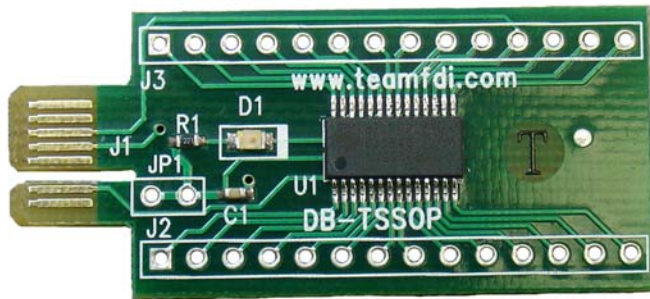


# DB-TSSOP-LPC938



## USB-Dongle and Derivative Boards



The **DB-TSSOP-LPC938** is the Derivative Board for the P89LPC938 microcontroller in a 28 pin TSSOP package. The **DB-TSSOP-LPC938** requires the use of the USB-Dongle for power and a programming interface.

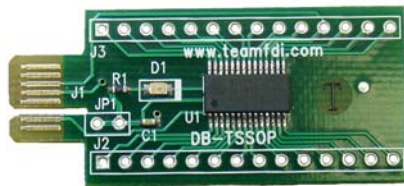
The USB-Dongle and **DB-TSSOP-LPC938** allow quick and easy ICP programming of the P89LPC938. The unit also provides a low cost platform for testing or prototyping of simple microcontroller based designs. The USB-Dongle provides a Virtual COM Port interface to the PC and allows hex files to be downloaded and programmed using Flash Magic or other common utilities. The USB-Dongle provides all power needed by the various Derivative Boards so no external power supply is required. Low cost Derivative Boards are available for many different microcontrollers from NXP. Please consult our website for details at [www.teamfdi.com](http://www.teamfdi.com)

### *Highlights*

- Low cost tool for prototyping
- USB port powered so no external Power Supply required
- Supports USB 2.0
- Plugs directly into any standard USB Port – great for laptops
- Works with NXP free Flash Magic software that can be downloaded from the web
- USB-Dongle Kit Includes:
  - ◆ USB-Dongle
  - ◆ Download docs and software examples at [www.teamfdi.com/USB\\_Dongle](http://www.teamfdi.com/USB_Dongle)
  - ◆ Derivative Boards for many microcontrollers are available

# Technical Details

The **DB-TSSOP-LPC938** uses a PCB edge finger connector to interface to the USB-Dongle.



Board Dimensions 1.793" x 0.8"

## Target Interface

The USB-Dongle includes a 14 pin connector to the Derivative Board that utilizes the following signals. Not all signals are used on all Derivative Boards:

| ISP/ICPn                                                      | 5V (USB power, unswitched)               |
|---------------------------------------------------------------|------------------------------------------|
| Switched Power (3V for ICP) or Reset (High True for 8051 ISP) | Reset (Low True) (for ICP & LPC2000 ARM) |
| Ground                                                        | 3V (unswitched)                          |
| PCL/SCL (ICP/I2C)                                             | PDA/SDA (ICP/I2C)                        |
| TXD (UART)                                                    | RXD (UART)                               |
| MSIO (SPI)                                                    | PSEN/P0.14 (ISP entry)                   |
| SCLK (SPI)                                                    | MOSI (SPI)                               |

## Example of USB-Dongle and Derivative Board

USB-Dongle



DB-HVSON10-LPC9103

**Headers** – The **DB-TSSOP-LPC938** brings every pin of the microcontroller out to a standard 0.10" spacing header footprint for easy probing of signals or to support prototyping or wire-wrapping. Consult the **DB-TSSOP-LPC938** schematic if there are any questions about pin alignment from the microcontroller to the headers.

**Power** – The USB-Dongle provides the regulated 3.3V power required by the **DB-TSSOP-LPC938**. The DB has a power measurement jumper, JP1, to allow the user to easily measure the power consumption of the microcontroller. In the artwork, JP1 pin 1 is shorted to pin 2 so the board is continuously powered. The board can be easily modified by cutting JP1 and loading a standard 0.10" header.

**LED** - A green activity or status LED is provided at location D1 on the Derivative Board. This LED can be used to indicate when the microcontroller is being programmed or for other types of user activity under software control.

**Crystal or Clock Frequency** - The **DB-TSSOP-LPC938** is clocked by the on-board oscillator in the LPC938 at a frequency of 7.373 MHz so no external crystal is needed on the DB.

# Ordering Information

Order Online at [www.digikey.com](http://www.digikey.com)  
Digi-Key Part #: 622-1011-ND  
Availability: Stock  
Digi-Key Contact Info:  
1-800-DIGI-KEY Phone  
(218) 681-3380 FAX

FDI  
Contact Info:  
(800) 278-0293 Phone  
(256) 883-1241 FAX

[www.teamfdi.com](http://www.teamfdi.com)

All brand names and product names are trademarks or registered trademarks of their respective holders.

**FDI** *Future Designs, Inc.*  
Your Development Partner