

S4E5B001B000A00 EPD Controller Module

June 2012

EPSON's S4E5B001B000A00 EPD Controller Module is a complete, high performance, easy to use solution for E Ink EPDs (Electronic Paper Displays). The module includes all necessary digital and analog power circuitry for driving an E Ink panel. The EPD Controller Module consists of Epson's S1D13522 EPD controller, an on-board 26MHz crystal clock source, a 4 Mbit flash memory for command/waveform storage, and a Power Management IC (PMIC) with built in temperature sensor.

The S1D13522 includes 2M bytes of stacked memory and features that greatly reduce the CPU overhead for EPD applications. Allowing multi-regional and concurrent display updates, the S1D13522 adds interface support for direct Touch/Pen drawing. Picture-in-Picture, Rotation, Transparency, and Hardware Cursor functions further increase the flexibility in delivering the optimal display experience. Together with the Advanced Sequencer Engine, Power Management and Thermal Sensor the EPD Controller Module makes a variety of implementations possible.

The S4E5B001B000A00 EPD Controller Module is the ideal choice for new EPD designs and design upgrades.

Features

- Targeted for display resolutions up to 1024x768
- 2M bytes of stacked memory on S1D13522
- Smooth screen updates
- Multi-Regional updates for smooth drawing
- Rotation support for Host Writes
- Low Host overhead
- 8/16-bit Indirect or Serial Host Support
- PMIC on-chip Thermal Sensor provides automatic temperature compensation.
- Optional auto boot display support and customizable boot screen
- Programmable Power Management for panel power saving

- Advanced Sequencer Engine w/ ALU
- Picture-in-Picture and Cursor functions with separate buffers
- Supports Direct Touch/Pen drawing
- Module Internal Clock source
- Software Power Save Mode
- Four regulated output voltages for Source and Gate Driver power supplies
- VPOS + VNEG = ±50mV tracking accuracy
- True shutdown on all outputs
- Controlled inrush current during soft start
- Six General Purpose IO Pins available
- Package: 76-pin 23mm x 23mm x 2.4mm Castellated-via, 1mm pitch



System Block Diagram



Description

Display Support

- Compatible with E Ink Active Matrix Panels
- Compatible with LG Display Gate In Panel (GIP)
- Up to 4-bit grayscale waveforms (16 grey-shades)
- Auto Waveform Management Version 2
- Panel Border Support
- Waveform format: E Ink's

Stacked Memory

- Host write rotation: 90°, 180°, or 270°
- Host writes can use packed mode for high-speed transfers
- Host writes with transparency for non-rectangular images
- New image data can be loaded to the image buffer while display updates are in progress

Host Support

- Indirect Intel 80 8/16-bit or Serial Host
- Simplified command style access

Display Features

• Picture-in-Picture (PIP) window with separate image buffer and transparency function

GRAPHICS

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Hardware Cursor support

Power Management Support

• Power Management IC (PMIC) with built-in temperature sensor

Miscellaneous

- Optional auto boot display support and customizable boot screen
- SPI master for Panel ID retrieval support
- Supports Pen/Touch Digitizer ICs (SPI or UART)
- Software Power Save Modes
- Low and ultra-low power modes
- Six General Purpose Input/Output pins
- Each GPIO pin can be configured for edge detect interrupt
- Package: 76-pin 23mm x 23mm x 2.4mm Castellated-via, 1mm pitch
- Module Supply Voltage: 3.3V
- PMIC Inverting Regulator Supply Voltage: 2.7V ~ 5.5V

For technical and ordering information for the S4E5B001B000A00 EPD Controller Module, contact your EPSON sales representative.

Japan

Seiko Epson Corporation Microdevices Operations Division IC Sales & Marketing Department 421-8, Hino, Hino-shi Tokyo 191-8501, Japan Tel: +81-42-587-5814 Fax: +81-42-587-5117

Hong Kong

Epson Hong Kong Ltd. 20/F, Harbour Centre 25 Harbour Road Wanchai, Hong Kong Tel: +852-2585-4600 Fax: +852-2827-4346

North America

Epson Electronics America, Inc. 214 Devcon Drive San Jose, CA 95112, USA Tel: +1-800-228-3964 Fax: +1-408-922-0238

Europe

Epson Europe Electronics GmbH Riesstrasse 15 80992 Munich, Germany Tel: +49-89-14005-0 Fax: +49-89-14005-110

China Epson

Epson (China) Co., Ltd. 7F, Jinbao Bldg. No. 89 Jinbao St. Dongcheng District Beijing 100005, China Tel: +86-10-6410-6555 Fax: +86-10-6410-7320

Singapore

 Epson Singapore Pte., Ltd.

 1 HarbourFront Place

 #03-02 HarbourFront Tower One

 Singapore 098633

 Tel: +65-6586-5500

 Fax: +65-6271-3182

Taiwan Epson Taiwan Technology & Trading Ltd. 14F, No. 7 Song Ren Road

Taipei 110, Taiwan Tel: +886-2-8786-6688 Fax: +886-2-8786-6660

Korea

Seiko Epson Corp. Korea Office 5F, LKI 63 Bldg. 60 Yoido-dong, Youngdeungpo-Ku, Seoul, 150-763, Korea Tel: +82-2-784-6027 Fax: +82-2-767-3677

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