

# STEVAL-CCM002V1

# TFT-LCD panel demonstration board based on the STM32 as LCD controller

Data brief

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## **Features**

- Displays images on a TFT-LCD using the STM32 as LCD controller
- Includes a slideshow of images to demonstrate static display model
- STM32 FSMC (flexible static memory interface) drives TFT using external SRAM as refresh RAM
- On-board constant current drive circuit for LED-based TFT-LCD backlighting
- Dimming control for the TFT-LCD backlighting
- Jumper headers offer easy analysis of TFT-LCD interface to the microcontroller
- RoHS compliant

## **Description**

The STEVAL-CCM002V1 demonstration board is an STM32-based LCD controller for TFT-LCD displays. The board provides a platform for testing the capabilities of the STM32F103VET6 FSMC peripheral to drive a TFT-LCD panel without an LCD controller.

A 3.5" QVGA resolution TFT-LCD panel is interfaced with the STM32 FSMC peripheral. The board is designed to be connected as a daughterboard to the STM3210E-EVAL demonstration kit.

For further information contact your local STMicroelectronics sales office.



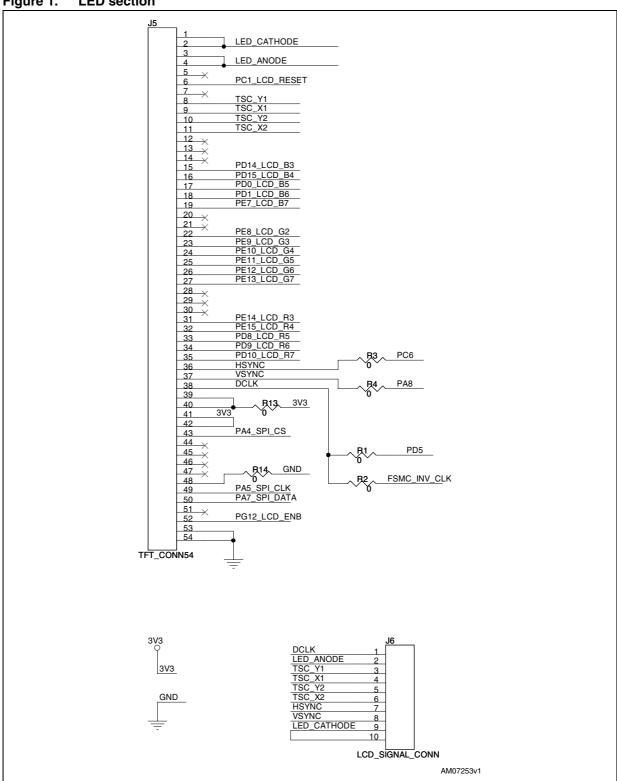
STEVAL-CCM002V1

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**Schematic diagrams** STEVAL-CCM002V1

### **Schematic diagrams** 1

Figure 1. **LED** section



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Figure 2. Demonstration board connectors

14	CN6		10	
GND 1	2 PG8	GND	J2 1	] 2 PG8
PG7 3	4 PG6	PG7	3	4 PG6
PG5 5	6 PG4	PG5	5	6 PG4
G3 7	8 PG2	PG3	7	8 PG2
213 9	10 GND	PC13	9	10 GND
SET# 11 12 13	12 PD13	RESET#	_11	12 PD13
	14 PD11 16 PD9_LCD_R6	PD12 PD10_LCD_R7	13	14 PD11 16 PD9_LCD_R6
D_LCD_R7		PD8_LCD_R5	15	
19	18 PB15 20 PB14	D5V	17 19	18 PB15 20 PB14
3 21	22 PB12	PB13	21	22 PB12
11_TSC_SDA2 23 15_LCD_R4 25	24 PB10_TSC_SCL2	PB11_TSC_SDA2 PE15_LCD_R4	23	24 PB10_TSC_SCL2
	26 PE14_LCD_R3	PE15_LCD_R4	25	26 PE14_LCD_R3
13_LCD_G7 27	28 PE12_LCD_G6	PE13_LCD_G7	27	28 PE12_LCD_G6
11_LCD_G5 29 15_LCD_B4 31	30 GND 32 PD14_LCD_B3	PE11_LCD_G5 PD15_LCD_B4	29	30 GND 32 PD14_LCD_B3
15_LCD_B4 31 9_LCD_G3 33	32 PD14_LCD_B3 34 PE10_LCD_G4	PE9 LCD G3	31 33	32 PD14_LCD_B3 34 PE10_LCD_G4
7_LCD_B7 35	36 PE8_LCD_G2	PE7 LCD B7	35	36 PE8_LCD_G2
37	38 ×	PG1	37	38 ×
39	40 ^PG0	GND	39	40 ^PG0
14 41	42 PF15	PF14	41	42 PF15
12 43	44 PF13	PF12	43	44 PF13
2 45	46 PF11	PB2	45	46 PF11
1 47	48 50 GND	PB1	47	48 50 GND
0 × 49 51	50 GND 52 PC5	PB0 ×	49 51	50 GND 52 PC5
24 53	54 PA7_SPI_DATA	PC4	53	54 PA7_SPI_DATA
6 55	56 PA5_SPI_CLK	PA6	55	56 PA5_SPI_CLK
4_SPI_CS 57	58 PA3	PA4_SPI_CS	57	58 PA3
D 59	60 PA2	GND	59	60 PA2
1 61	62 64 PC2	PA1	61	62
3_TSC_INT 63 1_LCD_RESET 65	01	PC3_TSC_INT PC1_LCD_RESET	63	64 PC2 66 PC0
		PF10	65	
10 67 3V3 69	68 70 GND	21/2	67 69	68 70 GND
	70	3V3O	03	70
	CON70A		CON70A	
<u>J3</u>			<u>J4</u>	
ND 1	2 PC6	GND BC7	_1_	2 PC6
ND 1 C7 3	2 PC6 4 PC8	PC7	1 3	4 PC8
ND 1 07 3 09 5	2 PC6 4 PC8 6 PA8	PC7 PC9	1 3 5	4 PC8 6 PA8
ND 1 27 3 29 5 A9 7	2 PC6 4 PC8 6 PA8 8 PA10	PC7	1 3 5 7	4 PC8 6 PA8 8 PA10
ND 1 C7 3 C9 5 A9 7 A0 9	2 PC6 4 PC8 6 PA8 8 PA10 10 GND 12 PA11	PC7 PC9 PA9 PA0	1 3 5	4 PC8 6 PA8 8 PA10 10 GND 12 PA11
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ND	2 PC6 4 PC8 6 PA8 8 PA10 10 GND 12 PA11 14 PA13 16 PA15 18 PC11 20 PC12 22 PD1_LCD_B6 24 PE1 26 PD3 28 PD5 30 GND 32 PG9 34 PG11 36 PG13 38 PG15 40 PB3 42 PB5 44 PB7 46 PB9 48 3V3 50 GND 52 PE3 54 PE5 56 PC13 58 PC15 60 PF1 62 PF3 64 PF5 66 PF7 68 PF9 70 GND	PC7 PC9 PA9 PA9 PA0  PA12 PA14 PC10 GND PD0 LCD B5 PE2 PD2 PD4 PD6 PD7 PG10 PG12 LCD ENB PG14 GND PB4 PB6 PB7 PB8 PG14 GND PB4 PB6 PB8 PC14 PE6 PC14 PF0 GND GND PF2 PF4 PF6 PF8	1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 43 45 47 49 51 53 55 57 59 61 63 65 67 69	4 PC8 6 PA8 8 PA10 10 GND 112 PA11 114 PA13 16 PA15 118 PC11 20 PC12 22 PD1 LCD B6 24 PE1 26 PD3 28 PD5 30 GND 32 PG9 34 PG11 36 PG13 38 PG15 40 PB3 42 PB5 44 PB7 46 PB9 48 3V3 50 GND 52 PE3 54 PE5 56 PC13 58 PC15 60 PF1 62 PF3 64 PF5 66 PF7 68 PF9

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Schematic diagrams STEVAL-CCM002V1

Single channel inverter FSMC\_INV\_CLK 74V1G14CTR\_SOT323-5L 3V3 <u>L1</u> 4.7uH ▼ STPS1L30A\_SMA SW EN VO NC LED\_ANODE LCD backlight driver STLD40DPUR\_QFN8 C1 2.2uF C2 4.7uF GND C4 =2pF C5 =2pF C6 =2pF TSC\_X2 TSC\_X2 3V3 VIO DATA\_IN TSC\_Y2 15 Touchscreen controller STMPE811QTR TSC\_X1 PB11\_TSC\_SDA2 100nF 16 A0 PB10\_TSC\_SCL2 PC3\_TSC\_INT PB10\_TSC\_SCL2 AM07255v1

Figure 3. Single channel inverter, LCD backlight driver and touchscreen controller

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STEVAL-CCM002V1 Revision history

# 2 Revision history

Table 1. Document revision history

Date	Revision	Changes
16-Jun-2010	1	Initial release.

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