

### 4-inch WVGA TFT LCD board with MIPI<sup>®</sup> DSI interface and capacitive touch screen

#### Introduction

The B-LCD40-DSI1 daughterboard provides 4-inch WVGA TFT LCD display with MIPI<sup>®</sup> DSI interface. It features 480x800 pixels and 16.7M display colors. Self-capacitive touch panel is also implemented on the B-LCD40-DSI1 daughterboard. It supports single-point touch and gesture, or two-point touch.

The B-LCD40-DSI1 daughterboard is used on STM32 evaluation boards or on discovery boards to demonstrate display solutions of the STM32 MCUs.

Figure 1. B-LCD40-DSI1 daughterboard



1. Picture is not contractual

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## 1 Features

- 4-inch TFT color LCD
- 480(RGB)x800 pixels
- 16.7M display colors
- RGB vertical stripe of pixel arrangement
- Up to two lanes of MIPI/DSI data
- Self-capacitive touch panel supports single-point touch and gesture, or two-point touch
- 2.8V-3.3V power supply for both LCD and touch panel, 5V power supply for backlight

## 2 Order code

To order the DSI LCD daughterboard, refer to [Table 1](#):

**Table 1. Ordering information**

Order code	Product
B-LCD40-DSI1	DSI LCD daughterboard

## 3 Hardware layout and configuration

B-LCD40-DSI1 daughterboard is designed around MIPI TFT LCD. The hardware block diagram (see [Figure 2](#)) shows the connections between the B-LCD40-DSI1 daughterboard and the motherboard. Refer to the layout of the B-LCD40-DSI1 daughterboard (see [Figure 3](#)) to locate these connections on the evaluation board.

Figure 2. B-LCD40-DSI1 daughterboard hardware block diagram

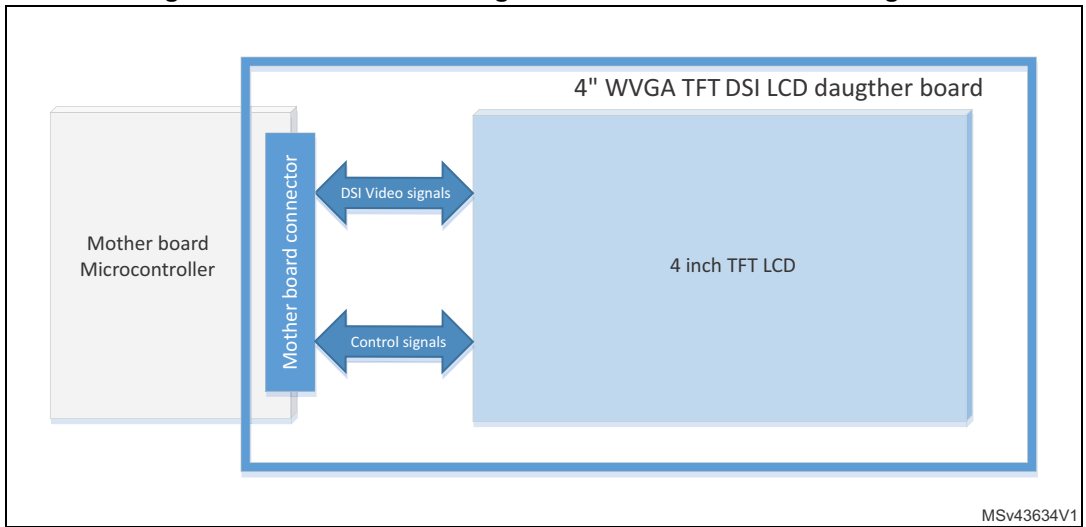
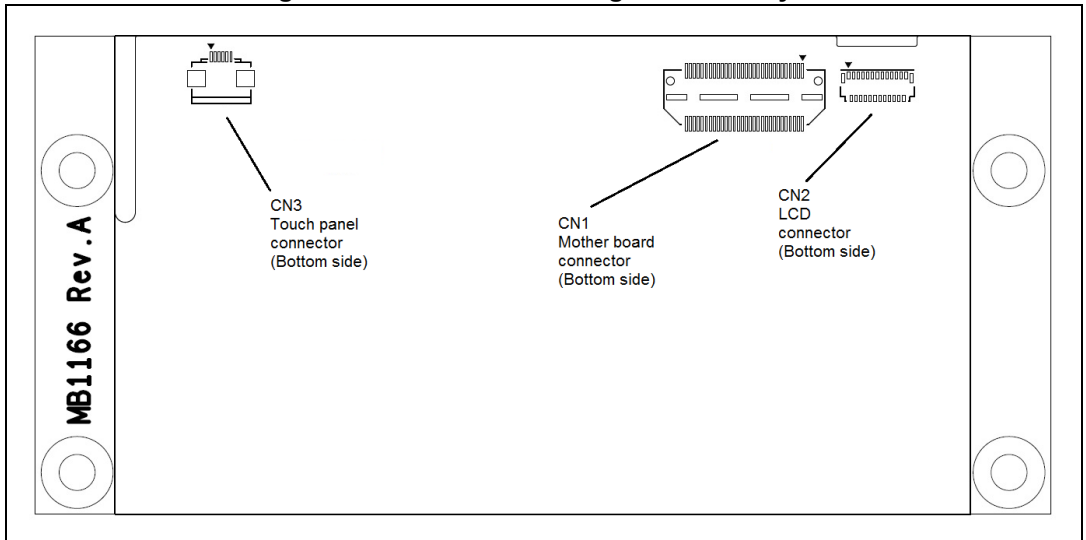


Figure 3. B-LCD40-DSI1 daughterboard layout



## 4 Video and touch panel

### 4.1 Motherboard connector

A male high-speed connector CN1 on bottom side is used to implement the B-LCD40-DSI1 daughterboard on the motherboard. 2-lane DSI video signal and control signals (I<sup>2</sup>C bus, reset and interrupt signals) are on this connector.

[Table 2](#) shows the pinout of CN1.

**Table 2. Motherboard connector**

Pin No. odd	Description	Interface	Pin No. even	Description	Interface
1	GND	-	2	-	-
3	DSI_CK_P	DSI	4	TOUCH_INT	Interrupt output
5	DSI_CK_N	DSI	6	-	-
7	GND	-	8	-	-
9	DSI_D0_P	DSI	10	-	-
11	DSI_D0_N	DSI	12	-	-
13	GND	-	14	-	-
15	DSI_D1_P	DSI	16	-	-
17	DSI_D1_N	DSI	18	-	-
19	GND	-	20	-	-
21	BLVDD(+5V)	-	22	-	-
23	BLVDD(+5V)	-	24	-	-
25	-	-	26	-	-
27	BLGND	-	28	-	-
29	BLGND	-	30	-	-
31	-	-	32	-	-
33	-	-	34	-	-
35	-	-	36	VDD(2.8V-3.3V)	-
37	-	-	38	-	-
39	-	-	40	I2C_SDA	I <sup>2</sup> C
41	-	-	42	-	-
43	-	-	44	I2C1_SCL	I <sup>2</sup> C
45	-	-	46	-	-
47	-	-	48	-	-
49	DSI_TE	DSI	50	-	-
51	-	-	52	-	-

Table 2. Motherboard connector (continued)

Pin No. odd	Description	Interface	Pin No. even	Description	Interface
53	BL_CTRL	GPIO	54	-	-
55	-	-	56	-	-
57	RESET	GPIO	58	-	-
59	-	-	60	-	-

## 4.2 LCD display

LCD display on B-LCD40-DSI1 daughterboard is a color active matrix TFT (Thin Film Transistor) LCD (Liquid Crystal Display) that uses amorphous silicon TFT as a switching device. The resolution of a 4-inch TFT-LCD contains 480x800 pixels, and displays up to 16.7M colors. The interface between LCD and microcontroller is a 2-Lane MIPI signal.

The LCD module is reset by RESET signal on CN1 Pin57.

## 4.3 Backlight

Backlight unit of LCD requires typical 25.6V power supply. It is provided by boost converter STLD40DPUR on B-LCD40-DSI1 daughterboard.

## 4.4 Touch panel

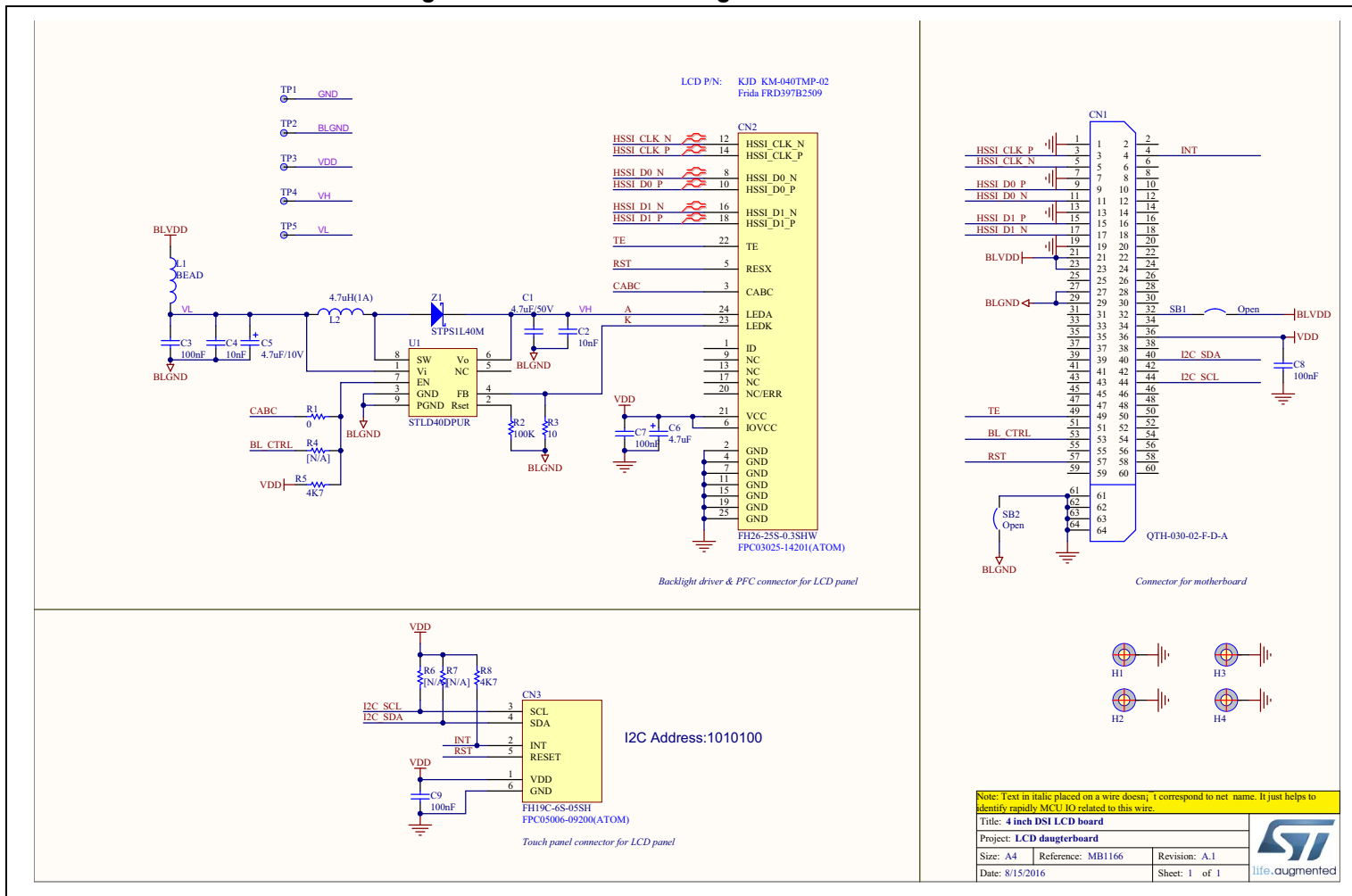
The self-capacitive touch panel on LCD module supports single-point and gesture touch, or two-points touch. The interface is I<sup>2</sup>C whose address is 0x1010100. The touch panel outputs interrupt signals on CN1 Pin4.





# Appendix A Schematics

Figure 4. B-LCD40-DSI1 daughterboard schematics



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Schematics

Note: Text in italic placed on a wire doesn't correspond to net name. It helps to identify rapidly MCU IO related to this wire.

Title: 4 inch DSI LCD board		
Project: LCD daughterboard		
Size: A4	Reference: MB1166	Revision: A.1
Date: 8/15/2016	Sheet: 1 of 1	life.augmented

## Revision history

**Table 3. Document revision history**

Date	Revision	Revision Details
28-Sep-2016	1	Initial version.

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