

73S1121F

Smart Card Terminal Controller for e-transaction, control access and advanced smart card reader applications.



The 73S1121F is the industry's first extensive low-cost system-on-a-chip smart-card terminal controller. The chip incorporates all the functionality required to build a low-cost, dual smart-card terminal in a single package. Based on an 80C52 core, with two built-in EMV smart card interfaces, communication capabilities and peripherals, the 73S1121F has been optimized for either standalone or host-connected applications. The 73S1121F facilitates a low external component count and fast design cycle.

TDK Semiconductor has developed the 73S1121F together with a comprehensive software layer stack, based on a two-level Application Programming Interface (API) using functions written in ANSI-C.

- The low-level API functions are used to control the entire 73S1121F and low-level parameters (register settings, clock settings and power modes, resource sharing such as interrupts and timers, interface configuration).
- The high-level API functions include protocol layers to communicate with asynchronous cards (protocols T=0 and T=1, compliant with ISO-7816 and EMV-2000) and with the USB interface. It also provides services for PIN management, memory management and display. This two-level API will shorten the development time of any 73S1121F-based products, providing a dramatic reduction in time-to-market.

Features

• Microcontroller:

- 80C52 Core
- 64KB internal Flash (Program Memory)
- 1KB IRAM (internal RAM and registers) + 4 KB internal XRAM (User Data Memory), expandable to 64KB
- ROM boot-loader enabling In-System-Programming (ISP) of the internal Flash (Program Memory)
- Optional DMA interface when using external memory
- 128 Bytes Flash IFB (Information Block for serial #, firmware version...)
- Single low cost 12MHz crystal
- Optional 32kHz crystal (with internal counter for real time clock support)

• Smart Card Interfaces:

- (2) ISO-7816 / EMV2000 smart card interfaces w/ embedded Step-up converter for 3V/5V smart-cards
- ISO-7816 UART (9600Kbps to 115Kbps with 12MHz crystal) for protocols T=0, T=1 with (2) dedicated 2-Byte FIFOs
- Auxiliary I/O lines for C4/C8 signals and UART bypass for synchronous card support
- Shared 4-wire interface enabling connection of external SAMs

• Communication:

- USB Full-speed interface (12Mbps with 4 Endpoints)
- (1) Serial interface 1200Kbps to 115Kbps (Standard 8052 serial UART)

• Peripherals:

- 5x6 Keyboard interface with hardware scanning, de-bouncing and scrambling
- (7) Dedicated LCD I/Os (to control any external LCD driver)
- (8) User I/Os
- (4) GPIOs compatible with interfacing voltages up to 5.5V
- (8) Analog inputs for voltage detection (for battery monitoring or any DC voltage comparison from 0.2V to 2.5V)

• Software:

- Two-level API (C-language libraries) for fast application development
- Sample USB driver compatible with Microsoft® PC/SC and Windows™ Hardware Quality Laboratory test suite.

• Single 2.7V to 3.6V power supply

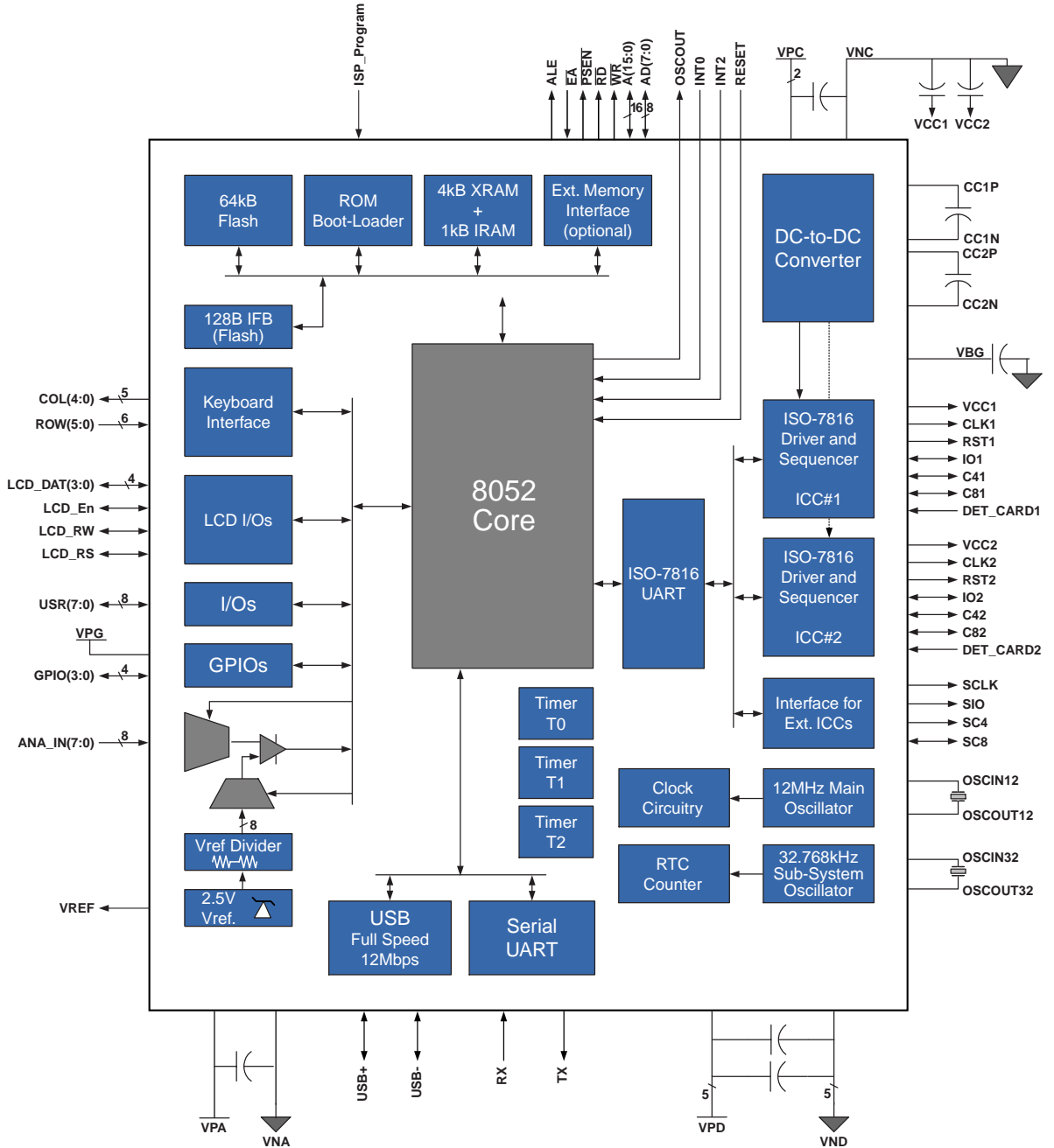
• Packaging: 128 pin TQFP and Die form

Applications

- Physical and Logical Access PIN-pad Smart-Card Terminals
- E-purse Terminals
- Ticketing and Vending Machines

- Inexpensive Point of Sale Terminals
- Payphones
- Meters
- Pre-paid Card Terminals

73S1121F Block Diagram



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1/03 - rev 3.0