FEATURES
(1) a-Si TFT-LCD for P-navi, PMP…etc
(2) WVGA 800(W) x 480(H) pixels
(3) Transmissive type Mode
(4) 16,777,216 colors (24 bit color depth)
(5) RGB I/F(24 bit)
(6) Cell + FPC + Backlight + Touch panel

MECHANICAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>Item</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensional Outline (TYP.)</td>
<td>127.7(W) x 82.0(H) x 4.28(D) mm (Typ)</td>
</tr>
<tr>
<td>Number of Pixels</td>
<td>800(W) x 480 (H) pixels</td>
</tr>
<tr>
<td>Active Area</td>
<td>114.0 (W) x 68.4 (H) mm</td>
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<tr>
<td>Pixel Pitch</td>
<td>0.1425(W) x 0.1425(H)</td>
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<tr>
<td>Weight (approximately)</td>
<td>(90) g (Typ.)</td>
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ABSOLUTE MAXIMUM RATINGS

<table>
<thead>
<tr>
<th>Item</th>
<th>Min.</th>
<th>Max.</th>
<th>Unit</th>
<th>Remarks</th>
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</thead>
<tbody>
<tr>
<td>Power Supply for Logic</td>
<td>-0.3</td>
<td>5.0</td>
<td>V</td>
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<td>Power Supply for Analog</td>
<td>-0.3</td>
<td>5.5</td>
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<tr>
<td>Operating Temperature</td>
<td>-20</td>
<td>70</td>
<td>°C</td>
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<tr>
<td>Storage Temperature</td>
<td>-30</td>
<td>80</td>
<td>°C</td>
<td></td>
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<tr>
<td>Storage Humidity (Max. wet bulb temp. = 39°C)</td>
<td>10</td>
<td>90</td>
<td>% (RH)</td>
<td>No dew condensation</td>
</tr>
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</table>

ELECTRICAL SPECIFICATION

<table>
<thead>
<tr>
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<th>Max.</th>
<th>Unit</th>
<th>Remarks</th>
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<tbody>
<tr>
<td>Logic Power Supply Voltage (DVdd)</td>
<td>2.25</td>
<td>2.5</td>
<td>3.6</td>
<td>V</td>
<td>Normal mode</td>
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<tr>
<td>Analog Power Supply Voltage (AVdd)</td>
<td>4.85</td>
<td>5.0</td>
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<tr>
<td>LED forward Voltage (I_LED=20mA)</td>
<td>---</td>
<td>3.2</td>
<td>3.6</td>
<td>V</td>
<td></td>
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<tr>
<td>Current Consumption</td>
<td>---</td>
<td>TBD</td>
<td>(1300) mW</td>
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OPTICAL SPECIFICATION (T_a=25°C)

<table>
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<th>Max.</th>
<th>Unit</th>
<th>Remarks</th>
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<tbody>
<tr>
<td>Contrast Ratio (CR)</td>
<td>(150)</td>
<td>(300)</td>
<td>---</td>
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<tr>
<td>Viewing Angle (CR=10)</td>
<td>ϕ =180°</td>
<td>TBD</td>
<td>(40)</td>
<td>---</td>
<td>Transmissive mode</td>
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<tr>
<td>(Vertical)</td>
<td>ϕ =90°</td>
<td>TBD</td>
<td>(55)</td>
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<td>Transmissive mode</td>
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<tr>
<td>Viewing Angle (CR=10)</td>
<td>ϕ =+90°</td>
<td>TBD</td>
<td>(60)</td>
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<td>Transmissive mode</td>
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<tr>
<td>(Horizontal)</td>
<td>ϕ =-90°</td>
<td>TBD</td>
<td>(60)</td>
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<td>Transmissive mode</td>
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<tr>
<td>Luminance^3 (with TP)</td>
<td>350</td>
<td>500</td>
<td>---</td>
<td>cd/m²</td>
<td>Transmissive mode</td>
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<tr>
<td>NTSC ratio</td>
<td>---</td>
<td>50</td>
<td>---</td>
<td>%</td>
<td>Transmissive mode</td>
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<tr>
<td>Response Time</td>
<td>(t_ON)</td>
<td>30</td>
<td>50</td>
<td>ms</td>
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<td></td>
<td>(t_OFF)</td>
<td>30</td>
<td>50</td>
<td>ms</td>
<td>Transmissive mode</td>
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<tr>
<td>Crosstalk</td>
<td>---</td>
<td>4</td>
<td>6</td>
<td>%</td>
<td>Refer to figure at next page</td>
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<tr>
<td>Optimum view angle</td>
<td>12 o’clock</td>
<td>---</td>
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</table>

*T: Final number will be specified with actual LCD samples
^1: LED current=20mA x 16LED
^2: Upper side of the panel is no color inversion. (6 o’clock : Color inversion. (contrast peak))

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(1/14) 2008-06-09 (Ver.0.2)
<Touch Panel Condition>

RECOMMENDED OPERATING CONDITIONS

<table>
<thead>
<tr>
<th>Item</th>
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<tr>
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<td>VTP</td>
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ELECTRICAL SPECIFICATIONS

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<th>Typ.</th>
<th>Max.</th>
<th>Unit</th>
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<td>Insulation resistance</td>
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<td>20</td>
<td>-</td>
<td>-</td>
<td>MOhm</td>
<td>DC25V, between upper and lower electrodes</td>
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<tr>
<td>Resistance between terminals</td>
<td>Rx</td>
<td>TBD</td>
<td>-</td>
<td>(1000)</td>
<td>Ohm</td>
<td>Between X1 and X2</td>
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<tr>
<td>Resistance between terminals</td>
<td>Ry</td>
<td>TBD</td>
<td>-</td>
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<td>Ohm</td>
<td>Between Y1 and Y2</td>
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<td>(15)</td>
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MECHANICAL SPECIFICATIONS

<table>
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<tr>
<th>Item</th>
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<th>Typ.</th>
<th>Max.</th>
<th>Unit</th>
<th>Remarks</th>
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<tbody>
<tr>
<td>Operating starting force</td>
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<td>-</td>
<td>-</td>
<td>1.0</td>
<td>N</td>
<td></td>
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<tr>
<td>Surface hardness</td>
<td>-</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>H</td>
<td>JIS K 5400 but 500gf</td>
</tr>
</tbody>
</table>

<Crosstalk Testing Pattern>

Crosstalk calculating formula = |(A-A')/A'|
Correspondence points : A to A', B to B', C to C', D to D'

Black : L0
Gray : L127
general tolerance: +/-0.5mm
<Outline dimension(w/ TP) Rear>

general tolerance: +/-0.5mm
<Block diagram>

LCD Panel
800 x 480 pixels

GATE Driver IC
NT39210 x1
(NOVATEK)

SOURCE Driver IC
NT39407S x3
(NOVATEK)

DVdd  AVdd  VSS  NRESET  R0-R7  G0-G7  B0-B7  DISP  VSYNC  HSYNC  DCLK

TP X1  TP Y2  TP X2  TP Y1

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<Table of Pin Assignment (RGB I/F)>

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<th>Symbol</th>
<th>I/O</th>
<th>Signal</th>
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<tbody>
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<td>—</td>
<td>29</td>
<td>G7</td>
<td>I</td>
<td>—</td>
</tr>
<tr>
<td>2</td>
<td>NRESET</td>
<td>I</td>
<td>Reset</td>
<td>30</td>
<td>G6</td>
<td>I</td>
<td>—</td>
</tr>
<tr>
<td>3</td>
<td>DVdd</td>
<td>—</td>
<td>Logic power source</td>
<td>31</td>
<td>G5</td>
<td>I</td>
<td>—</td>
</tr>
<tr>
<td>4</td>
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<td>—</td>
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<td>G4</td>
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<td>—</td>
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<td>34</td>
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Note 1) Please put NRESET when you power on. (Please refer to the chapter of 2.6.1 Power On/Off sequence).
Note 2) All data 0 becomes a black display. (All data 1 becomes a white display.)
Note 3) 18 bit: Please connect R1 with R7 and R0 with R6 for Red. As for Green and Blue, it is similar.
       16 bit: Please connect R2 with R7, R1 with R6 and R0 with R5 for Red. As for Blue, it is similar.
       And please connect G1 with G7 and G0 with G6 for Green.
<Mating Connector>
FH26-57S-0.3SHW(05)  (HRS)

(Command/AC Timing>
Detail technical information of “command/data”, or “AC timing” can be available with following documents:
- IC specification of source driver IC with TCON : NT39407S (by NOVATEK)
- IC specification of gate driver IC Built-in DC/DC : NT39210 (by NOVATEK)

<table>
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<th>Max.</th>
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</table>
1. Power On/Off sequence
2. Timing of Input
3. Data format (Horizontal: Fclk=33.5MHz)
4. Data format (Vertical: Fclk = 33.5MHz)
< LED specification>

Detail technical information of Luminous intensity and color coordinates can be available with following documents:

- Specification for TOYODA GOSEI chip type white LED
  Model: E1S62-YW0S7-07(TOYODA GOSEI)

About the method of driving LED, please consider the content of specifications of LED and LED-Dr enough.
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 GRASS 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.
   Be careful with handling the metal flame (bezel) of a module identically. Even though burr disposal treatment is performed
   For designing the system, give special consideration that the wiring and parts do not touch those edges.

8) RECOMMENDED OPERATING CONDITIONS
   Don't exceed “the recommended operation conditions” in this specification. (The LCD module should be used within “the recommended operation conditions”.)
   The performance and quality of the LCD module are warranted only when the LCD module is used within “the recommended operation conditions”. Toshiba Matsushita Display Technology never warrants the performance and quality of the LCD module when you use the LCD module over “the recommended operation conditions”, although within “the absolute maximum rating”.
   To use the LCD module over “the recommended operation conditions” may have bad influence on the characteristics and reliability of the LCD module and may shorten the life of the LCD module.
   Therefore, when designing the whole set, not to be over “the recommended operation conditions”, you should fully take care of supply voltage change, characteristic of connection parts, serge of input-and-output line , and surrounding temperature.