



SPECIFICATIONS FOR MODULE

CUSTOMER	STD
MODEL	WM-M0101W-NFLWa VER. 01
CUSTOMER APPROVED	

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History of Version

Version	Contents	Date	Note
a1	New version	18.Jan.2011	SPEC

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(1) LCM

1.1 Absolute Maximum Ratings

ITEM	SYMBOL	MIN	TYP	MAX	UNIT
Operating Temperature	TOP	0	-	+50	
Storage Temperature	TST	-20	-	+60	
Supply Voltage for System	VDD-VSS	-0.3	-	6	V
Static Electricity	Be sure that you are grounded when handing LCM.				

1.2 Electrical Characteristics

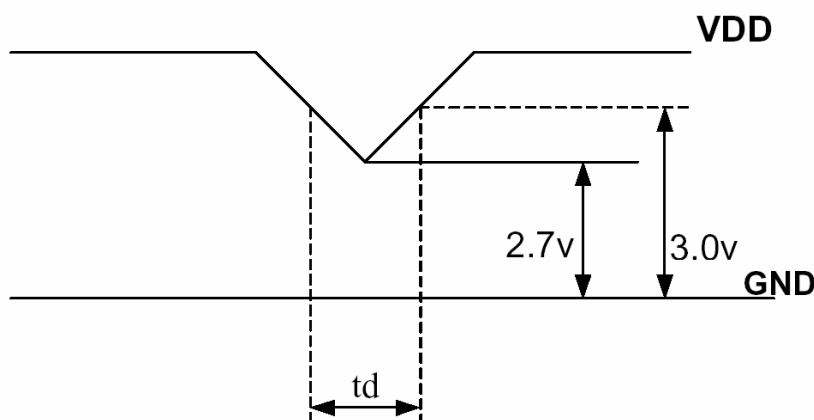
(Ta=25)						
ITEM	SYMBOL	MIN.	TYP.	MAX.	UNIT	NOTE
Supply Voltage for System	VDD	3.0	3.3	3.6	V	Note (1)
Supply Current for System	*IDD	-	190	-	mA	VDD=3.3V Ta=25 fv=60Hz Note (2)(3)
Rush Current	Irush	-	-	1.5	A	Note (4)
Logic Input Voltage (LVDS: IN+, IN-)	Common Mode Voltage Offset	VCM	0.7	1.2	V	-
	Differential Input Voltage	VID	100	-	mV	-
	Threshold Voltage (HIGH)	Vth	-	-	mV	VCM=1.2V
	Threshold Voltage (LOW)	Vtl	-100	-	mV	

Note

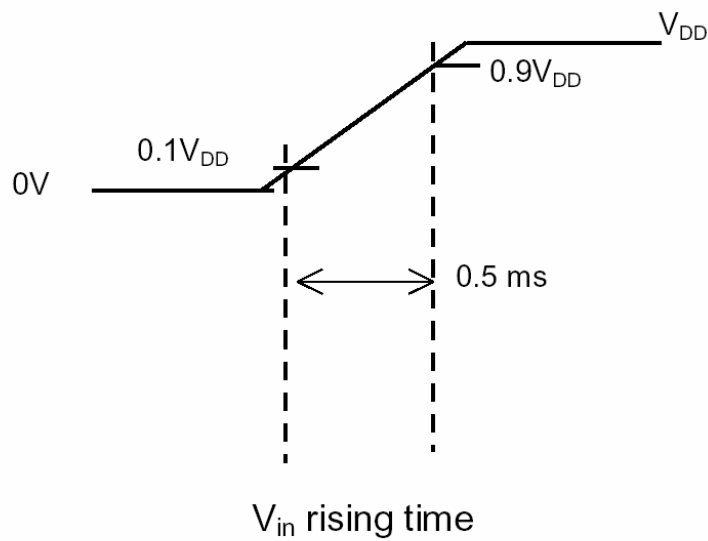
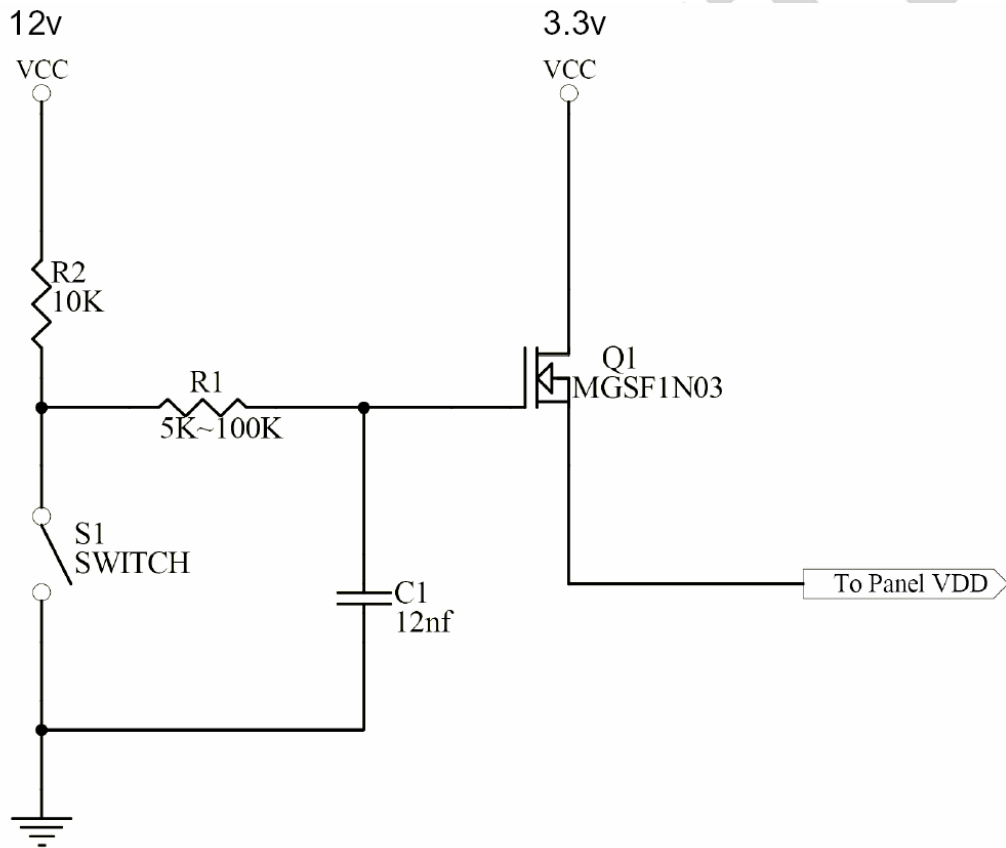
(1) VDD-dip condition :

When VDD operating within $2.7V \leq VDD \leq 3.0V$, $t_d \leq 10ms$, the display may momentarily become abnormal.

VDD < 2.7V, VDD dip condition should also follow the Power On/Off conditions for supply voltage.



- (2) Maximum Measurement Condition: Black Pattern
- (3) Typical Measurement Condition: Mosaic Pattern
- (4) Power on Inrush current test circuit



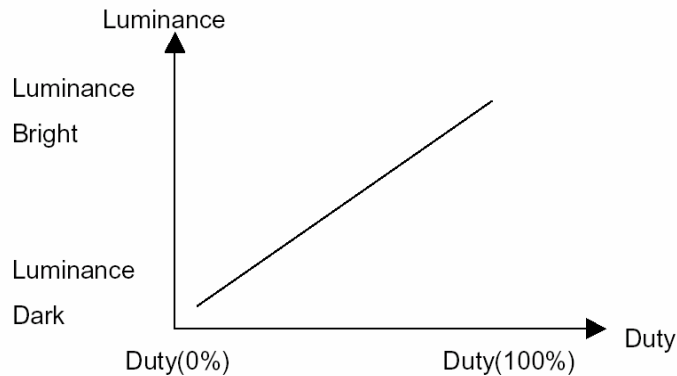
1.3 Interface Pin Function

CN1:

NO	SYMBOL	I / O	FUNCTION
1	GND	P	Ground
2	AVDD	P	PowerSupply, 3.3V(typical)
3	AVDD	P	PowerSupply, 3.3V(typical)
4	DVDD	P	DDC 3.3V power
5	CABC_EN	I/O	CABC function enable/disable
6	SCL	I/O	DDC Clock
7	SDA	I/O	DDC Data
8	Rin0-	I	- LVDS differential data input
9	Rin0+	I	+ LVDS differential data input
10	GND	P	Ground
11	Rin1-	I	- LVDS differential data input
12	Rin1+	I	+ LVDS differential data input
13	GND	P	Ground
14	Rin2-	I	- LVDS differential data input
15	Rin2+	I	+ LVDS differential data input
16	GND	P	Ground
17	ClkIN-	I	- LVDS differential data input
18	ClkIN+	I	+ LVDS differential data input
19	GND	P	Ground
20	VDDA_EN	I/O	VDDA on/off
21	NC	-	No Connection
22	GND	P	Ground
23	NC	-	No Connection
24	NC	-	No Connection
25	GND	P	Ground
26	NC	-	No Connection
27	NC	-	No Connection
28	GND	P	Ground
29	NC	-	No Connection
30	NC	-	No Connection
31	VLED_GND	P	LED Ground
32	VLED_GND	P	LED Ground
33	VLED_GND	P	LED Ground
34	NC	-	No Connection
35	PWM	I	System PWM Signal Input
36	VLED_EN	I/O	LED enable pin(+3.3V input)/VLED on/off
37	NC	-	No Connection

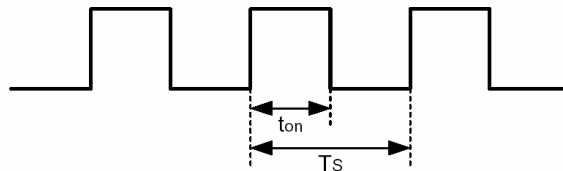
38	VLED	P	LED Power Supply5V
39	VLED	P	LED Power Supply5V
40	VLED	P	LED Power Supply5V

Note: The brightness of LCD panel could be changed by adjusting PWM
 (1) ADJ can adjust brightness to control Pin. Pulse duty the bigger the brighter.



(2) ADJ Signal=0~3.3V , Operation Conditions:

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
ADJ Logic-High Level	V _{ADJH}		1.8	3.3	3.6	V
ADJ Logic-Low Level	V _{ADJL}		0	0	0.4	V
Dimming Frequency	F _{ADJ}		18	20	22	kHz
Dimming Duty Cycle	D		20	--	100	%



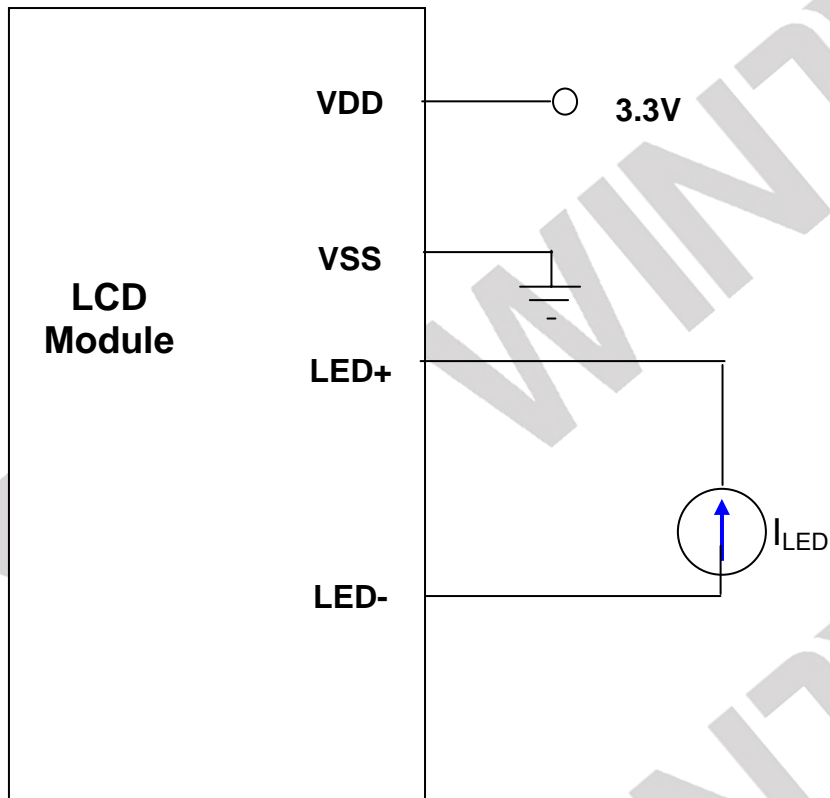
$$D = t_{on} / T_s \times 100\%$$

$$F_{ADJ} = 1 / T_s$$

(3) VLED_EN & VDDA_EN & CABC_EN, Operation Conditions :

Parameter	Symbol	Min	Typ	Max	Units	Remark
LED enable pin (control LED driver circuit on/off)	LED_EN (H)	3.0	3.3	3.6	Volt	LED on
	LED_EN (L)	--	0	0.2		LED off
VDD on/off signal (control Panel VDD power source on/off)	VDDA_EN (H)	3.0	3.3	3.6	Volt	VDD on
	VDDA_EN (L)	--	0	0.2		VDD off
CABC on/off signal (control CABC Function on/off)	CABC_EN (H)	3.0	3.3	3.6	Volt	CABC on
	CABC_EN (L)	--	0	0.2		CABC off

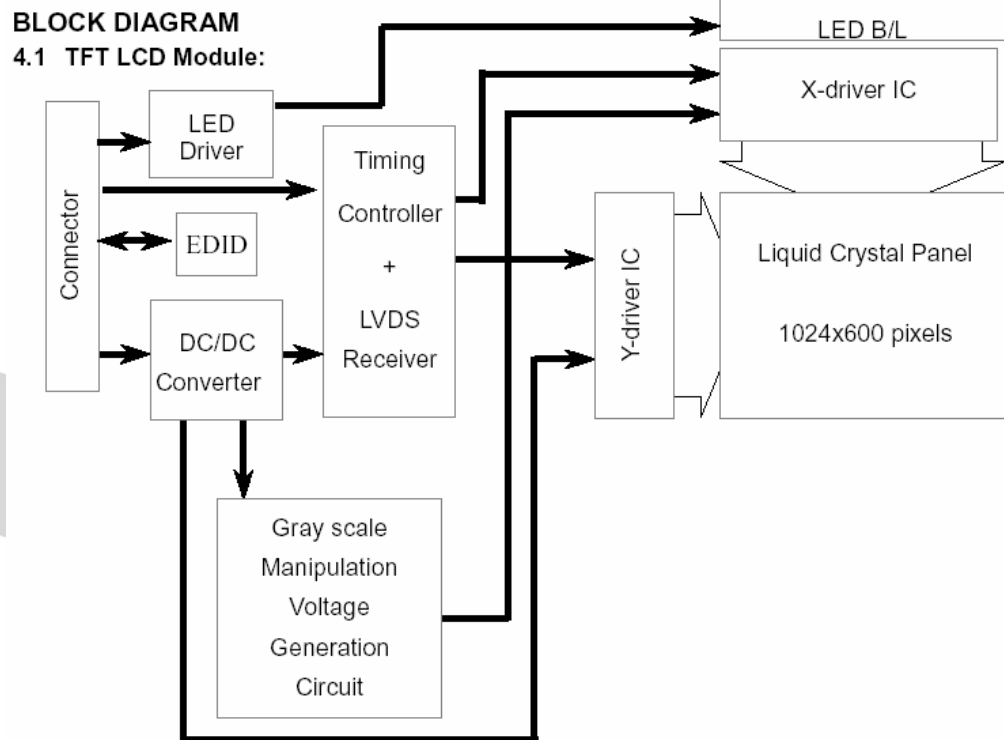
1.4 Power Supply for LCD Module



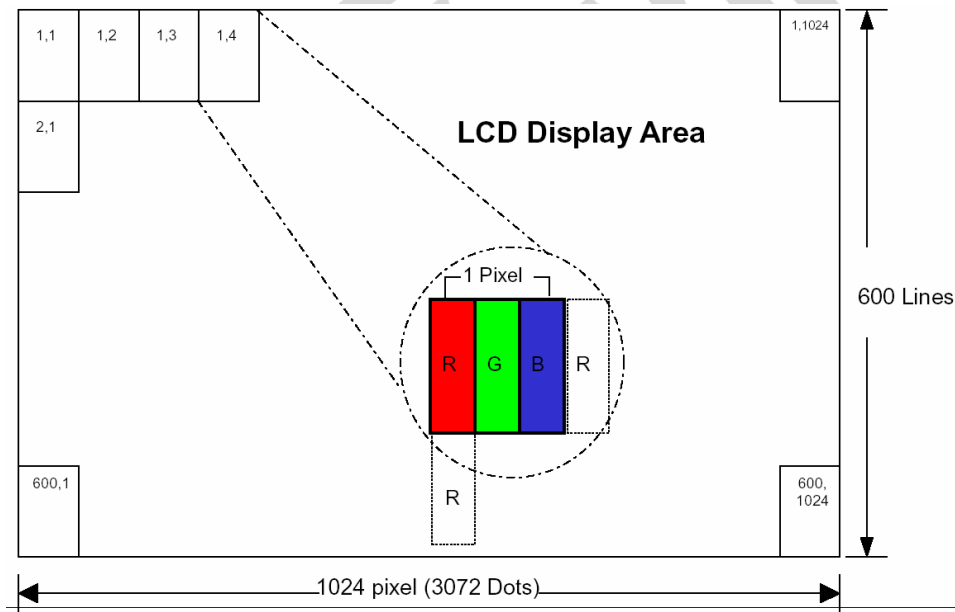
Note : Using Internal Voltage Generator VDD= 3.3V

1.5 Block Diagram with Display RAM Address

1.5-1. Block Diagram



1.5-2. Pixel Format



1.5-3. Relationship Between Displayed Color and Input

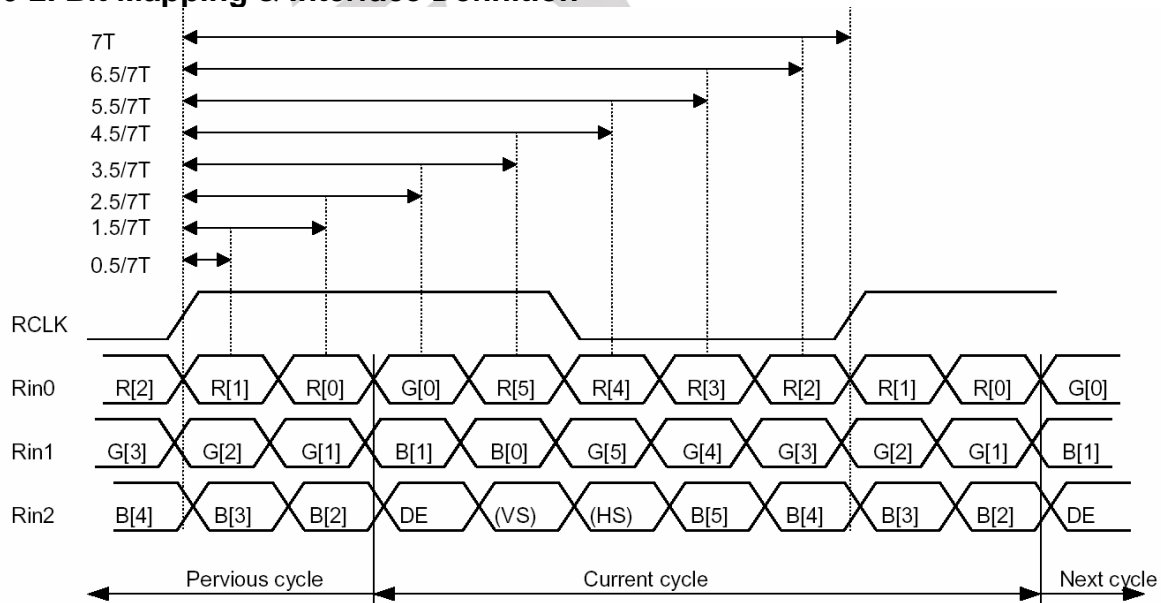
	Display	MSB					LSB					MSB					LSB					MSB					LSB					Gray scale level
		R5	R4	R3	R2	R1	R0	G5	G4	G3	G2	G1	G0	B5	B4	B3	B2	B1	B0													
Basic color	Black	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L													-
	Blue	L	L	L	L	L	L	L	L	L	L	L	L	H	H	H	H	H	H													-
	Green	L	L	L	L	L	L	H	H	H	H	H	H	L	L	L	L	L	L													-
	Light Blue	L	L	L	L	L	L	H	H	H	H	H	H	H	H	H	H	H	H													-
	Red	H	H	H	H	H	H	L	L	L	L	L	L	L	L	L	L	L	L													-
	Purple	H	H	H	H	H	H	L	L	L	L	L	L	H	H	H	H	H	H													-
	Yellow	H	H	H	H	H	H	H	H	H	H	H	H	L	L	L	L	L	L													-
Gray scale of Red	White	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H													-
	Black	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L													L0
	Dark ↑ ↓ Light	L	L	L	L	L	H	L	L	L	L	L	L	L	L	L	L	L	L													L1
		L	L	L	L	H	L	L	L	L	L	L	L	L	L	L	L	L	L													L2
		:					:					:					:															L3...L60
		H	H	H	H	L	H	L	L	L	L	L	L	L	L	L	L	L	L													L61
		H	H	H	H	H	L	L	L	L	L	L	L	L	L	L	L	L	L													L62
	Red	H	H	H	H	H	H	L	L	L	L	L	L	L	L	L	L	L	L													Red L63
Gray scale of Green	Black	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L													L0
	Dark ↑ ↓ Light	L	L	L	L	L	L	L	L	L	L	L	L	H	L	L	L	L	L													L1
		L	L	L	L	L	L	L	L	L	L	L	H	L	L	L	L	L	L													L2
		:					:					:					:															L3...L60
		L	L	L	L	L	L	H	H	H	H	L	H	L	L	L	L	L	L													L61
		L	L	L	L	L	L	H	H	H	H	H	L	L	L	L	L	L	L													L62
	Green	L	L	L	L	L	L	H	H	H	H	H	H	L	L	L	L	L	L													Green L63
Gray scale of Blue	Black	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L													L0
	Dark ↑ ↓ Light	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L													L1
		L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	H													L2
		:					:					:					:															L3...L60
		L	L	L	L	L	L	L	L	L	L	L	L	H	H	H	H	L	H													L61
		L	L	L	L	L	L	L	L	L	L	L	L	H	H	H	H	H	L													L62
	Blue	L	L	L	L	L	L	L	L	L	L	L	L	H	H	H	H	H	H													Blue L63
Gray scale of White & Black	Black	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L													L0
	Dark ↑ ↓ Light	L	L	L	L	L	H	L	L	L	L	L	H	L	L	L	L	L	H													L1
		L	L	L	L	H	L	L	L	L	H	L	L	L	L	L	L	H	L													L2
		:					:					:					:															L3...L60
		H	H	H	H	L	H	H	H	H	L	H	H	H	H	H	H	L	H													L61
		H	H	H	H	H	L	H	H	H	H	H	L	H	H	H	H	H	L													L62
	White	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H													White L63

1.6 Timing Characteristic

1.6-1. Switching Characteristics for LVDS Receiver

Item	Symbol	Min.	Typ.	Max.	Unit	Conditions
Differential Input High Threshold	V _{th}	—	—	100	mV	V _{CM} =1.2V
Differential Input Low Threshold	V _{tl}	-100	—	—	mV	
Input Current	I _{IN}	-10	—	+10	uA	
Differential input Voltage	V _{ID}	0.1	—	0.6	V	
Common Mode Voltage Offset	V _{CM}	0.7	1.2	1.6	V	

1.6-2. Bit Mapping & Interface Definition



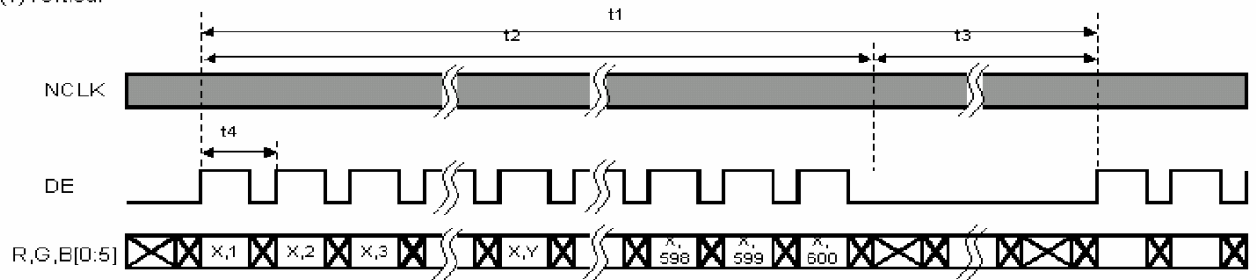
LVDS Receiver Input Timing Definition
for 6bits LVDS input

1.6-3. Interface Timing (DE mode)

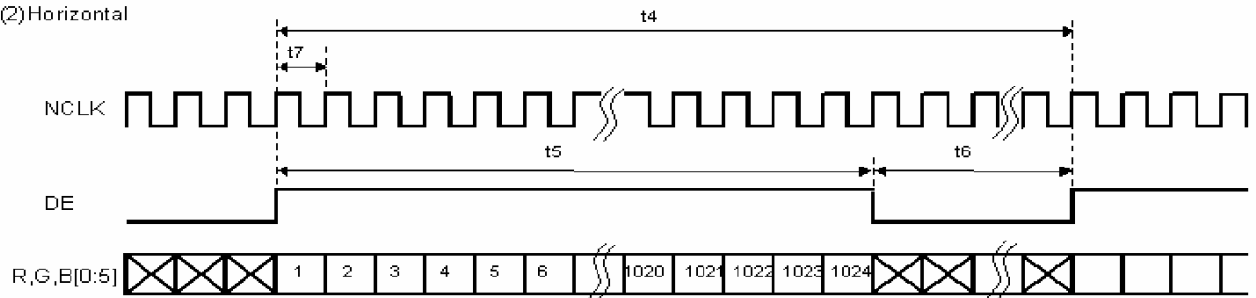
Item	Symbol	Min.	Typ.	Max.	Unit
Frame Rate	--	55	60	65	Hz
Frame Period	t ₁	612	625	638	line
Vertical Display Time	t ₂	600	600	600	line
Vertical Blanking Time	t ₃	12	25	38	line
1 Line Scanning Time	t ₄	1160	1200	1240	clock
Horizontal Display Time	t ₅	1024	1024	1024	clock
Horizontal Blanking Time	t ₆	136	176	216	clock
Clock Rate	t ₇	39	45	51.42	MHz

Timing Diagram of Interface Signal (DE mode)

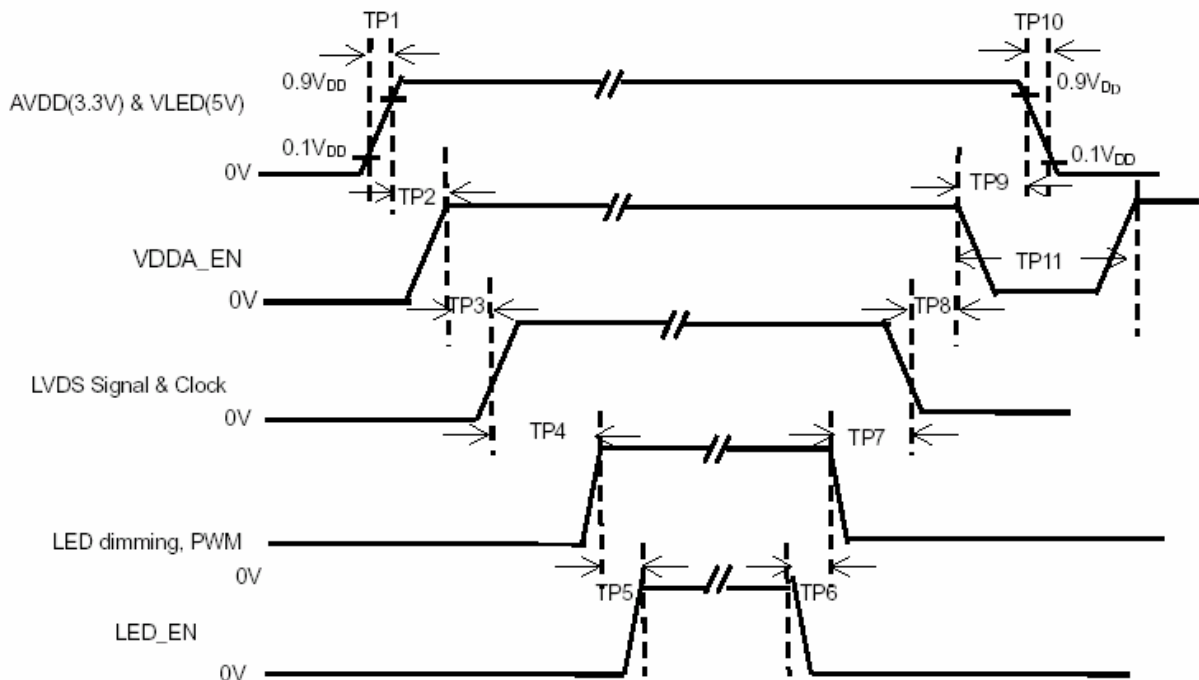
(1) Vertical



(2) Horizontal



1.7 Power ON/OFF SEQUENCE



Item	Min.	Typ.	Max.	Unit	Remark
TP1	0.5	--	10	msec	
TP2	10	--	--	msec	
TP3	30	40	90	msec	
TP4	200	--	--	msec	
TP5	10	--	--	msec	
TP6	0	--	--	msec	
TP7	110	--	--	msec	
TP8	0	16	80	msec	
TP9	0	--	--	msec	Must exceed 0
TP10	--	10	30	msec	
TP11	1000	--	--	msec	

Note

- (1) The supply voltage of the external system for the module input should be the same as the definition of VDD.
- (2) Apply the lamp voltage within the LCD operation range. When the back-light turns on before the LCD operation or the LCD turns off before the back-light turns off, the display may momentarily become white.
- (3) In case of VDD = off level, please keep the level of input signal on the low or keep a high impedance.
- (4) TP4 should be measured after the module has been fully discharged between power off and on period.
- (5) Interface signal shall not be kept at high impedance when the power is on.

(2) ATT (Advanced Touch Technology)

2.1 ATT Electrical Characteristics

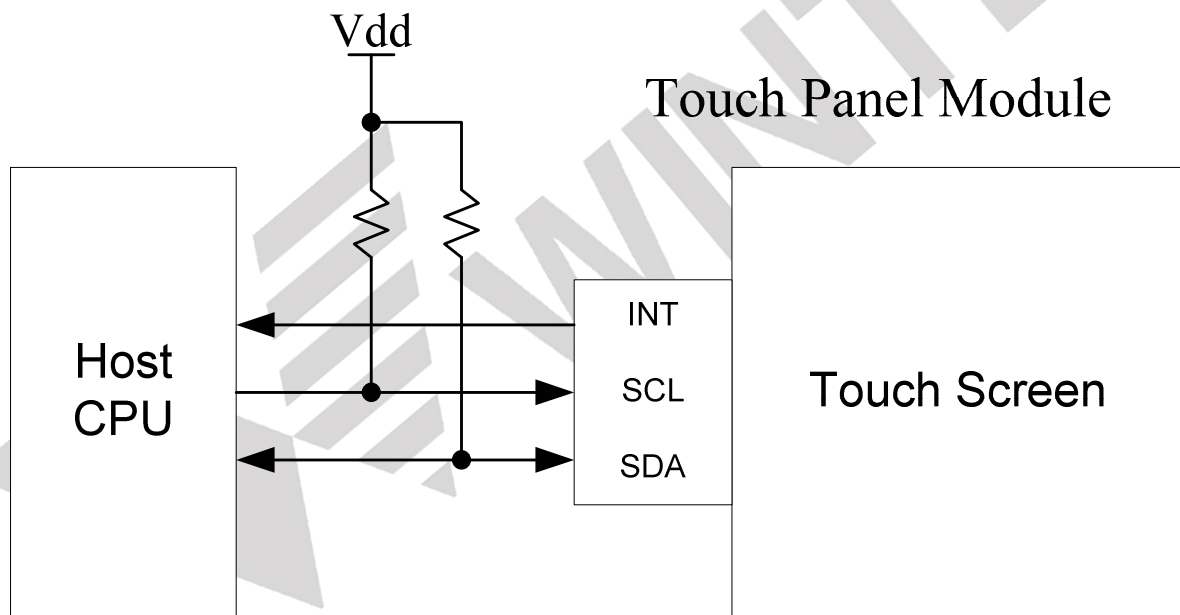
(Ta=25 °C)

ITEM		SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT	Remark
Input Power Voltage		V _{DD_TP}	-	3.2	3.3	3.4	V	-
Input Signal Voltage	H Level	V _{IH}	-	2	-	V _{DD} +0.3	V	-
	L Level	V _{IL}	-	-0.3	-	0.8	V	
Output Signal Voltage	H Level	V _{OH}	-	0.9*V _{DD}	-	-	V	-
	L Level	V _{OL}	-	-	-	0.45	V	
		-	-	-	-	150	Hz	
Supply Current		*IDD	-			TBD	mA	
Interface		I2C						
Touch Panel Resolution		4096 x 4096						
Input		Finger (Real two point)						

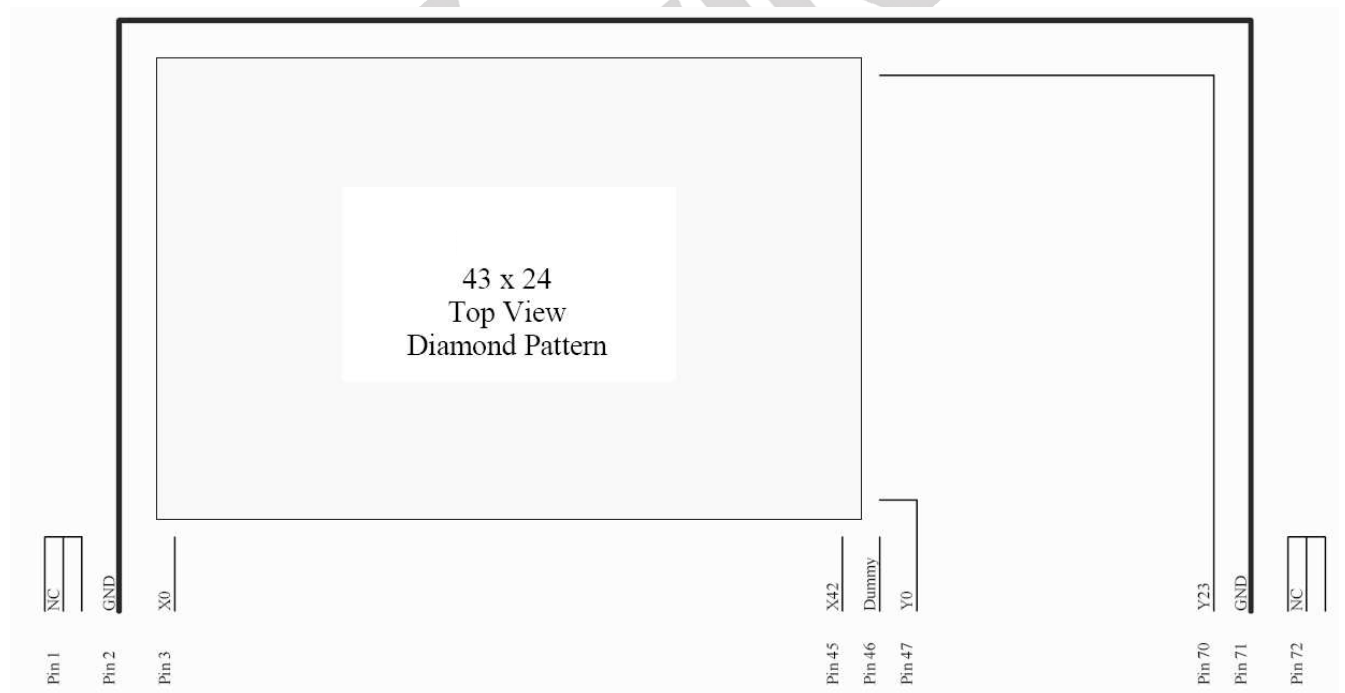
2.2 ATT Interface Pin Function

NO	SYMBOL	I/O	FUNCTION
1	I2C_DATA	I/O	I2C serial data input/output pin
2	I2C_CLK	I	I2C serial clock input/output pin
3	RESETN	I	Reset pin
4	INT	O	Interrupt pin
5	GND	P	Ground

2.3 ATT Interface Diagram



2.4 ATT Schematic

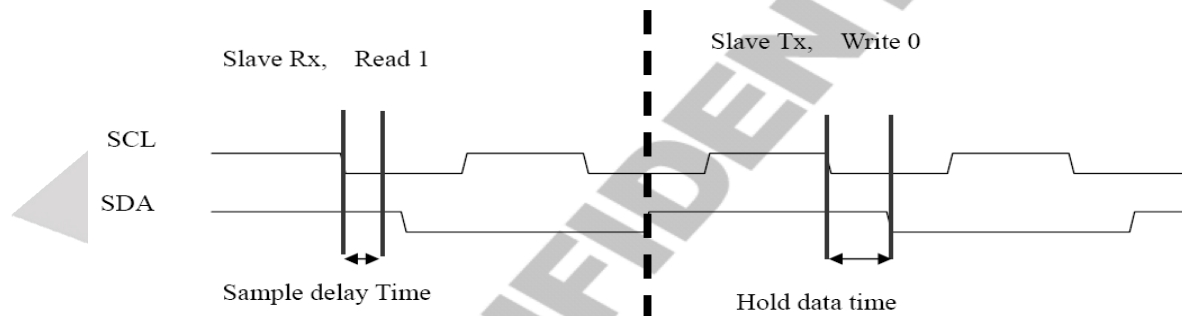


2.5 ATT Timing Characteristic

92xx	CLK	160
I2C	Hold Data	8

I2C Standard Mode (10K ~ 100K)		
	92xx Slave Rx	92xx Slave Tx
	Sample delay time (us)	92xx Hold Data Time
I2C CLK / 4	0.15	2.3

≈ 145KHz



2.6 ATT Protocol

PointNum	Byte 0 (Byte Cnt)	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8	Byte 9	Byte 10	Byte 11	Byte 12	Byte 13	Byte 14	Byte 15
NoTouch	2	FrameID	0x00	N/A												
1 Point	9	FrameID	0xB1	S1	X1[15:8]	X1[7:0]	Y1[15:8]	Y1[7:0]	CRC		N/A					
2 Points	14	FrameID	0xB2	S1	X1[15:8]	X1[7:0]	Y1[15:8]	Y1[7:0]	S2	X2[15:8]	X2[7:0]	Y2[15:8]	Y2[7:0]	CRC	N/A	
5 Points	14	FrameID	0xB5	S1	X1[15:8]	X1[7:0]	Y1[15:8]	Y1[7:0]	S2	X2[15:8]	X2[7:0]	Y2[15:8]	Y2[7:0]	CRC	N/A	
	12	S3	X3[15:8]	X3[7:0]	Y3[15:8]	Y3[7:0]	S4	X4[15:8]	X4[7:0]	Y4[15:8]	Y4[7:0]	CRC		N/A		
	7	S5	X5[15:8]	X5[7:0]	Y5[15:8]	Y5[7:0]	CRC		N/A							
10 Points	14	FrameID	0xB7	S1	X1[15:8]	X1[7:0]	Y1[15:8]	Y1[7:0]	S2	X2[15:8]	X2[7:0]	Y2[15:8]	Y2[7:0]	CRC	N/A	
	12	S3	X3[15:8]	X3[7:0]	Y3[15:8]	Y3[7:0]	S4	X4[15:8]	X4[7:0]	Y4[15:8]	Y4[7:0]	CRC		N/A		
	12	S5	X5[15:8]	X5[7:0]	Y5[15:8]	Y5[7:0]	S6	X6[15:8]	X6[7:0]	Y6[15:8]	Y6[7:0]	CRC		N/A		
	12	S7	X7[15:8]	X7[7:0]	Y7[15:8]	Y7[7:0]	S8	X8[15:8]	X8[7:0]	Y8[15:8]	Y8[7:0]	CRC		N/A		
	12	S9	X9[15:8]	X9[7:0]	Y9[15:8]	Y9[7:0]	S10	X10[15:8]	X10[7:0]	Y10[15:8]	Y10[7:0]	CRC		N/A		
Button Touch	5	FrameID	0x70	BS	CRC		N/A									
1 Point +Button	10	FrameID	0x71	S1	X1[15:8]	X1[7:0]	Y1[15:8]	Y1[7:0]	BS	CRC		N/A				
2 Points +Button	15	FrameID	0x72	S1	X1[15:8]	X1[7:0]	Y1[15:8]	Y1[7:0]	S2	X2[15:8]	X2[7:0]	Y2[15:8]	Y2[7:0]	BS	CRC	
3 Points +Button	15	FrameID	0x74	S1	X1[15:8]	X1[7:0]	Y1[15:8]	Y1[7:0]	S2	X2[15:8]	X2[7:0]	Y2[15:8]	Y2[7:0]	BS	CRC	
4 Points +Button	7	S3	X3		Y3		CRC		N/A							
	15	FrameID	0x74	S1	X1[15:8]	X1[7:0]	Y1[15:8]	Y1[7:0]	S2	X2[15:8]	X2[7:0]	Y2[15:8]	Y2[7:0]	BS	CRC	
	12	S3	X3		Y3		S4	X4		Y4		CRC		N/A		

Notes:

1. Bit Definition of Type(byte 2):

Bits	Description
[3:0]	Number of Touch Points
[4]	0: without CRC 1: with CRC
[7:5]	001: RealPoint with PointStatus of Integer Format Mode 101: RealPoint with PointStatus of Fixed point Format Mode 011 : RealPoint with PointStatus and ButtonStatus of Integer Format Mode

2. Bit Definition of Status (S1, S2...)

Bits	Description
[3:0]	Point Status 0x0000:Touch Down (Birth or Move) 0x0001:Touch Up (Death)
[7:4]	Point ID

3. Definition of two bytes coordinates (X1, Y1, X2, Y2...):

- 16 bits fixed point (9.7), the unit is line, that is, pitch of sensing lines/channels)
The X/Y coordinates need further transfer on the Master side, See Section 3 and Appendix C.

Bits	Description
[15:7]	Integer part
[6:0]	Decimal part, 7 bits resolution

- 12 bits Integer, The range of coordinate is 0 to 4095.

Bits	Description
[15:12]	reserved
[11:0]	Integer, 12 bits resolution

4. Byte count is not included in CRC calculation.

5. Bit Definition of Button Status (BS)

Bits	Description
[7:0]	Button[7:0] Status — 0: NoTouch 1: TouchDown

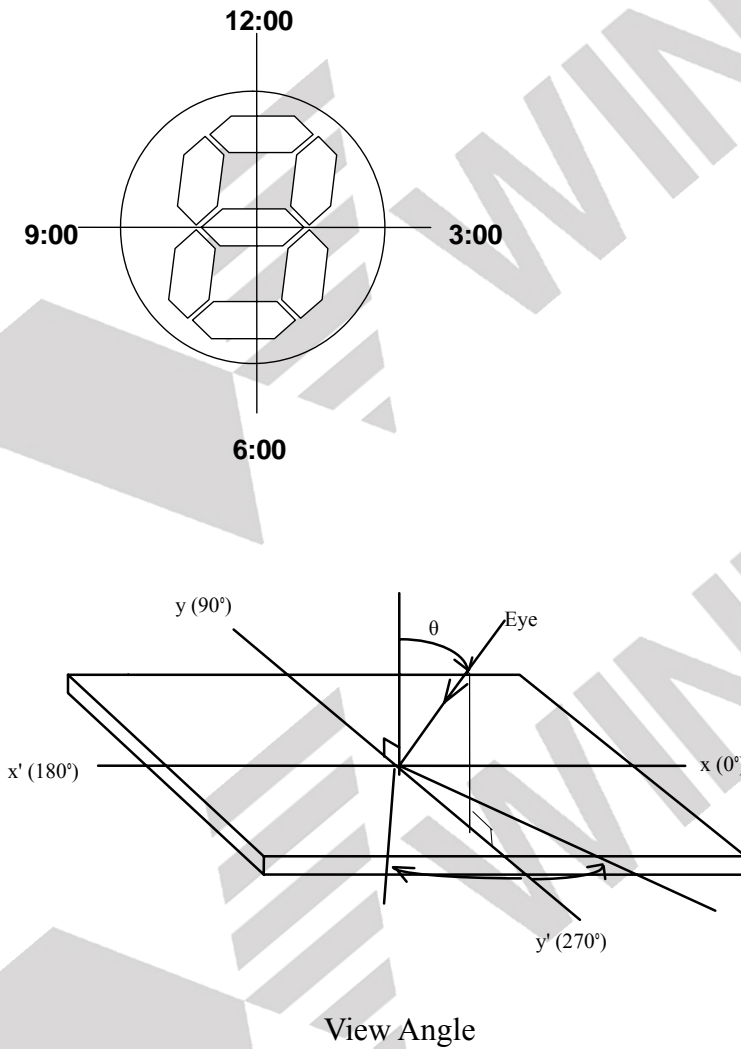
(3) Electro-optical Unitss

3.1 Electro-optical Characteristics

ITEM	SYMBOL		CONDITION	MIN.	TYP.	MAX.	UNIT	NOTE	
View Angle CR>10	ψ= 90 ° (12H)		-	70	80	-	deg.		
	ψ= 270 ° (6H)			70	80	-	deg.		
	ψ= 180 ° (9H)			70	80	-	deg.		
	ψ= 0 ° (3H)			60	70	-	deg.		
Contrast Ratio	CR		Ta=25	400	500	-	-	-	
Response Time	Tr		Ta=25	-	4	8	ms	-	
	Td			-	12	24	ms		
Color Coordinate	Red	Rx	Ta=25	0.56	0.61	0.66	-	-	
		Ry		0.30	0.35	0.40			
	Green	Gx		0.26	0.31	0.36			
		Gy		0.49	0.54	0.59			
	Blue	Bx		0.10	0.15	0.20			
		By		0.06	0.11	0.16			
	White	Wx		0.26	0.31	0.36			
		Wy		0.28	0.33	0.38			
	NTSC			-	50	-	%		-
	LCD Type	TFT , (POSITIVE / Transmissive)							-
Viewing Direction	6:00							-	
Gray Inversion Direction	9:00							-	


Notes : All the optical data should be measured when the display's driven under the TYP. condition.

3.2 Optical Definitions



(4) LCM Mechanical Units

4.1 LCM Mechanical Diagram

NO	Document Number	Attachment file
1	MM0101W-AS1-101	

Double-Click the "Attachment Icon" above for opening attachment file.

4.2 Back-light Specification

LED Backlight Styles:

The LED chips are distributed over the whole light area of the illumination unit, which gives the most uniform light.

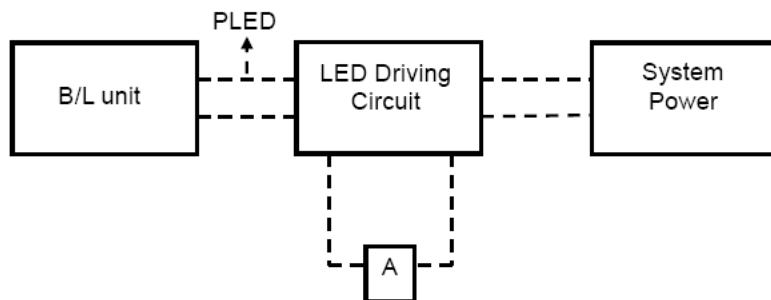
4.2-1. Data About LED Backlight

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	NOTE
Backlight Type	LED / WHITE					-
LED Driver Input Voltage	VLED	4.5	-	5.5	V	-
Forward Voltage	VF	3.1	3.3	3.5	V	T=25
Forward Current	IF	-	20	20.6	mA	T=25
Power Consumption	PLED	-	1.98	2.16	W	T=25 Note1
Luminous Intensity (5P)	IV	-	200	-	cd/m2	-
Luminous Intensity Ratio(5P)	V	-	-	25	%	5
Luminous Intensity Ratio(13P)		-	-	50	%	

NOTE:1. Maximum LED Driver Input Current at 7V Input Voltage/PWM Duty 100%.

2. Measure method : a. LED current is measured by utilizing a current meter as show below.

b. System power PLED is measured at input voltage 12V.



3. Calculator value for reference $IF \times VF \times N = PLED$

4. 5P luminance (AVG.) : The measuring points are at 5、10、11、12、13.

5. Luminous Intensity Ratio = $(MAX-MIN) / MAX$.

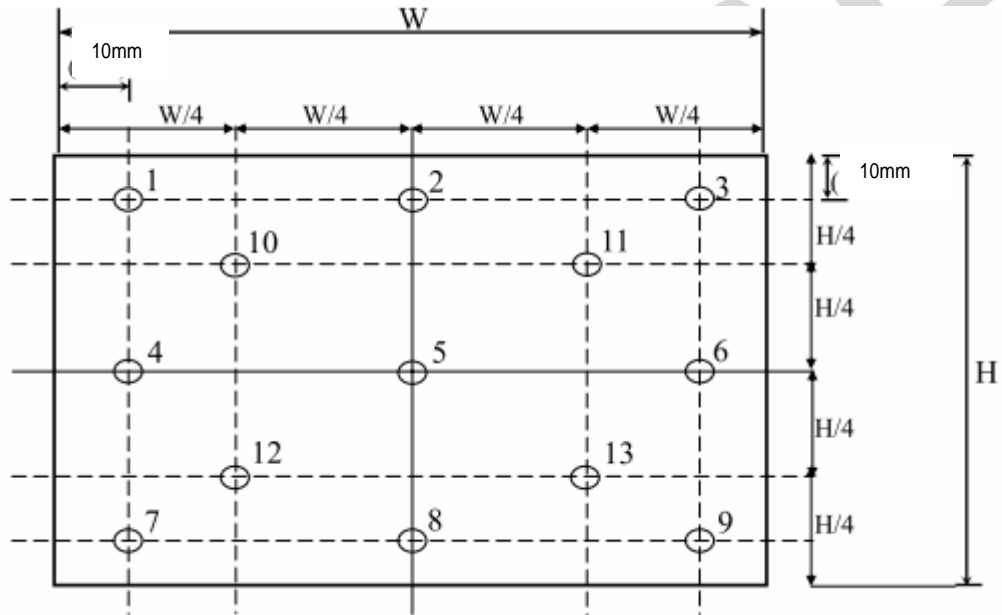
DC Electrical Characteristics

Parameter	Symbol	Min	Typ	Max	Units	Remark
LED Power Supply Voltage	V_{LED}	4.5	--	5.5	Volt	
PWM High Threshold	V_{PWMH}	3.0	--	--	Volt	
PWM Low Threshold	V_{PWML}	--	--	0.2	Volt	

CABC DC Electrical Characteristics

Parameter	Symbol	Min	Typ	Max	Units	Remark
CABC_EN High Threshold	V_{CABCH}	$0.7V_{DD}$	--	--	Volt	
CABC_EN Low Threshold	V_{CABCL}	--	--	$0.3V_{DD}$	Volt	


4.2-2. Definition of Luminous Intensity and Ratio



Note :

1. The measuring points of 5P are at 5、10、11、12、13.
2. The measuring points of 13P are at 1~13 .
4. Hole Diameter $\phi 3\text{mm}$; 1 to 13 per Position Measured Luminous Intensity Ratio

4.3 Packing Method

NO	Document Number	Attachment file
1	MF0101Z-M1-02	

Double-Click the "Attachment Icon" above for opening attachment file.

(5) Quality Units

5.1 Specification of Quality Assurance

5.1-1.Purpose

This standard for Quality Assurance should affirm the quality of LCD module products to supply to purchaser by WINTEK CORPORATION (Supplier).

5.1-2.Standard for Quality Test

a. Inspection :

Before delivering, the supplier should take the following tests, and affirm the quality of product.

b. Electro-Optical Characteristics:

According to the individual specification to test the product.

c. Test of Appearance Characteristics:

According to the individual specification to test the product.

d. Test of Reliability Characteristics:

According to the definition of reliability on the specification for testing products.

e. Delivery Test:

Before delivering, the supplier should take the delivery test.

(i) Test method: According to **ANSI/ASQC Z1.4-2003.General Inspection Level take a single time.**

(ii) The defects classify of AQL as following:

Major defect: AQL=0.65

Minor defect: AQL=2.5

Total defects: AQL=2.5

5.1-3.Nonconforming Analysis & Deal With Manners

a. Nonconforming analysis:

(i) Purchaser should supply the detail data of non-conforming sample and the non-suitable state.

(ii) After accepting the detail data from purchaser, the analysis of nonconforming should be finished in two weeks.

(iii) If supplier can not finish analysis on time, must announce purchaser before two weeks.

b. Disposition of nonconforming:

(i) If find any product defect of supplier during assembly time, supplier must change the good product for every defect after recognition.

(ii) Both supplier and customer should analyze the reason and discuss the disposition of nonconforming when the reason of nonconforming is not sure.

5.1-4. Agreement items

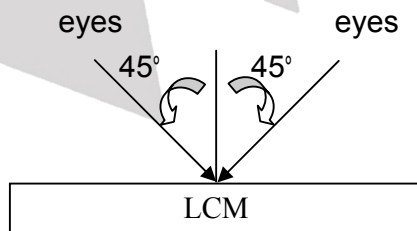
Both sides should discuss together when the following problems happen.

- There is any problem of standard of quality assurance, and both sides think that it must be modified.
- There is any argument item which does not record in the standard of quality assurance.
- Any other special problem.

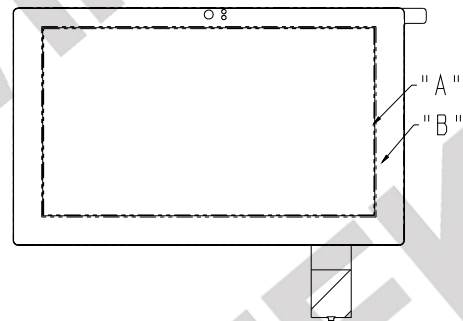
5.1-5. Standard of The Product Appearance Test

a. Manner of appearance test:

- The test must be under 20W x 2 or 40W fluorescent light, and the distance of view must be at 30 cm.
- When display on use front-light test, while display off use back-light test.
- The test direction is base on about around 45° of vertical line.



(iv) Definition of area:



A Area : Viewing area.


B Area : Out of viewing area (Outside viewing area)

Any defect at area B could be ignored. If customer has particular requirement, this requirement should be clearly defined in inspection specification. If inspection specification has defined other criteria, the final judgement should follow the inspection specification .

b. Basic principle:


- It will accord to the AQL when the standard can not be described.
- The sample of the lowest acceptable quality level must be discussed by both supplier and customer when any dispute happened.
- Must add new item on time when it is necessary.

5.1-6. Inspection specification

NO	Document Number	Attachment file
1	M1L070012	

Double-Click the "Attachment Icon" above for opening attachment file.

5.2 Standard Specification for Reliability

NO	Document Number	Attachment file
1	M3ET100001	

Double-Click the "Attachment Icon" above for opening attachment file.

5.3 Precautions in Use of LCM

5.3-1 Handling of LCM

- Don't give external shock.
- Don't apply excessive force on the surface.
- Liquid in LCD is hazardous substance. Must not lick and swallow. when the liquid is attach to your hand, skin, cloth etc. Wash it out thoroughly and immediately.
- Don't operate it above the absolute maximum rating.
- Don't disassemble the LCM.

5.3-2 Storage

- Store in an ambient temperature of 25 ± 5 , and in a relative humidity of 40% to 60%. Don't expose to sunlight or fluorescent light.
- Storage in a clean environment, free from dust, active gas, and solvent.
- Store in anti-static electricity container.
- Store without any physical load.

5.3-3 Soldering


- Use the Sn-Ag-Cu (96.5, 3.0, 0.5) solder
- Iron : Temperature 300 and less than 5-6 sec during soldering.
- Rewiring : no more than 3 times.

5.3-4 Assembly

The front polarizer is covered with a protective foil which should be removed before use.

(6) Substance Management Units

6.1 Product Substances Management Documentation

NO	Document Number	Attachment file
1	Environment management standard(EMS-P-017-01)	

Double-Click the "Attachment Icon" above for opening attachment file.