

# High-Performance WVGA Display Module with maXTouch® Information Sheet

The High-Performance WVGA Display Module with maXTouch (AC320005-5) is designed for evaluating the Microchip graphics display solution and graphics library for 32-bit microcontrollers. This board is compatible with both versions of the Multimedia Expansion Board II (DM320005-2 or DM320005-5), as well as with Xplained Pro and Xplained Ultra evaluation kits. This board has a TFT 800 x 480 display with a 24-bit parallel RGB interface with a maXTouch capacitive touch interface.

## Features

- 800 x 480 TFT display
- maXTouch MXT460
- QTouch® QT1070 (with four navigation keys)
- 4 K-bit 1-wire EEPROM
- Integrated Projective Capacitive Touch (PCAP) panel

## Running the High-Performance WVGA Display Module with maXTouch Demonstration Code

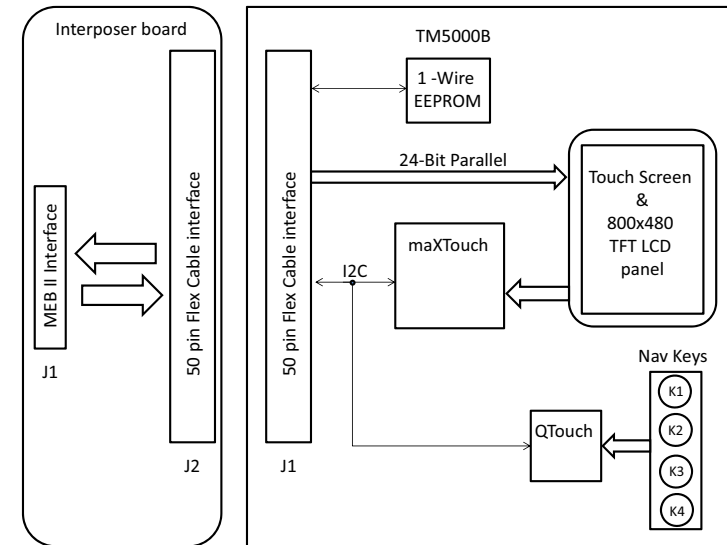
For free Microchip demonstration code and additional information, visit the MPLAB® Harmony web page at: [www.microchip.com/Harmony](http://www.microchip.com/Harmony).

After MPLAB Harmony is installed, refer to the following MPLAB Harmony installation folder for demonstration purposes:

C:\microchip\harmony\

To work with older Xplained Pro and Xplained Ultra evaluation kits, disconnect the ribbon connector from the adapter board and connect it to the GFX port (50 flex) of the Xplained Pro or Xplained Ultra.

**FIGURE 1: WVGA DISPLAY MODULE BLOCK DIAGRAM**



### Americas

Atlanta - 678-957-9614  
 Austin - 512-257-3370  
 Boston - 774-760-0087  
 Chicago - 630-285-0071  
 Cleveland - 216-447-0464  
 Dallas - 972-818-7423  
 Detroit - 248-848-4000  
 Houston - 281-894-5983  
 Indianapolis - 317-773-8323  
 Los Angeles - 949-462-9523  
 New York - 631-435-6000  
 Phoenix - 480-792-7200  
 Santa Clara - 408-961-6444  
 Toronto - 905-673-0699

### Europe

Austria - Wels - 43-7242-2244-39  
 Denmark - Copenhagen - 45-4450-2828  
 France - Paris - 33-1-69-53-63-20  
 Germany - Munich - 49-89-627-144-0  
 Italy - Milan - 39-0331-742611  
 Netherlands - Drunen - 31-416-690399  
 Spain - Madrid - 34-91-708-08-90  
 UK - Wokingham - 44-118-921-5869

### Asia/Pacific

Australia - Sydney - 61-2-9868-6733  
 China - Beijing - 86-10-8569-2100

### Asia/Pacific (Continued)

China - Chengdu - 86-28-8665-5511  
 China - Chongqing - 86-23-8980-9588  
 China - Hangzhou - 86-571-8792-8115  
 China - Hong Kong SAR - 852-2943-5100  
 China - Nanjing - 86-25-8473-2460  
 China - Qingdao - 86-532-8502-7355  
 China - Shanghai - 86-21-5407-5533  
 China - Shenyang - 86-24-2334-2829  
 China - Shenzhen - 86-755-8864-2200  
 China - Wuhan - 86-27-5980-5300  
 China - Xiamen - 86-592-2388138  
 China - Xian - 86-29-8833-7252  
 China - Zhuhai - 86-756-3210040  
 India - Bangalore - 91-80-3090-4444  
 India - New Delhi - 91-11-4160-8631  
 India - Pune - 91-20-3019-1500  
 Japan - Osaka - 81-6-6152-7160  
 Japan - Tokyo - 81-3-6880-3770  
 Korea - Daegu - 82-53-744-4301  
 Korea - Seoul - 82-2-554-7200  
 Malaysia - Kuala Lumpur - 60-3-6201-9857  
 Malaysia - Penang - 60-4-227-8870  
 Philippines - Manila - 63-2-634-9065  
 Singapore - 65-6334-8870  
 Taiwan - Hsin Chu - 886-3-5778-366  
 Taiwan - Kaohsiung - 886-7-213-7840  
 Taiwan - Taipei - 886-2-2508-8600  
 Thailand - Bangkok - 66-2-694-1351

01/11/17



**MICROCHIP**

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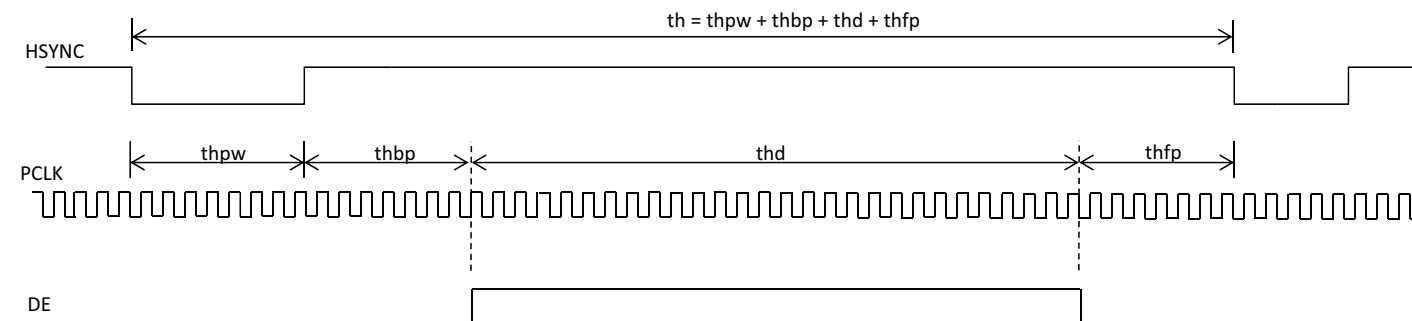
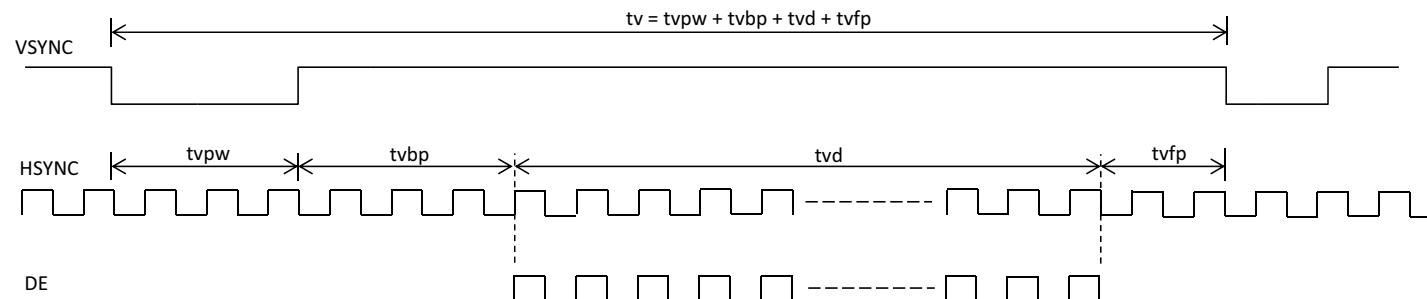
DS50002681A



# High-Performance WVGA Display Module with maXTouch® Board Timing Specifications

**TABLE 1: TIMING SPECIFICATION VALUES**

Parameter	Symbol	Spec.			Unit
		Min.	Typ.	Max.	
Clock Cycle	1/PCLK	-	30	40	MHz
Hsync Cycle	1/th	-	10.7	-	kHz
Vsync Cycle	1/tv	-	19	-	Hz
<b>Horizontal Signal</b>					
Horizontal Cycle	th	-	928	-	CLK
Horizontal Display Period	thd	800	800	800	CLK
Horizontal Front Porch	thfp	-	40	-	CLK
Horizontal Pulse width	thpw	1	48	-	CLK
Horizontal Back Porch	thbp	-	40	-	CLK
<b>Vertical Signals</b>					
Vertical Cycle	tv	-	525	-	Hsync
Vertical Display Period	tvd	480	480	480	Hsync
Vertical Front Porch	tvfp	-	13	-	Hsync
Vertical Pulse Width	tvpw	1	3	-	Hsync
Vertical Back Porch	tvbp	-	29	-	Hsync

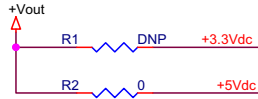


## Bottom Contacts Use Type 1 FFC

### Xplained Interface

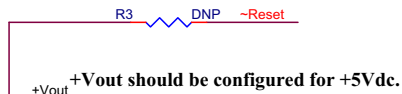
J2	1	ONE WIRE
	2	GND
	3	LCDDAT0
	4	LCDDAT1
	5	LCDDAT2
	6	LCDDAT3
	7	GND
	8	LCDDAT4
	9	LCDDAT5
	10	LCDDAT6
	11	LCDDAT7
	12	GND
	13	LCDDAT8
	14	LCDDAT9
	15	LCDDAT10
	16	LCDDAT11
	17	GND
	18	LCDDAT12
	19	LCDDAT13
	20	LCDDAT14
	21	LCDDAT15
	22	GND
	23	LCDDAT16
	24	LCDDAT17
	25	LCDDAT18
	26	LCDDAT19
	27	GND
	28	LCDDAT20
	29	LCDDAT21
	30	LCDDAT22
	31	LCDDAT23
	32	GND
	33	PCLK
	34	VSYNC
	35	HSYNC
	36	DE
	37	SCK
	38	MOSI
	39	MISO
	40	~SS
	41	DISP
	42	SDA
	43	SCL
	44	~CHG_mxt
	45	~CHG_QT
	46	LCD_PWM
	47	~Reset_IN
	48	+Vout
	49	+Vout
	50	GND

CON50



~CHG\_QT is connected to Pin 53 for future use if desired.

SCK, MOSI, MISO and ~SS are connected to Pins 54, 56, 58 and 57 (respectively) for future use if desired.

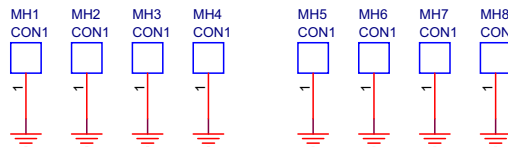


## Debug Header

J3	1	GND
	2	~CHG_QT
	3	~CHG_mxt
	4	SCL
	5	SDA
	6	DE
	7	HSYNC
	8	VSYNC
	9	PCLK
	10	GND

CON10

## Mounting Holes



## MEB II Interface

GND	J1	1	2	GND
GND	3	4	GND	
+3.3Vdc	5	6	+3.3Vdc	
LCDDAT12	7	8	LCDDAT8	
LCDDAT13	9	10	LCDDAT9	
LCDDAT14	11	12	LCDDAT10	
LCDDAT15	13	14	LCDDAT11	
LCDDAT16	15	16	LCDDAT0	
LCDDAT17	17	18	LCDDAT1	
LCDDAT18	19	20	LCDDAT2	
LCDDAT19	21	22	LCDDAT3	
LCDDAT20	23	24	LCDDAT4	
GND	25	26	GND	
+3.3Vdc	27	28	+3.3Vdc	
LCDDAT21	29	30	LCDDAT5	
LCDDAT22	31	32	LCDDAT6	
LCDDAT23	33	34	LCDDAT7	
PCLK	35	36	ONE WIRE	
VSYNC	37	38	HSYNC	
DE	39	40		
~CHG_mxt	41	42	SCL	
	43	44	SDA	
LCD_PWM	45	46	DISP	
GND	47	48	GND	
+5Vdc	49	50	+5Vdc	
~CHG_QT	51	52	SCK	
~Reset	53	54	MOSI	
~SS	55	56	MISO	
GND	57	58	GND	
	59	60		

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ONE\_WIRE is connected to Pin 38 for future use if desired.

Microchip "LCD\_CS" is not used by PDA LCD interface

Microchip "LCD\_Reset" is connected to PDA "DISP". When DISP is low the LCD is in standby mode. When DISP is high the LCD is in normal display mode.