73S1121F

Smart Card Terminal Controller for e-commerce, e-purse, security and POS applications.

The 73S1121F is the industry's first extensive system on a chip for controlling smart card terminals. The chip incorporates a processor, Flash and RAM memory, two ISO-7816 compatible and EMV2000 compliant card reader interfaces, very extensive additional I/O interfaces, plus multi-level on-chip and applications development software. The 73S1121F differs from its predecessors especially in its broad range of I/O links, support software, and memory size.

The dual ISO 7816 interfaces make it possible to support applications requiring PIN-based ID verification, such as network access security and electronic purchase transactions, where one card reader is used for the client card and the other for a Security Application Module (SAM).

The hardware ISO 7816 smart card UART can be shared by the two built-in ICC interfaces, as well as four dedicated wires to interface with up to seven additional smart cards using external ICC interfaces.

Software support is provided through C-language based libraries and two Applications Programming Interfaces (APIs). The lower-level API allows for device control without the use of assembly coding, and the higher-level API supports protocol processing and higher-level peripheral drivers. This extensive software support significantly reduces development time for 73S1121F based products.

TDK further eases and expedites the development and marketing of its customers' products by participating in its customers efforts to attain EMV, PC/SC, WHQL and other certifications. TDK has performed certification support services for many years for its modem products customers, and now is simply extending those services to the smart card terminal arena. In addition, simple ready-to-use software is provided for EMV certification testing, as is a sample USB driver compatible with Microsoft® Windows™ Hardware Quality Laboratory testing suites. A comprehensive software User Guide is also provided.

TDK believes that the 73S1121F single-chip smart card terminal controller provides the easiest and fastest way to enter the smart card terminal business.

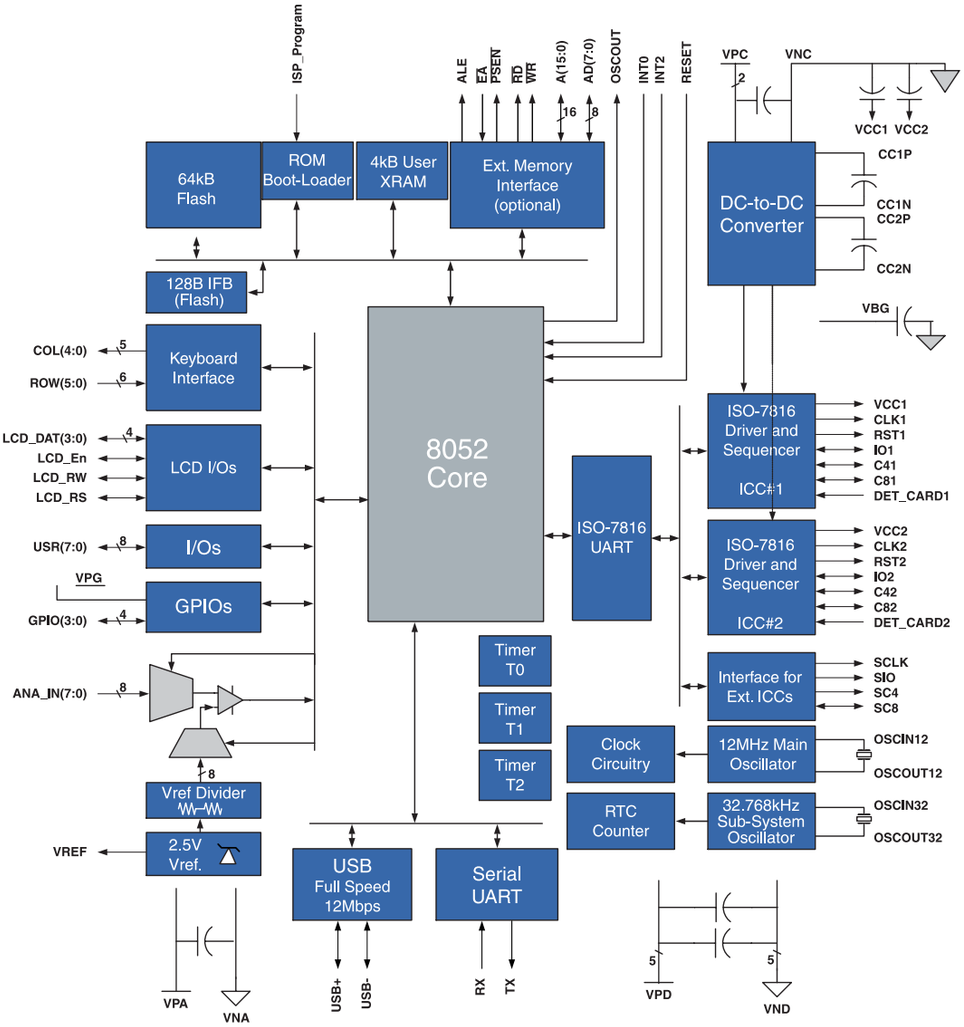
Features

- Dual ISO-7816/EMV2000 smart card reader interfaces, with built-in expansion capabilities
- 24 additional I/O interfaces for application flexibility, including USB, keyboard and display
- Two-level APIs for fast application development

Applications

- PIN pad terminals for electronic purchasing and network access security
- e-purse terminals
- Payphones
- Vending machines
- Inexpensive point of sale terminals
- Single or multiple SAM architectures for secure applications

73S1121F Block Diagram



Microcontroller
- 12MHz 8052 core, 8bit
- Optional 32KHz oscillator for real-time control and low-speed operation

Memory
- 64KB Flash for program
- 4KB user-XRAM for data
- 128B Flash Information Block for system ID, serial number, software version, etc.
- ROM boot-loader for downloading of the Flash
- Optional DMA interface for external memory

Smart Card Reader Interfaces
- (2) ISO-7816 / EMV2000 ICC (Integrated Circuit Card) interfaces for with built-in DC-DC converters for connection of 3V / 5V cards
- (1) Shared interface for up to 7 external ICC interfaces
- (1) Hardware ISO-7816 UART with dedicated FIFOs for asynchronous card protocols T=0 and T=1.
- Auxiliary I/O lines for C4/C8 signals and UART bypass for synchronous cards

Keyboard Interface
- Intelligent hardware interface for 5x6 keyboard with scanning, debouncing and scrambling
- Additional firmware support for keyboard control and PIN management

Display Interface
- "Turnkey" interface for common generic LCD drivers
- (7) dedicated I/O lines

USB Interface
- 12Mbps interface with 4 endpoints

Serial Interface
- 1200 to 115Kbps (Standard 8052 serial UART)

General Purpose I/Os
- (4) GPIOs compatible with interfacing voltages up to 5.5v

Analog Inputs
- (8) Analog inputs for voltage detection (for battery monitoring or any DC voltage comparison from 0.2v to 2.5v)

User-reserved Interfaces
- (8) 7-line interfaces

Software
- Low-level API for device control
- High-level API for protocol processing and higher-level device drivers
- C-language libraries
- EMV2000 certification application code
- Sample USB driver compatible with Microsoft® WHQL test suites

Power Supply
- 2.7v to 3.6v

Packaging
- 128-pin TQFP, die form

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