Toshiba Mobile Display Co., Ltd.

PRODUCT INFORMATION

20.3cm COLOUR TFT-LCD MODULE
(8.0 TYPE)

LT080EE04000
(p-Si TFT)

All information is subject to change without notice. Please read bottom notes.

TENTATIVE

FEATURES

(1) 8.0” UWXGA(1600x768 pixels) display size for notebook PC
(2) LED Backlight
(3) Antiglare
(4) Bezel less structure
(5) LVDS interface

MECHANICAL SPECIFICATIONS

Item	Specifications
Dimensional Outline (typ.)	195.0 (*W*) x 101.4 (*H*) x 2.42(*D*) Max. mm (without PCB)
Number of Pixels	1600(*W*) x 768 (*H*) pixels
Active Area	182.4 (*W*) x 87.552 (*H*) mm
Pixel Pitch	0.114 (*W*) x 0.114 (*H*) mm
Weight (approximately)	75 g (Typ)
Backlight	LED type

ABSOLUTE MAXIMUM RATINGS

Item		Min.	Max.	Unit	Checked Terminal
Supply Voltage	V_{DD}	-0.3	+3.0	V	V_{DD} – GND
Input Voltage of Signals	V_{IN}	-0.3	V_{DD}+0.3	V	LVDS interface
LED Input Voltage(Backword Voltage)	V_{LED}	-	5	V	
LED Input Current(Forward Current)	I_{LED}	-	30	mA	
Operating Ambient Temperature [1)]	T_{OP}	0	+50	°C	
Operating Ambient Humidity [1)]	H_{OP}	10	90	%(RH)	
Storage Temperature [1)]	T_{STG}	-20	+60	°C	
Storage Humidity [1)]	H_{STG}	10	90	%(RH)	
Operating Temperature for Panel [2)]	-	0	+60	°C	

ELECTRICAL SPECIFICATION

Item		Min.	Typ.	Max.	Unit	Remarks
Supply Voltage	V_{DD}	2.35	2.5	2.7	V	
Common Mode Input Voltage	V_{CM}	0.7	1.2	1.75	V	
Differential Input amplitude	V_{ID}	0.25	-	0.45	V	
LED Input Current	I_{LED}	-	-	12	mA	

*1 : 8 color bars pattern is considered typical condition.
*2 : The current value of each row should be the same value.

OPTICAL SPECIFICATION (*Ta*=25°C)

Item		Min.	Typ.	Max.	Unit	Remarks
Contrast Ratio	(*CR*)	200	250	---	---	
Luminance (5point)	(*L*)	210	320	---	cd/m^2	I_{LED} =12mA

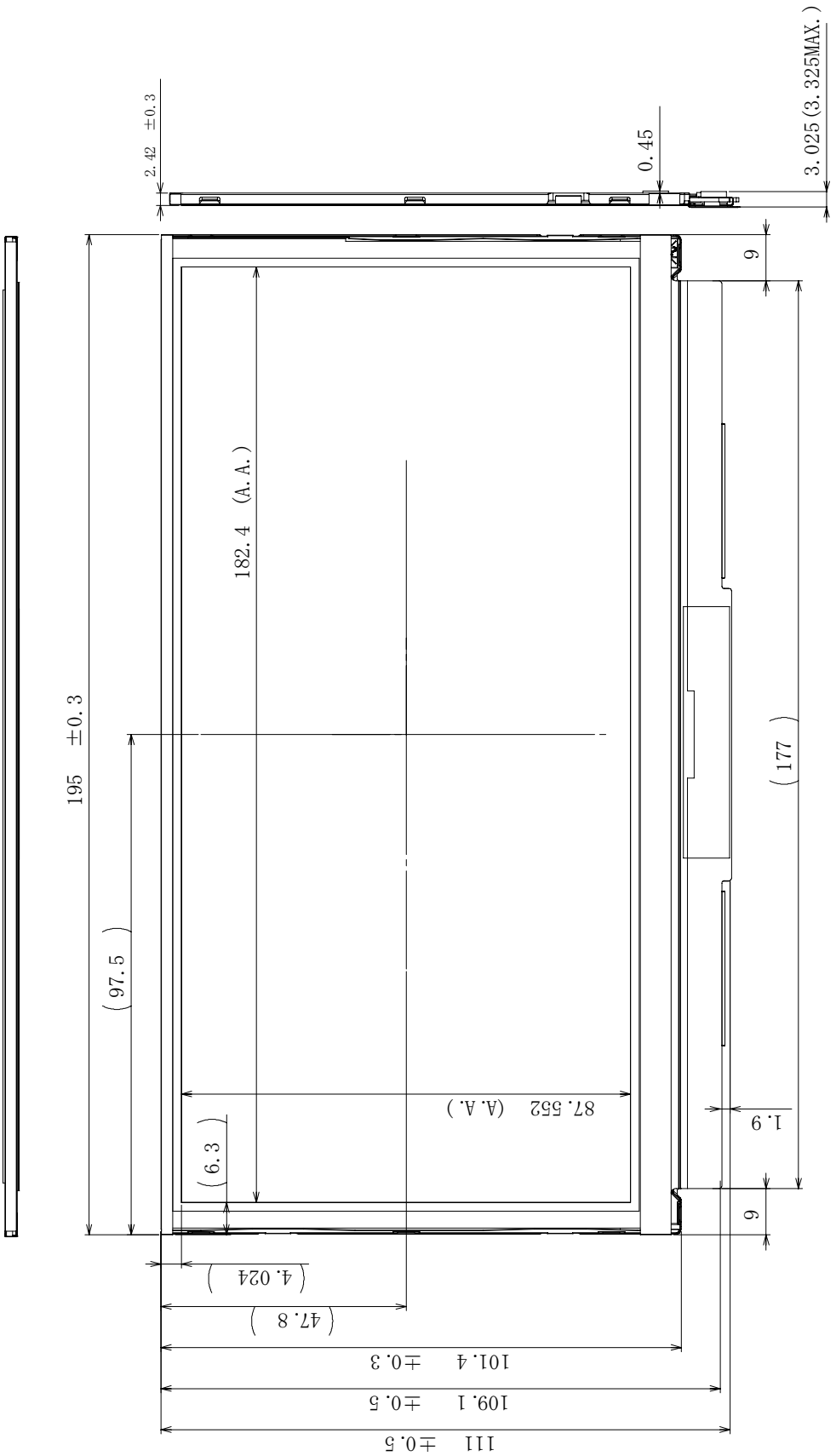
TENTATIVE

DIMENSIONAL OUTLINE

(Front side)

Unit : mm

Standard tolerance : ±0.5



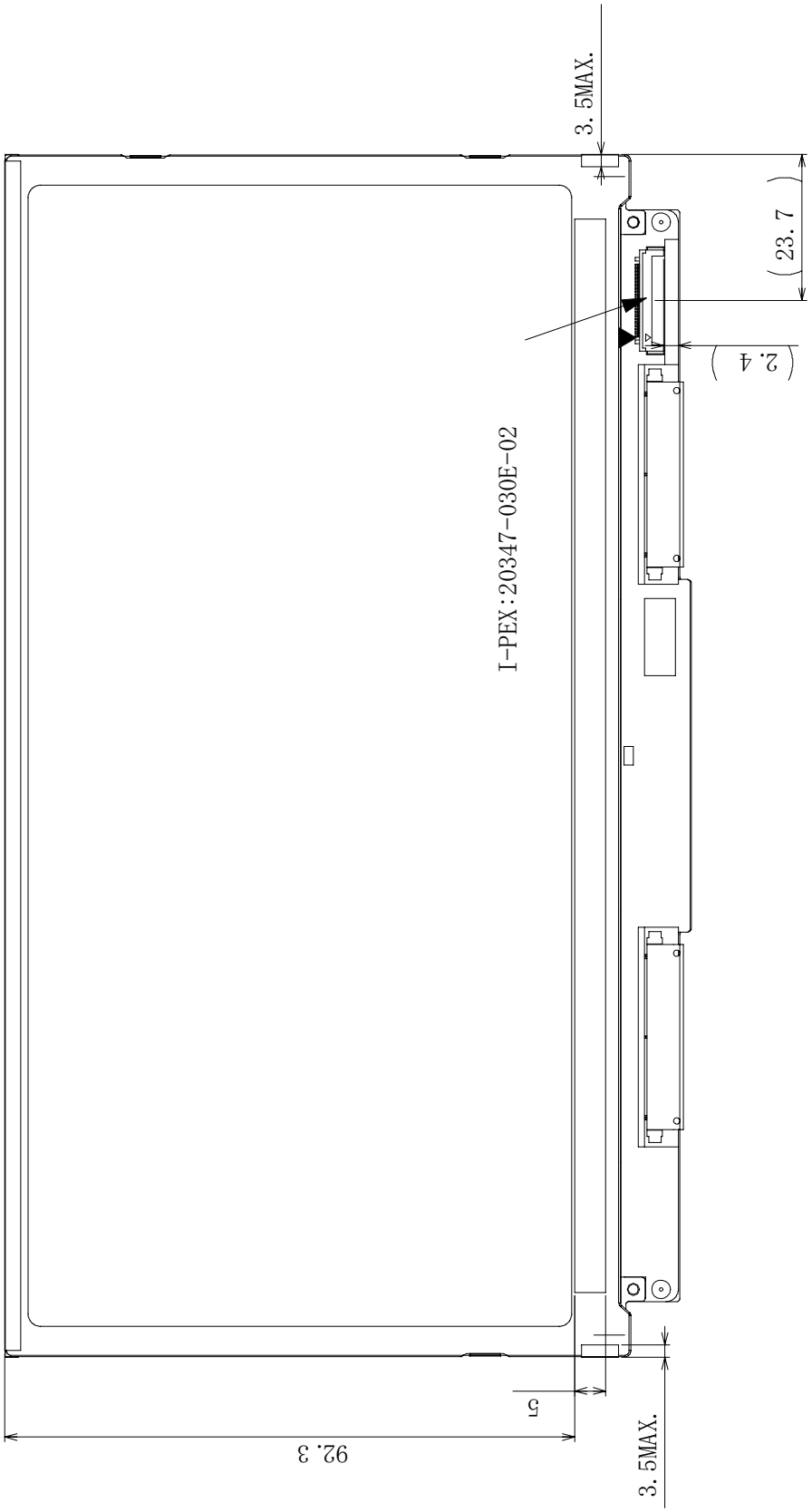
DIMENSIONAL OUTLINE

TENTATIVE

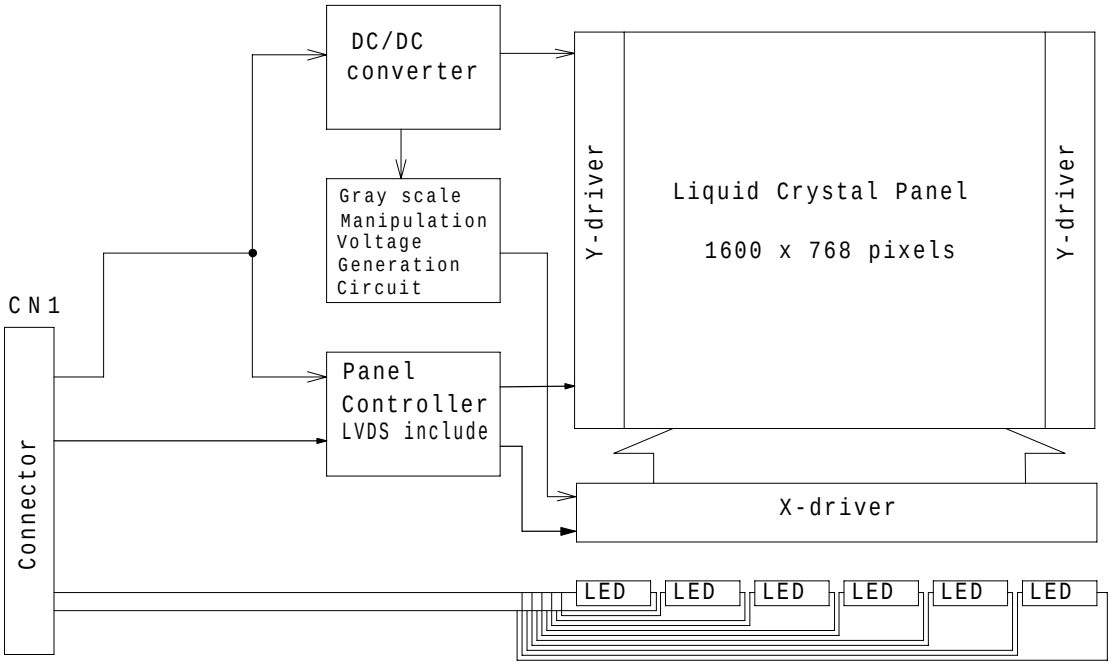
(Back side)

Unit : mm

Standard tolerance : ±0.5



BLOCK DIAGRAM



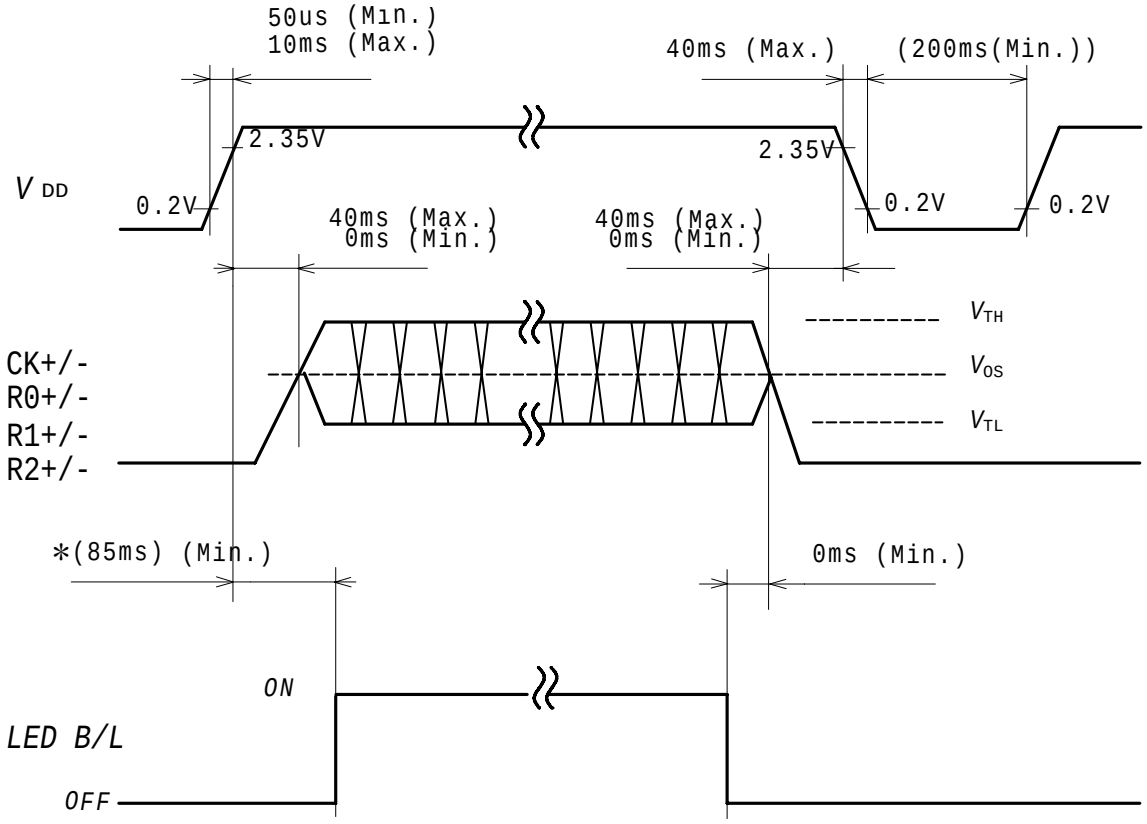
1600 pixels

1, 1	2, 1		X, 1			1600, 1
1, 2						
1, Y			X, Y			
1, 768						1600,768

768 pixels

TIMING CHART

POWER SEQUENCE



TIMING SPECIFICATION [1) 2) 3) 4) 5) 6)]

Item	Symbol	min.	typ.	max.	Unit
Frame Period	*T*v	772	778		th
			16.68	-	ms
Vertical Display Term	*T*vd	768	768	768	th
Vertical Blanking Period	*T*vb	4	10		th
Horizontal Scanning Term	*T*h	1756	1790		Tc
		21.40	21.44		μ s
Horizontal Display Term	*T*hd	1600	1600	1600	tc
Horizontal Blanking Period	*T*hb	156	190		tc
Clock Period	*T*c	81	83.5	85	MHz
			11.976		ns
V-sync Pulse Width	*T*vw	1	1	-	th
Vertical Front Porch	*T*vfp	1	1	-	th
Vertical Back Porch	*T*vbp	2	8	-	th
H-sync Pulse Width	*T*hw	8		-	tc
Horizontal Front Porch	*T*hfp	8		-	tc
Horizontal Back Porch	*t*hbp	8		-	tc
DE Pulse Width	*Thd*	1600	1600	1600	tc

Note 1) Refer to “Timing Chart” and LVDS (TIA/EIA-644-A) specifications.

Note 2) If DE is fixed to "H" or "L" level for certain period while NCLK is supplied, the panel displays black with some flicker.

Note 3) If NCLK is fixed to “H” or “L” level for certain period while DE is supplied, the panel may be damaged.

Note 4) In case of using the long frame period, the deterioration of display quality, noise etc. may be occurred.

Note 5) NCLK count of each Horizontal Scanning Time should be always the same.
V-Blanking period should be “*n*” X “Horizontal Scanning Time”. (*n*: integer)
Frame period should be always the same.

Note 6) Please keep below equations.
tvb = tvw + tvfp + tvbp
thb = thw + thfp + thbp

Note 7) The above tables shows allowable interface timings under 60Hz refresh rate conditions.
In case of using this rate condition, some flicker may be occurred.

CONNECTOR PIN ASSIGNMENT FOR INTERFACE

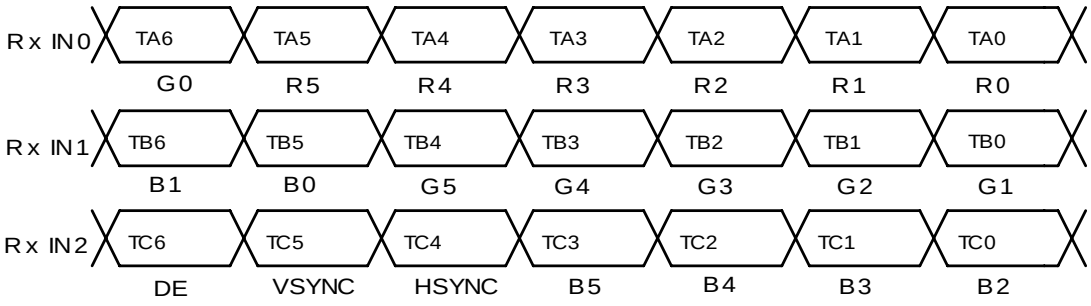
CN1 INPUT SIGNAL

CN1 INPUT SIGNAL (20461-030E-12 / I-PEX)

Terminal No.	Symbol	Function
1	RxIN0-	Negative LVDS differential data input (R0-R5, G0)
2	RxIN0+	Positive LVDS differential data input (R0-R5, G0)
3	RxIN1-	Negative LVDS differential data input (G1-G5, B0-B1)
4	RxIN1+	Positive LVDS differential data input (G1-G5, B0-B1)
5	RxIN2-	Negative LVDS differential data input (B2-B5, HS, VS, DE)
6	RxIN2+	Positive LVDS differential data input (B2-B5, HS, VS, DE)
7	CLK-	Clock Signal(-)
8	CLK+	Clock Signal(+)
9	NC	Non-Connection
10	NC	Non-Connection
11	NC	Non-Connection
12	NC	Non-Connection
13	VCD1	LED Cathode
14	VCD2	LED Cathode
15	VCD3	LED Cathode
16	VCD4	LED Cathode
17	NC	Non-Connection
18	NC	Non-Connection
19	NC	Non-Connection
20	NC	Non-Connection
21	NC	Non-Connection
22	V_{SS}	GND
23	V_{SS}	GND
24	V_{SS}	GND
25	V_{SS}	GND
26	V_{DD}	Power Supply, 2.5V
27	V_{DD}	Power Supply, 2.5V
28	V_{DD}	Power Supply, 2.5V
29	VAD2	LED Anode
30	VAD2	LED Anode

Note 1) Please connect GND pin to ground. Don't use it as no-connect nor connection with high impedance.

Note 2) Please connect NC to nothing. Don't connect it to ground nor to other signal input.



256k (k=1024) COLORS COMBINATION TABLE

	Display	R5	R4	R3	R2	R1	R0	G5	G4	G3	G2	G1	G0	B5	B4	B3	B2	B1	B0	Gray Scale Level
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	-
	White	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	-
Gray Scale of Red	Black	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L 0
	Dark ↑ ↓ Light	L	L	L	L	L	H	L	L	L	L	L	L	L	L	L	L	L	L	L 1
		L	L	L	L	H	L	L	L	L	L	L	L	L	L	L	L	L	L	L 2
		⋮						⋮						⋮						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	L 0
	Dark ↑ ↓ Light	L	L	L	L	L	L	L	L	L	L	L	H	L	L	L	L	L	L	L 1
		L	L	L	L	L	L	L	L	L	L	H	L	L	L	L	L	L	L	L 2
		⋮						⋮						⋮						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	L 0
	Dark ↑ ↓ Light	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	H	L 1
		L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	H	L	L 2
		⋮						⋮						⋮						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	L 0
	Dark ↑ ↓ Light	L	L	L	L	L	H	L	L	L	L	L	H	L	L	L	L	L	H	L 1
		L	L	L	L	H	L	L	L	L	L	H	L	L	L	L	L	H	L	L 2
		⋮						⋮						⋮						L3… L60
		H	H	H	H	L	H	H	H	H	H	L	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

FOR SAFETY

LCD module is generally designed with precise parts to achieve light weighted thin mechanical dimensions.
In using our Modules, make certain that you fully understand and put into practice the warnings and safety precautions detailed in Engineering Information No.EE-D-001A,"CAUTIONS AND INSTRUCTIONS FOR TOSHIBA MOBILE DISPLAY CO., LTD LCD MODULES".
Refer to individual specifications and TECHNICAL DATA sheets (hereinafter called "TD") for more detailed technical information.

1) SPECIAL PURPOSES

A) Toshiba Mobile Display's Standard LCD Modules have not been customized for operation in extreme environments or for use in applications where performance failures could be life-threatening or otherwise catastrophic.

B) Since Toshiba Mobile Display's Standard LCD Modules have not been designed for operation in extreme environments, they must never be used in devices that will be exposed to abnormally high levels of vibration or shock which exceed Toshiba Mobile Display's published specification limits.

C) In addition, since Toshiba Mobile Display Standard LCD Modules have not been designed for use in applications where performance failures could be life-threatening or catastrophic, they must never be installed in aircraft navigation control systems (such as, but not limited to Traffic Collision Avoidance System and Air Traffic Indicator), in military defense or weapons systems, in critical industrial process-control systems (e.g., those involved in the production of nuclear energy), or in critical medical device or patient life-support systems.

2) DISASSEMBLING OR MODIFICATION

DO NOT DISASSEMBLE OR MODIFY the module. It may damage sensitive parts inside LCD module, and may cause scratches or dust on the display.
Toshiba Mobile Display doses not warrant the module, if customer disassembled or modified it.

3) BREAKAGE OF LCD PANEL

DO NOT INGEST liquid crystal material, DO NOT INHALE this material, and DO NOT CONTACT the material with skin, if LCD panel is broken and liquid crystal material spills out.
If liquid crystal material comes into mouth or eyes, rinse mouth or eyes out with water immediately.
If this material contact with skin or cloths, wash it off immediately with alcohol and rinse thoroughly with water.

4) GLASS OF LCD PANEL

BE CAREFUL WITH CHIPS OF GLASS that may cause injuring fingers or skin, when the glass is broken.

5) ELECTRIC SHOCK

DISCONNECT POWER SUPPLY before handling LCD module.
DO NOT TOUCH the parts inside LCD module and the connector or cables in order to prevent electric shock, because high voltage is supplied to these parts from power supply is turned on.

6) ABSOLUTE MAXIMUM RATINGS AND POWER PROTECTION CIRCUIT

DO NOT EXCEED the absolute maximum rating values under the worst probable conditions caused by the supply voltage variation, input voltage variation, variation in parts' constants, environmental temperature, etc., otherwise LCD module may be damaged.
Employ protection circuit for power supply, whenever the specification or TD specifies it.
Suitable protection circuit should be applied for each system design.

7) DISPOSAL

When dispose LCD module, obey to the applicable environmental regulations.