



**WINSTAR Display Co.,Ltd.**  
**華凌光電股份有限公司**

## SPECIFICATION

**MODULE NO.: WO12864U1**

### General Specification

Item	Dimension	Unit
Number of dots	128 x 64	—
Module dimension	58.2 x 44.7 x 3.9(MAX)	mm
View area	52.0 x 33.5	mm
Active area	47.76 x 30.29	mm
Dot size	0.40 x 0.35	mm
Dot pitch	0.42 x 0.37	mm
Duty	1/65 duty;1/9 bias	
View direction	6 o'clock	
Backlight Type	LED	
IC	ST7567S	
Interface	6800 series/8080 series/4-Line SPI	

# 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	—	$V_{DD}+0.3$	V
Digital Power Supply Voltage	$V_{DD}-V_{SS}$	-0.3	—	4.0	V
LCD Power supply voltage	$V_0-XV_0$	-0.3	—	14.0	V

# Electrical Characteristics

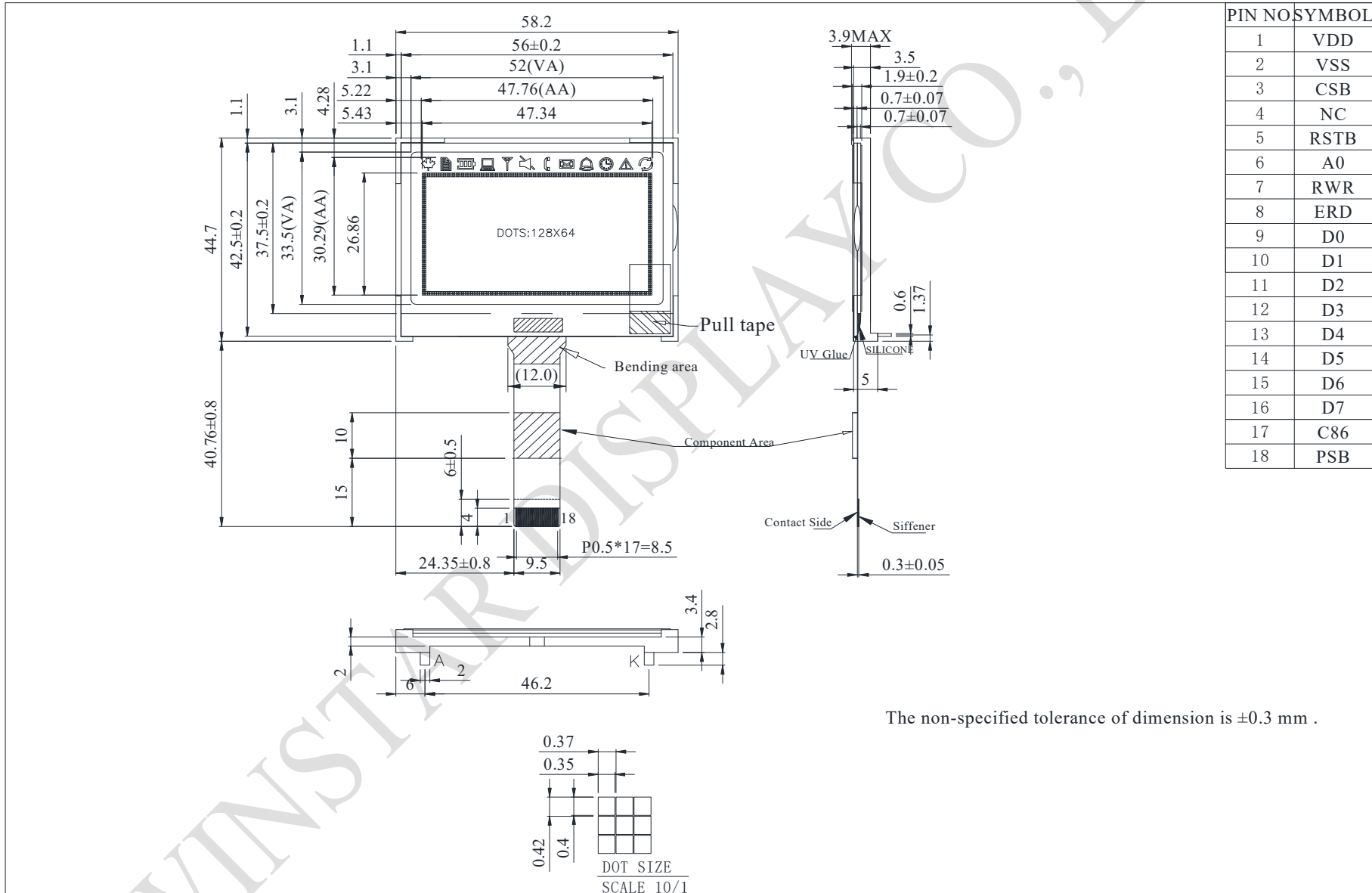
Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Supply Voltage For Logic	$V_{DD}-V_{SS}$	—	3.0	3.3	3.6	V
Supply Voltage For LCD	$V_{OP}$	$T_a=-20^{\circ}C$	—	—	—	V
		$T_a=25^{\circ}C$	8.3	8.5	8.7	V
		$T_a=70^{\circ}C$	—	—	—	V
Input High Volt.	$V_{IH}$	—	$0.7V_{DD}$	—	$V_{DD}$	V
Input Low Volt.	$V_{IL}$	—	$V_{SS}$	—	$0.3V_{DD}$	V
Output High Volt.	$V_{OH}$	—	$0.8V_{DD}$	—	$V_{DD}$	V
Output Low Volt.	$V_{OL}$	—	$V_{DD}$	—	$0.2V_{DD}$	V
Supply Current	$I_{DD}$	$V_{DD}=3.3V$	—	—	1.5	mA

# Interface Pin Function

Pin No.	Symbol	Description			
1	VDD	Power supply pin for logic.			
2	VSS	Ground pin, connected to 0V			
3	CSB	Chip select input pin.			
4	NC	NC			
5	RSTB	Hardware reset input pin			
6	A0	It determines whether the access is related to data or command.			
7	RWR	<b>C86</b>	<b>MPU Type</b>	<b>RWR</b>	<b>Description</b>
		H	6800 series	R/W	Read/Write control input pin. R/W="H": read. R/W="L": write.
		L	8080 series	/WR	Write enable input pin. Signals on D[7:0] will be latched at the rising edge of /WR signal.
RWR is not used 4-line SPI interface and should fix to "H" by VDD					
8	ERD	<b>C86</b>	<b>MPU Type</b>	<b>ERD</b>	<b>Description</b>
		H	6800 series	E	Read/Write control input pin. R/W="H": When E is "H", D[7:0] are in output mode. R/W="L": Signals on D[7:0] are latched at the falling edge of E signal.
		L	8080 series	/RD	Read enable input pin. When /RD is "L", D[7:0] are in output mode.
ERD is not used in 4-Line SPI interface and should fix to "H" by VDD					

9~16	D0~D7	<p><b>When using 8-bit parallel interface: (6800 or 8080 mode)</b>  8-bit bi-directional data bus. Connect to the data bus of 8-bit microprocessor.  When CSB is non-active (CSB="H"), D[7:0] pins are high impedance</p>		
		<p><b>When using serial interface: 4-line SPI</b>  D[0]=SCL: Serial clock input.  D[1]=SDA_IN: Serial data input.  D[2:3]=SDA_OUT: Serial data output.  <b>D[1:3] must be connected together as SDA.</b>  D[4:7]=(1,1,1,1): ID Pin. D[4:7] should fix to "H" or "L" by VDDH or VSSL.  ID[0:3] can be read 4-bit ID only for serial interface from D[4:7].</p>		
17	C86	C86 selects the microprocessor type in parallel interface mode.		
		<b>PSB</b>	<b>C86</b>	<b>Selected Interface</b>
		"L"	"H"	Serial 4-Line SPI Interface
		"H"	"L"	Parallel 8080 Series MPU Interface
"H"	"H"	Parallel 6800 Series MPU Interface		
18	PSB	PSB selects the interface type: Serial or Parallel.		

# Contour Drawing



PIN NOS	SYMBOL
1	VDD
2	VSS
3	CSB
4	NC
5	RSTB
6	A0
7	RWR
8	ERD
9	D0
10	D1
11	D2
12	D3
13	D4
14	D5
15	D6
16	D7
17	C86
18	PSB

The non-specified tolerance of dimension is ±0.3 mm .