



5" TFT DISPLAY MODULE DATASHEET



CFAF800480E3-050SN

Datasheet Release: 2025-01-29

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1. General Information

Datasheet Revision History
Datasheet Release: 2025-01-29 Datasheet for the CFAF800480E3-050SN display module.

Product Change Notifications
You can check for or subscribe to Part Change Notices for this display module on our website.

Variations
Slight variations between lots are normal (e.g., contrast, color, or intensity).

Volatility
This display module has volatile memory.

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2. Module Description

The CFAF800480E3-050SN is a 5-inch color TFT LCD graphic display module with a high-brightness, sunlight-readable backlight. The CFAF800480E3-050SN is suitable for industrial, media, embedded and other general-purpose display applications.

This module includes a Sitronix ST7262 LCD driver.

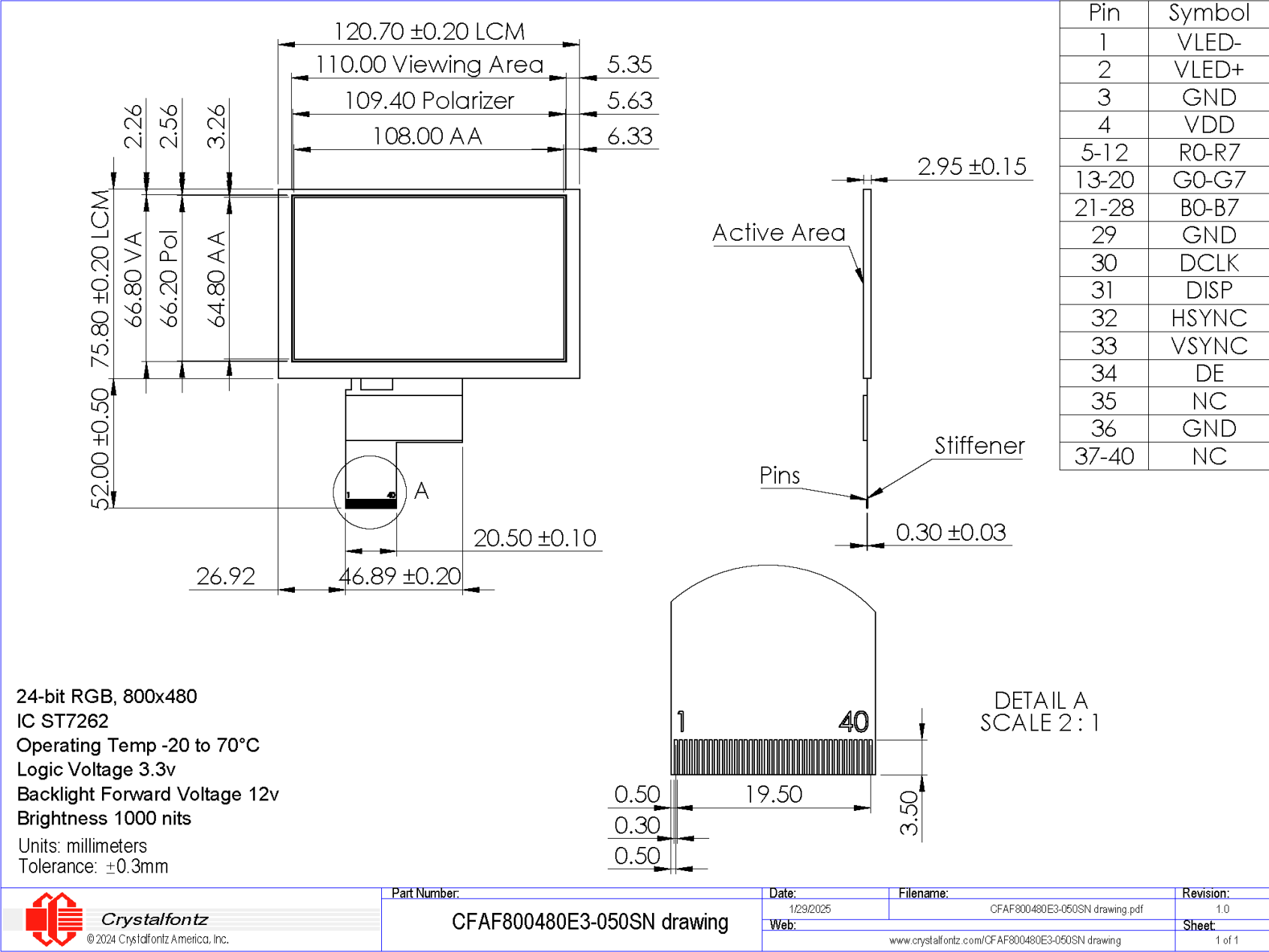
3. Features

- 5-inch 800x480 RGB TFT Dot Matrix LCD
- 24-bit Parallel RGB Interface
- +3.3V Logic Power Supply (backlight requires higher voltage)
- Sunlight Readable
- Transmissive LCD
- Bright White LED Backlight
- Operating Temperature: -20°C to +70°C
- Storage Temperature: -30°C to +80°C

4. Mechanical Data

Item	Specification (mm)	Specification (inch)
Overall Module Dimension	120.7 (W) x 75.8 (H) x 2.95 (D)	4.752 (W) x 2.984 (H) x 0.116 (D)
Viewing Area	110.0 (W) x 66.8 (H)	4.330 (W) x 2.630 (H)
Active Area	108.0 (W) x 64.8 (H)	4.252 (W) x 2.551 (H)
Dot Pitch	0.135 (W) x 0.135 (H)	0.0053 (W) x 0.0053 (H)
Weight (Typical)	47 grams	1.7 ounces

5. Mechanical Drawings





6. TFT LCD Panel

6.1. General Information

The CFAF800480E3-050SN module uses a Sitronix ST7262 TFT LCD panel controller. For detailed information on this controller IC, please see the ST7262 datasheet which can be found here:

<https://www.crystalfontz.com/controllers/Sitronix/ST7262/>

6.2. Interface Pin Function

Pin	Symbol	Function
1	VLED-	Backlight LED Cathode
2	VLED+	Backlight LED Anode
3	GND	System Ground
4	V _{DD}	Power Supply for Logic Operation
5-12	R0-R7	Data Bus
13-20	G0-G7	Data Bus
21-28	B0-B7	Data Bus
29	GND	System Ground
30	DCLK	Pixel Clock Signal, input data latches on rising edge
31	DISP	Display On/Off Control, normally pulled high for normal operation. Pulling low will turn off timing controller and source driver. All outputs become high impedance.
32	HSYNC	Horizontal Sync Signal, negative polarity
33	VSNC	Vertical Sync Signal, negative polarity
34	DEN	Data Enable, active high.
35	NC	No Connection
36	GND	System Ground
37	X+	No Connection (resistive touch panel X+)
38	Y-	No Connection (resistive touch panel Y-)
39	X-	No Connection (resistive touch panel X-)
40	Y+	No Connection (resistive touch panel Y+)

6.3. Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit
Operating Temperature	T _{OP}	-20	+70	°C
Storage Temperature	T _{ST}	-30	+80	°C

Note: These are stress ratings only. Extended exposure to the absolute maximum ratings listed above may affect device reliability or cause permanent damage. Temp. ≤60°C, 90% RH Maximum Temp. >60°C Absolute humidity < 90% RH at 60°C



6.4. Electrical Characteristics

Item	Symbol	Min	Typ	Max	Unit
Logic Power Supply	V _{DD}	2.5	3.3	3.6	V
I/O Supply Voltage	IOV _{CC}	3.1	3.3	3.5	
Input Logic High	VIH	0.7 * IOV _{CC}	-	IOV _{CC}	V
Input Logic Low	VIL	GND	-	0.3 * IOV _{CC}	V
Output Logic High	VOH	0.8 * IOV _{CC}	-	IOV _{CC}	V
Output Logic Low	VOL	GND	-	0.2 * IOV _{CC}	V
Logic Supply Current	IVDD	-	55	85	mA

6.5. Optical Characteristics

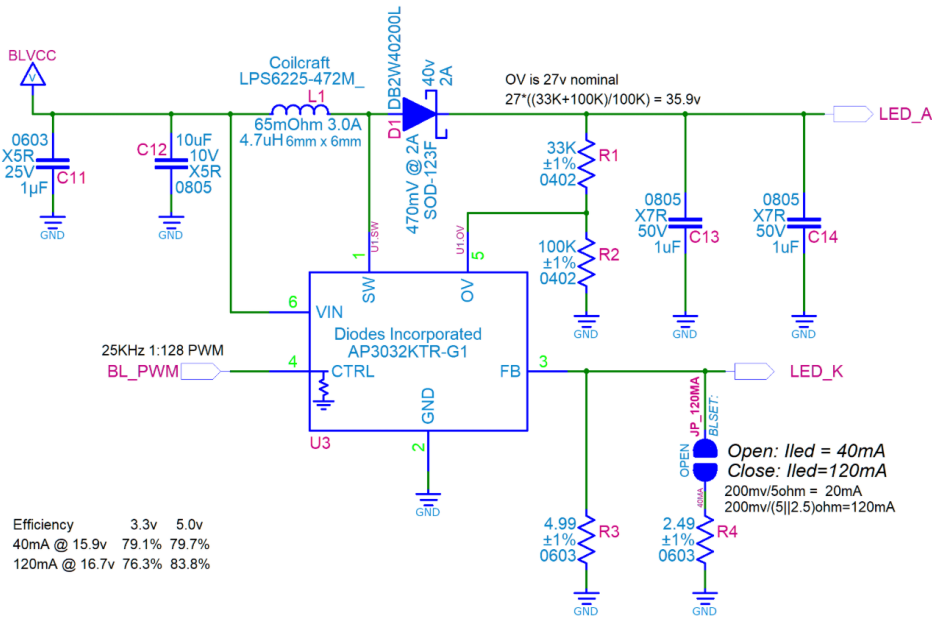
Item	Symbol	Condition	Min	Typ	Max	Unit
Response Time	T _r + T _f	-	-	30	35	ms
Contrast Ratio	(CR)	-	600	900	-	-
Viewing Angle	Horizontal	θ _L	CR ≥ 10	75	85	Degree
		θ _R		75	85	
	Vertical	θ _T		75	85	
		θ _B		75	85	
Luminance	L	-	800	1000	-	cd/m ²
Color Chromaticity	White	W _X		0.242	0.292	0.342
		W _Y		0.233	0.283	0.333

6.6. Backlight Characteristics

Item	Symbol	Min	Typ	Max	Unit
Forward Voltage	V _F	11.2	12	13.2	V
Forward Current	I _F	-	140	-	mA
Backlight Power Consumption	W _{BL}	-	1.68	-	W
LED Lifetime		10000	-	30000	hours



Constant-Current Backlight Driver



Example backlight driver circuit

6.7. System Bus Timing for RGB Interface

For additional timing information, please see the [Sitronix ST7262 datasheet](#).

Item	Symbol	Min	Typ	Max	Unit
CLK Pulse Duty	T_{CW}	40	50	60	%
HSYNC Width	T_{hw}	2	-	-	DCLK
HSYNC Period	T_h	55	60	65	μs
HSYNC Setup Time	T_{hst}	12	-	-	ns
HSYNC Hold Time	T_{hhd}	12	-	-	ns
VSYNC Setup Time	T_{vst}	12	-	-	ns
VSYNC Hold Time	T_{vhd}	12	-	-	ns
Data Setup Time	T_{dsu}	12	-	-	ns
Data Hold Time	T_{dhd}	12	-	-	ns
DE Setup Time	T_{dest}	12	-	-	ns
DE Hold Time	T_{dehd}	12	-	-	ns



7. LCD Module Precautions

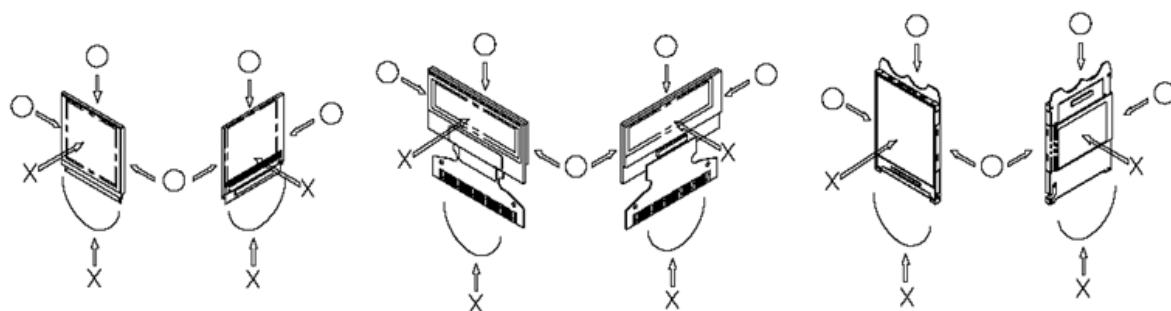
These precautions help ensure personal safety, module performance, and compliance of environmental regulations when using an LCD module.

7.1. Modules

- Avoid excessive physical and electrical shocks to module.
- Do not drop, bend, or twist the LCD display module.
- Do not make extra holes, modify the shape, or change the components of the printed circuit board.
- Do not disassemble the LCD display module.
- Do not operate the LCD display module outside the absolute maximum rating.
- Only solder to the I/O terminals.
- Store in an anti-static electricity container and clean environment.
- Do not display static information for long periods of time to avoid burn in.
- Crystalfontz has the right to change passive components on the display module. Resistors, capacitors and other passive components may have different appearance and color.
- Crystalfontz has the right to change the PCB revision/version in order to satisfy the supply stability, management optimization, the best product performance, etc., under the premise of not affecting the electrical characteristics and external dimensions.

7.2. Handling Precautions

- The display panel is made of glass. Do not apply mechanical impacts, stress or pressure to the LCD display module.
- Pressure applied to or near the display surface may damage the cell structure.
- If the display panel is accidentally broken and the internal organic substance leaks out, do not inhale or touch the organic substance.
- The polarizer covering the surface of the LCD display module is soft and can be easily scratched. Cover the polarizer in the final design.
- Clean the surface of the polarizer using Scotch Mending Tape No. 810 or an equivalent
 - Never breathe on the surface or wipe the surface using a cloth containing solvent such as ethyl alcohol, as the surface of the polarizer will become cloudy.
 - Water, ketone, and aromatic solvents may ruin the polarizer.
- Do not over bend the film with electrode pattern layouts. This can effect the display performance.



- Do not apply stress to the LSI chips and the surrounding molded sections.
- Do not apply input signals while the logic power is off.
- Prevent damage by electrostatic discharge (ESD) when handling the LCD display module:
 - Ground personnel handling LCD display modules.
 - Ground tools used for assembly such as soldering irons.
 - To suppress generation of ESD, avoid carrying out assembly work under dry environments.
 - Remove the protective film applied to the display panel slowly as ESD may be generated when removing the film.
- Protective film is applied to the surface of the display panel. Remove the film before assembly. If the LCD display module has been stored for a long period of time, residue adhesive material of the protection film may remain on the surface of the display panel after the film has been removed. In such a case, remove the residue material as discussed above.



7.3. Storing Precautions

- Store the LCD display modules in ESD preventative bags. Avoid exposure to direct sunlight and fluorescent lamps. Avoid high temperature and high humidity environments and low temperature (less than 0°C) environments. We recommend storing these modules in the packaged state in which they were shipped from Crystalfontz.
- Do not let water drops or dew adhere to the packages or bags.
- If electric current is applied when water is on the surface of the LCD display module, the module may become dewed. If a dewed LCD display module is placed under high humidity environments the electrodes may become corroded.

7.4. Designing Precautions

- The absolute maximum ratings cannot be exceeded for LCD display module. If these values are exceeded, panel damage may happen.
- Satisfy the VIL and VIH specifications and, ensure the signal line cable is as short as possible to avoid signal noise.
- Install excess current preventative unit (fuses, etc.) to the power circuit. Recommend value: 0.5A
- Avoid occurrence of mutual noise interference with the neighboring devices.
- When fastening the LCD display module, fasten the external plastic housing section.
If the power supply to the LCD display module is forcibly shut down, by such errors as taking out the main battery while the LCD display panel is in operation, we cannot guarantee the quality of this LCD display module.
- Connection (contact) to any other potential than the above may lead to rupture of the IC.

7.5. Disposing Precautions

- Request qualified companies handle the industrial waste when disposing of the LCD display modules. Observe all relevant laws and regulations.

7.6. Other Precautions

- When an LCD display module is operated for a long period of time with a fixed pattern, the fixed pattern may remain as an after image or a slight contrast deviation may occur.
 - If the operation is interrupted and left unused for a while, normal state can be restored.
 - This will not cause a problem in the reliability of the module.
- To protect the LCD display module from performance drops by static electricity rapture, etc., do not touch the following sections whenever possible while handling the LCD display modules.
 - Pins and electrodes
 - Pattern layouts such as the TCP & FPC
- With this LCD display module, the LCD driver is exposed. If this LCD driver is exposed to light, malfunctioning may occur. Design the product and installation method so that the LCD driver may be shielded from light in actual usage and during the inspection processes.
- Although this LCD display module stores the operation state data by the commands and the indication data, when excessive external noise, etc. enters into the module, the internal status may be changed. Therefore, it is necessary to take appropriate measures to suppress noise generation or to protect from influences of noise on the system design.
- Periodically refresh the operation statuses in the software (reset the commands and retransfer the display data), to cope with catastrophic noise.
- Resistors, capacitors, and other passive components will have different appearance and color caused by the different supplier.
- Crystalfontz has the right to upgrade and modify the product function.
- The limitation of FPC bending:

