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TFT | CHARACTER | UWVD | FSC | SEGMENT | CUSTOM | REPLACEMENT

Graphic Display Module

Part Number

G12864D-FTY-DW65

Overview:

- 128x64 dots
- Area: 93.0x70.0 mm
- Viewing Area: 70.8x 38.8 mm
- FSTN Positive Transflective
- Wide Temp
- Viewing Direction: 6 o'clock
- 5V Supply Voltage
- Controller: AIP31108
- RoHS Compliant
- Parallel

Graphic LCD Features

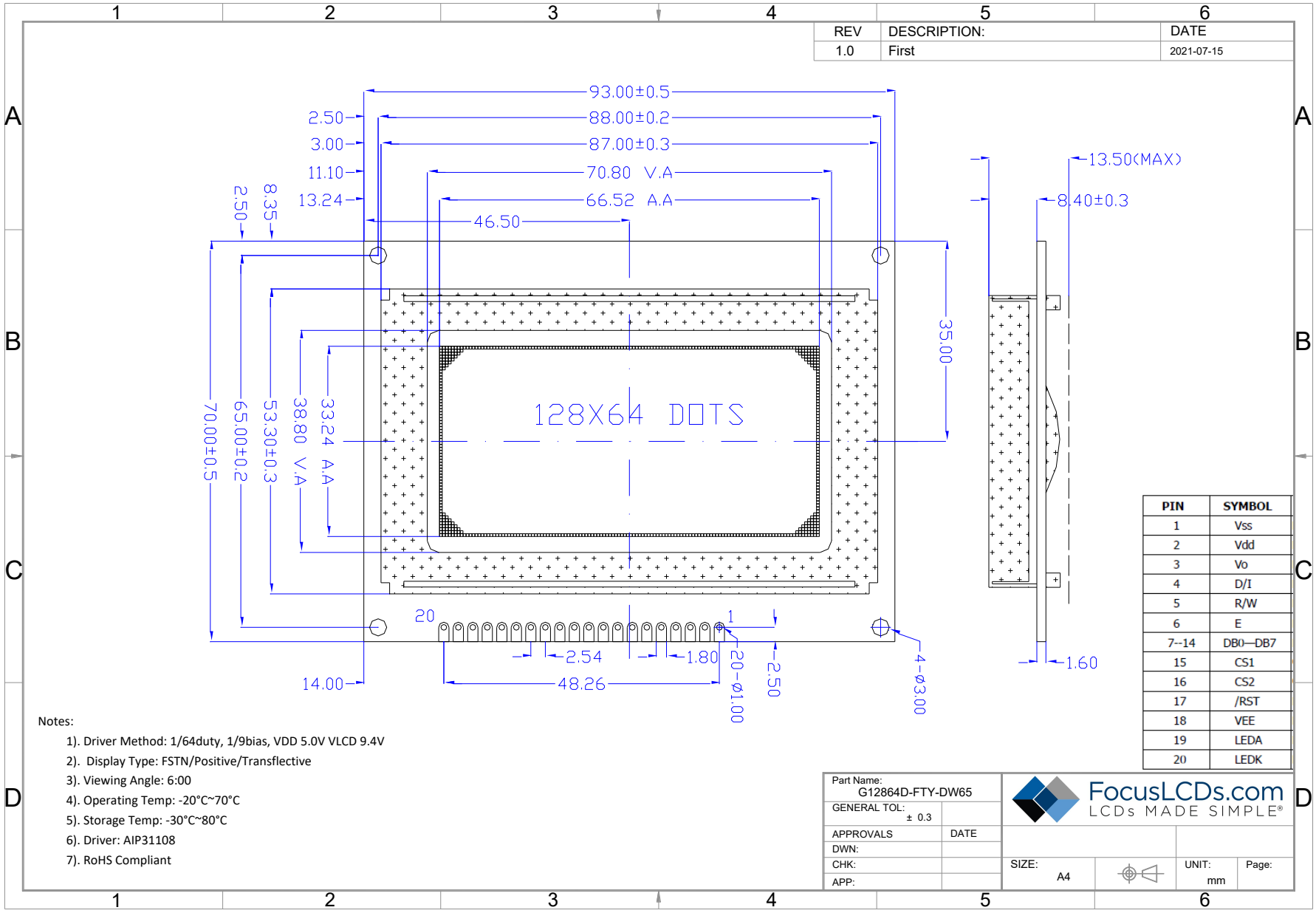
Resolution: 128x64 dots
Interfaces: 8-bit parallel
Built in IC Controller: AIP31108
RoHS Compliant

General Information Items	Specification Main Panel	Unit	Note
Viewing Area	70.8(L) x 38.8(W)	mm	-
LCD Type	FSTN positive	-	-
Viewing Direction	6:00	o'clock	-
Rear Polarizer	Transflective	-	-
Number of Pixels	128x64	dots	-
Backlight Type	4.2 for Yellow/Green & 3.2 for White	V	-
Backlight Color	Yellow/Green	-	-
Controller IC	AIP31108	-	-
Interfaces	8-bit parallel MCU	-	-
Operating temperature	-20～+70	℃	-
Storage temperature	-30～+80	℃	-

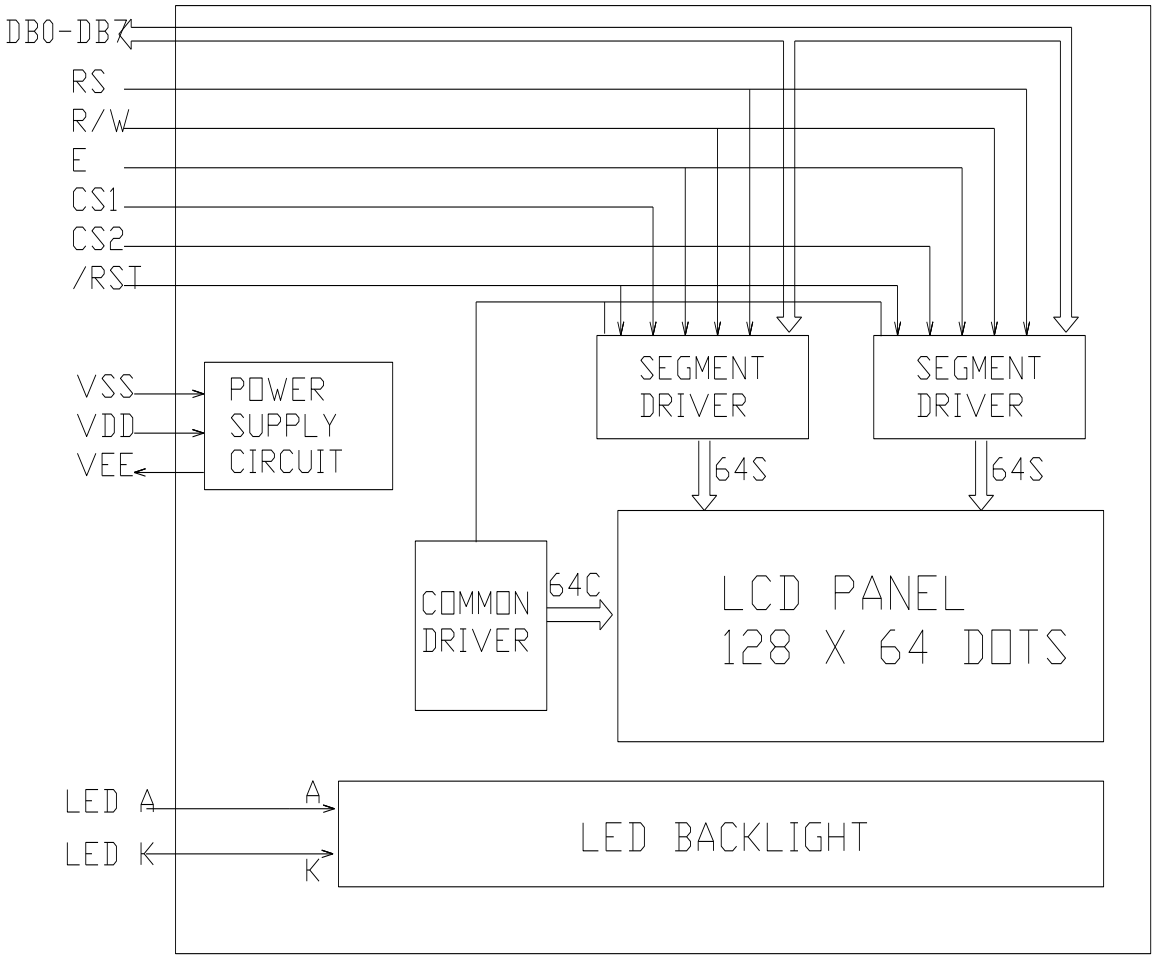
Mechanical Information

Item		Min	Typ.	Max	Unit	Note
Module size	Length (L)		93.0		mm	-
	Width (W)		70.0		mm	-
	Height (H)		13.50		mm	-

1. Outline Dimensions



2. Block Diagram



3. Input Terminal Pin Assignment

NO.	Symbol	Description
1	VSS	POWER SUPPLY (GND)
2	Vdd	POWER SUPPLY FOR LOGIC (+5.0V)
3	Vo	POWER SUPPLY FOR LCD DRIVING
4	D/I	DATA/INSTRUCTION SELECT
5	R/W	READ/WRITE SIGNAL SELECT
6	E	ENABLE SELECT
7-14	DB0-DB7	8-BIT DIRECTIONAL DATA BUS
15	CS1	CHIP SELECT OF IC1 (HIGH EFFECTIVE)
16	CS2	CHIP SELECT OF IC2 (HIGH EFFECTIVE)
17	/RST	RESET SIGNAL(LOW EFFECTIVE)
18	VEE	NEGATIVE VOLTAGE INPUT/OUTPUT
19	LEDA	LED BACKLIGHT POWER SUPPLY(+)
20	LEDK	LED BACKLIGHT POWER SUPPLY(-)

4. LCD Optical Characteristics

4.1 Optical Specifications

FSTN Type Display Module *(Ta=25˚C, VDD=3.0V)*

Item		Symbol	Condition	Min	Typ.	Max	Unit	Note
Contrast Ratio		CR	Ta=25˚C	--	12	--	--	
Response Time	Rising	TR		--	160	240	ms	
	Falling	TF		--	100	150		
Viewing Angle	Left-Right	Φ		--	--	40	degree	
	Top-Bottom	θ		--	--	60		

5. Electrical Characteristics

5.1 Absolute Maximum Rating (Ta=25 ˚C, VSS=0V)

Characteristics	Symbol	Min	Max	Unit
Power Voltage Logic	VDD-VSS	-0.3	7.0	V
Input Voltage	VIN	-0.3	VDD+0.3	V
Power Supply Voltage for LCD	V0-VSS	0	25.0	V
Operating Temperature	TOP	-20	+70	℃
Storage Temperature	TST	-30	+80	℃
Forward Current	Ifm	--	60	mA

NOTE: If the absolute maximum rating of the above parameters is exceeded, even momentarily, the quality of the product may be degraded. Absolute maximum ratings specify the values which the product may be physically damaged if exceeded. Be sure to use the product within the range of the absolute maximum ratings.

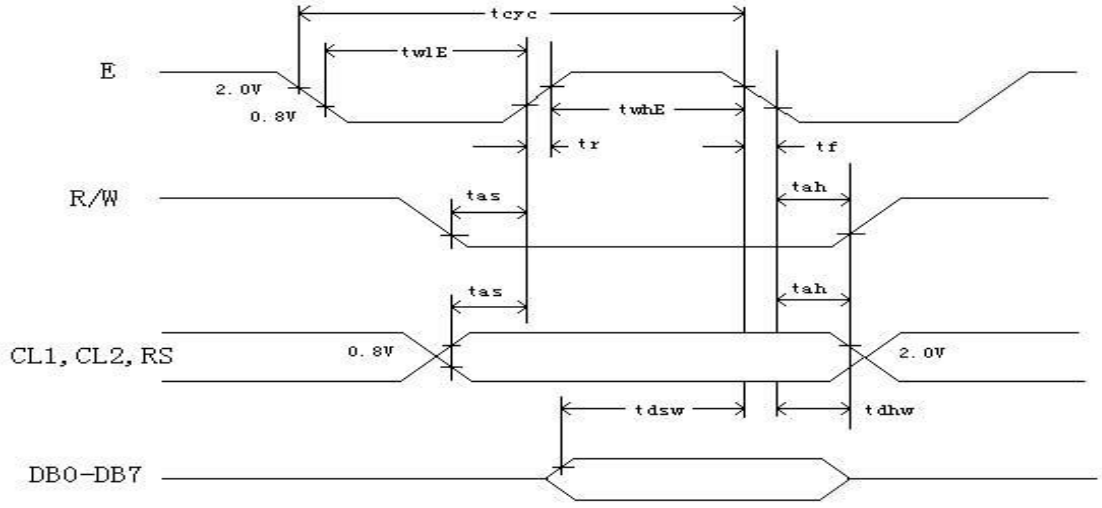
5.2 DC Electrical Characteristics

Characteristics	Symbol	Conditions	Min	Typ.	Max	Unit
Supply Voltage for LCD	V0-VSS	Ta=25℃	--	9.4	--	V
Supply Voltage for Logic	VDD	--	4.5	5.0	5.5	V
Input Signal Voltage	V-ih	"H" level	0.8VDD	--	VDD	V
	V-il	"L" level	VSS	--	0.2VDD	V
Output Signal Voltage	V-oh	"H" level	0.8VDD	--	VDD	V
	V-ol	"L" level	VSS	--	0.2VDD	V

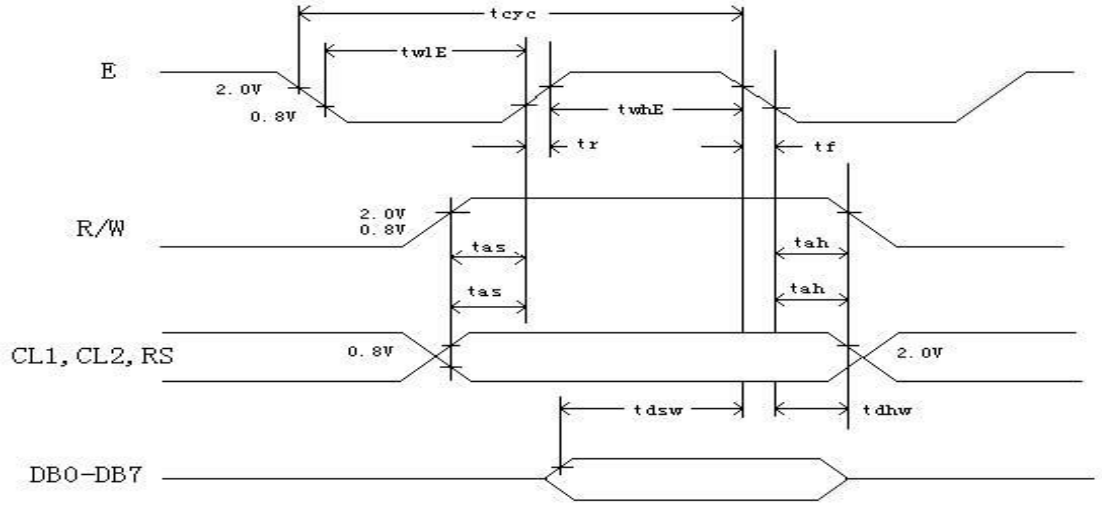
6. Signal Timing Characteristics

6.1 MPU Characteristics

Parameter	Signal	Symbol	Min	Max	Unit	Note
E cycle	--	t_{AH8}	1000	--	ns	
E high level width		t_{AW8}	450	--	ns	
E low level width		t_{CYC8}	450	--	ns	
E rise time	--	t_{CCLW}		25	ns	
E fail time		t_{CCHW}		25	ns	
Address set-up time	--	t_{CCLR}	140	--	ns	
Address hold time		t_{CCHR}	10	--	ns	
Data set-up time	DB0-DB7	t_{DS8}	200	--	ns	
Data delay time		t_{DH8}		320	ns	
Data hold time(write)		t_{ACC8}	10	--	ns	CL=100pF
Data hold time(read)		t_{OH8}	20	--	ns	CL=100pF



MPU Write Timing



MPU Read Timing

7. Cautions and Handling Precautions

7.1 Handling and Operating the Module

1. When the module is assembled, it should be attached to the system firmly. Do not warp or twist the module during assembly work.
2. Protect the module from physical shock or any force. In addition to damage, this may cause improper operation or damage to the module and back-light unit.
3. Note that polarizer is very fragile and could be easily damaged. Do not press or scratch the surface.
4. Do not allow drops of water or chemicals to remain on the display surface. If you have the droplets for a long time, staining and discoloration may occur.
5. If the surface of the polarizer is dirty, clean it using some absorbent cotton or soft cloth.
6. The desirable cleaners are water, IPA (Isopropyl Alcohol) or Hexane. Do not use ketene type materials (ex. Acetone), Ethyl alcohol, Toluene, Ethyl acid or Methyl chloride. It might permanent damage to the polarizer due to chemical reaction.
7. If the liquid crystal material leaks from the panel, it should be kept away from the eyes or mouth. In case of contact with hands, legs, or clothes, it must be washed away thoroughly with soap.
8. Protect the module from static, it may cause damage to the CMOS ICs.
9. Use fingerstalls with soft gloves in order to keep display clean during the incoming inspection and assembly process.
10. Do not disassemble the module.
11. Protection film for polarizer on the module shall be slowly peeled off just before use so that the electrostatic charge can be minimized.
12. Pins of I/F connector shall not be touched directly with bare hands.
13. Do not connect, disconnect the module in the “Power ON” condition.
14. Power supply should always be turned on/off by the item Power On Sequence & Power Off Sequence.

7.2 Storage and Transportation

1. Do not leave the panel in high temperature, and high humidity for a long time. It is highly recommended to store the module with temperature from 0 to 35 ℃ and relative humidity of less than 70%
2. Do not store the Graphic LCD module in direct sunlight.
3. The module shall be stored in a dark place. When storing the modules for a long time, be sure to adopt effective measures for protecting the modules from strong ultraviolet radiation, sunlight, or fluorescent light.
4. It is recommended that the modules should be stored under a condition where no condensation is allowed. Formation of dewdrops may cause an abnormal operation or a failure of the module. In particular, the greatest possible care should be taken to prevent any module from being operated where condensation has occurred inside.
5. This panel has its circuitry FPC on the bottom side and should be handled carefully in order not to be stressed.