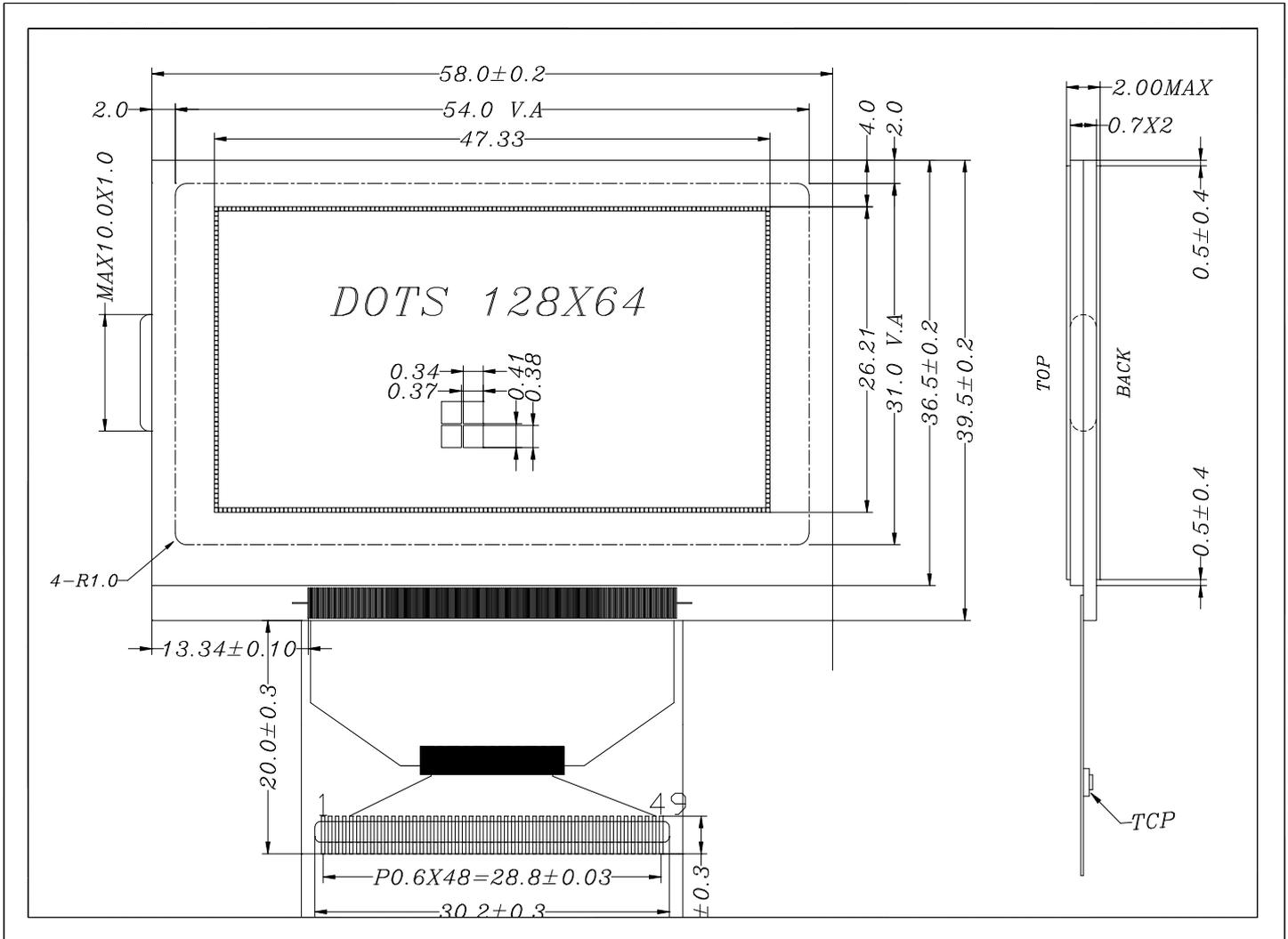# PRODUCT SPECIFICATIONS

TNS-G12864FTDFN-5W

■ EXTERNAL DIMENSIONS

■ PHYSICAL DATA

■ ABSOLUTE MAXIMUM RATINGS

■ ELECTRO-OPTICAL CHARACTERISTICS

■ INTERFACE PIN CONNECTIONS

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BEIJING ZHENZHONG ZHIYUAN DISP-TECH. CO.,LTD.

型号：
TNS-G12864FTDFN-5W

■ EXTERNAL DIMENSION

■ PHYSICAL DATA

Item	Contents	Unit
DIMENSIONAL OUTLINE	58.0(W)×39.5(H)×2.0(MAX)(T)	mm
VIEWING AREA	54.0(W)X31.0(H)	mm
EFFECTIVE AREA	47.33(W)×26.21(H)	mm
LCD TYPE	FSTN POSITIVE	---
LCD DUTY	1/64	---
LCD BIAS	1/9	---
VIEWING DIRECTION	6	o'clock
NUMBER OF DOTS	128×64	dots
DOT SIZE	0.34(W)×0.38(H)	mm
DOT PITCH	0.37(W)×0.41(H)	mm

■ ABSOLUTE MAXIMUM RATINGS (Ta = 25℃)

ITEM	SYMBOLI	MIN	MAX	UNIT
SUPPLY VOLTAGE FOR LOGIC	V_{DD}	-0.3	7.0	V
SUPPLY VOLTAGE FOR LCD	V_{LCD}	+0.3	17.0	V
INPUT VOLTAGE	V_{IN}	-0.3	VDD + 0.3	V
OPERATING TEMPERATURE	T_{OP}	-20	70	℃
STORAGE TEMPERATURE	T_{ST}	-30	80	℃

■ ELECTRO-OPTICAL CHARACTERISTICS

Condition:TEMP=(23±3)℃   Hum=(70±5)%RH

NO	Item		Symbol	Min	Typ.	Max	Unit	Condition
1	Supply Voltage(Logic)		Vdd-Vss		3.5		V	
2	Supply Current (Logic)		Idd				mA	Vdd=5V
3	LCD Operating Voltage		Vdd-V_0		9.9		V	-20℃
					9.5			25℃
					9.1			70℃
4	Response Time		Ton		152		ms	
			Toff		232		ms	
5	Contrast		CR	3				
6	Viewing Angel	12H	θ1		48		Deg.	(CR≥3.0)
		6H	θ2		54			
		3H	θ3		50			
		9H	θ4		50			
7	LCD Threshold Voltage		Vth		8.18		V	25℃

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■ INTERFACE PIN CONNECTIONS

Pin No.	Symbol	Function

1	NC	No Connect
2	NC	No Connect
3	NC	No Connect
4	NC	No Connect
5	FR	This is the liquid crystal alternating current signal I/O terminal
6	CL	Display clock input/output
7	DOF	This is the liquid crystal display blanking control terminal
8	NC	No Connect
9	/CS1	Chip1 select input
10	CS2	Chip2 select input
11	/RES	Reset signal input
12	A0	This is connected to the least significant bit of the normal MPU address bus A0="H" indicating that D0 to D7 are display data and A0="L" indicating that D0 to D7 are control data.
13	R/W	MCU interface input
14	E/RD	MCU interface input
15-22	D0-D7	The 8-bit bi-directional data bus to be connected to the MCU in parallel interface mode

23	DUTY1	Select the LCD driver duty
24	DUTY2	

DUTY1	DUTY0	LCD driver duty
0	0	1/33
0	1	1/49
1	0	1/55
1	1	1/65

25	V_{DD}	Chip's power supply pin
26	V_{DD2}	This is the reference power supply for the set-up voltage circuit for the LCD.

27	VSS	Ground
28	V_{OUT}	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	V_{EXT}	This is the external input reference voltage (V_{REF}) for the internal voltage regulator. It is valid only when the external V_{REF} is used. V_{EXT} Must be $\geqslant$2.4V and$\leqslant V_{DD2}$
36	V_{RS}	Select the internal voltage regulator or external voltage regulator VRS=0 Select external V_{REF} VRS=1 Select internal V_{REF} When using internal V_{REF} , this pad must be NC.
37-41	V1-V4,V0	LCD Supply Voltage
42	V_{R}	Voltage adjustment pad. Applies voltage between V_0 and V_{SS} using a resistive divider
43	M/S	This is selects the master/slave operation for the NT7532 chips
44	CLS	The internal clock enable pin
45	C86	MCU parallel interface selection input
46	P/S	Serial/parallel interface selection input
47	HPM	Control input of High Power Current Mode
48	IRS	The input pin to enable the internal resistors network for the voltage regulator
49	NC	No Connect