



Classic LCDs & LEDs

LCD MODULE SPECIFICATION

ITEM CODE
FC1602B01-FHYYBW-51SK

ISSUED BY:  CHECKED BY:  APPROVED BY: 

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FEATURES

AVAILABLE OPTIONS	CHARACTERISTICS	CODE	No.
DISPLAY FORMAT	16 Characters by 2 Lines	FC1602B01	1~6
POLARIZER OPTIONS	Positive Transflective	F	7
BACKLIGHT TYPE OPTIONS	Edge Type LED Backlight (Long life span version)	H	8
BACKLIGHT COLOR OPTIONS	Yellow-Green color	Y	9
LCD PANEL OPTIONS	Yellow-Green STN	Y	10
VIEWING ANGLE OPTIONS	6:00 (Bottom)	B	11
TEMPERATURE RANGE OPTIONS	-20°C ~ 70°C, Single Supply Voltage	W	12
SUGGESTED DRIVING VOLTAGE	V _{lcm} = 5.0V V _{led} = 5.0V	5	13
SUGGESTED LED DRIVING MODE	PIN15: LED+, PIN16: LED-	1	14
CONTROLLER ▲1	ST7066U+ST7065C	S	15
FONT MAP CODE	K Version	K	16
DRIVING DUTY	1/16	—	—
DRIVING BIAS	1/5	—	—

▲1 Please ask for datasheet of the mentioned controller from FORDATA or FORDATA's authorized distributors. You can find the related information including AC & DC characteristics, Write & Read Timing diagram, Instruction table and descriptions, DDRAM & CGRAM, Rest Function and so on from the datasheet of controller.

▲1 You can ask for the example of software program (C language) from FORDATA or FORDATA's authorized distributors.

MECHANICAL SPECIFICATIONS

OVERALL SIZE	85.0W x 36.0H	mm	THICKNESS	max 13.5	mm
VIEWING AREA	64.5W x 16.4H	mm	HOLE-HOLE	80.0W x 31.0H	mm
CHARACTER SIZE	3.00W x 5.23H	mm	CHARACTER PITCH	0.51W x 0.52H	mm
DOT SIZE	0.56W x 0.61H	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 *

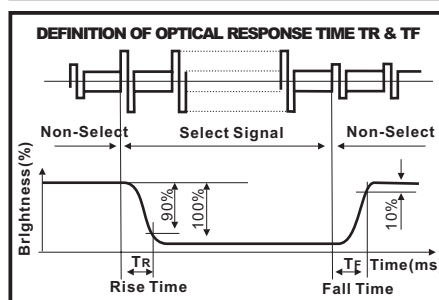
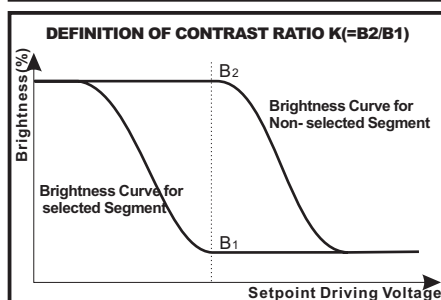
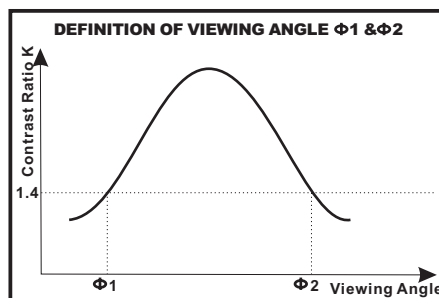
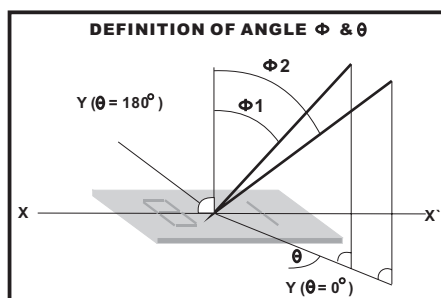
ICONS	ITEM	SYMBOL	CONDITION	MIN	TYP	MAX	UNIT
	INPUT VOLTAGE	V _{dd}	—	—	5.0	—	V
	SUPPLY CURRENT	I _{dd}	V _{dd} =5V	—	1.5	—	mA
	DRIVING VOLTAGE FOR LCD PANEL	V _{lcd} = (V _{dd} - V ₀)	-20°C	4.45	—	4.90	V
			0°C	4.35	—	4.85	
			25°C	4.25	4.50	4.80	
			50°C	4.15	—	4.70	
			70°C	4.05	—	4.60	

* All data are recorded from TEST REPORT #FSYP000700037



LCD CHARACTERISTICS

FOR STN/FSTN TYPE LCD Panel (TA=25°C, V _{lcd} =5.0V ± 0.5V)							
ICONS	ITEM	SYMBOL	CONDITION	MIN	TYP	MAX	UNIT
  	VIEWING ANGLE	$\Phi 2 - \Phi 1$	K=4	40	—	—	deg
		θ		60			
	CONTRAST RATIO	K	—	—	10	—	—
	RESPONSE TIME(RISE)	TR	—	—	150	250	ms
	RESPONSE TIME(FALL)	TF	—	—	150	250	ms



LED CHARACTERISTICS

ICONS	ITEM	SYMBOL	CONDITION	MIN	TYP	MAX	UNIT
 	LED FORWARD VOLTAGE	V _f	25°C I _f = 5mA	—	3.0	—	V
	LED FORWARD CURRENT ▲2	I _f	25°C	—	5	—	mA
	LED REVERSE CURRENT	I _r	25°C V _r = 5V	—	—	10	μA
	LED PEAK WAVE LENGTH	λ _p	25°C I _f = 5mA	569	—	575	nm
	LED BRIGHTNESS (WITHOUT LCD)	L _v	25°C I _f = 5mA	—	125	—	cd/m ²
	LED BRIGHTNESS UNIFORMITY	L _{vmin} /L _{vmax}	25°C I _f = 5mA	70	—	—	Ratio
	LED LIFE TIME	—	25°C I _f = 5mA	20K	—	—	Hours

▲2 请注意, 驱动背光考虑的是恒流而不是恒压. 所以, 这个数值非常重要!

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

* 当工作温度高于25°C时, I_{fm}, I_{fp}和P_d必须降低; 电流降低率是 -0.36*1mA/°C (直流驱动), 或-0.86*1A/°C (脉冲驱动), 功率降低率是-75*1mW/°C.

产品工作电流不能大于对应的工作条件温度I_{fm}或I_{fp}的60%.

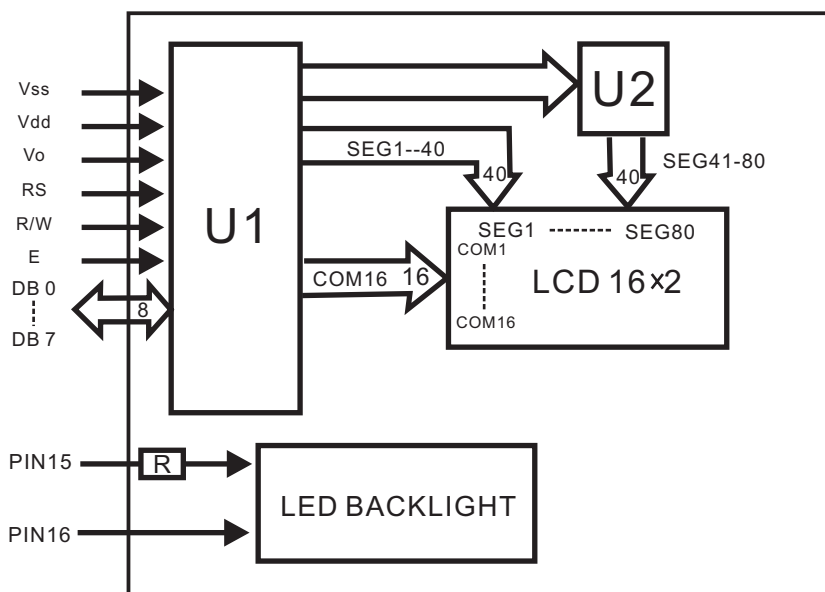
For operation above 25°C, The I_{fm} I_{fp} & P_d must be derated, the Current derating is -0.36*1mA/°C for DC drive and -0.86*1 mA/°C for Pulse drive, the power dissipation is -75*1 mW/°C The product working current must not be more than 60% of the I_{fm} or I_{fp} according to the working temperature.



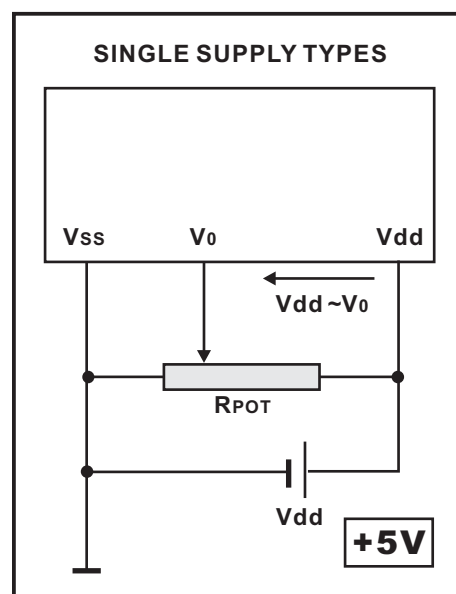
PIN ASSIGNMENT

PIN	SYMBOL	DESCRIPTION	REMARKS
1	Vss	GND	
2	Vdd	Power supply for LCM	5.0V
3	V0	Contrast Adjust	
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	5.0V
16	LED-	Power supply for BKL	

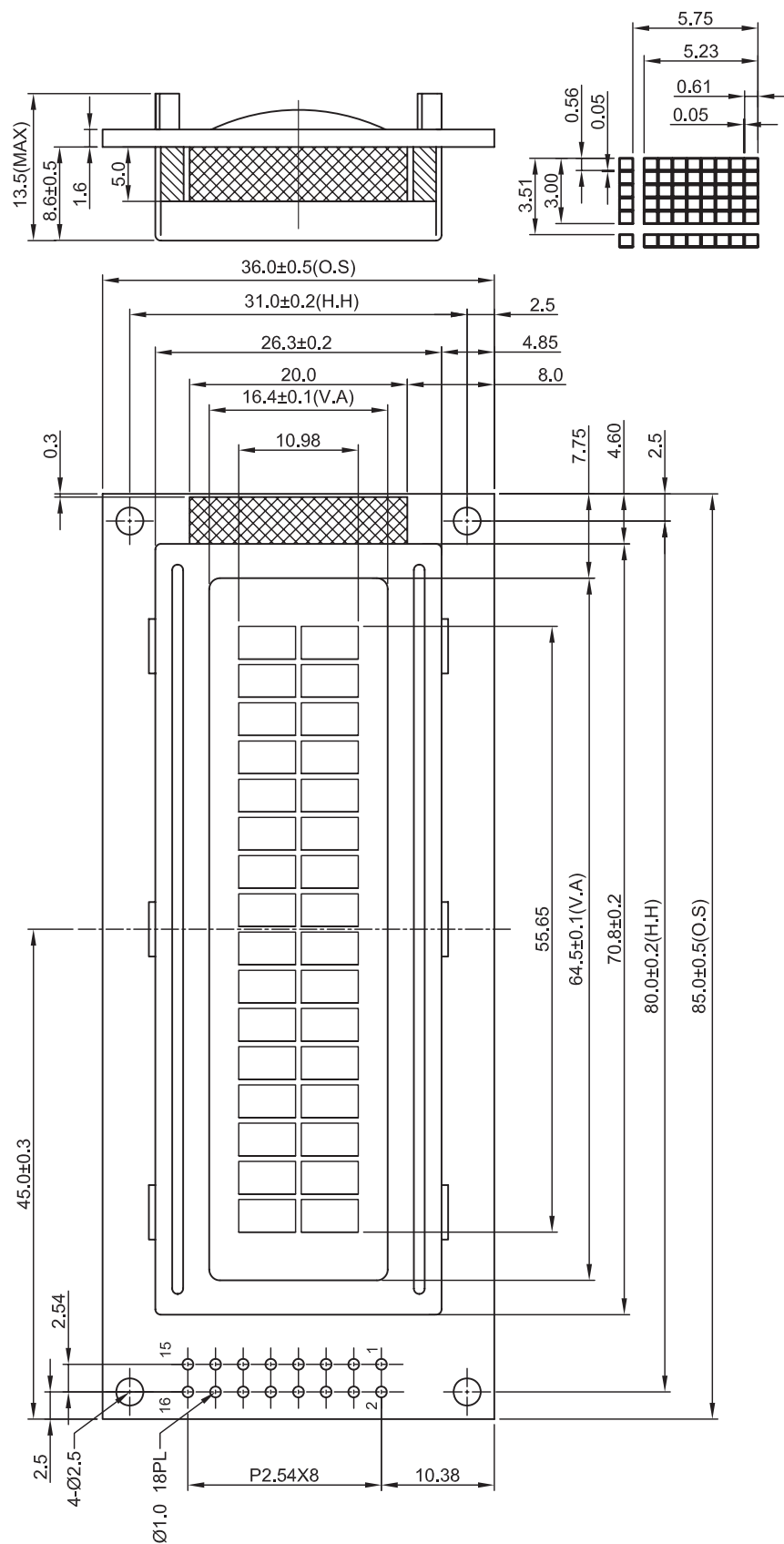
BLOCK DIAGRAM



POWER SUPPLY DIAGRAM



Upper 4bit Lower 4bit	LLLL	LLH	LLHL	LLHH	LHLL	LHLH	LHHL	LHHH	HLLL	HLLH	HLHL	HLHH	HHLL	HHLH	HHHL	HHHH
LLLL	CG RAM (1)															
LLH	(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)															



FULL-SIZED PACKAGE
45 PCS/BOX
10 BOXES/CARTON
450 PCS/CARTON
13.00 KGS/CTN(G.W.)
0.054 M ³ /CARTON

HALF-SIZED PACKAGE
45 PCS/BOX
5 BOXES/CARTON
225 PCS/CARTON
6.00 KGS/CTN(G.W.)
0.027 M ³ /CARTON

PACKING DECLARATION

1. This packaging information is for reference only. The actual information is subject to the actual packaging. Especially for packaging of LCL, tolerances may exist.
2. FORDATA will not be responsible for quality problems caused by unnormal transportation conditions (including but not limited to climate factors or human factors, such as improper handling).

