chip device that interfaces directly to the F100-L, providing full signed 2's-complement multiply and divide functions in a 40 lead package (H40) or (K40).

INTERFACE SET F111-L AND F112-L

An interface set of one F111-L (Control Interface) and two F112-Ls (Data Interface) used to connect any system device to the Input/Output Bus. The Interface Set has five modes of operation covering all aspects of system interfacing including DMA channel control. F112-L devices incorporate high current bus drivers enabling a terminated bus to be used. Both devices are encapsulated in 40 lead packages (E40), (H40) or (K40).

MEMORY INTERFACES F113-L and F114-L

For the small system using only memory and memory-mapped input/output the Memory Interfaces provide direct control of RAM and ROM and include two sets of timing circuits and generate the necessary control signals (e.g. $\overline{\text{Write}}$, $\overline{\text{Memory Enable}}$) for connection to two speeds of memory.

The choice of device depends on the memory system being used:

F113-L High Speed Interface
F114-L Medium Speed Low Power version
Both types are encapsulated in 24 lead packages (H24) or (M24)

REAL TIME INTERRUPT CHIPS F115-L and F117-L

The F115-L has an on-chip oscillator and when used with an external crystal can generate real time interrupts at any of fifteen rates selectable by hardwiring or software control. An external device can also generate interrupts using the F115-L logic.

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Full vectoring capability is provided, enabling the F100-L to differentiate between real time interrupts, external device interrupts, and interrupts generated by other external devices not connected to the F115-L. The F115-L is encapsulated in a 24 lead package (H24).

The F117-L Two Channel interrupt controller provides full vectored interrupt capability for two external devices connected to an F100-L system. On receiving an interrupt accept signal the device will pass vector data, via the bus, to the F100-L program counter and remove vector data from the bus once the counter is loaded.

The F117-L has an on-chip oscillator for use with an external crystal and provides a buffered clock output plus a half clock frequency output.

The device is supplied in a 24 lead package (H24).

All the F100-L family of LSI bipolar parts operate from a single 5V supply and are fully TTL compatible. All devices are available in commercial (C suffix) and military (A suffix) temperature range versions and also in most cases to BS and BSS2 specifications. High Reliability Space Specification devices are also available on special request.

In the majority of cases all devices are available in ceramic dual in-line packages (J suffix) and leadless ceramic chip carriers (K or M suffix). The interface set (F111-L and F112-L) is also available in plastic package (E suffix) for operation over the commercial temperature range only.

As an example an F100-L-AJ-BSS2 is a military temperature range device in a ceramic dual in-line package to BS9000 category S2.

F100 PROCESSOR HYBRID FBH5092

This thick film module contains an F100-L Microprocessor, F101-L Multiply and Divide Unit, Clock Generation, and two F112-L Data Interfaces acting as buffers to drive the F100-L bus. The active LSI components are packaged in leadless ceramic chip carriers which are soldered to the ceramic (alumina) substrate of the 64 lead hybrid assembly.

Using the Processor Hybrid saves approximately half of the board area normally occupied by D.I.L's. and therefore offers significant savings in applications where space is at a premium. The unit also reduces the number of soldered joints required and, of course, has the advantage in that it can be pretested to the required specification.

F100 SOFTWARE

There is a comprehensive set of program development and testing aids for use with F100 Systems:

- Cross Product Development Software
- Resident Development Software
- Coral 66 Compiler
- Subroutine Library
- Hardware Test Programs

For detailed information on the F100-L Microprocessor system please contact:

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