Other Information

To obtain the most recent and complete documentation for this demonstration board, including:

- User's Guide
- Board Description
- Board Schematics
- Source Code
- Application Examples
- Links to Web Seminars

please refer to the Microchip web site: **www.microchip.com/usb**

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USB PICtail™ Plus Daughter Board

Overview

The USB PICtail™ Plus Daughter Board is a USB demonstration board for evaluating Microchip Technology's 16 and 32-bit USB product lines using the Explorer 16 development board.

Features

- Example circuits for USB device, embedded host and On-The-Go (OTG)
- Both horizontal and vertical PICtail Plus Daughter Board connection interfaces

Getting Started

To get started, an Explorer 16 Development Board is required. The USB PICtail Plus Daughter Board can be attached to the Explorer 16 Development Board, either through the J5 connector, or by attaching to the edge of the Explorer 16 via the horizontal PICtail Plus Daughter Board connection interface. The USB PICtail Plus Daughter Board is capable of sourcing 100 mA to VBUS when operating as an embedded host or in OTG mode. If the desired application requires more than 100 mA for an embedded host application, then a +5V power supply must be attached to the +5V rail of the Explorer 16. OTG applications are limited to sourcing 100 mA on VBUS.

Board Configurations

There are four jumpers on the board to select the operational mode and optional features.

JP1 connects a resistor divider from the output of the current limiting fuse to the OVERCURRENT pin of the PICtail Plus Daughter Board connection interface. This allows embedded host applications to determine if the attached device has tripped the 500 mA fuse.

Jumpers 2, 3 and 4 are used to select between Device, Embedded Host and OTG modes, respectively. Only one of the three jumpers should be shorted at any point of time. Any other combinations can result in contention in the VBUS power rail.

Application	JP2	JP3	JP4	Current Sourcing Limit
Device	Short	Open	Open	N/A
Embedded Host (5V from Explorer 16 rail – no additional power supply attached)	Open	Short	Open	100 mA(1)
Embedded Host (5V from Explorer 16 rail – additional power supply attached to 5V rail)	Open	Short	Open	500 mA
Embedded Host (5V generated from boosting Explorer 16 3.3V rail)	Open	Open	Short	100 mA
OTG (dual role)	Open	Open	Short	100 mA

Note 1: The actual current source limit will vary depending on any additional load from the Explorer 16 or attached circuitry on the 5V rail. Caution should be used when drawing more than this limit of current from the 5V rail as the voltage regulator on the Explorer 16 may become hot and eventually enable its thermal shutdown feature.

Firmware

The Microchip USB Stack and application examples can be found at **www.microchip.com/usb**

Signal Interface

Function	I/O	Pin	Description
VBUS	I	65	VBUS voltage level input for level detection
USBID	I	68	ID detection for OTG applications
PGOOD	I	66	Power good out of MCP1253
$\overline{\text{SHDN}}$	O	67	Shutdown signal for MCP1253
OVERCURRENT	I	43	Overcurrent detection for embedded host applications (optional)
D+	I/O	27	Data + line
D-	I/O	29	Data - line

USB PICtail™ Plus Daughter Board

Board Schematic