



WINSTAR Display Co.,Ltd.
華凌光電股份有限公司

SPECIFICATION

MODULE NO.: WO12864H

General Specification

Item	Dimension	Unit
Number of dots	128 x 64	—
Module dimension	80.0 x 54.0 x 9.5	mm
View area	70.7 x 38.8	mm
Active area	66.52 x 33.24	mm
Dot size	0.48 x 0.48	mm
Dot pitch	0.52 x 0.52	mm
Duty	1/65 , 1/9 Bias	
Backlight Type	LED	
IC	ST7567	
Interface	6800/8080/4-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	—	3.6	V
LCD Power supply voltage	V_0-XV_0	-0.3	—	16	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 LCM	XV_0-V_0	$T_a=-20^{\circ}\text{C}$	—	—	—	V
		$T_a=25^{\circ}\text{C}$	—	10.0	—	V
		$T_a=70^{\circ}\text{C}$	—	—	—	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}	—	$0.8 V_{DD}$	—	V_{DD}	V
Output Low Volt.	V_{OL}	—	V_{SS}	—	$0.2V_{DD}$	V
Supply Current(No include LED Backlight)	I_{DD}	$V_{DD}=3.3\text{V}$	—	2.0	—	mA

Interface Pin Function

Pin No.	Symbol	Level	Description												
1	PSB	I	PSB selects the interface type: Serial or Parallel.												
2	C86	I	C86 selects the microprocessor type in parallel interface mode.												
			<table><tr><th>PSB</th><th>C86</th><th>Selected Interface</th></tr><tr><td>“H”</td><td>“H”</td><td>Parallel 6800 Series MPU Interface</td></tr><tr><td>“H”</td><td>“L”</td><td>Parallel 8080 Series MPU Interface</td></tr><tr><td>“L”</td><td>“X”</td><td>Serial 4-Line SPI Interface</td></tr></table>	PSB	C86	Selected Interface	“H”	“H”	Parallel 6800 Series MPU Interface	“H”	“L”	Parallel 8080 Series MPU Interface	“L”	“X”	Serial 4-Line SPI Interface
			PSB	C86	Selected Interface										
			“H”	“H”	Parallel 6800 Series MPU Interface										
“H”	“L”	Parallel 8080 Series MPU Interface													
“L”	“X”	Serial 4-Line SPI Interface													
3	VG	Power	VG is the LCD driving voltage for segment circuits.												
4	XV0	Power	XV0 is the LCD driving voltage for common circuits at positive frame.												
5	V0	Power	V0 is the LCD driving voltage for common circuits at negative frame.												
6	VSS	Power	This is a 0V terminal connected to the system GND.												
7	VDD	Power	Shared with the MPU power supply terminal VDD. (3.3 V)												
8-15	D7-D0	I/O	When using 8-bit parallel interface: (6800 or 8080 mode) 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.												
		I	When using serial interface: 4-LINE D7=SDA : Serial data input. D6=SCL : Serial clock input. D[5:0] are not used and should connect to “H” by VDD1 or VDDH. When CSB is non-active (CSB=“H”), D[7:0] pins are high impedance.												
16	ERD	I	Read/Write execution control pin. When PSB is “H”,												
			<table><tr><th>C86</th><th>MPU Type</th><th>ERD</th><th>Description</th></tr><tr><td>H</td><td>6800 series</td><td>E</td><td>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.</td></tr><tr><td>L</td><td>8080 series</td><td>/RD</td><td>Read enable input pin. When /RD is “L”, D[7:0] are in output mode.</td></tr></table>	C86	MPU Type	ERD	Description	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.
			C86	MPU Type	ERD	Description									
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L	8080 series	/RD	Read enable input pin. When /RD is “L”, D[7:0] are in output mode.												
ERD is not used in serial interface and should fix to “H” by VDD1 or VDDH.															

17	RWR	I	Read/Write execution control pin. When PSB is “H”,			
			C86	MPU Type	RWR	Description
			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 in serial interface and should fix to “H” by VDD1 or VDDH.			
18	A0	I	It determines whether the access is related to data or command. A0=“H” : Indicates that signals on D[7:0] are display data. A0=“L” : Indicates that signals on D[7:0] are command.			
19	RSTB	I	Hardware reset input pin. When RSTB is “L”, internal initialization is executed and the internal registers will be initialized.			
20	CSB	I	Chip select input pin. Interface access is enabled when CSB is “L”.When CSB is non-active (CSB=“H”), D[7:0] pins are high impedance.			

Contour Drawing & Block Diagram

