/

PRODUCT SPECIFICATION/APPROVAL SHEET

CUSTOMER

WINDON MODEL NO   COG1602-FPC

CUSTOMER MODEL NO

Please confirm your acceptance of this approval sheet by return fax

CONFIRMATION SIGNATURE

1.

■ Features

- 5 x 8 dot matrix possible
- Low power operation support:
  -- 2.7 to 5.5V
- Range of LCD driver power
  -- 3.0 to 7.0V
- 4-bit, 8-bit, serial MPU or 400kbits/s fast I²C-bus interface are available
- 80 x 8-bit display RAM (80 characters max.)
- 10,240-bit character generator ROM for a total of 256 character fonts(max)
- 64 x 8-bit character generator RAM(max)
- 16-common x 80-segment and 1-common x 80-segment ICON liquid crystal display driver
- 16 x 5 –bit ICON RAM(max)

- Wide range of instruction functions: Display clear, cursor home, display on/off, cursor on/off, display character blink, cursor shift, display shift, double height font
- Automatic reset circuit that initializes the controller/driver after power on and external reset pin
- Internal oscillator(Frequency=540KHz) and external clock
- Built-in voltage booster and follower circuit (low power consumption)
- Com/Seg direction selectable
- Multi-selectable for CGRAM/CGROM size
- Instruction compatible to ST7066U
- Available in COG type

2.REVISION HISTORY

Specification Revision History		
Version	**Content**	**Date**
1.0	Released	2009-04-17

3.FEATURES

Display mode	TRANSFKECTIVE and positive type
	FSTN LCD GRAY/blue/black
Display format	Graphic 1602
Input Date	Parallel date input form MPU
Multiplexing patio	1/16 Duty
Viewing Direction	12 O'clock
Driver	1/4B

4.MECHANICAL SPECIFICATION

Item	Specifications	Unit
Dimensional outline	68.6(w) x 25.0(H)	mm
Resolution	5 (w) x 8(H) 16*2	dots
Active area	64.60(w) x 19.00(H)	mm
Dots pitch	0.57(w) x 0.67(H)	mm
Dots size	0.55(w) x 0.65(H)	mm

5.MECHANICAL DIMENSION
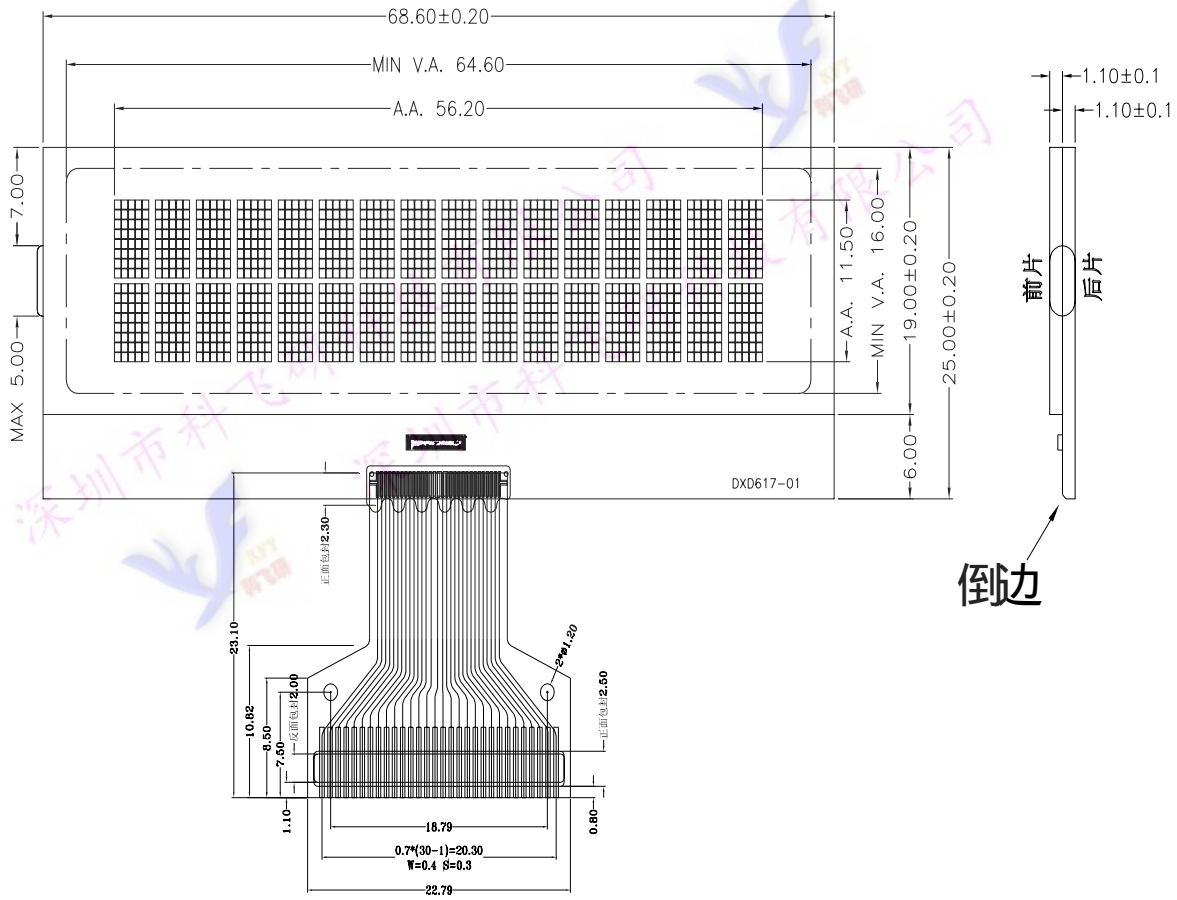
<u>SPECIFICATIONS</u>

FRONT POLARIZER :
BACK POLARIZER :
DISPLAY MODE :   STN
DRIVE CONDITION : 1/16 DUTY 1/4 BIAS   5.6 V
OPERATING TEMP :   −10℃ TO +60℃
STORAGE TEMP :   −20℃ TO +70℃
VIEWING DIRECTION : 12 O'CLOCK
CUSTOMER P/N :   1602
CONNECTOR: COG (ST7032)

3

5.1:LED

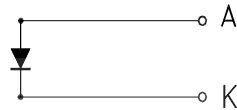1. MECHANICAL OUTLINE   COLOR : YELLOW GREEN

(Unspecified Tolerances is: ± 0.3 mm)   :
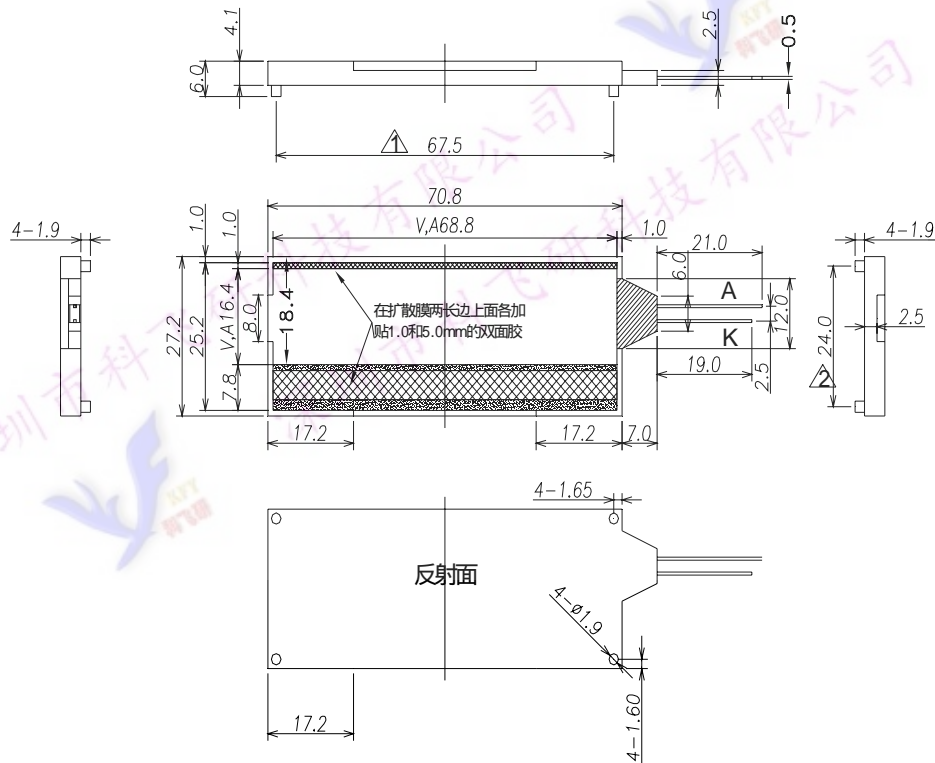
2. CIRCUIT DIAGRAM (LED 1X1=1 dies)

3. STORAGE & SOLDERING CONDITIONS:

- Store with care. Storing the units in bad condition will cause the reflector sheet and decrease it's adhesive power. Storage The products under the condition: temperature (25°c ±10°C) and humidity (65°CRH±20°CRH) our recommendation.
- The Soldering Temperature is 260±5°C and Soldering Time should be less than 3 sec, and soldering iron power should be less than 30W.
- The soldering point should be farther than 1.6mm (1/10") from body .

- . , ( ) ( ) .
  : 25°C±10°C 65°CRH±20°CRH
- 260°C±5°C, 3 , 30W.
- 1.6mm.

4.　ABSOLUTE MAXIMUM RATINGS

(　　　　,　　Ta=25℃. Unless specified,The Ambient temperature Ta=25℃)

Item	Symbel	Conditions	Rating	Unit
* Absolute maximum forward current	Ifm		25	mA
* Peak forward current	Ifp	1 msec ,1/10 1 msec Plus 10% Duty Cycle	60	mA
Reverse Voltage	Vr		5.0	V
* Power dissipation	Pd		82.5	mW
Operating Temperature Range	Topr		−30~+60	℃
Storage Temperature Range	Tstg		−40~+70	℃

*　　　　25℃　,Ifm、Ifp Pd　　　　;　　　−0.36 mA/°c(　　　),　−0.86 mA/°c(
)、　　−0.75 mW/°C.　　　　　　　　　　　　Ifm Ifp　60 %.

For operation above 25℃,The Ifm Ifp & Pd must be derated,the Curent derating is −0.36
mA/°c for DC drive and −0.86 mA/°c for Pulse drive,the Power dissipation is −0.75 mW/°c.
The product working current must not more than the 60 % of the Ifm ir Ifp according
to the working temperature.

5.　,　ELECTRICAL−OPTICAL CHARACTERISTICS

(　　　　,　　Ta=25℃. Unless specified,The Ambient temperature Ta=25℃)

Item	Condition	Symbol	min.	typ.	max.	Unit
Forward Voltage	If= 15 mA	Vf	2.8	3.0	3.2	V
Reverse Current	Vr= 5 V	Ir			30	μA
Peak wave length	If= 15 mA	$\lambda\rho$	569	573	576	nm
Spectral Line Half width	If= 15 mA	$\triangle\lambda$		30		nm
* Luminance	If= 15 mA	Lv	260	390		Lux

*　　　3　　　　　,　　　　　　　1.5(　　1.7).
　　TES−1330A　　　　.

The luminance is the average value of 3 points, and
The Lvmax./Lvmin. is less than 1.5 Typical (max 1.7).
The measurement instrument is TES−1330A Light meter.

6.

■ Absolute Maximum Ratings

Characteristics	Symbol	Value
Power Supply Voltage	V_{DD}	-0.3 to +6.0
LCD Driver Voltage	V_{LCD}	7.0- Vss to -0.3+Vss
Input Voltage	V_{IN}	-0.3 to VDD+0.3
Operating Temperature	T_A	$-30^\circ C$ to $+85^\circ C$
Storage Temperature	T_{STO}	$-65^\circ C$ to $+150^\circ C$

7.

■ Absolute Maximum Ratings

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7.1 PIN DESCRIPTION

PIN NO.	Symbol	Description
1	/RES	"L"RESET SIGNAL
2	A0	ONTROL / ATA SELECT SIGNAL
3	CS1	CHIP SELECT SIGNAL
4	/WR	8080 ''L'' WRITE ; ''H''READ AND WRITRE
5	/RD	8080: L Read;
6-13	D0-D7	DATA BUS
14	VSS	GROUND
15	VDD	POWER SUPPLY FOR LOGIC
16	VIN	Power supply Input the voltage to booster
17	VOUT	DC/DC CONVERTER OUTPUT
18	PSB	Interface selection 0:serial mode ("E" must connect to "VDD" when serial mode is selected.) 1:parallel mode(4/8 bit) In I²C interface PSB must connect to VDD
19	PSI2B	<table><tr><th>PSB</th><th>PSI2B</th><th>Interface</th></tr><tr><td>0</td><td>0</td><td>No use</td></tr><tr><td>0</td><td>1</td><td>SI4</td></tr><tr><td>1</td><td>0</td><td>SI2 (I²C)</td></tr><tr><td>1</td><td>1</td><td>Parallel 68</td></tr></table>
20	CAP1+	DC/DC CAPACTIOR1+ CONNECTION
21	CLS	Internal/External oscillation select 0:external clock 1:internal oscillation
22	CAP1-	DC/DC CAPACTIOR1- CONNECTION
23	VOUT	DC/DC CONVERTER OUTPUT
24	V0	LCD DRINER SUPPLY VOLTAGE
25	V1	LCD DRINER SUPPLY VOLTAGE
26	V2	LCD DRINER SUPPLY VOLTAGE
27	V3	LCD DRINER SUPPLY VOLTAGE
28	V4	LCD DRINER SUPPLY VOLTAGE
29	SHLS	Segment signals direction select: 0:Seg1~80、Column address 79~0(Invert) 1:Seg1~80、Column address 0~79(Normal)
30	SHLC	Common signals direction select: 0:Com1~16、Row address 15~0(Invert) 1:Com1~16、Row address 0~15(Normal)

7.2

■ Block Diagram
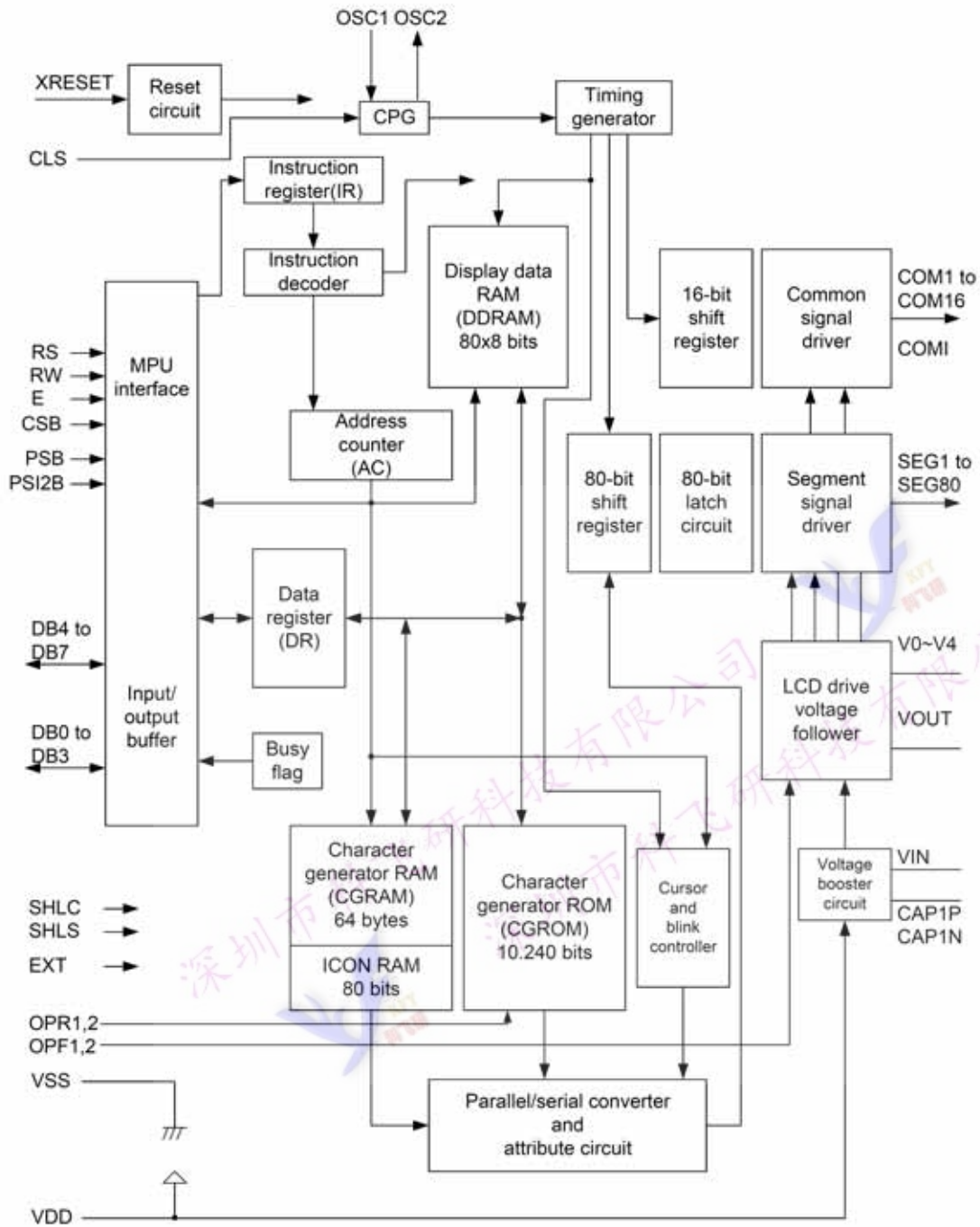
COG1602-30PIN-ST7032

SPI电路参考图

PIN	SUMBOL
1	/RES
2	A0
3	CS1
4	/WR
5	/RD
6	D0
7	D1
8	D2
9	D3
10	D4
11	D5
12	D6
13	D7
14	VSS
15	VDD
16	VIN
17	VOUT
18	PSB
19	PSI2B
20	CAP1P
21	CLS
22	CAP1-
23	VOUT
24	V0
25	V1
26	V2
27	V3
28	V4
29	SHLS
30	SHLC

1 /RES → 复位

2 A0 → 空脚（SPI时为选择写入指令/数据）

3 CS1 → 空脚（SPI时是片选）

4~11 → VDD

12 D6 → 时钟 SCL

13 D7 → 数据 SDA

14 VSS → 地

15 VDD → 电源 3.3V / 5V

17 VOUT — C2 1uF/25V

18 PSB → VSS （选择为SPI接口）

19 PSI2B → VDD

20 CAP1P — C1 1uF/25V

21 CLS → VDD

23~28 空脚

29 SHLS → 选择SEG地址，高电平是0-79，低电平是79-0

30 SHLC → 选择COM地址，高电平是0-15 低电平是15-0