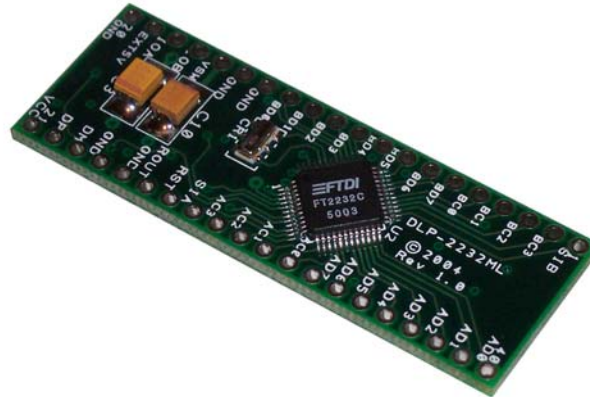




## DLP-2232ML LOW-PROFILE USB MODULE

---



### 1.0 Introduction

The DLP-2232ML utilizes FTDI's third-generation USB UART/FIFO I.C., the FT2232C. This low-cost development tool features two Multi-Purpose UART/FIFO controllers that can be configured individually in several different modes. In addition to the UART interface, FIFO interface, and Bit-Bang IO modes of the second-generation FT232BM and FT245BM devices, the FT2232C offers a variety of additional modes of operation including a Multi-Protocol Synchronous Serial Engine interface designed specifically for synchronous serial protocols such as JTAG and SPI bus.

The DLP-2232M features a quality four-layer printed circuit board with a solid ground plane, an integral 93C56 EEPROM on board for easy OEM customization and a standard 40-pin, 0.6in wide footprint. Integral power control and on-board MOSFET power switch make the DLP-2232M a perfect choice for USB bus-powered, high-power designs as well as self- and low-powered products.

NOTE: With the exception of the mechanical connectors, mechanical dimensions and the host connection interface signals, the DLP-2232ML and DLP-2232M are the same product. The supporting electronics for the USB connector are already on the DLP-2232ML board, just add a type B connector to your design and you're ready to go.

For a complete list of features and specifications please refer to the datasheet for the DLP-2232M.

## 2.0 Module Pin-Out

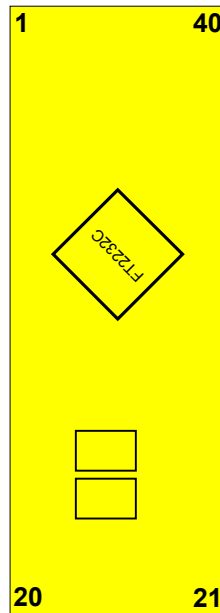
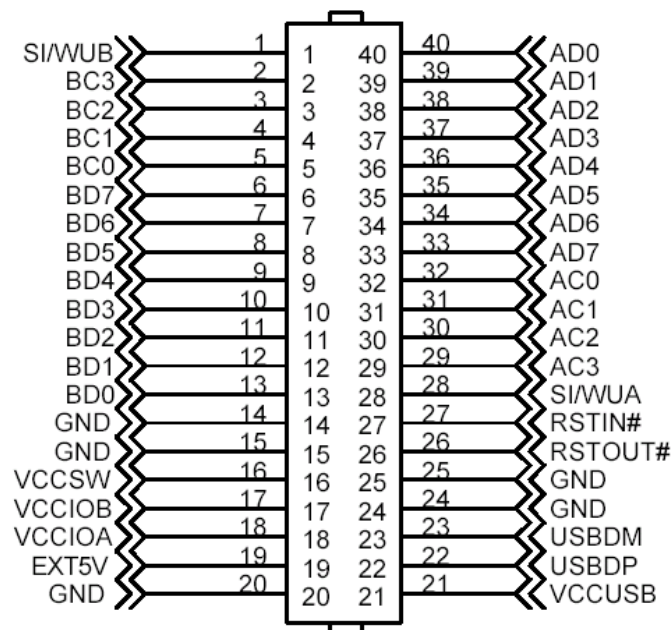


Figure 2. Pin-Out (40 Pin DIP Header )

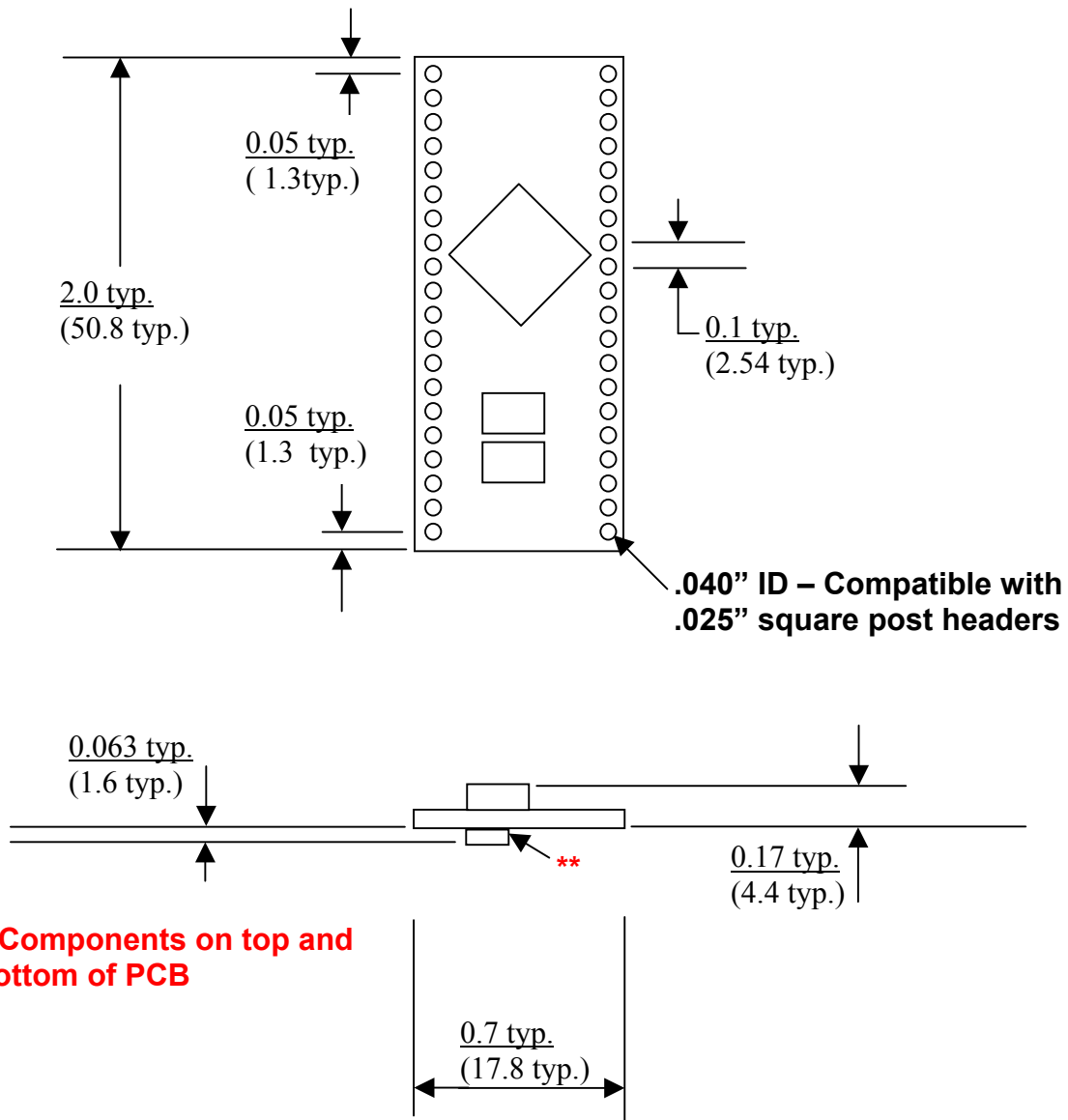
## 2.1 Pin Definitions

Since the DLP-2232ML does not have a USB connector, the USBDM and USBDP signal lines are brought out on pins 23 and 22 as shown here.



With the exception of the 2 USB communications lines (USBPD and USBDM) the pinout for the DLP-2232ML is the same as the DLP-2232M module. Please refer to the datasheet for the DLP-2232M for a complete description of the pinout.

**3.0 Mechanical Dimensions >>> Preliminary <<<**  
**Inches (mm)**



## **4.0 Document Revision History**

DLP-2232ML Version 1.0 – Initial document created 7-28-2004.

## **5.0 Disclaimer**

© DLP Design, Inc., 2002 / 2004

Neither the whole nor any part of the information contained in, or the product described in this manual, may be adapted or reproduced in any material or electronic form without the prior written consent of the copyright holder.

This product and its documentation are supplied on an as-is basis and no warranty as to their suitability for any particular purpose is either made or implied. DLP Design, Inc. will not accept any claim for damages howsoever arising as a result of use or failure of this product. Your statutory rights are not affected. This product or any variant of it is not intended for use in any medical appliance, device or system in which the failure of the product might reasonably be expected to result in personal injury.

This document provides preliminary information that may be subject to change without notice.

## **6.0 Contact Information**

DLP Design, Inc.  
1605 Roma Ln.  
Allen, TX 75013  
Phone: 469-964-8027  
Fax: 415-901-4859  
E-Mail ( Sales ) : [sales@dlpdesign.com](mailto:sales@dlpdesign.com)  
E-Mail ( Support ) : [support@dlpdesign.com](mailto:support@dlpdesign.com)  
Web Site URL : <http://www.dlpdesign.com>

# Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[DLP Design:](#)

[DLP-2232ML](#)