



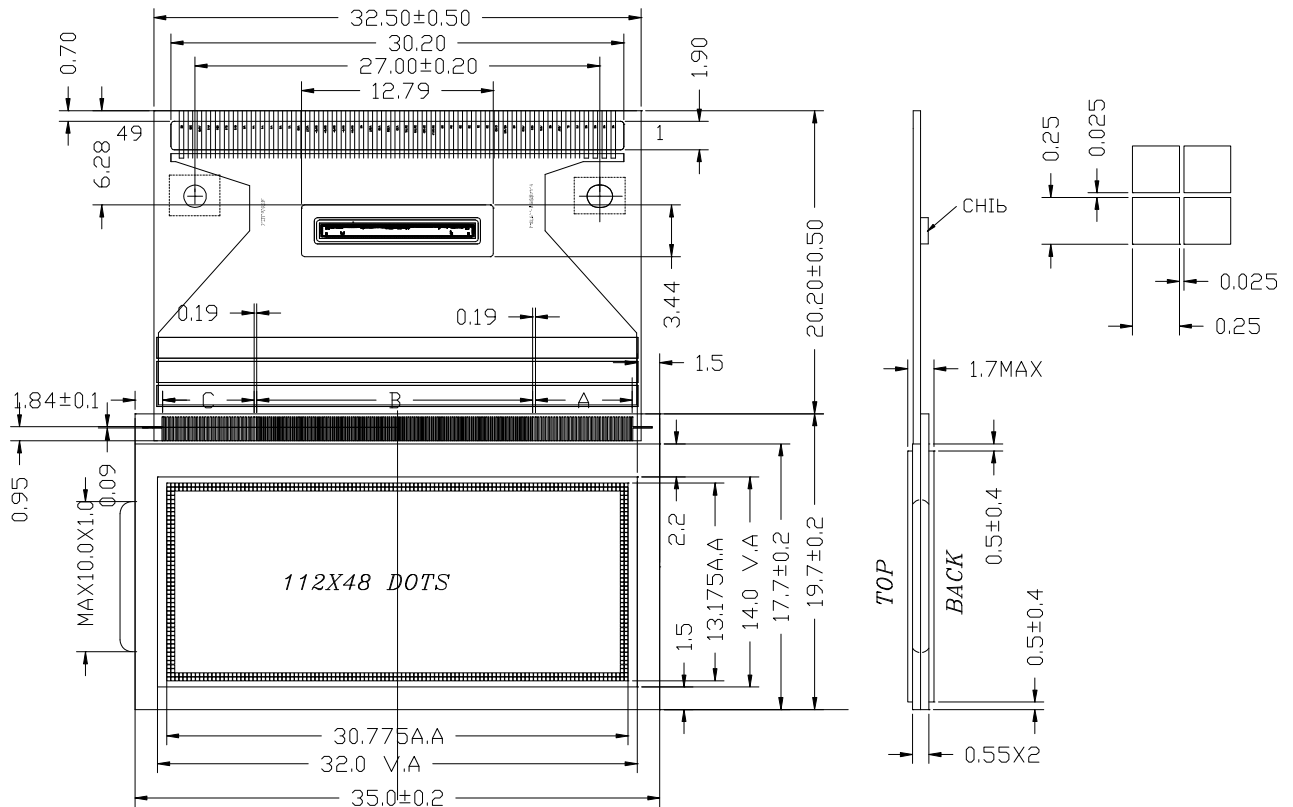
PRODUCT SPECIFICATIONS

TNS-G11248FTDFN-1W

- **PHYSICAL DATA**
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- **BLOCK DIAGRAM**
- **ABSOLUTE MAXIMUM RATINGS**
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EXTERNAL DIMENSIONS



PHYSICAL DATA

Item	Contents	Unit
Module size (W×H×T)	35.0(W)X19.7(H)X1.7(T,MAX)	mm
Viewing area (W×H)	32.0(W)X17.7(H)	mm
LCD type	FSTN	---
LCD duty	1/48	---
Viewing direction	6	o'clock
Number of dots	112X48	dots
Dot size (W×H)	0.25X0.25	mm
Dot pitch (W×H)	0.275X0.275	mm

ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

PARAMETER	SYMBOL	RATINGS			UNITS
		MIN.	TYP.	MAX.	

	北京振中致远显示技术有限公司	型号: TNS-G11248FTDFN-1W
	BEIJING ZHENZHONG ZHIYUAN DISP-TECH. CO.,LTD.	

POWER SUPPLY FOR LOGIC	VDD	0	-	3.0	V
POWER SUPPLY FOR LCD DRIVER	VLCD	0	-	9.0	V
INPUT VOLTAGE	VIN	0	-	VDD+0.3	V
OPERATING TEMPERATURE	TOP	-20	-	70	°C
STORAGE TEMPERATURE	TST	-30	-	80	°C

■ ELECTRICAL & OPTICAL CHARACTERISTICS

Condition:TEMP=(23±3)°C Hum=(70±5)%RH

NO	Item	Symbol	Min	Typ.	Max	Unit	Condition
1	Supply Voltage(Logic)	Vdd-Vss		3.0		V	
2	Supply Current (Logic)	Idd				mA	Vdd=5V
3	LCD Operating Voltage	Vdd-V ₀		9.4		V	-20°C
				9.0			25°C
				8.6			70°C
4	Response Time	Ton		247		ms	
		Toff		58		ms	
5	Contrast	CR	3				
6	Viewing Angel	12H	θ 1	46		Deg.	(CR≥3.0)
		6H	θ 2	28			
		3H	θ 3	50			
		9H	θ 4	50			
7	LCD Threshold Voltage	Vth		7.89		V	25°C

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■ INTERFACE PIN CONNECTIONS

Pin No.	Symbol	Function
1-4	NC	No connect
5	FR	This is the liquid crystal alternating current signal I/O terminal .
6	CL	This is the display clock input terminal.
7	DOF	The liquid crystal display blanking control terminal.



8	NC	No connect
9-10	Cs1- Cs2	Chip Select signal.
11	RES	Reset Signal
12	A0	This is connected to the least significant bit of the normal MPU address bus,and it determines whether the data bits are data or a command.
13	/WR	Write Select
14	RD	Read Select
15-22	D0~D7	Data Bus Line
23-24	DUTY0 DUTY1	Select the LCD driver duty.
25	VDD	Logic Supply Voltage(+3.0V)
26	VDD2	This is the reference power supply for the Step-up voltage circuit for the LCD.
27	VSS	Ground(0v)
28	VOUT	DC/DC voltage converter output
29	NC	No connect
30	CAP3+	Capacitor 3+ pad for internal DC/DC voltage converter
31	CAP1-	Capacitor 1- pad for internal DC/DC voltage converter
32	CAP1+	Capacitor 1+ pad for internal DC/DC voltage converter
33	CAP2+	Capacitor 2+ pad for internal DC/DC voltage converter
34	CAP2-	Capacitor 2- pad for internal DC/DC voltage converter
35	VEXT	This is the external input reference voltage(VREF) for the internal voltage regulator. It is valid only when external VREF is used.
36	VRS	Select the internal voltage regulator or external voltage regulator
37-41	V1V2V3V4V0	LCD driver supply voltages.

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42	VR	Voltage adjustment pad .
43	M/S	This terminal selects the master/slave operation for the NT7502 chips.
44	CLS	Terminal to select whether enable or disable the display clock internal oscillator circuit
45	C86	This is the MPU interface switch terminal.
46	P/S	This is the parallel data input/serial data input switch terminal .
47	HPM	This is the power control terminal for the power supply circuit for lipid crystal drive .
48	IRS	This terminal selects the resistors for the Vo voltage level adjustment .
49	NC	No connect