Signal Interface

Function	I/O	Pin (PICtail™ Daughter Board)	Pin (PICtail™ Plus)	Description
SCK	O	RC3/RB1	RF6/RG6	SPI Clock Out
SDI	I	RC4/RB0	RF7/RG7	SPI Data In
SDO	O	RC5/RC7	RF8/RG8	SPI Data Out
CD	I	RB4	RF0/RG0	Physical Card Insertion Detect Signal
WD	I	RA4	RF1/RG1	Physical Write-Protect Switch Status Signal
$\overline{CS}$	O	RB3	RB1/RB9	Low Asserting SPI Chip Select

Other Information

To obtain additional information about how this demonstration board can be used, including application examples and source code, please refer to *AN1189 "Implementing a Mass Storage Device Using Microchip USB Device Firmware Framework"* and *AN1045 "Implementing File I/O Functions Using Microchip's Memory Disk Drive File System Library"*.

References

FAT File System Specification available by license, **http://www.microsoft.com/mscorp/ip/tech/fat.asp**.
MMC Specifications: some are available by license and others are available for purchase, **http://www.mmca.org/compliance**.
SD Card Specification available by license, **http://www.sdcard.org**.

Americas

Atlanta - 678-957-9614
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Kokomo - 765-864-8360
Los Angeles - 949-462-9523
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Toronto - 905-673-0699

Asia/Pacific

Australia - Sydney - 61-2-9868-6733
China - Beijing - 86-10-8528-2100
China - Chengdu - 86-28-8665-5511
China - Hong Kong SAR - 852-2401-1200
China - Nanjing- 86-25-8473-2460
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China - Shanghai - 86-21-5407-5533
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Taiwan - Taipei - 886-2-2500-6610
Thailand - Bangkok - 66-2-694-1351

Europe

Austria - Weis - 43-7242-2244-39
Denmark - Copenhagen - 45-4450-2828
France - Paris - 33-1-69-53-63-20
Germany - Munich - 49-89-627-144-0
Italy - Milan - 39-0331-742611
Netherlands - Drunen - 31-416-690399
Spain - Madrid - 34-91-708-08-90
UK - Wokingham - 44-118-921-5869

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DS51583B

PICtail™ Daughter Board for SD™ and MMC Cards

Overview

The PICtail Daughter Board for SD and MMC Cards is a demonstration board for evaluating reading and writing data on SD or MMC cards. It is an expansion board compatible with a number of PICDEM™ demonstration boards. A complete list of compatible PICDEM demonstration boards is available on Microchip's web site.

Note: The implementation and use of the FAT file system, SD card specifications, MMC card specifications and other third party tools may require a license from various entities, including, but not limited to Microsoft® Corporation, SD Card Association and MMCA. It is your responsibility to obtain more information regarding any applicable licensing obligations. Some third party web sites have been listed in **"References"** for your convenience.

Getting Started

To get started, a compatible PICDEM demonstration board is required. In general, a board is compatible if it has a PICtail Daughter Board interface expansion port or a PICtail Plus board interface expansion port. Most PICDEM demonstration boards do not have the female PICtail Daughter Board header installed, so a 14x2 female connector is included with this kit for the user to install onto the PICDEM demonstration board if necessary. When connecting this daughter board to a board with the PICtail Plus connector, like the Explorer 16 Development Board, the connector should be inserted in the first slot of the demonstration board (aligned with Pin #1) to communicate using the SPI1 module, or in the second slot of the demonstration board (aligned with Pin #33) to communicate using the SPI2 module. Note that the pins used for other signals will change as well, depending on the slot selected.

Features

- Supports a wide range of SD cards
- Supports auto-triggering of files on SD cards
- Operates on a wide range of voltages from 3.3V-5.0V DC
- Includes PICtail Daughter Board and PICtail Plus Board connection interfaces
- Compatible with many boards with PICtail Daughter Board and PICtail Plus interface, including Explorer 16 Development Board, PIC18 Explorer and PICDEM FS USB demo boards

Board Configurations

A total of 7 jumper locations are available. As shipped from the factory, some of the jumper locations are bridged by circuit traces forming a default setup. To change this, the user will need to cut the traces and install pins and a block jumper. Afterward, the features can be enabled or disabled easily by installing or removing the jumper.

Note: Jumpers, JP1-JP6, are only used to configure pin settings for the PICtail Daughter Board connector. To switch between sets of operating pins on a PICtail Plus header, the card edge connector must be swapped between the first and second slot of the PICtail Plus socket. Jumper, JP7, is also used only by the PICtail Daughter Board connector.

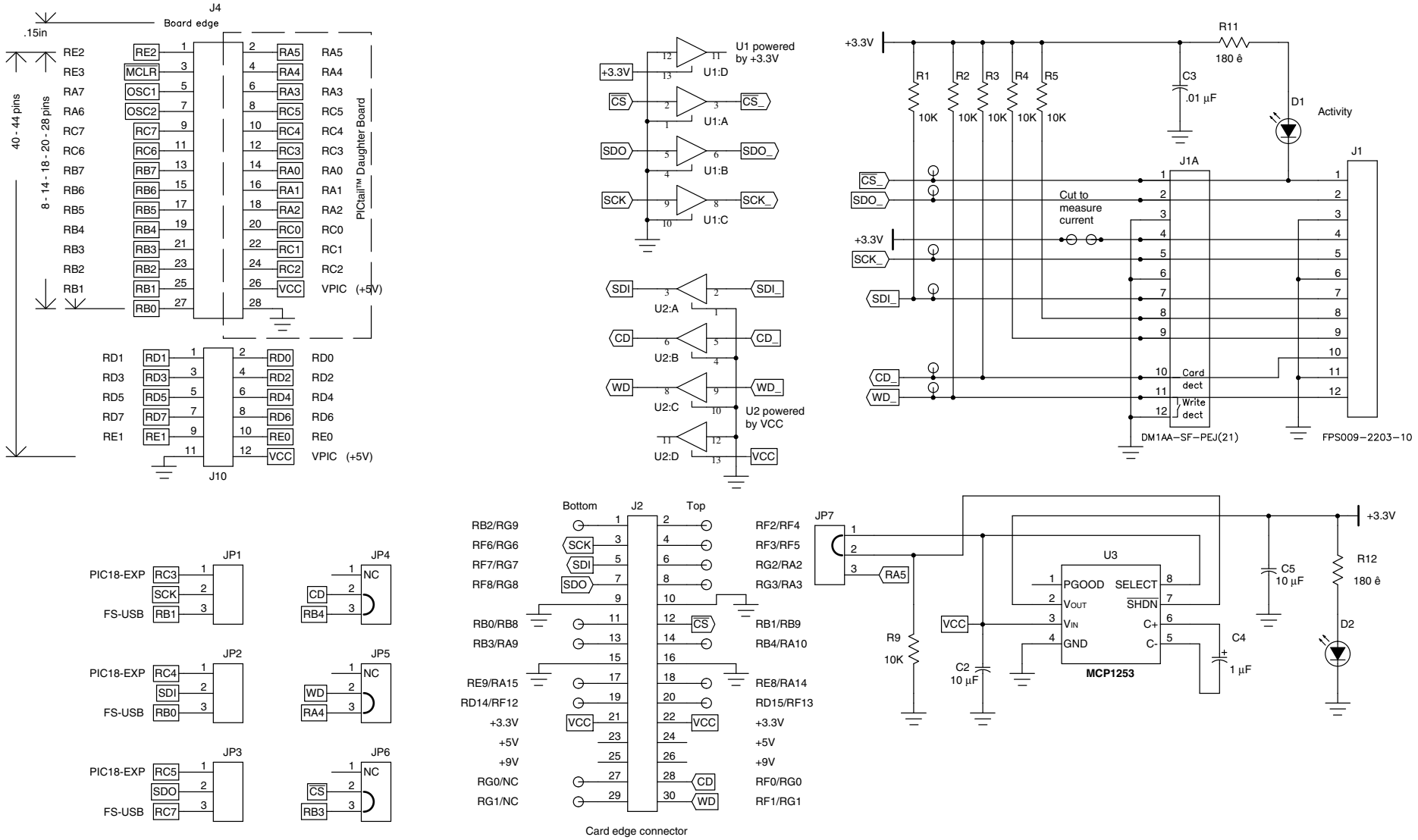
Jumper	Position	Function
JP1	Pin 1-2	PIC18 Explorer Board enabled (SCK connected to RC3)
	Pin 2-3	PICDEM FS USB enabled (SCK connected to RB1)
JP2	Pin 1-2	PIC18 Explorer Board enabled (SDI connected to RC4)
	Pin 2-3	PICDEM FS USB enabled (SDI connected to RB0)
JP3	Pin 1-2	PIC18 Explorer Board enabled (SD0 connected to RC5)
	Pin 2-3	PICDEM FS USB enabled (SD0 connected to RC7)
JP4	Pin 1-2	No Connect (user can select an available port)
	Pin 2-3 (Default)	Card Detect (CD) signal connected to RB4
JP5	Pin 1-2	No Connect (user can select an available port)
	Pin 2-3 (Default)	Write-Protect (WD) signal connected to RA4
JP6	Pin 1-2	No Connect (user can select an available port)
	Pin 2-3 (Default)	Chip Select ($\overline{CS}$) signal connected to RB3
JP7	Pin 1-2	User can use RA5 as Shutdown ($\overline{SHDN}$) signal for MCP1253
	Pin 2-3 (Default)	Shutdown disabled (connected to V_{CC})

Firmware

USB mass storage examples can be downloaded from **http://www.microchip.com/usb**. USB products will require a vendor ID and product ID. For more information, consult Application Note, AN1189 (DS01189). Application Note, AN1045 (DS01045), provides a method for interfacing directly to SD cards formatted with a FAT file system. It can be downloaded from:
http://www.microchip.com/Stellent/idcplg?IdcService=SS_GET_PAGE&nodeId=1824&appnote=en532040

PICtail™ Daughter Board for SD™ and MMC Cards

Board Schematic



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