

## PRODUCT INFORMATION

## FEATURES

- (1) p-Si TFT-LCD for Mobile Phone
- (2) QVGA 240(H) x 320(V) pixels
- (3) Transflective type Mode
- (4) 262,144 colors (18 bit color depth)
- (5) CPU memory bus I/F 16bit (i80)  
FPC change is needed for 8, 9, 18 bit
- (6) Cell + FPC . without Backlight

TENTATIVE

## MECHANICAL SPECIFICATIONS

Item	Specifications
Dimensional Outline (TYP.)	41.7(W) x 58.7(H) x 1.77(D) mm(Typ.)
Number of Pixels	240(x RGB)(W) x 320 (H) pixels
Active Area	36.72(W) x 48.96 (H) mm
Pixel Pitch	0.153(W) x 0.153(H)
Weight (approximately)	9.0g(Typ.)

## ABSOLUTE MAXIMUM RATINGS

Item	Min.	Max.	Unit	Remarks
Logic Power Supply	-0.3	4.6	V	
Operating Temperature	-20	70	°C	
Storage Temperature	-30	80	°C	
Storage Humidity (Max. wet bulb temp. = 39°C)	10	90	%(RH)	

## ELECTRICAL SPECIFICATION

Item	Min.	Typ.	Max.	Unit	Remarks
Supply Voltage	2.70	2.85	3.00	V	*1
Current Consumption	---	4.7	TBD	mA	*1 Normal mode

\*1 : Final number well be specified with actual LCD samples

## OPTICAL SPECIFICATION (Ta=25°C)

Item	Min.	Typ.	Max.	Unit	Remarks
Contrast Ratio (CR)	TBD	(110)	---	---	*2 Transmissive mode
Response Time	( <i>t</i> <sub>ON</sub> )	---	(50)	ms	*2
	( <i>t</i> <sub>OFF</sub> )	---	(50)	ms	*2
Transmittance*3	TBD	(3.5)	---	cd/m <sup>2</sup>	*2 Transmissive mode
NTSC ratio	---	(45)	---	%	*2 Transmissive mode
Optimum view angle	---	6'o'clock *4	---	---	

\*2 : Final number well be specified with actual LCD samples

\*3 : LEDPower=15mA×3LED

\*4 : Lower side of the panel has better viewing angle. (The optimum contrast direction is at 12 o'clock.)

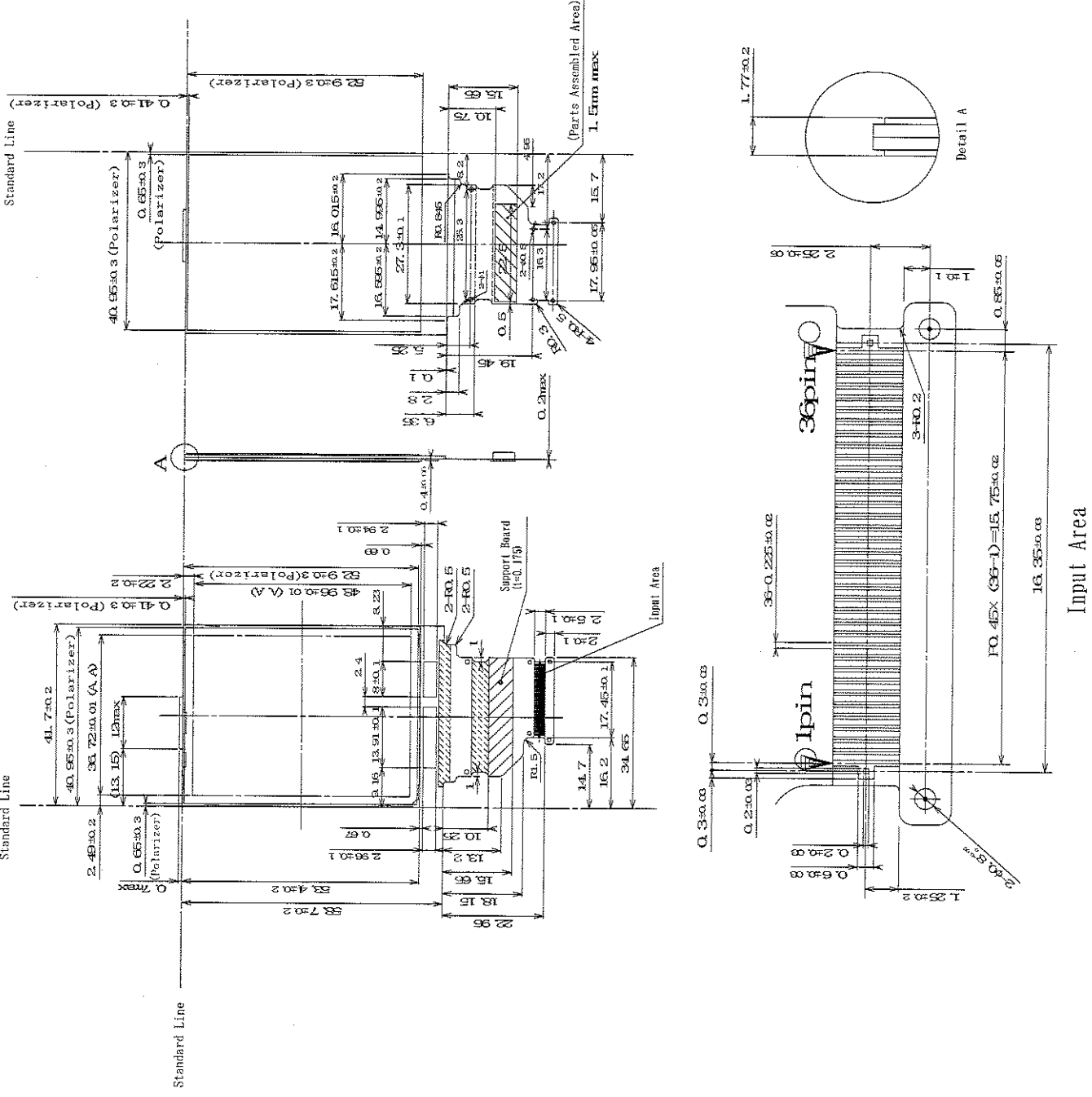
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\*The information contained herein may be changed without prior notice. It is therefore advisable to contact Toshiba Matsushita Display Technology Co.,Ltd. before proceeding with the design of equipment incorporating this product.

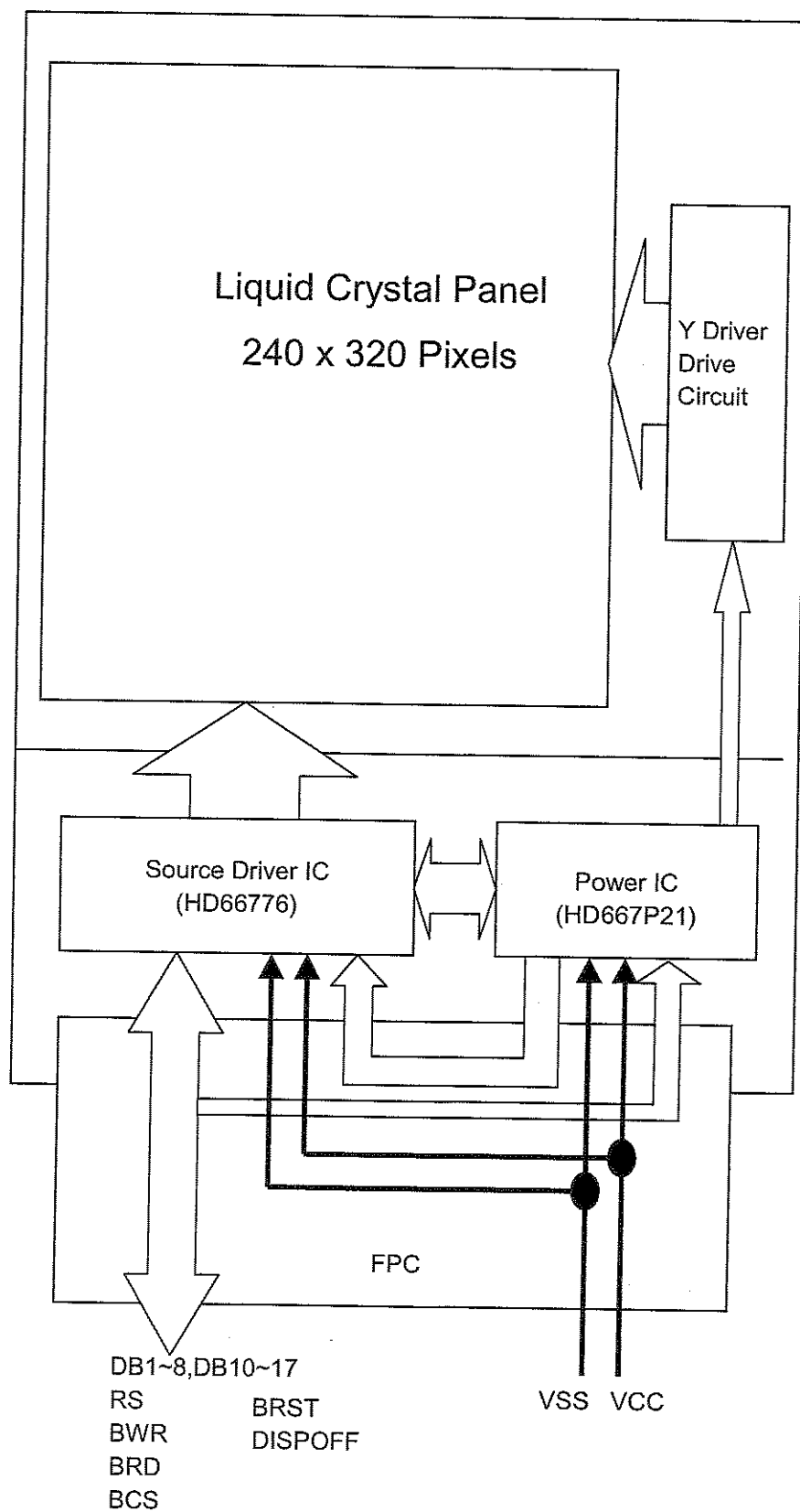
<Outline dimension>

Unit : mm

Standard tolerance : ±0.4



&lt;Block diagram&gt;



## &lt;Table of Pin Assignment&gt;

I/F FPC

0.45mm Pitch

Pin No.	Symbol	Function
1	GND	GND
2	GND	GND
3	GND	GND
4	GND	GND
5	GND	GND
6	GND	GND
7	VCC	Power Supply
8	VCC	Power Supply
9	/CS	Chip Select Signal
10	RS	Resistor Select Signal
11	/WR	Write Select Signal
12	/RD	Read Select Signal
13	DB1	Data Input
14	DB2	Data Input
15	DB3	Data Input
16	DB4	Data Input
17	DB5	Data Input
18	DB6	Data Input
19	DB7	Data Input
20	DB8	Data Input
21	DB10	Data Input
22	DB11	Data Input
23	DB12	Data Input
24	DB13	Data Input
25	DB14	Data Input
26	DB15	Data Input
27	DB16	Data Input
28	DB17	Data Input
29	/RESET	Reset Signal
30	DISPOFF	Display Off Signal
31	VCC	Power Supply
32	VCC	Power Supply
33	GND	GND
34	GND	GND
35	GND	GND
36	GND	GND

<Mating Connector>

None

<Command/AC Timing>

Detail technical information of "command/data", or "AC timing" can be available with following documents:

- IC specification of Source driver : HD66776
- IC specification of Power IC : HD667P21

## &lt;Revision History&gt;

Date	Rev	Page (New)	Item	New	Old	Reason
2003-06-30	0.1					
2003-08-04	0.2	1,2 2-7	Thickness Type name	1.77mm LTM024D030*	1.75mm LTM020D030*	Miss print Miss print

**TOSHIBA MATSUSHITA DISPLAY TECHNOLOGY Co., Ltd.**

MOBILE-USE SALES & MARKETING DEPT.  
MOBILE-USE LCD DIVISION

1-8, KONAN 4-CHOME, MINATO-KU, TOKYO 108-0075 JAPAN  
PHONE : +81-3-5462-7240, FAX : +81-3-3458-0078

**TOSHIBA MATSUSHITA DISPLAY TECHNOLOGY    CONFIDENTIAL**  
(8/7)

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www.DataSheet4U.net

## 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-N001,"CAUTIONS AND INSTRUCTIONS FOR TOSHIBA MATSUSHITA DISPLAY TECHNOLOGY CO.,LTD. LCD MODULES".

Refer to individual specifications and TECHNICAL DATA sheets (hereinafter called "TD") for more detailed technical information.

### Warning

#### 1) SPECIAL PURPOSES

- a) Toshiba Matsushita Display Technology'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 they have not been designed for operation in extreme environments, they must never be used in devices that will be exposed to temperatures above 50 degrees Celsius or below 0 degrees Celsius, to X-ray or Gamma-ray radiation, or to abnormally high levels of vibration or shock which exceed Toshiba Matsushita Display Technology's specification limits.
- c) In addition, since Toshiba Matsushita Display Technology's 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.

### Caution

#### \* 1) DISASSEMBLING OR MODIFICATION

DO NOT DISASSEMBLE OR MODIFY the modules.

Sensitive parts inside LCD module may be damaged, and dusts or scratches may mar the displays. Toshiba Matsushita Display Technology does not warrant the modules, if customer disassembled or modified them.

#### \* 2) BREAKAGE OF LCD PANEL

DO NOT INGEST liquid crystal material, DO NOT INHALE this material, and DO NOT PERMIT this material to contact the skin, if glass of LCD panel is broken. If liquid crystal material contacts the skin, mouth or clothing, take the following actions immediately. In case contact to the eye or mouth, rinse with large amount of running water for more than 15 minutes. In case contact to the skin or clothing, wipe it off immediately and wash with soap and large amount of running water for more than 15 minutes. The skin or clothing may be damaged if liquid crystal material is left adhered. In case ingestion, rinse out the mouth well with water. After spewing up by drinking large amount of water, get medical treatment.

#### \* 3) GLASS OF LCD PANEL

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

#### 4) ABSOLUTE MAXIMUM RATINGS

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.

#### 5) POWER PROTECTION CIRCUIT

Employ protection circuit for power supply, whenever the specification specifies it. A suitable protection circuit should be applied, based on each system design. A fuse is not fitted to this module. Therefore, without a suitable power-supply protection device, dust or partial circuit failure may cause overheating and/or burning, which may lead to injury.

#### 6) DISPOSAL

Always comply with all applicable environmental regulations, when disposing of the LCD.

#### 7) EDGES OF PARTS

Be careful with edges of glass parts, it may cause injuring.

For designing the system, give special consideration that the wiring and parts do not touch those edges.