



Wincom Tech CO., LTD.

The LCD(M) Specialist

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PART NO. : WG19264B

FOR MESSRS. : _____

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ACCEPTED BY: _____

PROPOSED BY: _____

RECORD OF REVISION

DATE	PAGE	SUMMARY

3. General specifications

3.1 General specifications

PLEASE REFER TO:

“CUSTOMER ACCEPTANCE STANDARD SPECIFICATIONS (MS-10-10000)”.

3.2 Quality Assurance and Warranty

PLEASE REFER TO:

“QUALITY ASSURANCE MANUL (MS-10-10001)”.

3.3 This individual specification is prior to general specifications

4. Mechanical data

- Display format: 192 x 64DOTS
- LCD type: STN-BLUE, NEGATIVE TYPE
- Backlight color: WHITE
- Viewing angle: 6:00
- Data transfer: 8Bit Parallel
- LCD controller: KS0107+KS0108x3
- Module size: 120x62 mm
- View area: 104x39 mm
- Dot size: 0.458 x 0.458 mm
- Dot pitch: 0.508 x 0.508mm
- Driving method: 1/64duty, 1/9 bias
- RoHS regulation: To our best knowledge, this product satisfies material requirement of RoHS regulation. Our company is doing the best efforts to Obtain the equivalent certificate from our suppliers.

5. Absolute maximum ratings

5.1 Electrical absolute maximum ratings

<i>I T E M</i>	<i>SYMBOL</i>	<i>MIN.</i>	<i>MAX.</i>	<i>UNIT</i>	<i>COMMENT</i>
POWER SUPPLY FOR LOGIC	V _{DD} -V _{SS}	-0.3	6	V	-----
INPUT VOLTAGE	V _I	-0.3	V _{DD} +0.3	V	-----
STATIC ELECTRICITY	-----	-----	-----	V	-----
POWER SUPPLY FOR BACKLIGHT	V _S	0	3.3	V _{rms}	-----
	f _{FL}	-----	-----	KHz	-----
STARTING VOLTAGE FOR BACKLIGHT	-----	-----	-----	V _{rms}	Ta = 25°C
	-----	-----	-----	V _{rms}	Ta = 25°C
POWER SUPPLY FOR LCD	V _{DD} -V _{EE}	-----	15	V	-----

5.2 Environmental absolute maximum ratings

<i>I T E M</i>	<i>OPERATING</i>		<i>STORAGE</i>		<i>COMMENT</i>
	<i>MIN.</i>	<i>MAX.</i>	<i>MIN.</i>	<i>MAX.</i>	
AMBIENT TEMPERATURE	-20°C	70°C	-30°C	80°C	-----
HUMIDITY	NOTE (2)		NOTE (2)		NO CONDENSATION
VIBRATION NOTE (3)	-----	0.5G	-----	2G	10~300Hz XYZ DIRECTIONS 1 Hr EACH
SHOCK NOTE (3)	-----	3G	-----	5G	10 msec XYZ DIRECTIONS 1 TIME EACH
CORROSIVE GAS	NOT ACCEPTABLE		NOT ACCEPTABLE		-----

NOTE (2): Ta ≦ 70°C: 75% RH MAX.

Ta > 70°C: ABSOLUTE HUMIDITY MUST BE LOWER THAN THE HUMIDITY OF 75% RH AT 70°C.

NOTE (3): 1G = 9.8 m/s²

6. Electrical characteristics

Ta = 25°C VDD = 5.0 V

<i>I T E M</i>	<i>SYMBOL</i>	<i>CONDITION</i>	<i>MIN.</i>	<i>TYP.</i>	<i>MAX.</i>	<i>UNIT</i>
Power supply voltage for circuit	V _{DD} -V _{SS}	-----	4.25	5.0	5.25	V
Power supply voltage for LCD drive	V _{DD} -V _{EE}	-----	-----	10.5	-----	V
Data input voltage	V _{IH}	H LEVEL	2.4	-----	V _{DD}	V
	V _{IL}	L LEVEL	-0.3	-----	0.4	V
LCD display duty ratio	DUTY	-----	-----	1/64	-----	-----
LED BACKLIGHT	I _{fp}	I mse0 plus 10% Dutg cyele		--		mA
		Operating voltage	3.0	3.1	3.2	V
		Forward current		130		mA
LED Lifetime	-----	V _F L= 3.1Vrms f _F L= KHZ	-----	100,000	-----	Hr

NOTE: LED backlight: Due to the LED backlight working current is XXX Max, and LED chips Vop may be different, Wincom will adjust the backlight resistor according to the LED chips Vop, to meet the brightness maximum.

7. Optical characteristics

Ta = 25°C V_{DD}-V_{EE} = 10.5V

<i>I T E M</i>	<i>SYMBOL</i>	<i>CONDITION</i>	<i>MIN.</i>	<i>TYP.</i>	<i>MAX.</i>	<i>UNIT</i>	<i>NOTE</i>
Viewing angle	Φ2-Φ1	K ≥ 2.0	-35	-----	20	deg.	1
Contrast ratio	K	Φ = 10 ⁰ θ = 0 ⁰	4.0	-----	-----	-----	1
Response time (at 25°C)	tr (rise)	Φ = 10 ⁰ θ = 0 ⁰	-----	-----	250	ms	1
	tf (fall)	Φ = 10 ⁰ θ = 0 ⁰	-----	-----	250	ms	1
The brightness of backlighting source	B	V _F L= 3.1Vrms f _F L= KHZ	-----	250	-----	cd/m ²	2

NOTE (1): SEE CUSTOMER ACCEPTANCE STANDARD SPECIFICATION FOR DEFINITION OF OPTICAL CHARACTERISTICS

NOTE (2): UNDER NORMAL TEMPERATURE AND HUMIDITY IN A DARK ROOM

8. Outline dimension

Customer:

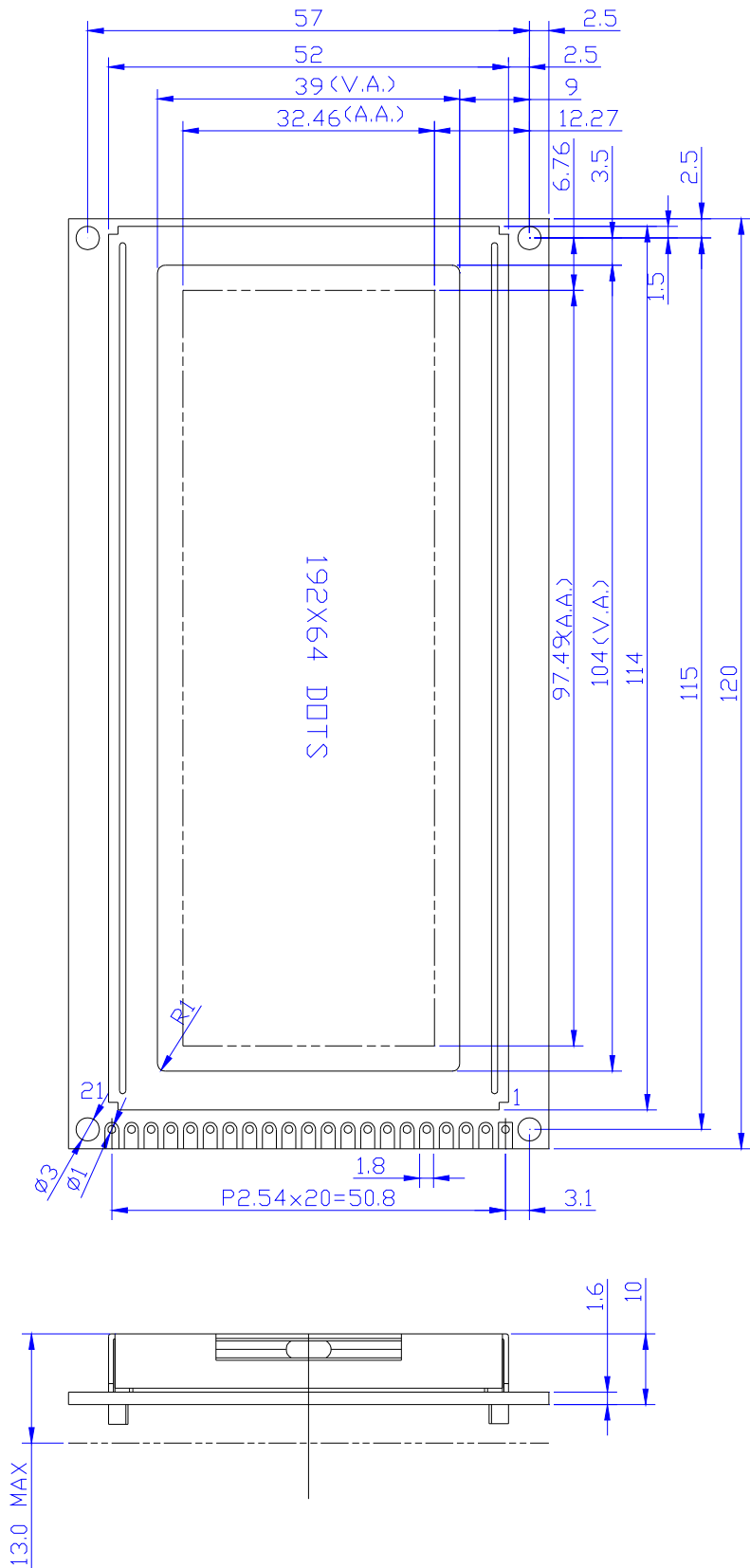
Product Model:

Customer Approve By:


REV.

DESCRIPTION OF MODIFY

DATE



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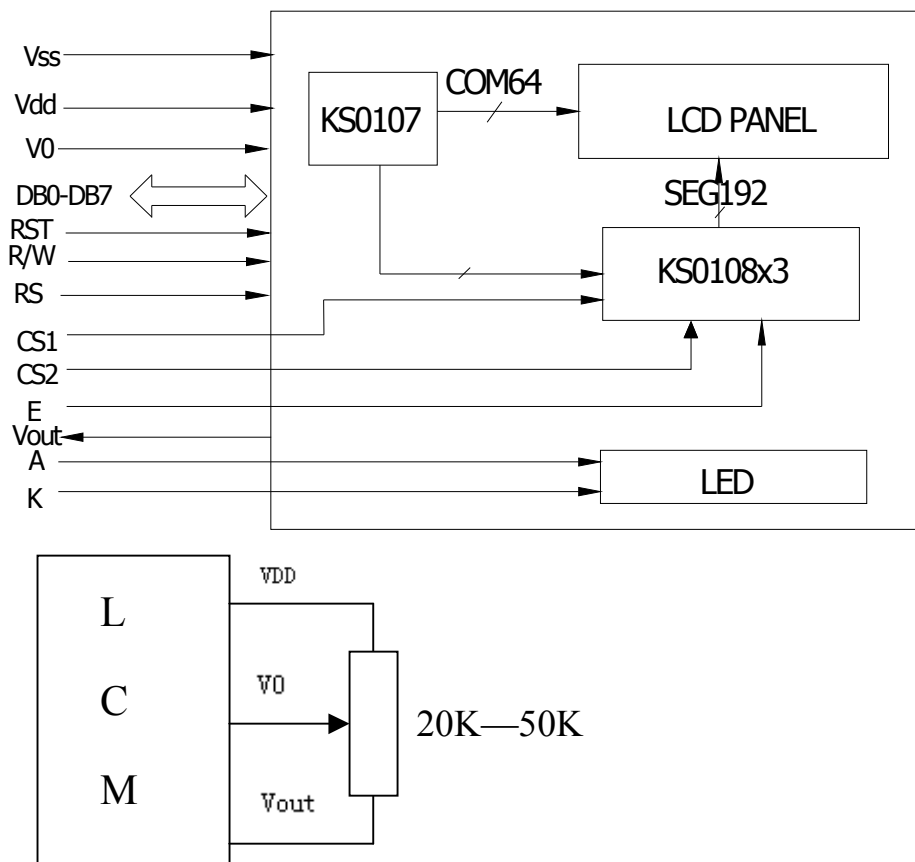
 WINCOM TECH CO., LTD	
DWG NO. : WG19264B	REV: _____
SIZE: _____	SHEET: _____
SCALE: _____	TITL: _____
	UNITS: MM

8.1 Interface

Pin Assignment

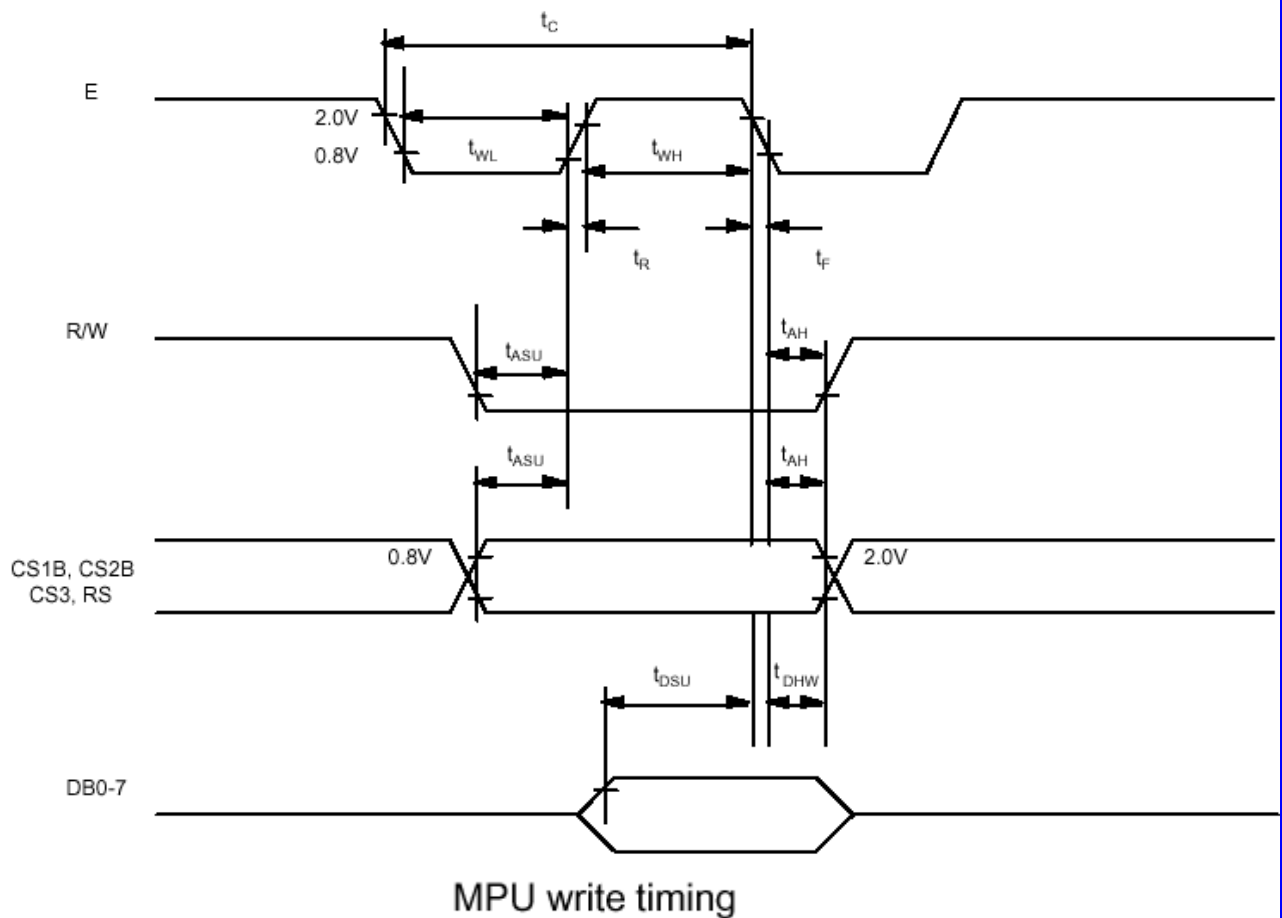
PIN NO.	Symbol	Function
1	VSS	Ground(-)
2	VDD	Power supply for logic circuit(+5V)
3	V0	Contrast adjust
4	Vout	Output Voltage for LCD Driving
5	RS	H : Data input L : Instruction Code Input
6	R/W	H : Data Read(LCD to MPU) L : Data Write(MPU to LCM)
7	E	Enable signal
8	DB0	Data Bus Line
9	DB1	Data Bus Line
10	DB2	Data Bus Line
11	DB3	Data Bus Line
12	DB4	Data Bus Line
13	DB5	Data Bus Line
14	DB6	Data Bus Line
15	DB7	Data Bus Line
16	/CS1	Selection Signal for chip 1 (SEG1—SEG64)
17	/CS2	Selection Signal for chip 2 (SEG65—SEG128)
18	/CS3	Selection Signal for chip 3 (SEG129—SEG192)
19	RST	Reset (Active " Low")
20	A	Power supply for BL (+5V)
21	K	Power supply for BL (0V)

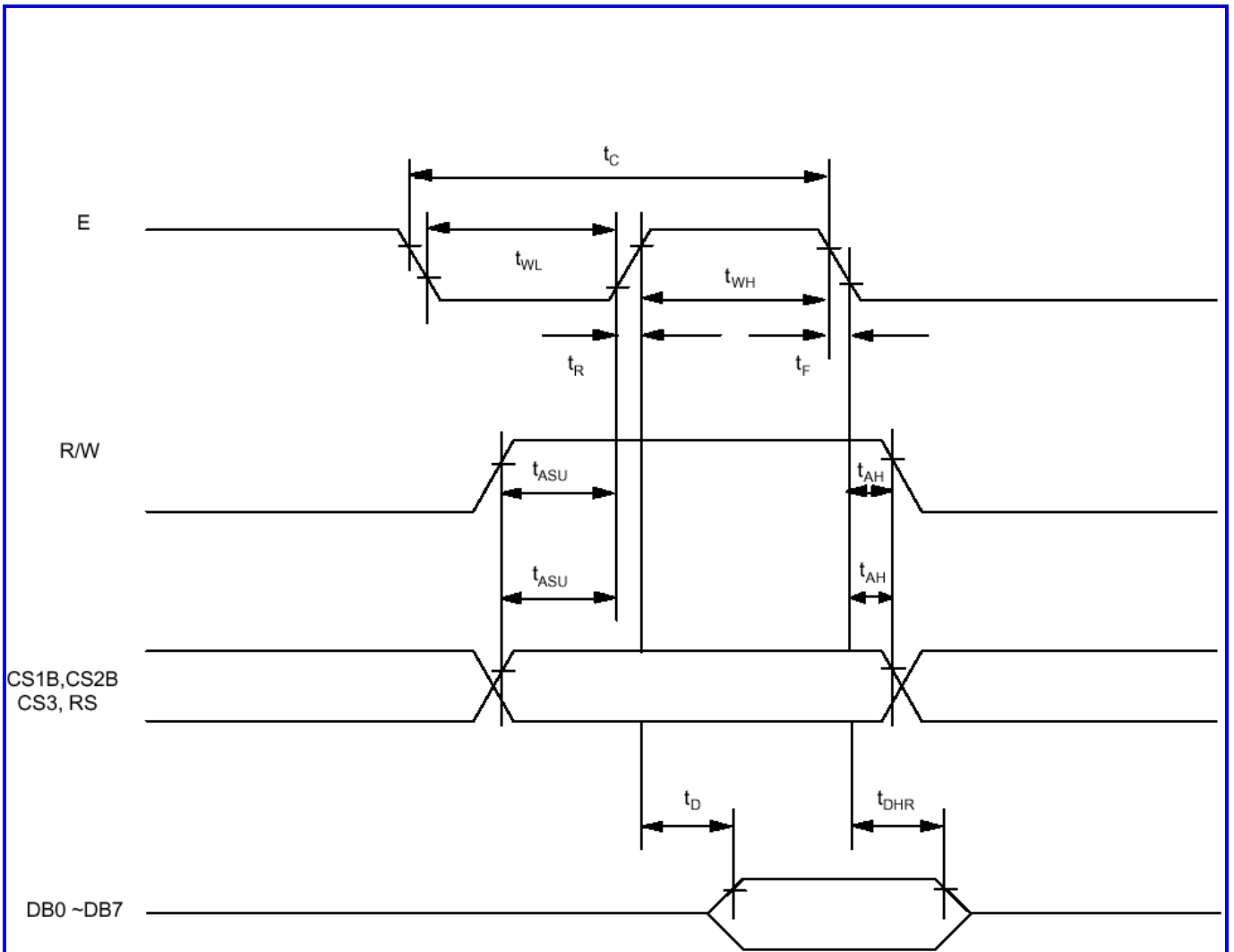
9. Block diagram



10. Interface Timing Chart

Characteristic	Symbol	Min	Typ	Max	Unit
E Cycle	t_C	1000	-	-	ns
E High Level Width	t_{WH}	450	-	-	ns
E Low Level Width	t_{WL}	450	-	-	ns
E Rise Time	t_R	-	-	25	ns
E Fall Time	t_F	-	-	25	ns
Address Set-Up Time	t_{ASU}	140	-	-	ns
Address Hold Time	t_{AH}	10	-	-	ns
Data Set-Up Time	t_{DSU}	200	-	-	ns
Data Delay Time	t_D	-	-	320	ns
Data Hold Time (Write)	t_{DHW}	10	-	-	ns
Data Hold Time (Read)	t_{DHR}	20	-	-	ns





. MPU Read timing

11. Instruction Code

Instruction	RS	R/W	DB7	DB6	DB5	DB4	DB3	DB2	DB1	DB0	Function	
Display ON/OFF	L	L	L	L	H	H	H	H	H	L/H	Controls the display on or off. Internal status and display RAM data is not affected. L:OFF, H:ON	
Set Address (Y address)	L	L	L	H	Y address (0~63)						Sets the Y address in the Y address counter.	
Set Page (X address)	L	L	H	L	H	H	H	Page (0~7)			Sets the X address at the X address register.	
Display Start Line (Z address)	L	L	H	H	Display start line (0~63)						Indicates the display data RAM displayed at the top of the screen.	
Status Read	L	H	B U S Y	L	O N / O F F	R E S E T	L	L	L	L	Read status. BUSY L: Ready H: In operation ON/OFF L: Display ON H: Display OFF RESET L: Normal H: Reset	
Write Display Data	H	L	Write Data									Writes data (DB0:7) into display data RAM. After writing instruction, Y address is increased by 1 automatically.
Read Display Data	H	H	Read Data									Reads data (DB0:7) from display data RAM to the data bus.