


MC21605H6W-GPTLW3.3-V2	2 x 16	5mm Character Height	LCD Module
Specification			
Version: 1		Date: 12/02/2021	
Revision			
1	10/02/2021	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	4.99mm	
LC Type	Grey STN	
Module Size	65.50 x 36.70 x 13.50 mm	
Operating Temperature	-20°C ~ +70°C	
Construction	COB	Box Quantity
LED Backlight	White	Weight / Display
		--
		—



RoHS
compliant

* - 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, 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



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	Gray STN
VIEWING ANGLE OPTIONS	6:00 (Bottom)
TEMPERATURE RANGE OPTIONS	-20°C ~ 70°C, Single Supply Voltage
SUGGESTED DRIVING VOLTAGE	V _{lcm} = 3.3V V _{led} = 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

MECHANICAL SPECIFICATIONS

OVERALL SIZE	65.5W x 36.7H	mm	THICKNESS	max 13.5	mm
VIEWING AREA	54.0W x 14.4H	mm	HOLE-HOLE	60.5W x 31.7H	mm
CHARACTER SIZE	2.55W x 4.99H	mm	CHARACTER PITCH	0.61W x 0.42H	mm
DOT SIZE	0.47W x 0.58H	mm	DOT PITCH	0.05W x 0.05H	mm

ABSOLUTE MAXIMUM RATINGS

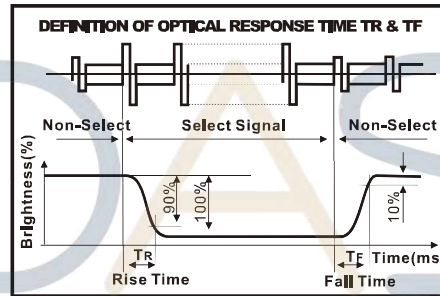
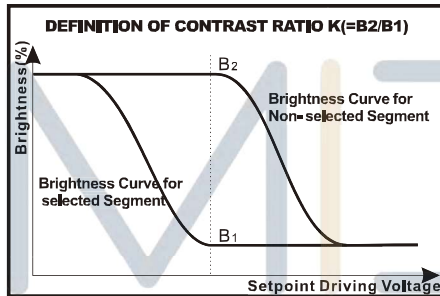
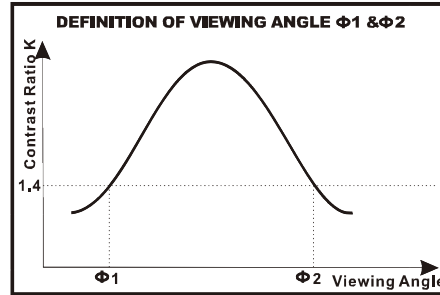
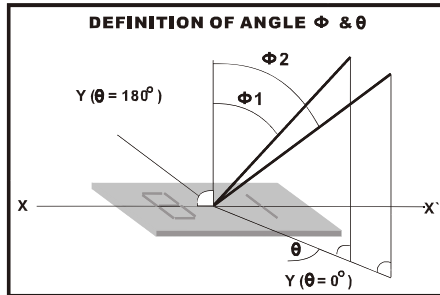
ITEM	SYMBOL	CONDITION	MIN	TYP	MAX	UNIT
POWER SUPPLY (LOGIC)	V _{dd}	25°C	-0.3	—	7.0	V
POWER SUPPLY (LCD)	V ₀	25°C	V _{dd} -13.5	—	V _{dd} +0.3	V
INPUT VOLTAGE	V _{in}	25°C	-0.3	—	V _{dd} +0.3	V
OPERATING TEMPERATURE	V _{opr}	—	-20	—	70	°C
STORAGE TEMPERATURE	V _{stg}	—	-30	—	80	°C

ELECTRONIC CHARACTERISTICS *

	ITEM	SYMBOL	CONDITION	MIN	TYP	MAX	UNIT
	INPUT VOLTAGE	V _{lcm} = V _{dd}	—	—	3.3	—	V
	SUPPLY CURRENT	I _{dd}	V _{dd} =3.3V	—	1.5	—	mA
	DRIVING VOLTAGE FOR LCD PANEL	V _{lcd} = (V _{dd} - V ₀)	-20°C	—	—	—	V
			0°C	—	—	—	
			25°C	—	—	—	
50°C			—	—	—		
			70°C	—	—	—	

LCD CHARACTERISTICS

FOR STN/FSTN TYPE LCD Panel (TA=25 °C, VIcd=5.0V ± 0.5V)							
	ITEM	SYMBOL	CONDITION	MIN	TYP	MAX	UNIT
	VIEWING ANGLE	$\Phi 2 - \Phi 1$	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	V_f	$25^\circ\text{C } I_f = 17\text{mA}$	—	3.0	—	V
	LED FORWARD CURRENT ▲	I_f	25°C	—	17	—	mA
	LED REVERSE CURRENT	I_r	$25^\circ\text{C } V_r=5.0\text{V}$	—	—	30	μA
	LED COLOR RANGE	X coordinate	$25^\circ\text{C } I_f = 17\text{mA}$	0.26	—	0.30	—
		Y coordinate		0.27	—	0.31	—
	LED BRIGHTNESS (WITHOUT LCD)	L_v	$25^\circ\text{C } I_f = 17\text{mA}$	—	250	—	cd/m^2
	LED BRIGHTNESS UNIFORMITY	$L_{v\text{min}}/L_{v\text{max}}$	$25^\circ\text{C } I_f = 17\text{mA}$	70	—	—	Ratio
	LED LIFE TIME	—	$25^\circ\text{C } I_f = 17\text{mA}$	20K	—	—	Hours

▲ **YOUR ATTENTION:** It is constant current (not constant voltage) that should be applied when driving LED backlight. Therefore, this data is very important!

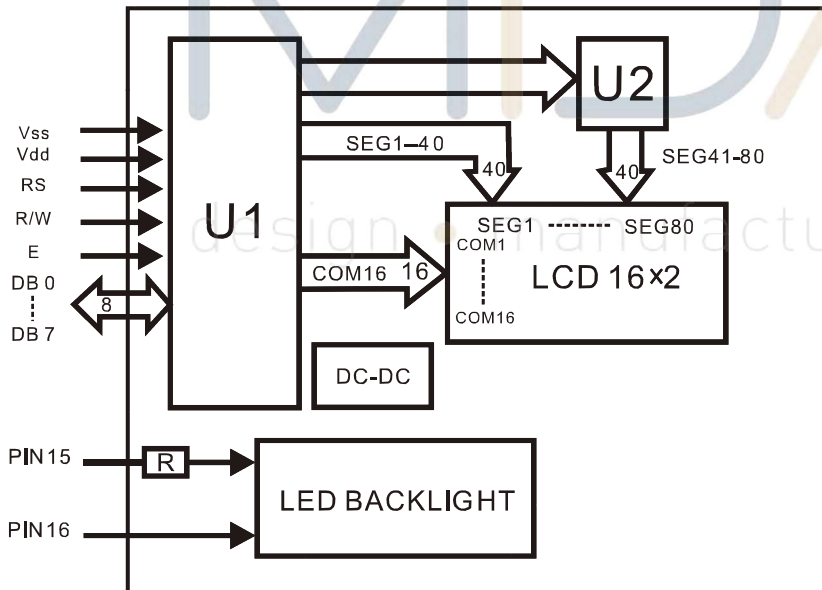
For operation above 25°C , The I_{fm} I_{fp} & P_d must be derated, the Current derating is $-0.36*3\text{mA}/^\circ\text{C}$ for DC drive and $-0.86*3\text{mA}/^\circ\text{C}$ for Pulse drive, the power dissipation is $-75*3\text{mW}/^\circ\text{C}$ The product working current must not be more than 60% of the I_{fm} or I_{fp} according to the working temperature.



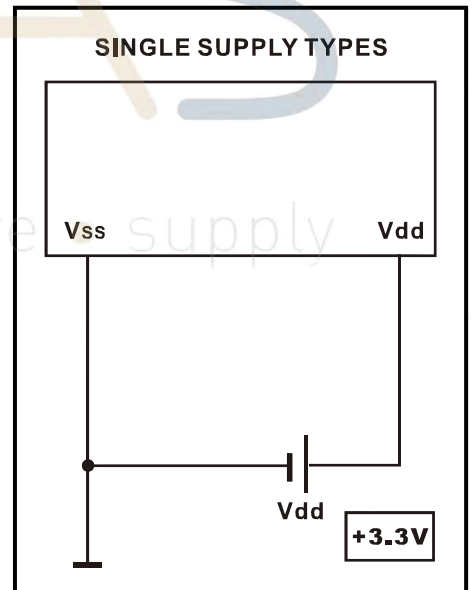
PIN ASSIGNMENT

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	3.3V
16	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)															



