

# Graphics Controller PICtail™ Plus Epson S1D13517 Board Information Sheet

## Features

- Graphics display controller (U1), Epson S1D13517, supporting 18/24-bit TFT interfaces, 16/24-bit color depth, maximum display resolution of 960x960, multiple frame buffering with external SDRAM, alpha-blending, picture-in-picture, transparency
- 128-Megabit (8Mx16) SDRAM (U4) for frame buffering
- 64-Megabit serial Flash memory (U3) for additional data storage
- Display connector (J2) for interfacing with different display boards
- PICtail™ Plus Interface (J1) for connecting to Explorer 16 Development Board
- Starter Kit Connector (J3) to connect any of the Starter Kits

## Getting Started

An Explorer 16 Development Board (DM240001) or one of the starter kits is required, but only one should be used. An external 9V (AC162039) power supply can be connected through the Explorer 16 or directly to connector J5. When a starter kit is used, the setup can be powered via the USB debugger. If your USB is unable to supply enough power, the external power supply should be used. Finally, a display board, such as the Graphics Display Truly 7" 800x480 Board (AC164127-9), should be connected to the display connector. For more information on this board and a list of available graphics display boards, check the **Graphics** link on the Development Tools webpage at: [www.microchip.com](http://www.microchip.com).

This board can be used in conjunction with the Microchip Graphics Library. The Microchip Graphics Library and other firmware examples can be downloaded from <http://www.microchip.com/graphics>. Please refer to the "**Getting Started**" topic in the Microchip Graphics Library Help file in the Microchip Application Library (MAL) to program and run demonstration projects in MAL.

## Board Settings

- Jumper, JP1, connects an interrupt signal, PEN\_INT, from the Display Connector to either signal, RA14 or RA15 (open by default)
- Jumper, JP2, selects the data bus width for the S1D13517 graphics display controller. When a jumper is plugged in, the data bus is 16-bit and when unplugged, it is 8-bit (16-bit by default).
- Jumpers JP3, JP4, JP5, and JP6 select the SPI channel between SPI1 and SPI2 for communication with Flash memory (U3) (SPI2 by default).

**TABLE 1: SIGNAL INTERFACE FOR DISPLAY CONNECTOR**

| Pin #  | Symbol    | Level | Description                        | Pin #            | Symbol         | Level | Description                                          |
|--------|-----------|-------|------------------------------------|------------------|----------------|-------|------------------------------------------------------|
| A1, B1 | +9V       | +9.0V | Power supply                       | B11              | BKLHT_PWM      | O     | PWM output for backlight driver                      |
| A2, B2 | GND       | GND   | Ground                             | A12, B12         | GND            | GND   | Ground                                               |
| A3, A4 | +3.3V     | +3.3V | Power supply                       | A13              | SHIFT          | O     | Pixel shift signal                                   |
| B3, B4 | +5V       | +5.0V | Power supply                       | B13              | DEN            | O     | Data enable for 24-bit digital RGB interface         |
| A5, B5 | GND       | GND   | Ground                             | A14              | FRAME          | O     | Frame pulse                                          |
| A6     | LEFT/X-   | I/O   | Touch panel left                   | B14              | LINE           | O     | Line pulse                                           |
| B6     | TOP/Y-    | I/O   | Touch panel top                    | A15-A26, B15-B26 | LDATA0-LDATA23 | O     | 24-bit data                                          |
| A7     | RIGHT/X+  | I/O   | Touch panel right                  | A27              | GPO0           | O     | Can be configured as display reset or as a GP output |
| B7     | BOTTOM/Y+ | I/O   | Touch panel bottom                 | B27              | GPO1           | O     | Can be used for SPI CS or as a GP output             |
| A8     | PEN_INT   | I     | Pen interrupt (touch panel driver) | A28              | SCK            | O     | PIC <sup>®</sup> MCU SPI SCK                         |
| B8     | SENSE     | I     | 5-wire touch panel sense           | B28              | SDO            | O     | PIC <sup>®</sup> MCU SPI SDO                         |
| A9     | SCK       | O     | PIC <sup>®</sup> MCU SCK           | A29              | GPO2           | O     | Can be used for display DC or as a GP output         |
| B9     | SDO       | O     | PIC <sup>®</sup> MCU SDO           | B29              | SDI            | I     | PIC <sup>®</sup> MCU SPI SDI                         |
| A10    | SDI       | I     | PIC <sup>®</sup> MCU SDI           | A30-A31, B29-B31 | NC             | —     | Not connected                                        |
| B10    | SS        | O     | PIC <sup>®</sup> MCU SS            | A32, B32         | GND            | GND   | Ground                                               |
| A11    | BKLHT_EN  | O     | Enable for backlight driver        |                  |                |       |                                                      |

## Americas

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## Asia/Pacific

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China - Nanjing - 86-25-8473-2460  
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India - Bangalore - 91-80-3090-4444  
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## Europe

Austria - Weis - 43-7242-2244-39  
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Germany - Munich - 49-89-627-144-0  
Italy - Milan - 39-0331-742611  
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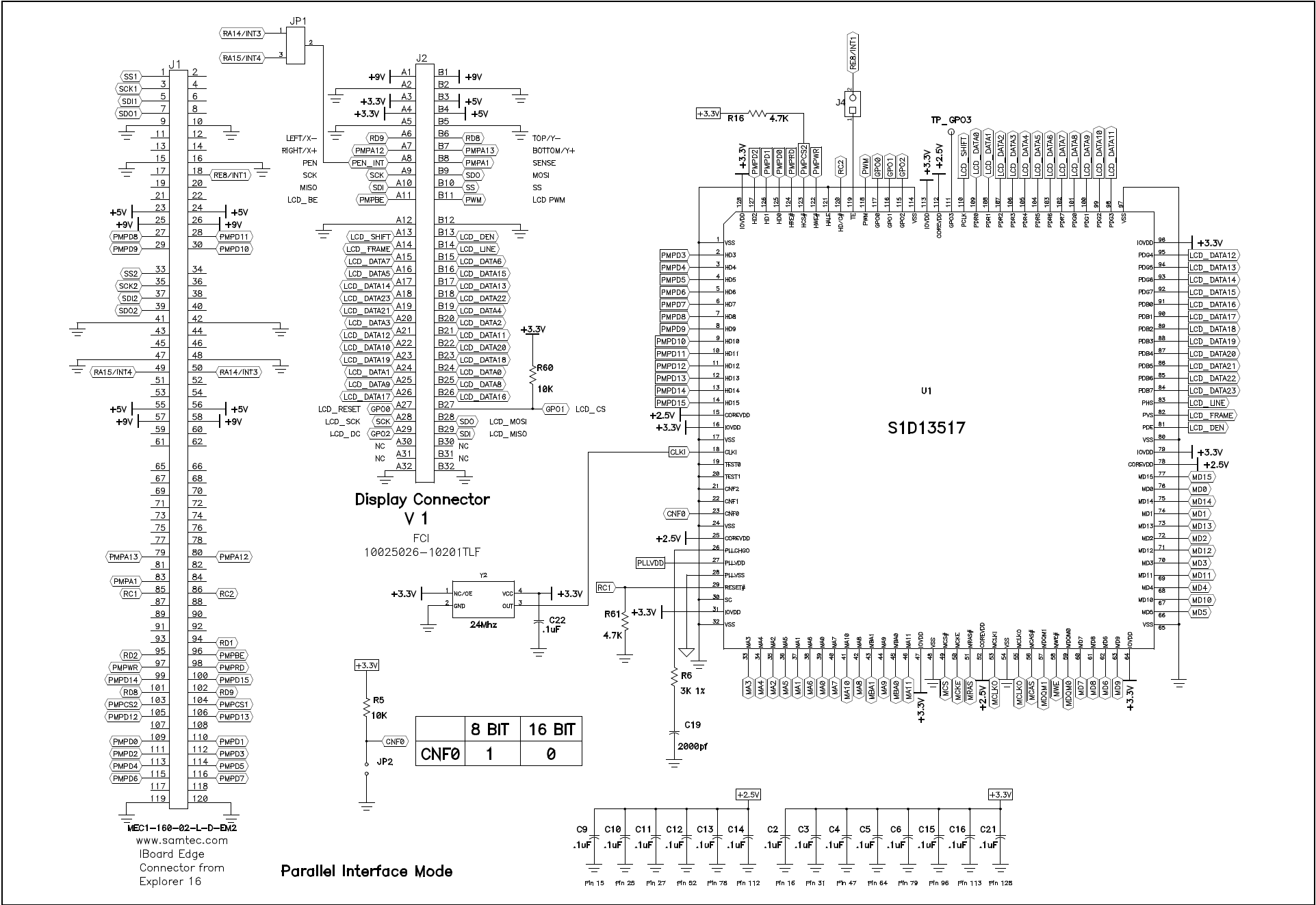
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Schematics (Revision 1.1) Sheet 1 of 2



**Schematics (Revision 1.1) Sheet 2 of 2**

