


MC44005A6W-FPTLWI-V2	4 x 40	5mm Character Height	LCD Module
<b>Specification</b>			
Version: 1		Date: 03/08/2022	
<b>Revision</b>			
1	02/08/2022	First Issue	

Display Features					
Character Count	4 x 40				
Appearance	Black on White				
Logic Voltage	5V				
Interface	I <sup>2</sup> C				
Font Set	English / Japanese				
Display Mode	Transflective				
Character Height	4.89mm				
LC Type	FSTN				
Module Size	190.00 x 54.00 x 13.00mm				
Operating Temperature	-20°C ~ +70°C				
Construction	COB			Box Quantity	Weight / Display
LED Backlight	White				

Display Accessories	
Part Number	Description
MCCMDB-16SIL	LCD Interconnect board, can be driven from either a PC or a single Board computer with a USB output.
MCCBL1A16SLIP-16DILS-150	16 Way, Single in-line to Dual In-line connector Cable.
MCCBL1A16SLIP-16SILS-150	16 Way, Single in-line to Single In-line connector Cable.

Optional Variants		
Fonts	Appearances	Voltage
English/Japanese	Black on Yellow/ Green	3V
English/Euro	White on Blue	3.3V
English/Cyrillic	Black on White	5V
	Black on RGB	



## FEATURES

AVAILABLE OPTIONS	CHARACTERISTICS
DISPLAY FORMAT	<b>40 Characters by 4 Lines</b>
POLARIZER OPTIONS	<b>Positive Transflective</b>
BACKLIGHT TYPE OPTIONS	<b>Edge Type LED Backlight (Long life span version)</b>
BACKLIGHT COLOR OPTIONS	<b>White color</b>
LCD PANEL OPTIONS	<b>FSTN</b>
VIEWING ANGLE OPTIONS	<b>6:00 ( Bottom )</b>
TEMPERATURE RANGE OPTIONS	<b>-20°C ~ 70°C, Single Supply Voltage</b>
SUGGESTED DRIVING VOLTAGE	<b>V<sub>lcm</sub> = 5.0V V<sub>led</sub> = 5.0V</b>
SUGGESTED LED DRIVING MODE	<b>PIN17: LED+, PIN18:LED-</b>
CONTROLLER	<b>I2C controller</b>
FONT MAP CODE	<b>E Version</b>
DRIVING DUTY	<b>1/16</b>
DRIVING BIAS	<b>1/5</b>

## MECHANICAL SPECIFICATIONS

OVERALL SIZE	<b>190.0W x 54.0H</b>	<b>mm</b>	THICKNESS	<b>max 13.0</b>	<b>mm</b>
VIEWING AREA	<b>147.0W x 29.5H</b>	<b>mm</b>	HOLE-HOLE	<b>183.0W x 47.0H</b>	<b>mm</b>
CHARACTER SIZE	<b>2.78W x 4.89H</b>	<b>mm</b>	CHARACTER PITCH	<b>0.75W x 1.20H</b>	<b>mm</b>
DOT SIZE	<b>0.50W x 0.55H</b>	<b>mm</b>	DOT PITCH	<b>0.07W x 0.07H</b>	<b>mm</b>

## ABSOLUTE MAXIMUM RATINGS

ITEM	SYMBOL	CONDITION	MIN	TYP	MAX	UNIT
POWER SUPPLY ( LOGIC )	V <sub>dd</sub>	25°C	<b>-0.3</b>	—	<b>7.0</b>	<b>V</b>
POWER SUPPLY ( LCD )	V <sub>0</sub>	25°C	<b>V<sub>dd</sub> -13.5</b>	—	<b>V<sub>dd</sub> +0.3</b>	<b>V</b>
INPUT VOLTAGE	V <sub>in</sub>	25°C	<b>-0.3</b>	—	<b>V<sub>dd</sub> +0.3</b>	<b>V</b>
OPERATING TEMPERATURE	V <sub>opr</sub>	—	<b>-20</b>	—	<b>70</b>	<b>°C</b>
STORAGE TEMPERATURE	V <sub>stg</sub>	—	<b>-30</b>	—	<b>80</b>	<b>°C</b>

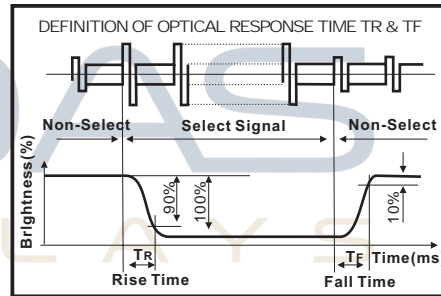
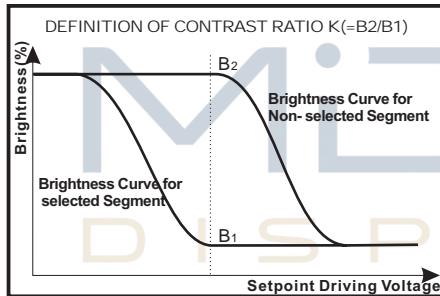
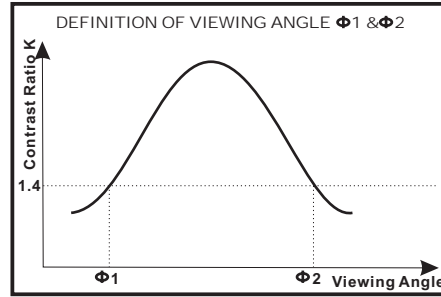
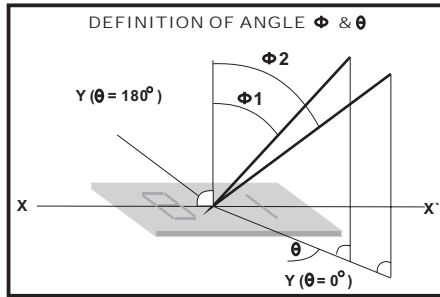
## ELECTRONIC CHARACTERISTICS

	ITEM	SYMBOL	CONDITION	MIN	TYP	MAX	UNIT
	INPUT VOLTAGE	V <sub>lcm</sub> = V <sub>dd</sub>	—	—	<b>5.0</b>	—	<b>V</b>
	SUPPLY CURRENT	I <sub>dd</sub>	<b>V<sub>dd</sub>=5V</b>	—	<b>1.5</b>	—	<b>mA</b>
	DRIVING VOLTAGE FOR LCD PANEL	V <sub>lcd</sub> = (V <sub>dd</sub> - V <sub>0</sub> )	<b>-20°C</b>	<b>3.90</b>	—	<b>4.30</b>	<b>V</b>
			<b>0°C</b>	<b>4.10</b>	—	<b>4.60</b>	
			<b>25°C</b>	<b>4.20</b>	—	<b>4.70</b>	
			<b>50°C</b>	<b>4.20</b>	—	<b>4.70</b>	
		<b>70°C</b>	<b>4.20</b>	—	<b>4.80</b>		



## LCD CHARACTERISTICS

FOR STN/FSTN TYPE LCD Panel <sup>o</sup> (TA=25 C, V <sub>ch</sub> =5.0V)						
ITEM	SYMBOL	CONDITION	MIN	TYP	MAX	UNIT
VIEWING ANGLE	$\Phi 2 - \Phi 1$	<b>K=4</b>	<b>40</b>	—	—	<b>deg</b>
	$\theta$		<b>60</b>			
CONTRAST RATIO	<b>K</b>	—	<b>6</b>	—	—	—
RESPONSE TIME(RISE)	TR	—	—	<b>150</b>	<b>250</b>	<b>ms</b>
RESPONSE TIME(FALL)	TF	—	—	<b>150</b>	<b>250</b>	<b>ms</b>



## LED CHARACTERISTICS

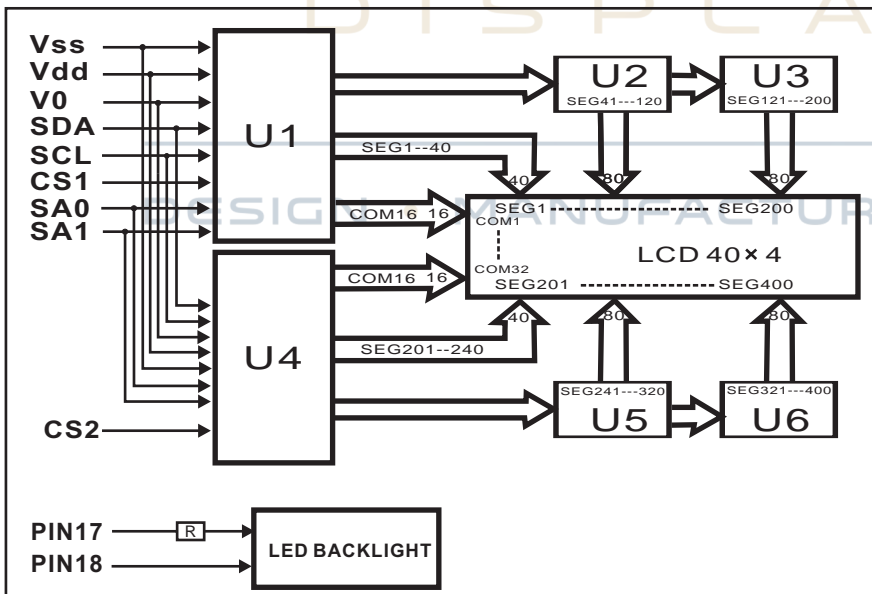
ITEM	SYMBOL	CONDITION	MIN	TYP	MAX	UNIT
LED FORWARD VOLTAGE	$V_f$	<b>25°C</b>	<b>2.6</b>	—	<b>3.0</b>	<b>V</b>
LED FORWARD CURRENT	$I_f$	<b>25°C</b>	—	<b>50</b>	—	<b>mA</b>
LED REVERSE CURRENT	$I_r$	<b>25°C Vr=5.0V</b>	—	—	<b>100</b>	<b>μA</b>
LED COLOR RANGE	X coordinate	<b>25°C If = 50mA</b>	<b>0.26</b>	—	<b>0.30</b>	—
	Y coordinate		<b>0.27</b>	—	<b>0.31</b>	—
LED BRIGHTNESS (WITHOUT LCD)	$L_v$	<b>25°C If = 50mA</b>	—	<b>420</b>	—	<b>cd/m<sup>2</sup></b>
LED BRIGHTNESS UNIFORMITY	$L_{vmin}/L_{vmax}$	<b>25°C If = 50mA</b>	<b>70</b>	—	—	<b>Ratio</b>
LED LIFE TIME	—	<b>25°C If = 50mA</b>	<b>20K</b>	—	—	<b>Hours</b>



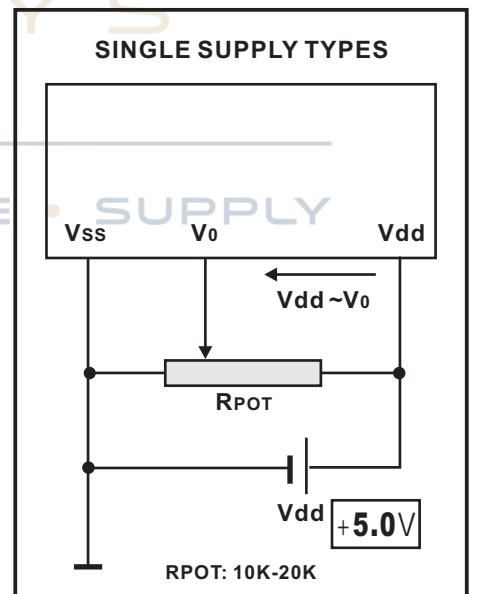
PIN ASSIGNMENT

PIN	SYMBOL	DESCRIPTION	REMARKS
1	SCL	Serial clock input	
2	SDA	Serial input data	
3	CS1	Chip select	
4	NC	No connection	
5	NC	No connection	
6	NC	No connection	
7	SA1	Slave address	
8	SA0	Slave address	
9	NC	No connection	
10	NC	No connection	
11	NC	No connection	
12	V0	Contrast Adjust	
13	Vss	GND	
14	Vdd	Power supply for LCM	5.0V
15	CS2	Chip select	
16	NC	No connection	
17	LED+	Power supply for BKL	5.0V
18	LED-	Power supply for BKL	

BLOCK DIAGRAM



POWER SUPPLY DIAGRAM



Upper 4bit Lower 4bit	LLLL	LLLH	LLHL	LLHH	LHLL	LHLH	LHHL	LHHH	HLLL	HLLH	HLHL	HLHH	HHLL	HHLH	HHHL	HHHH
LLLL	CG RAM (1)															
LLLH	(2)															
LLHL	(3)															
LLHH	(4)															
LHLL	(5)															
LHLH	(6)															
LHHL	(7)															
LHHH	(8)															
HLLL	(1)															
HLLH	(2)															
HLHL	(3)															
HLHH	(4)															
HHLL	(5)															
HHLH	(6)															
HHHL	(7)															
HHHH	(8)															



