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MC21609AB6W-FPTLW3.3-V2	2 x 16	9mm Character Height	LCD Module
Specification			
Version: 1		Date: 12/03/2021	
Revision			
1	10/03/2021	First Issue	

Display Features			
Character Count	2 x 16		
Appearance	Black on White		
Logic Voltage	3.3V		
Interface	Parallel		
Font Set	English / Japanese		
Display Mode	Transflective		
Character Height	9.66mm		
LC Type	FSTN		
Module Size	122.00 x 44.00 x 13.50 mm		
Operating Temperature	-20°C ~ +70°C		
Construction	COB	Box Quantity	Weight / Display
LED Backlight	White	---	---

RoHS compliant

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* - For full design functionality, please use this specification in conjunction with the ST7066U + ST7065C specification. (Provided Separately)

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, Sinlge 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**
	Black on Yellow/Green White on Blue	

FEATURES

AVAILABLE OPTIONS	CHARACTERISTICS
DISPLAY FORMAT	**16 Characters by 2 Lines**
POLARIZER OPTIONS	**Positive Transflective**
BACKLIGHT TYPE OPTIONS	**Edge Type LED Backlight (Long life span version)**
BACKLIGHT COLOR OPTIONS	**White color**
LCD PANEL OPTIONS	**FSTN**
VIEWING ANGLE OPTIONS	**6:00 (Bottom)**
TEMPERATURE RANGE OPTIONS	**-20°C ~ 70°C, Positive Voltage Driving Only**
SUGGESTED DRIVING VOLTAGE	**Vlcm = 3.3V Vled = 3.3V**
SUGGESTED LED DRIVING MODE	**PIN15: LED-, PIN16:LED+**
CONTROLLER	**ST7066U+ST7065C**
FONT MAP CODE	**E Version**
DRIVING DUTY	**1/16**
DRIVING BIAS	**1/5**

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MECHANICAL SPECIFICATIONS

OVERALL SIZE	**122.0W x 44.0H**	**mm**	**THICKNESS**	**max 13.5**	**mm**
VIEWING AREA	**99.0W x 24.0H**	**mm**	**HOLE-HOLE**	**115.0W x 37.0H**	**mm**
CHARACTER SIZE	**4.84W x 9.66H**	**mm**	**CHARACTER PITCH**	**1.16W x 0.68H**	**mm**
DOT SIZE	**0.92W x 1.10H**	**mm**	**DOT PITCH**	**0.06W x 0.06H**	**mm**

ABSOLUTE MAXIMUM RATINGS

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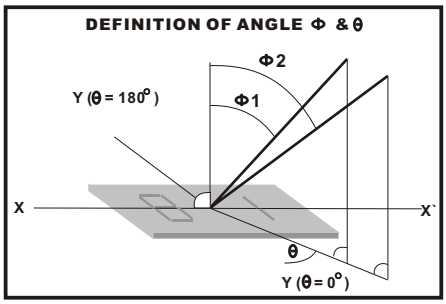
ITEM	SYMBOL	CONDITION	MIN	TYP	MAX	UNIT
POWER SUPPLY (LOGIC)	Vdd	25°C	**-0.3**	—	**7.0**	**V**
POWER SUPPLY (LCD)	V0	25°C	**Vdd -13.5**	—	**Vdd +0.3**	**V**
INPUT VOLTAGE	Vin	25°C	**-0.3**	—	**Vdd +0.3**	**V**
OPERATING TEMPERATURE	Vopr	—	**-20**	—	**70**	**°C**
STORAGE TEMPERATURE	Vstg	—	**-30**	—	**80**	**°C**

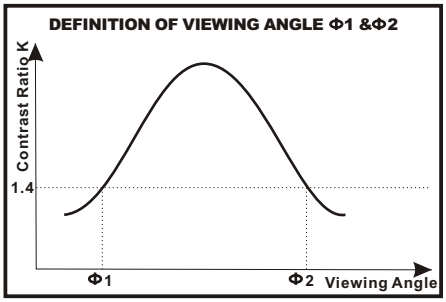
ELECTRONIC CHARACTERISTICS

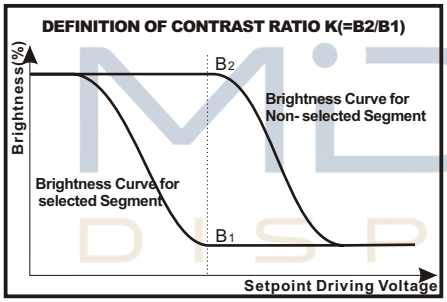
	ITEM	SYMBOL	CONDITION	MIN	TYP	MAX	UNIT
	INPUT VOLTAGE	Vlcm = Vdd	—	—	**3.3**	—	**V**
	SUPPLY CURRENT	Idd	**Vdd=3.3V**	—	**1.5**	—	**mA**
	DRIVING VOLTAGE FOR LCD PANEL	Vlcd = (Vdd - V0)	**-20°C**	—	—	—	**V**
			0°C	—	—	—	
			25°C	—		—	
			50°C	—	—	—	
			70°C	—	—	—	

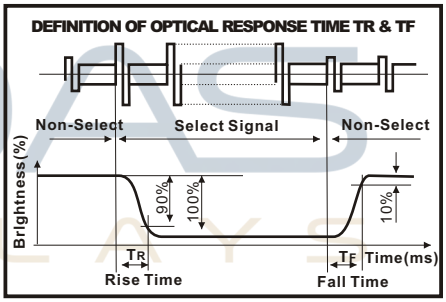
LCD CHARACTERISTICS

FOR STN/FSTN TYPE LCD Panel (TA=25°C, Vlcd=5.0V ± 0.5V)							
	ITEM	SYMBOL	CONDITION	MIN	TYP	MAX	UNIT
	VIEWING ANGLE	Φ2 − Φ1	K=4	40	—	—	deg
		θ		60			
	CONTRAST RATIO	K	—	6	—	—	—
	RESPONSE TIME(RISE)	TR	—	—	150	250	ms
	RESPONSE TIME(FALL)	TF	—	—	150	250	ms









LED CHARACTERISTICS

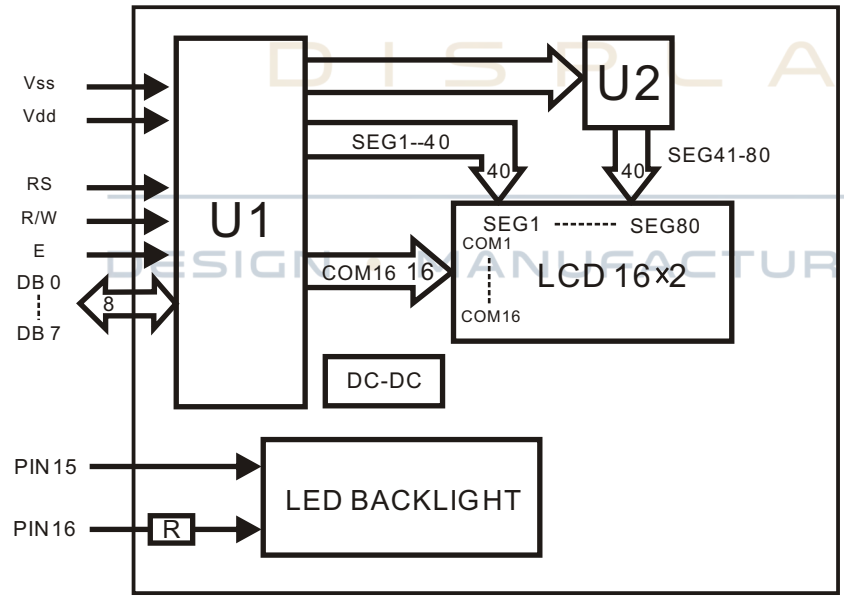
	ITEM	SYMBOL	CONDITION	MIN	TYP	MAX	UNIT
	LED FORWARD VOLTAGE	Vf	25°C	—	3.0	—	V
	LED FORWARD CURRENT	If	25°C	—	30	—	mA
	LED REVERSE CURRENT	Ir	25°C Vr=5.0V	—	—	60	μA
	LED COLOR RANGE	X coordinate	25°C If = 30mA	0.26	—	0.30	—
		Y coordinate		0.27	—	0.31	—
	LED BRIGHTNESS (WITHOUT LCD)	Lv	25°C If = 30mA	—	470	—	cd/m^2
	LED BRIGHTNESS UNIFORMITY	Lvmin/Lvmax	25°C If = 30mA	70	—	—	Ratio
	LED LIFE TIME	—	25°C If = 30mA	20K	—	—	Hours

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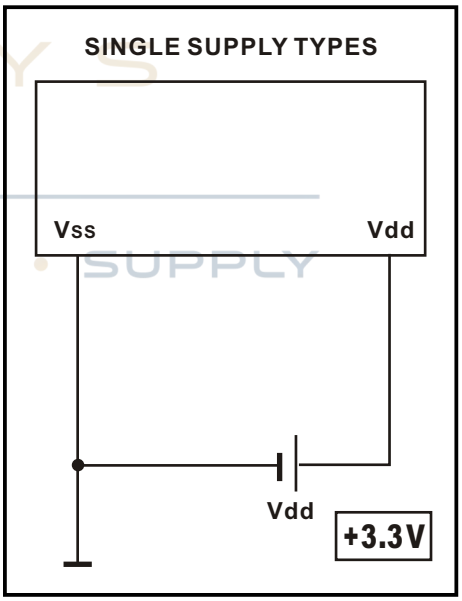
PIN ASSIGNMENT

PIN	SYMBOL	DESCRIPTION	REMARKS
1	Vss	GND	
2	Vdd	Power supply for LCM	3.3V
3	NC	No connection	
4	RS	Register Select Signal	
5	R/W	Data Read / Write	
6	E	Enable Signal	
7	DB0	Data bus line	
8	DB1	Data bus line	
9	DB2	Data bus line	
10	DB3	Data bus line	
11	DB4	Data bus line	
12	DB5	Data bus line	
13	DB6	Data bus line	
14	DB7	Data bus line	
15	LED-	Power supply for BKL	
16	LED+	Power supply for BKL	3.3V

BLOCK DIAGRAM

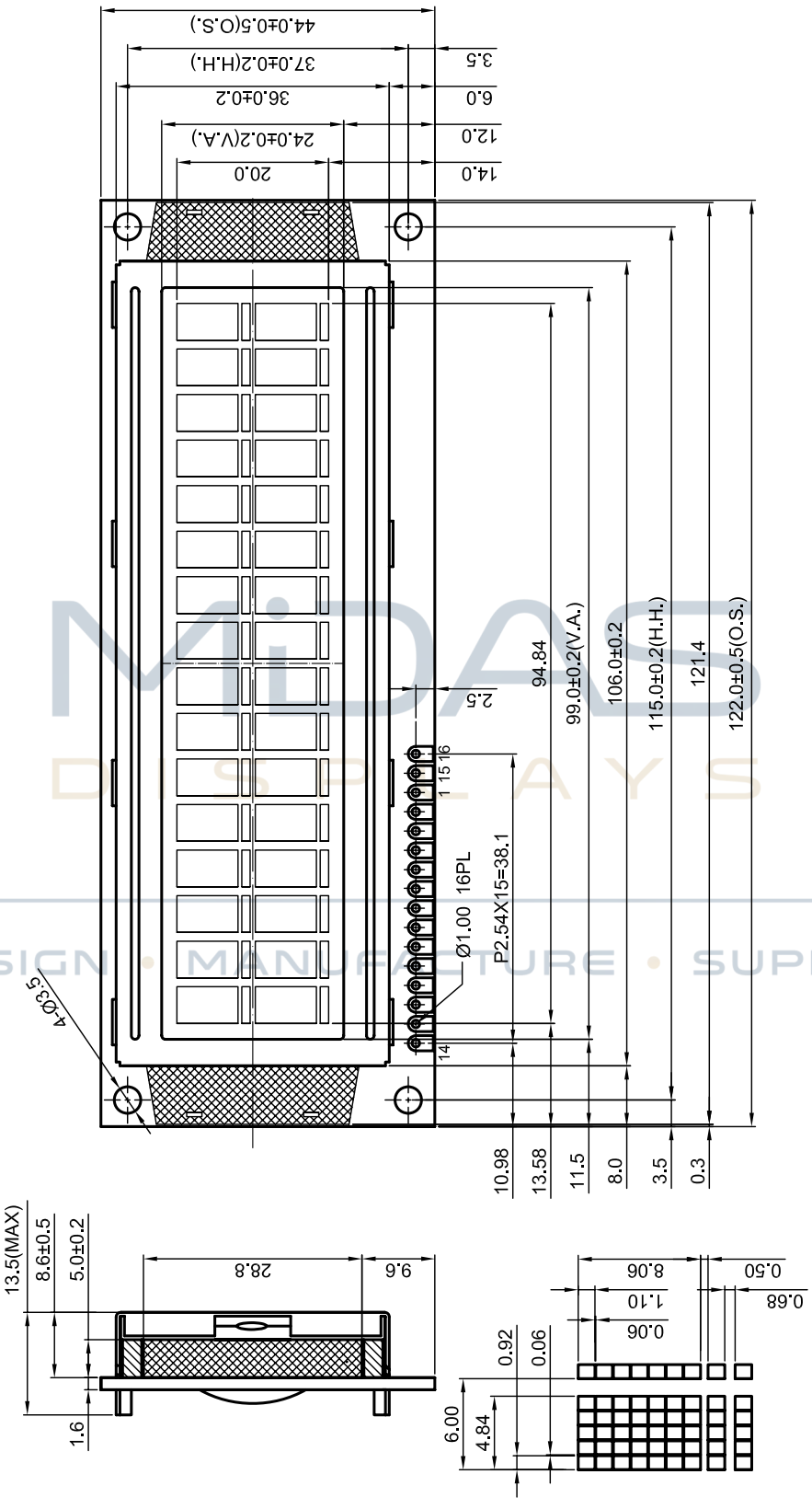


POWER SUPPLY DIAGRAM



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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)															



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