



WINSTAR Display Co.,Ltd.
華凌光電股份有限公司



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SPECIFICATION

MODULE NO.:

WO24064A1

General Specification

Item	Dimension	Unit
Number of dots	240 x 64	—
Module dimension	142.5 x 51.7 x 14.9 (MAX)	mm
View area	130.2 x 37.6	mm
Active area	127.17 x 33.89	mm
Dot size	0.50 x 0.50	mm
Dot pitch	0.53 x 0.53	mm
Duty	1/65	
Backlight Type	LED	
IC	ST7565P	
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
Power Supply Voltage	VDD	-0.3	—	3.6	V
Power supply voltage (VDD standard)	V0, VOUT	-0.3	—	14.5	V
Power supply voltage (VDD standard)	V1, V2, V3, V4	-0.3	—	V0+0.3	V

Electrical Characteristics

Item	Symbol	Condition	Min	Typ	Max	Unit
Supply Voltage For Logic	VDD-VSS	—	3.0	3.3	3.6	V
Supply Voltage For LCM	Vo-Vss	Ta=-20°C	—	—	—	V
		Ta=25°C	10.7	11.0	11.3	V
		Ta=70°C	—	—	—	V
Input High Volt.	VIH	—	0.8 V _{DD}	—	V _{DD}	V
Input Low Volt.	VIL	—	V _{SS}	—	0.2 V _{DD}	V
Output High Volt.	VOH	—	0.8 V _{DD}	—	V _{DD}	V
Output Low Volt.	VOL	—	V _{SS}	—	0.2V _{DD}	V
Supply Current(No include LED Backlight)	IDD	V _{DD} =3.3V	—	1.5	2.5	mA

Interface Pin Function

Pin No.	Symbol	Level	Description
1	NC		No connection
2	FR	O	This is the liquid crystal alternating current signal terminal.
3	CL	I/O	This is the display clock input terminal The following is true depending on the M/S and CLS status.
4	/DOF	O	This is the LCD blanking control terminal.
5	/CS1	I	This is the chip select signal. When /CS1 = “L” and CS2 = “H” , then the chip Select becomes active, and data/command I/O is enabled.
6	CS2	I	
7	/RES	I	When /RES is set to “L” , the register settings are initialized (cleared). The reset operation is performed by the /RES signal level.
8	A0	I	This is connect to the least significant bit of the normal MPU address bus, and it determines whether the data bits are data or command. A0 = “H” : Indicates that D0 to D7 are display data. A0 = “L” : Indicates that D0 to D7 are control data.
9	/WR	I	When connected to 8080 series MPU, this pin is treated as the “/WR” signal of the 8080 MPU and is LOW-active. The signals on the data bus are latched at the rising edge of the /WR signal. When connected to 6800 series MPU, this pin is treated as the “R/W” signal of the 6800 MPU and decides the access type : When R/W = “H” : Read. When R/W = “L” : Write.
10	/RD	I	When connected to 8080 series MPU, this pin is treated as the “/RD” signal of the 8080 MPU and is LOW-active. The data bus is in an output status when this signal is “L” . When connected to 6800 series MPU, this pin is treated as the “E” signal of the 6800 MPU and is HIGH-active. This is the enable clock input terminal of the 6800 Series MPU.
11~18	DB0~DB7	I/O	Data bus
19	V _{DD}	P	Power supply
20	V _{SS}	P	Ground
21	V _{out}	O	DC/DC voltage converter. Connect a capacitor between this terminal and VSS or VDD
22	C3+	O	DC/DC voltage converter
23	C1-		

24	C1+		
25	C2+		
26	C2-		
27	V4	P	This is a multi-level power supply for the liquid crystal drive. The voltage Supply applied is determined by the liquid crystal cell, and is changed through the use of a resistive voltage divided or through changing the impedance using an op. amp. Voltage levels are determined based on Vss, and must maintain the relative magnitudes shown below. $V0 \geq V1 \geq V2 \geq V3 \geq V4 \geq Vss$
28	V3		
29	V2		
30	V1		
31	V0		
32	VR	I	Output voltage regulator terminal. Provides the voltage between VSS and V0 through a resistive voltage divider. IRS = "L" : the V0 voltage regulator internal resistors are not used. IRS = "H" : the V0 voltage regulator internal resistors are used.
33	C86	I	This is the MPU interface selection pin. C86 = "H" : 6800 Series MPU interface. C86 = "L" : 8080 Series MPU interface.
34	P/S	I	This pin configures the interface to be parallel mode or serial mode. P/S = "H" : Parallel data input/output. P/S = "L" : Serial data input. The following applies depending on the P/S status: P/S Data/Command Data Read/Write Serial Clock "H" A0 D0 to D7 /RD, /WR X "L" A0 SI (D7) Write only SCL (D6) When P/S = "L" , D0 to D5 must be fixed to "H" . /RD (E) and /WR (R/W) are fixed to either "H" or "L" . The serial access mode does NOT support read operation.
35	NC		No connection
36	NC		No connection

Contour Drawing

