Crystalfontz America, Incorporated

GRAPHIC LCD MODULE DATA SHEET

Part Number	**CFAG128128B-YYH-VZ**
Data Sheet	**Release Date 2012-04-17, Preliminary**
Product Pages	**http://www.crystalfontz.com/product/CFAG128128BYYHVZ.html**

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CFAG128128B-YYH-VZ DATA SHEET REVISION HISTORY	
2012/04/17	Data Sheet version: Preliminary Release Date 2012-04-17 • In section 1, corrected part number from "CFAG128128B-YYH-*VN*" to " CFAG128128B-YYH-*VZ*". • In section 8, fixed description of pin 18 in table to "No Connection".
2010/09/16	Data Sheet version: Preliminary v0.2 • In section 8, fixed description of pin 17 in table.
Not listed	Data Sheet version: not listed New preliminary Data Sheet.

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CONTENTS

1. MODULE CLASSIFICATION INFORMATION

CFA	G	128	128	B	-	Y	Y	H	-	VZ
❶	❷	❸	❹	❺		❻	❼	❽		❾

❶	Brand	Crystalfontz America, Inc.
❷	Display Type	G→Graphic
❸	Number of Characters (Width)	128→ Pixels
❹	Number of Lines (Height)	128→Pixels
❺	Model Identifier	B
❻	Backlight Type & Color:	Y→LED, yellow-green
❼	Fluid Type, Image (Positive or Negative), & LCD Glass Color	Y→STN positive, yellow-green
❽	LCD Polarize Type, Temperature Range, View Direction	H→Transflective, Wide Temperature, 6:00 o'clock
❾	Special Codes	V→Negative voltage Z→Manufacturer code

2. PRECAUTIONS IN USE OF LCD MODULE

- Avoid applying excessive shocks to the module.
- Don't make extra holes on the printed circuit board, modify its shape, or change module components.
- Don't disassemble the LCD module.
- Don't operate the module above its absolute maximum rating.
- Don't drop, bend, or twist the LCD module.
- Solder only to the I/O terminals.
- Please store in an antistatic container in a clean environment.

3. GENERAL SPECIFICATIONS

RoHS compliant. Factories are ISO certified.

PHYSICAL CHARACTERISTICS	SPECIFICATION
Number of Pixels	128 pixels x 128 pixels
Pixel Size	0.32 (W) x 0.32 (H) mm
Pixel Pitch	0.35 (W) x 0.35 (H) mm
Viewing Area Width and Height	50.00 (W) x 49.00 (H) mm
Active Area Width and Height	44.77 (W) x 44.77 (H) mm
Overall Width, Height, and Depth	72.50 (W) x 69.90 (H) x 14.00 (D) mm
Weight	

4.Absolute Maximum Ratings

ITEM	SYMBOL	MIN.	TYP.	MAX.	UNIT
Operating Temperature	T_{OP}	20	–	+70	°C
Storage Temperature	T_{ST}	-30	–	+80	°C
Input Voltage	V_I	-0.3	–	V_{DD}	V
Supply Voltage For LCD	V_{DD}-V_{EE}	0	–	28	V

5.Electrical Characteristics

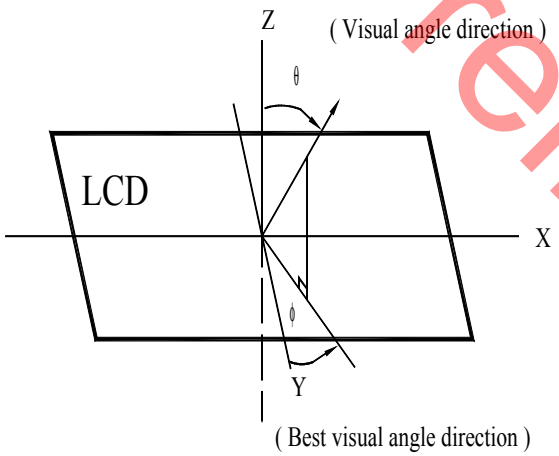
ITEM	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT
Supply Voltage For Logic	V_{DD}-V_{SS}	–	4.75	5.0	5.25	V
Supply Voltage For LCD	V_{DD}-V_0	Ta=-20°C		–	18.4	V
		Ta=25°C	–	16.3	–	V
		Ta=70°C	14.8	–		V
Input High Volt.	V_{IH}	–	2.2	–	V_{DD}	V
Input Low Volt.	V_{IL}	–	0	–	0.8	V
Output High Volt.	V_{OH}	–	2.4	–	V_{DD}	V
Output Low Volt.	V_{OL}	–	0	–	0.4	V
Supply Current	I_{DD}	V_{DD}=5V	30.0	34.0	38.0	mA

6.Optical Characteristics

Item	Symbol	Condition	Min	Typ	Max	Unit
View Angle	(V)θ	CR≥2	20	□	40	deg
	(H)φ	CR≥2	-30	□	30	deg
Contrast Ratio	CR	□	□	3	□	□
Response Time	T rise	□	□	150	200	ms
	T fall	□	□	150	200	ms

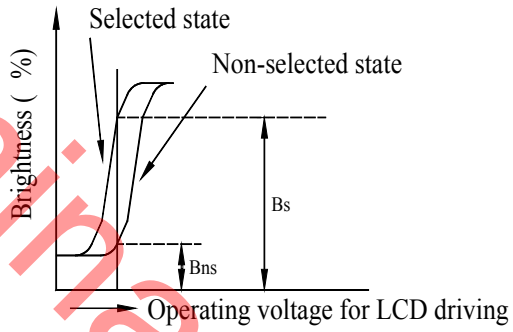
6.1 Definitions

■View Angles

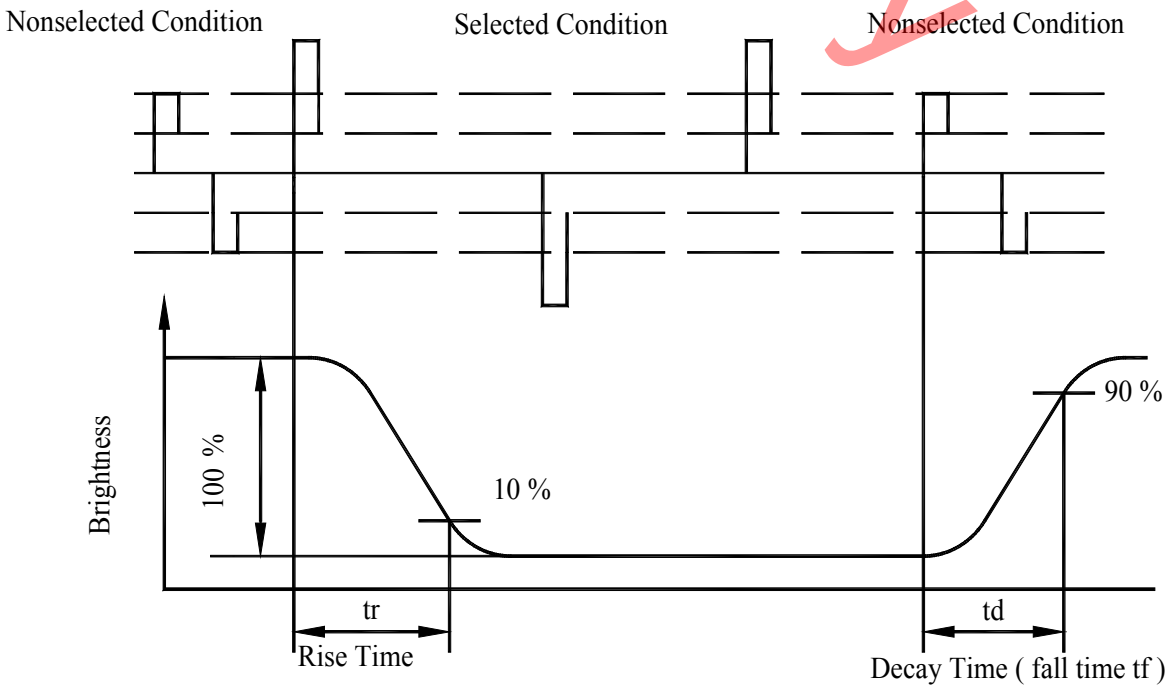


■Contrast Ratio

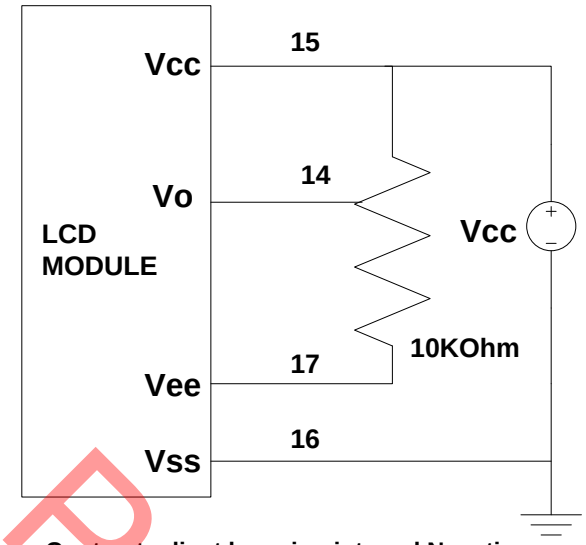
$$CR = \frac{\text{Brightness at selected state (BS)}}{\text{Brightness at non-selected state (Bns)}}$$



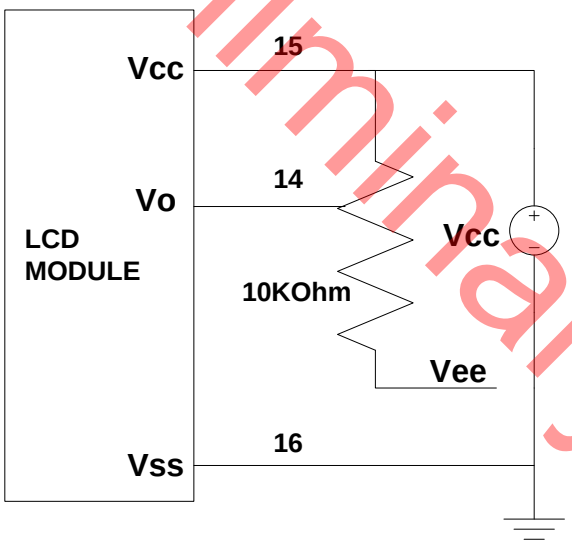
■ Response Time



7.Power Supply for LCD Module and Contrast Adjust



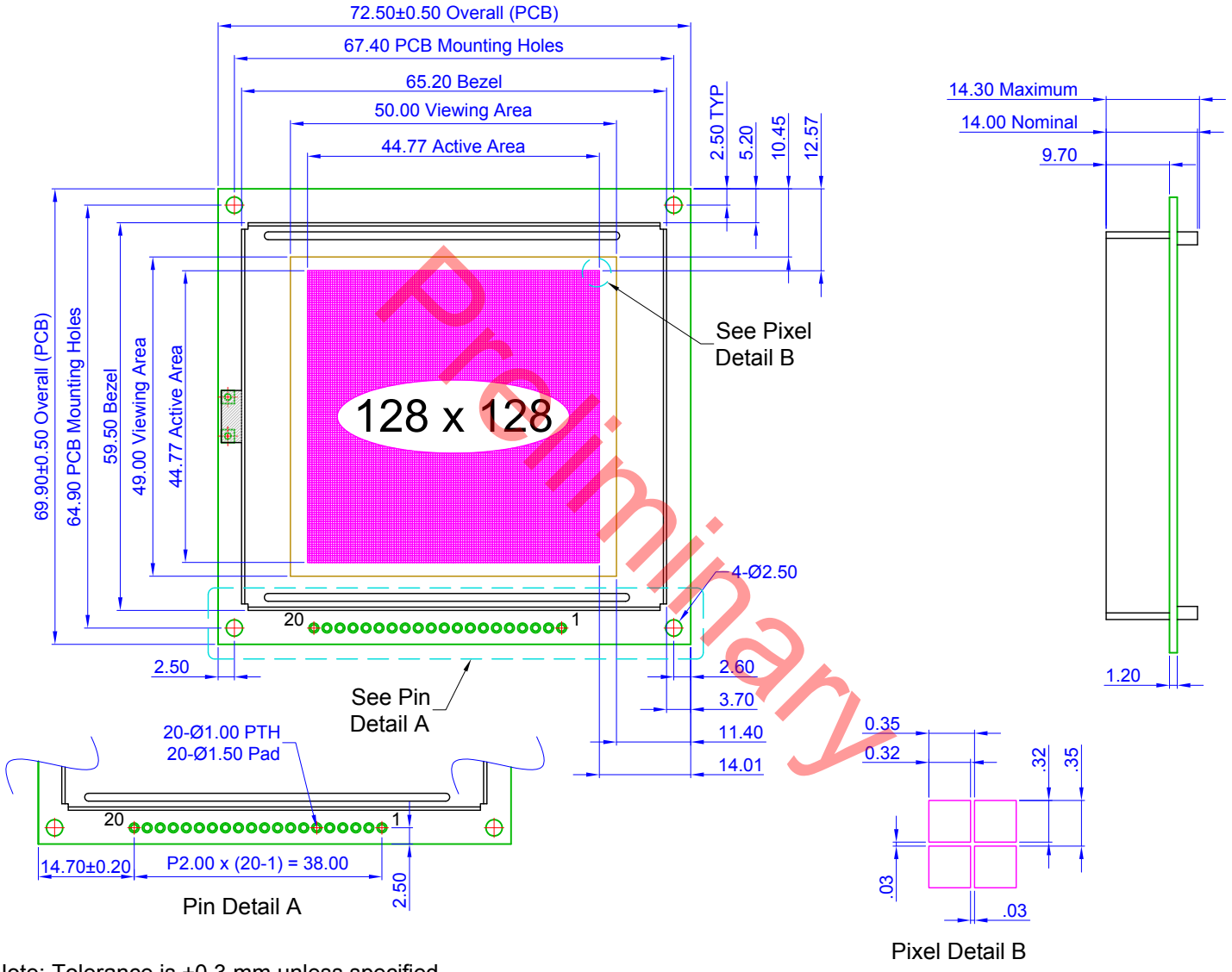
Contrast adjust by using internal Negative (Positive) voltage generator



Contrast adjust by using external Negative (Positive) voltage generator

8. Interface Description

Pin	Symbol	Level	Description
1-8	DB0-DB7	H/L	Bidirectional databus connects to standard host databus.
9	RS	H/L	Register selection input. High: Data register (for read and write) Low: Instruction code (for write)
10	R/W	H/L	Host interface input. High: Read (Host→Module) Low: Write (Host←Module)
11	E	H/L	Enable
12	/CS	H,H→L	Chip select input. *Low:* Controller chip is selected. Communications with the host is possible. *High:* Controller chip is not selected. Host interface signals are ignored by the controller.
13	/RST	L	Reset signal input. *Low:* Display controller is reset. The RST pin should be pulsed low shortly after power is applied. *High:* The RST pin should be brought high for normal operation.
14	V_O		Supply voltage for driving LCD.
15	V_{DD}		Supply voltage for logic. Must be connected to an external source. Do NOT mix supply voltage and logic voltages.
16	V_{SS}		Power Supply (GND). Must be connected to an external ground.
17	V_{EE}		Negative voltage output.
18	NC		Make no connection
19	LED+		Supply voltage for LED. “A” (anode) or “+” of LED backlight
20	LED-		Supply voltage for LED. “K” (cathode or kathode for German and original Greek spelling) or “-” of LED backlight



Note: Tolerance is ±0.3 mm unless specified.

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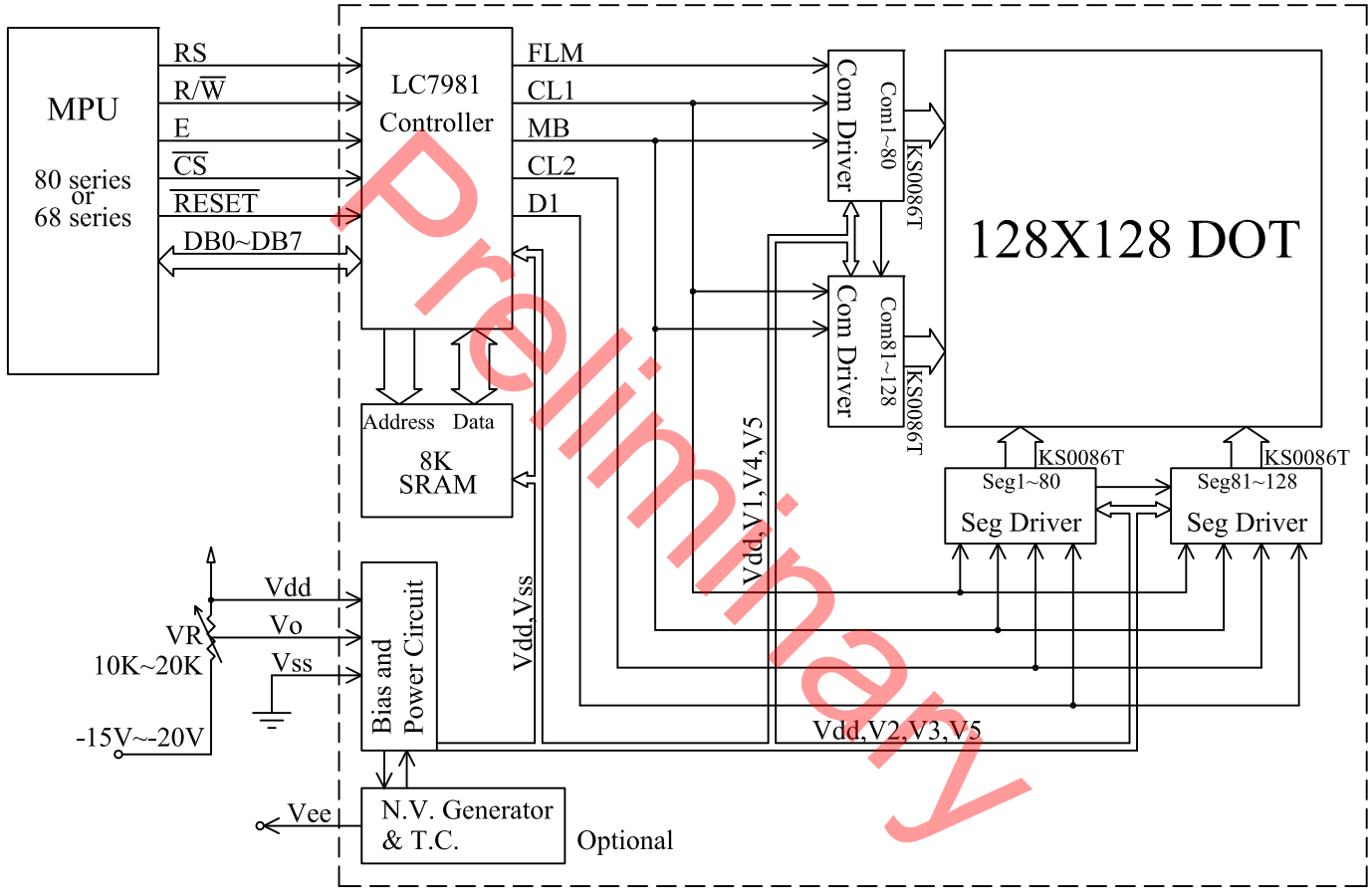
Part No.(s):	Scale:	Drawing Number:	Hardware Rev.:
CFAG128128B-YYH	Not to scale	CFAG128128B_master	vA
	Units: Millimeters	Date: 2010/12/23	Sheet: 1 of 1



External contrast adjustment.

11. Built-in Character Generator

Upper 4 bit / Lower 4 bit	LLLL	LLLH	LLHL	LLHH	LHLL	LHLH	LHHL	LHHH	HLLL	HLLH	HLHL	HLHH	HHLL	HHLH	HHHL	HHHH
LLLL																
LLLH																
LLHL																
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12.Reliability

Content of Reliability Test (wide temperature, -20°C~70°C)

Environmental Test			
Test Item	**Content of Test**	**Test Condition**	**Note**
High Temperature storage	**Endurance test applying the high storage temperature for a long time.**	**80°C 200hrs**	**2**
Low Temperature storage	**Endurance test applying the high storage temperature for a long time.**	**-30°C 200hrs**	**1,2**
High Temperature Operation	**Endurance test applying the electric stress (Voltage & Current) and the thermal stress to the element for a long time.**	**70°C 200hrs**	**——**
Low Temperature Operation	**Endurance test applying the electric stress under low temperature for a long time.**	**-20°C 200hrs**	**1**
High Temperature/ Humidity Operation	**The module should be allowed to stand at 60°C,90%RH max For 96hrs under no-load condition excluding the polarizer, Then taking it out and drying it at normal temperature.**	**60°C,90%RH 96hrs**	**1,2**
Thermal shock resistance	**The sample should be allowed stand the following 10 cycles of operation -20°C 25°C 70°C 30min 5min 30min 1 cycle**	**-20°C/70°C 10 cycles**	**——**
Vibration test	**Endurance test applying the vibration during transportation and using.**	Total fixed amplitude : 1.5mm Vibration Frequency : 10~55Hz **One cycle 60 seconds to 3 directions of X,Y,Z for Each 15 minutes**	**3**
Static electricity test	**Endurance test applying the electric stress to the terminal.**	**VS=800V,RS=1.5kΩ CS=100pF 1 time**	**——**

Note1: No dew condensation to be observed.

Note2: The function test shall be conducted after 4 hours storage at the normal Temperature and humidity after remove from the test chamber.

Note3: Vibration test will be conducted to the product itself without putting it in a container.

13.Backlight Information

Specification

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT	TEST□CONDITION
Supply Current	ILED	448	560	855	mA	V=4.2V
Supply Voltage	V	4.0	4.2	4.4	V	□
Reverse Voltage	VR	□	□	8.0	V	□
Luminous Intensity	IV	160	200	□	CD/M^2	ILED=560mA
Wave Length	λ	560	570	580	nm	ILED=560mA
Life Time	□	□	100K	□	Hr.	ILED=560mA
Color	Yellow Green					

Note: The LED of B/L is drive by current only□driving voltage is only for reference

To make driving current in safety area (waste current between minimum and maximum).