# DP-1011-01A Datasheet


## 1 Introduction

The DP-1011-01A is a 10.1-inch TFT-LCD module featuring a resolution of 1280 × 800 pixels. The module integrates a TFT-LCD panel, driver ICs, flexible printed circuit (FPC), backlight unit, and a capacitive touch panel (CTP).

Powered by HX8288 and HX8695 display drivers, it delivers 16.7 million colors over a single-channel LVDS interface, providing stable and high-speed image transmission. Touch input is handled by the GT928 controller with I²C interface support, enabling smooth and responsive touch functionality. GT928 supports up to 10-point touches.

### 1.1 Features

- 10.1" TFT-LCD with 1280 × 800 resolution and CTP support
- 16.7M RGB colors for vivid display
- Single-channel LVDS interface for high-speed, reliable data transfer
- Integrated GT928 touch controller with I²C interface providing accurate and low-latency capacitive touch response
- Meets RoHS requirements for environmental compliance

# 2 Part Numbers/Ordering Information

| Part No. | Description |
|---|---|
| DP-1011-01A | TFT Display 10.1 inch (1280 x 800 resolution) with Capacitive Touch Panel– Outline 250mm x 173mm |

**Table 1 - Part Number/Ordering Information**

# Contents

# 3 General Specifications

| Item | Specification | Unit | Note |
|---|---|---|---|
| LCD Type | TFT | - | |
| LCD Size | 10.1 | inch | |
| Number of Pixels | 1280(H)x 800(V) | pixels | |
| Viewing Direction | All | o'clock | |
| Interface | Single-channel LVDS | | |
| Display Colors | 16.7M Colors (RGB 8 bit) | colors | Note 2 |
| Module Size | 250(H) x 173 (V) x 7.1 (D) | mm | Note 3 |
| Active Area | 216.96(H) x 135.60(V) | mm | |
| Brightness | 700 | cd/m$^2$ | Typical value |
| Display Driver IC | HX8288*4 & HX8695*1 | - | |
| Touch Panel | Capacitive Touch Panel | - | |
| Touch Driver IC | GT928 | - | |
| CTP Structure | G + G | - | |
| CTP Connection Type | FPC | | |
| Operation Temperature | 0~50°C | °C | |
| Storage Temperature | -20~60°C | °C | |

**Table 2 - General Specifications**

**Note:**

1. Complies with environmental protection requirements and is RoHS compliant.
2. Color tune is slightly changed by temperature and driving voltage.
3. Module size excludes FPC and solder; with CTP.

# 4 Hardware Description

The DP-1011-01A features a 10.1-inch TFT-LCD with a 1280 × 800 resolution, integrated with a capacitive touch panel directly bonded to the LCD.

## 4.1 Pin Assignment

The interface connector pin configurations are described in the following sections.

### 4.1.1 TFT-LCD Interface Pin Assignment

| Pin no | Symbol | Type | Description |
|---|---|---|---|
| 1 | VCOM | P | Common voltage |
| 2 | VDD | P | Power for digital circuit |
| 3 | VDD | P | Power for digital circuit |
| 4 | NC | - | No Connection |
| 5 | NC | - | No Connection |
| 6 | NC | - | No Connection |
| 7 | GND | P | Ground |
| 8 | RXIN0- | I | -LVDS differential data input |
| 9 | RXIN0+ | I | +LVDS differential data input |
| 10 | GND | P | Ground |
| 11 | RXIN1- | I | -LVDS differential data input |
| 12 | RXIN1+ | I | +LVDS differential data input |
| 13 | GND | P | Ground |
| 14 | RXIN2- | I | -LVDS differential data input |
| 15 | RXIN2+ | I | +LVDS differential data input |
| 16 | GND | P | Ground |
| 17 | RXCLKIN- | I | -LVDS differential clock input |
| 18 | RXCLKIN+ | I | +LVDS differential clock input |
| 19 | GND | P | Ground |
| 20 | RXIN3- | I | -LVDS differential data input |
| 21 | RXIN3+ | I | +LVDS differential data input |
| 22 | GND | P | Ground |
| 23 | NC | - | No Connection |
| 24 | NC | - | No Connection |
| 25 | GND | P | Ground |
| 26 | NC | - | No Connection |
| 27 | LED_PWM | O | Blacklight CABC controller signal output |
| 28 | NC | - | No Connection |
| 29 | AVDD | P | Power for analog circuit |
| 30 | GND | P | Ground |
| 31 | LED- | P | LED Cathode |
| 32 | LED- | P | LED Cathode |
| 33 | NC | - | No Connection |
| 34 | NC | - | No Connection |

| | | | |
|---|---|---|---|
| 35 | VGL | P | Negative power for TFT |
| 36 | NC | - | No Connection |
| 37 | CABC_EN | I | CABC Enable Input |
| 38 | VGH | P | Positive power for TFT |
| 39 | LED+ | P | LED Anode |
| 40 | LED+ | P | LED Anode |

**Table 3 - TFT-LCD Interface Pin Definition**

### 4.1.2 CTP Interface Pin Assignment

**I2C Interface Pin Definition, connector: FPC 0.5mm pitch 10pin**

| Pin no | Name | Type | Description |
|---|---|---|---|
| 1 | GND | P | Ground |
| 2 | GND | P | Ground |
| 3 | VDD_CTP | P | 3.3V Input power supply |
| 4 | VDD_CTP | P | 3.3V Input power supply |
| 5 | SCL | I/O | I2C serial bus, clock line (3.3V) |
| 6 | SDA | I/O | I2C serial bus, data line (3.3V) |
| 7 | RES | I | Reset input, active “L” (3.3V) |
| 8 | INT | O | Interrupt request to the host (3.3V) |
| 9 | GND | P | Ground |
| 10 | GND | P | Ground |

**Table 4 - CTP Interface Pin Definition**

# 5 Specifications

## 5.1 Absolute Maximum Ratings

### 5.1.1 Electrical Absolute Maximum Ratings

Condition: $V_{SS}$=0V, $T_a$=25°C

| Item | Symbol | MIN. | MAX. | Unit | Note |
|---|---|---|---|---|---|
| Power Supply Voltage | VDD | -0.3 | 3.9 | V | Note 1, 2 |
| | VDD_CTP | 0.3 | 3.47 | V | |
| | AVDD | 0.5 | 14.0 | V | |
| | VGH | -0.3 | 42.0 | V | |
| | VGL | -19.0 | 0.3 | V | |

**Table 5 - Electrical Absolute Maximum Ratings**

**Note:**

1. Permanent damage to the LCD module may occur if operated beyond the specified limits. Operation beyond the specified electrical characteristics may lead to malfunction or reduced reliability.
2. $V_{DD}$ must always be greater than $V_{SS}$.
3. Ensure proper grounding when handling the LCD module.

### 5.1.2 Environmental Absolute Maximum Ratings

| Item | Storage | | Operating | | Note |
|---|---|---|---|---|---|
| | MIN. | MAX. | MIN. | MAX. | |
| Ambient Temperature | -20°C | 60°C | 0°C | 50°C | Note 1, 2 |
| Humidity | - | - | - | - | Note 3 |

**Table 6 - Environmental Absolute Maximum Ratings**

**Note:**

1. Response time decreases at low operating temperatures.
2. Background color may vary slightly with ambient temperature; this phenomenon is reversible.
3. Ta<=40°C: 85%RH MAX
   Ta>=40°C: Absolute humidity must not exceed the equivalent of 85% RH at 40°C.

## 5.2 Electrical Specifications

### 5.2.1 Electrical Characteristics

Condition: $V_{SS}$=0V, $T_a$=25°C

| Item | | Symbol | Min. | Typ. | Max. | Unit | Note |
|---|---|---|---|---|---|---|---|
| Power Supply | | VDD | 2.3 | 2.5 | 2.7 | V | |
| | | VDD_CTP | 2.8 | 3.3 | 3.47 | V | |
| | | AVDD | 8.0 | 8.2 | 8.4 | V | |
| | | VCOM | 2.7 | 3.0 | 3.3 | V | Note 1 |
| | | VGH | 21.7 | 22.0 | 22.3 | V | |
| | | VGL | -7.3 | -7.0 | -6.7 | V | |
| Input Voltage | 'H' | $V_{IH}$ | 0.8*VDD | - | 3.6 | V | |
| | 'L' | $V_{IL}$ | 0 | - | 0.2*VDD | V | |

**Table 7 - Electrical Characteristics**

**Note:**

1. The typical VCOM value is provided for reference only. The actual VCOM must be optimized for each individual LCM. A variable resistor is required to perform this adjustment.

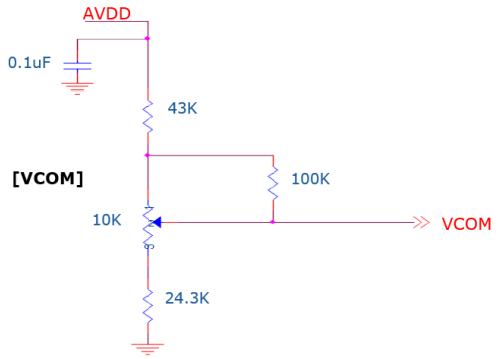


**Figure 1 - VCOM reference circuit**

### 5.2.2 Current Consumption

| Item | Symbol | Values | | | Unit | Remark |
|---|---|---|---|---|---|---|
| | | Min. | Typ. | Max. | | |
| Current for Driver | $I_{GH}$ | 300 | 705 | 1000 | uA | $V_{GH}$ = 22V |
| | $I_{GL}$ | 300 | 705 | 1000 | uA | $V_{GL}$ = -7V |
| | $IV_{DD}$ | 50 | 95 | 120 | mA | $V_{DD}$ = 2.5V |
| | $IAV_{DD}$ | 8 | 45 | 70 | mA | $AV_{DD}$ = 8.2V |

**Table 8 - Current Consumption**

### 5.2.3 LED Backlight Specification

Condition: $V_{SS}$=0V, $T_a$=25°C

| Item | Symbol | Min. | Typ. | Max. | Unit | Note |
|---|---|---|---|---|---|---|
| Supply Voltage | Vf | 16.2 | 18.0 | 19.8 | V | |
| Supply Current | If | - | 360 | - | mA | |
| Uniformity | Δ Bp | 75 | 80 | - | % | |
| Life Time | time | 20K | - | - | hours | Note 1 |

**Table 9 - LED Backlight Specification**

**Note:**

1. Brightness decreases to 50% of its initial value at an ambient temperature of $T_a$ = 25°C.

### 5.2.4 AC Electrical Characteristics

| Item | Symbol | Values | | | Unit | Note |
|---|---|---|---|---|---|---|
| | | Min. | Typ. | Max. | | |
| LVDS Differential Input High Threshold Voltage | $R_{xVTH}$ | - | - | 100 | mV | $R_{xVCM}$=1.2V |
| LVDS Differential Input Low Threshold Voltage | $R_{xVTL}$ | -100 | - | - | mV | |
| LVDS Differential Input Common Mode Voltage | $R_{xVCM}$ | 0.7 | - | 1.6 | V | |
| LVDS Differential Voltage | $\|V_{ID}\|$ | 200 | - | 600 | mV | |

**Table 10 - AC Electrical Characteristics**

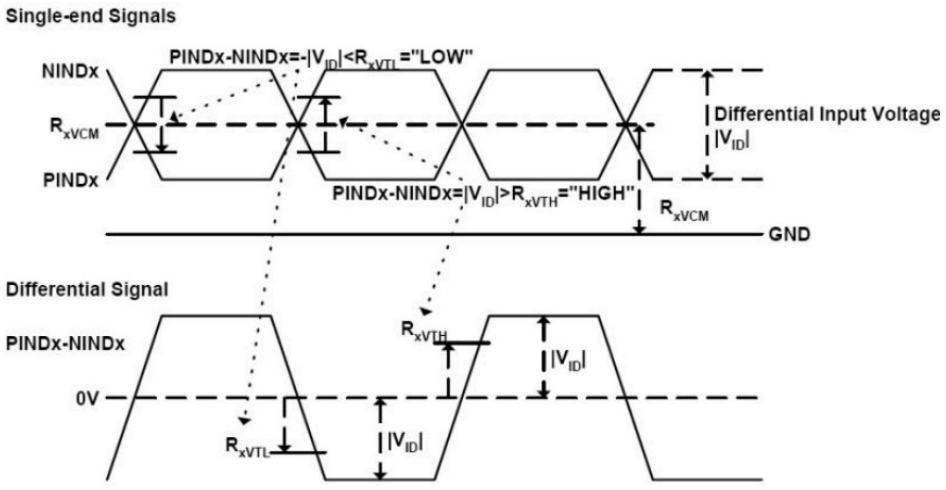


**Figure 2 - AC Electrical Characteristics**

## 5.3 Timing

### 5.3.1 Input Timing Characteristics

| Item | Symbol | Values | | | Unit | Note |
|---|---|---|---|---|---|---|
| | | Min. | Typ. | Max. | | |
| Clock Frequency | $1/T_C$ | 68.9 | 71.1 | 73.4 | MHz | Frame rate = 60Hz |
| Horizontal Display Area | $t_{HD}$ | | 1280 | | $T_C$ | |
| HS Period Time | $t_H$ | 1410 | 1440 | 1470 | $T_C$ | |
| HS Width + Back Porch + Front Porch | $t_{HW} + t_{HBP} + t_{HFP}$ | 60 | 160 | 190 | $T_C$ | |
| Vertical Display Area | $t_{VD}$ | | 800 | | $t_H$ | |
| VS Period Time | $t_V$ | 815 | 823 | 833 | $t_H$ | |
| VS Width + Back Porch + Front Porch | $t_{VW} + t_{VBP} + t_{VFP}$ | 15 | 23 | 33 | $t_H$ | |

**Table 11 - Input Timing Characteristic**

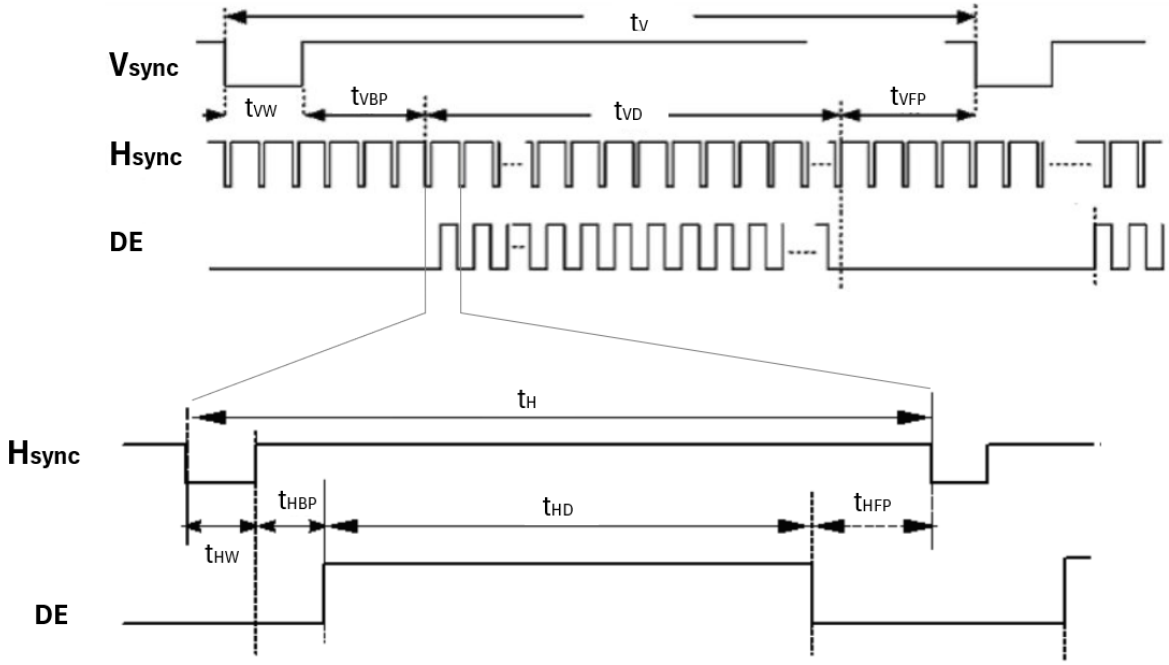


**Figure 3 - Input Timing Characteristic**

### 5.3.2 LVDS Data Input Format

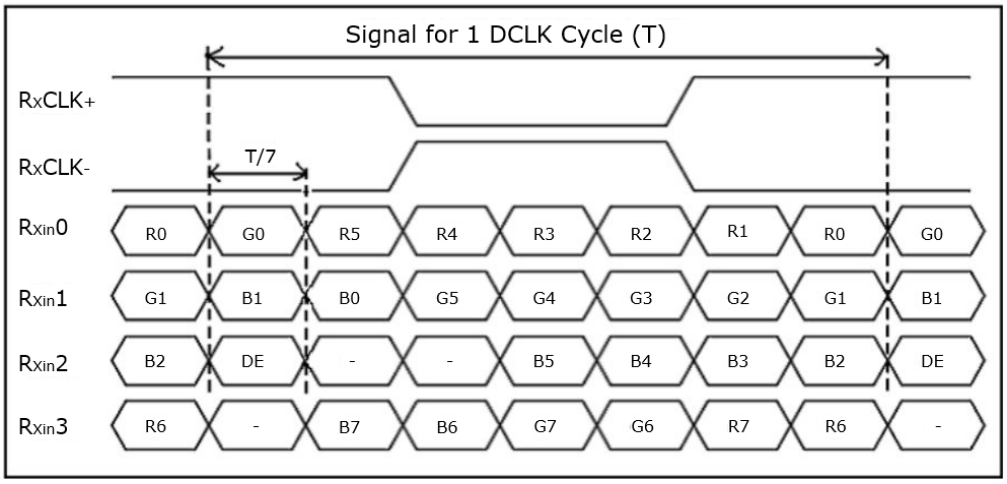


**Figure 4 - LVDS Data Input Format**

## 5.4 Power Sequence

### 5.4.1 Power ON Sequence

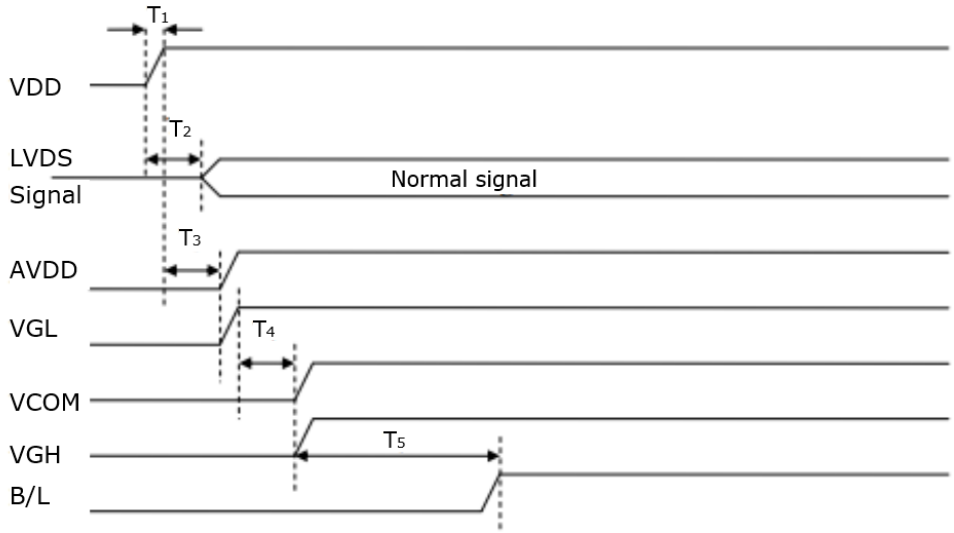


**Figure 5 - Power ON Sequence**

| Symbol | Values | | | Unit |
|---|---|---|---|---|
| | Min. | Typ. | Max. | |
| $T_1$ | 0.5 | 2 | 10 | ms |
| $T_2$ | 0 | 5 | 50 | ms |
| $T_3$ | 0 | 5 | 50 | ms |
| $T_4$ | 0 | 6 | 100 | ms |
| $T_5$ | 120 | 130 | 200 | ms |

**Table 12 - Power ON Sequence**

### 5.4.2 Power OFF Sequence

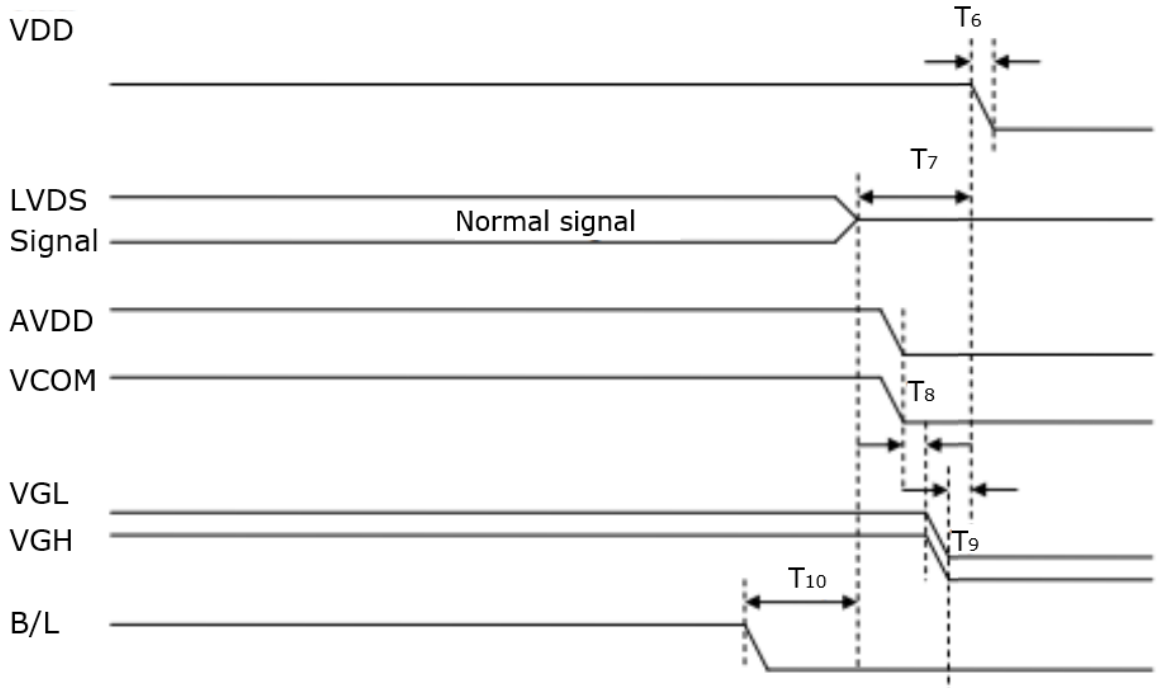


**Figure 6 - Power OFF Sequence**

| Symbol | Values | | | Unit |
|---|---|---|---|---|
| | Min. | Typ. | Max. | |
| $T_6$ | 0.5 | 2 | 10 | ms |
| $T_7$ | 0 | 7 | 50 | ms |
| $T_8$ | 0 | 5 | 10 | ms |
| $T_9$ | 0 | 1 | 10 | ms |
| $T_{10}$ | 0 | 2 | 100 | ms |

**Table 13 - Power OFF Sequence**

## 5.5 Optical Specifications

| Item | Symbol | | Condition | Min. | Typ. | Max. | Unit | Note |
|---|---|---|---|---|---|---|---|---|
| Brightness | Bp | | $\theta$=0° Φ=0° | - | 700 | - | Cd/m$^2$ | Note 1 |
| Uniformity | ⊿Bp | | | 70 | 80 | - | % | Note 1 Note 2 |
| Viewing Angle | 3:00 | | Cr≥10 | - | 80 | - | Deg | Note 3 |
| | 6:00 | | | - | 80 | - | | |
| | 9:00 | | | - | 80 | - | | |
| | 12:00 | | | - | 80 | - | | |
| Contrast Ratio | Cr | | $\theta$=0° Φ=0° | 600 | 800 | - | - | Note 4 |
| Response Time | $T_r + T_f$ | | | - | 25 | 50 | ms | Note 5 |
| Color of CIE Coordinate | W | x | $\theta$=0° Φ=0° | Typ -0.05 | 0.290 | Typ +0.05 | - | Note 1 Note 6 |
| | | y | | | 0.358 | | - | |
| | R | x | | | 0.589 | | - | |
| | | y | | | 0.323 | | - | |
| | G | x | | | 0.330 | | - | |
| | | y | | | 0.578 | | - | |
| | B | x | | | 0.146 | | - | |
| | | y | | | 0.140 | | - | |
| NTSC Ratio | S | | | 40 | 50 | - | % | |

**Table 14 - Optical Specifications**

**Remark:** ***Parameters may vary slightly depending on temperature, driving voltage, and material.***

**Note :**

1. Data was measured after the LEDs were turned on for 5 minutes with the LCM displaying full white. Brightness is the average value of 9 measured points. Measurement equipment: PR-705 (Φ8mm)
   Measuring Conditions:
   - Environment: Dark room
   - Temperature: Ta=25°C
   - Operating voltage adjusted for optimum contrast at the center of the display
   - Values measured at the center point of the LCD panel after more than 5 minutes of backlight operation

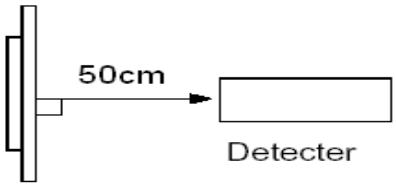


**Figure 7 - Measurement Setup**

2. The luminance uniformity is calculated using the following formula:

$$\text{⊿Bp} = \frac{\textbf{Bp (Min.)}}{\textbf{Bp (Max.)}} \times 100\%$$

Bp (Max.) = Maximum brightness in 9 measured spots
Bp (Min.) = Minimum brightness in 9 measured spots

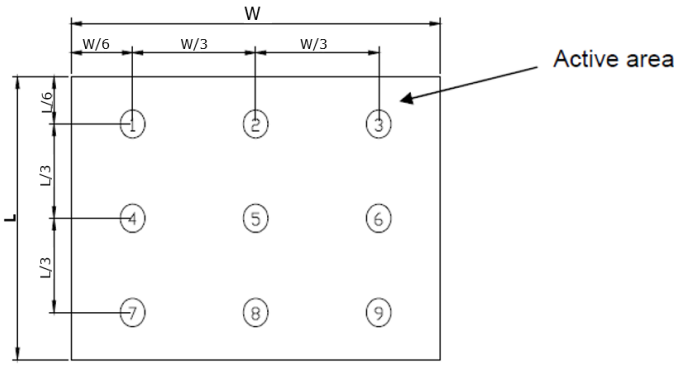


**Figure 8 - Measurement Point**

3. Definition of viewing angle: Refer to the figure below, indicated by θ and Φ.

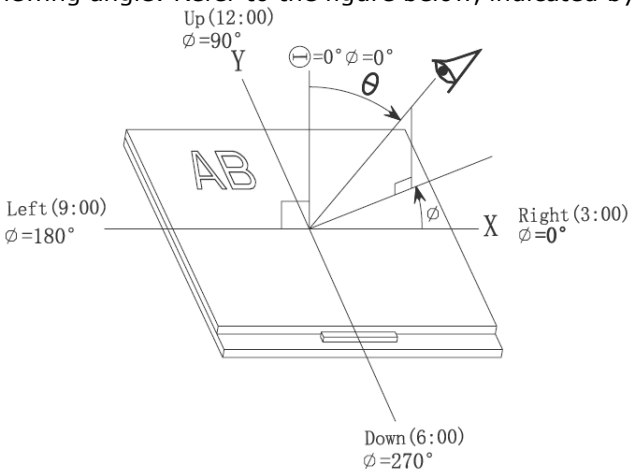


**Figure 9 - Viewing Angle**

4. Contrast ratio is calculated using the following formula. (Test equipment: DMS501)

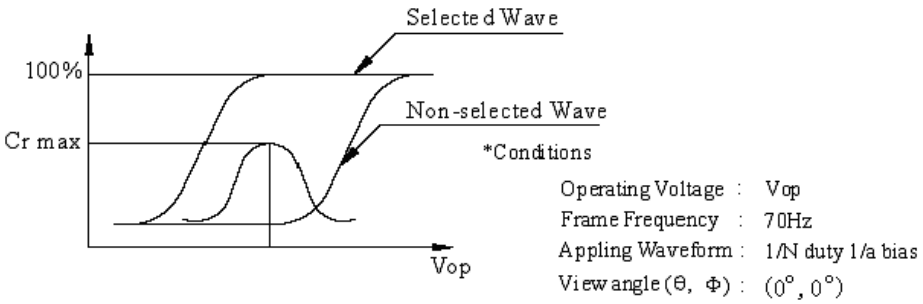


**Figure 10 - Contrast Ratio**

$$\text{Contrast ratio, } Cr = \frac{\textbf{Brightness of selected dots}}{\textbf{Brightness of non-selected dots}}$$

5. Definition of response time. (Test equipment: DMS501)
The output signals of the photo detector are measured when the input signal changes from "black" to "white" (falling time) and from "white" to "black" (rising time). Response time is defined as the time interval between 10% and 90% of the signal amplitude. Refer to the figure below for illustration.

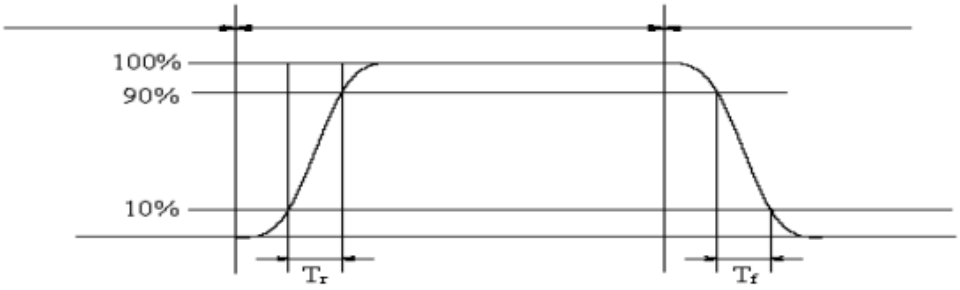


**Figure 11 - Definition of Response Time**

6. Definition of color in terms of CIE coordinates and NTSC ratio.
   Color gamut:

$$S = \frac{\text{Area of RGB triangle}}{\text{Area of NTSC triangle}} \times 100\%$$

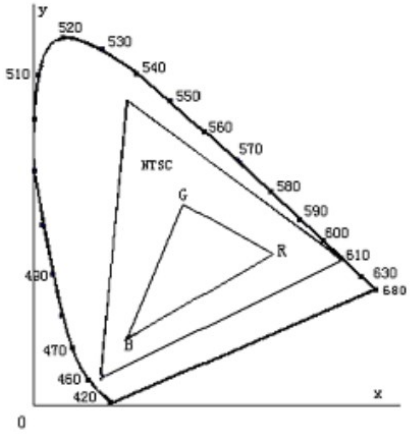


**Figure 12 - 1931 CIE Chromaticity Diagram**

7. Definition of cross talk.

$$\text{Cross talk ratio(\%)} = \frac{|\text{Pattern A Brightness} - \text{Pattern B Brightness}|}{\text{Pattern A Brightness}} \times 100\%$$

**Electric volume value=3F+/-3Hex**

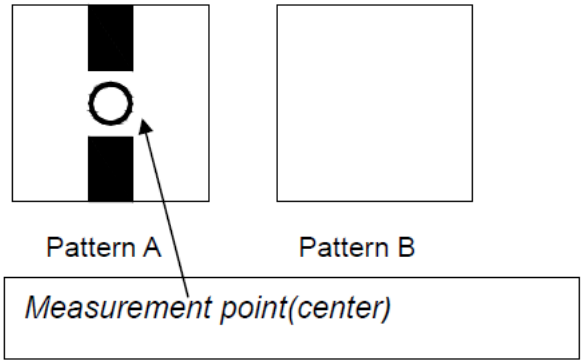


**Figure 13 - Definition of Cross talk**

# 6 Reliability Test Items

| Test Item | Test Conditions | Note |
|---|---|---|
| High Temperature Storage | Ta= +60°C 96hrs | Note 1, 3, 4 |
| Low Temperature Storage | Ta= -20°C 96hrs | Note 1, 3, 4 |
| High Temperature Operation | Ta= +50°C 96hrs | Note 2, 3, 4 |
| Low Temperature Operation | Ta= 0°C 96hrs | Note 1, 3, 4 |
| High Temperature and Humidity Storage | Ta= +40°C, 90%RH 96hrs | Note 3, 4 |
| Thermal Shock | 0°C /30 min ~ +50°C /30 min for 100 cycles<br>Start with cold temperature<br>End with high temperature | Note 3, 4 |
| Vibration Test | Frequency range: 10~55Hz<br>Stroke: 1.5mm<br>Sweep: 10Hz~55Hz~10Hz<br>2 hours for each direction of X, Y and Z (6 hours for total) | |
| Mechanical Shock | 100G 6ms, ±X, ±Y and ±Z, 3 times for each direction | |
| Package Vibration Test | Random vibration:<br>ISTA-3A 1Hz~200Hz, Grms=0.53<br>Half hours for direction of Z | |
| Package Drop Test | Height: 60cm<br>1 corner, 3 edges, 6 surfaces | |
| Electrostatic Discharge | ± 2 kV, Human Body Mode,<br>100pF/1500Ω | |

**Table 15 - Reliability Test Items**

**Note :**

1. Ta refers to the ambient temperature of the samples.
2. Ts refers to the temperature of the panel's surface.
3. Under standard conditions, no practical issues are expected that would affect display function. After reliability testing, only operational functionality is guaranteed; cosmetic specifications are not guaranteed.
4. Before performing cosmetic and functional tests, the product must be allowed sufficient recovery time, at least 2 hours at room temperature.

# 7 Dimension

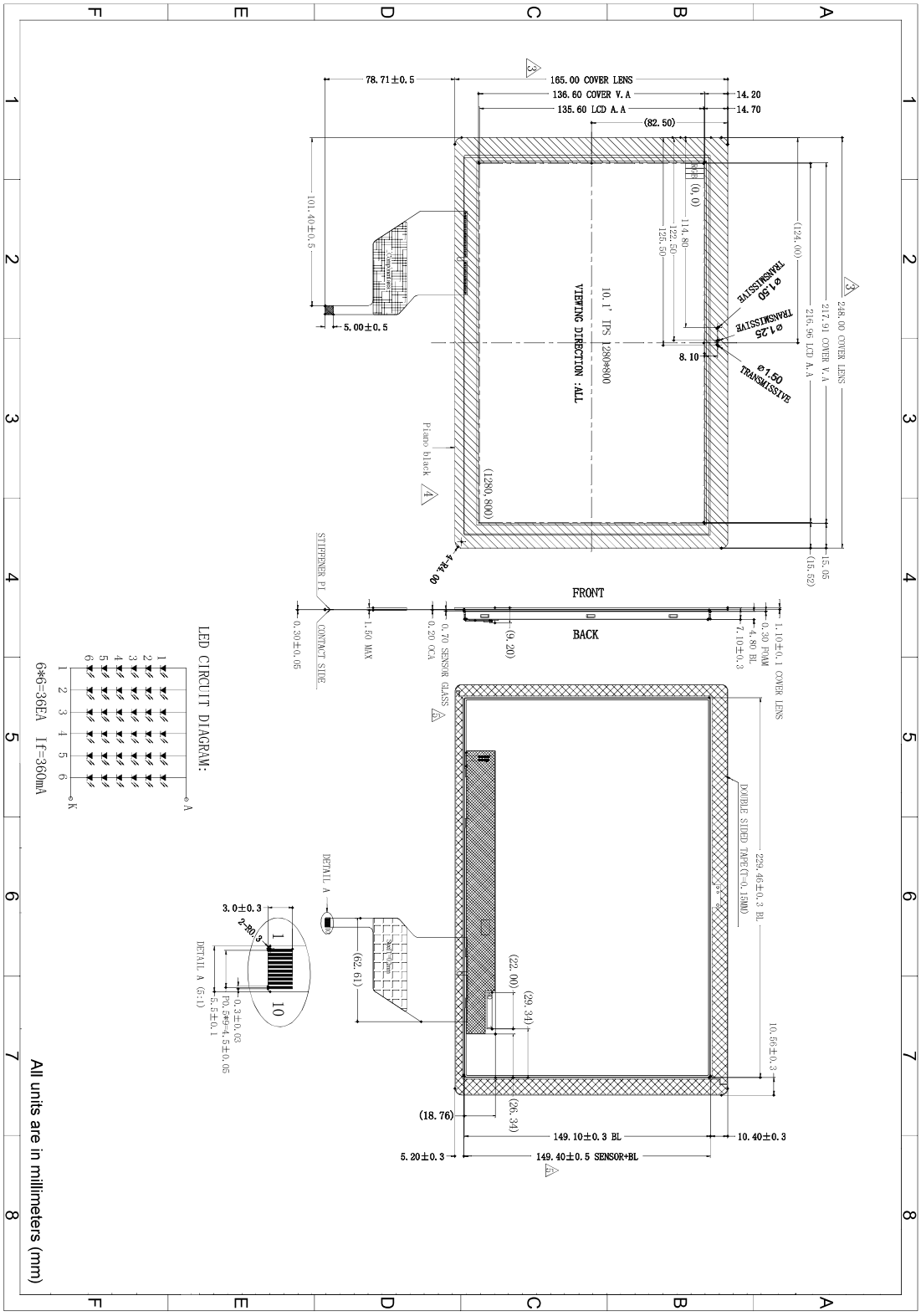


**Figure 14 - LCM Dimension**

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# 9 Warranty Statement

According to our after-sales policy, the warranty (if applicable) will be void under the following circumstances:

- The device has been damaged due to human factors, such as dropping, impact, water exposure, or unauthorized disassembly/modification.
- The device has malfunctioned due to improper use, mishandling, or usage beyond its intended design.
- The device has been disassembled, repaired, or modified by unauthorized personnel.
- Any other conditions that do not comply with our warranty policy. For details, please contact our sales team.

# 10 Contact Information

Refer to https://brtchip.com/contact-us/ for contact information.

**Distributor and Sales Representatives**

Please visit the Distribution Network – IC & Module (brtchip.com) page for the contact details of our distributor(s) and sales representative(s) in your country.

# Appendix A – References

## Document References

NA

## Acronyms and Abbreviations

| Terms | Description |
|---|---|
| CABC | Content Adaptive Backlight Control |
| CTP | Capacitive Touch Panel |
| DC | Direct Current |
| FPC | Flexible Printed Circuit |
| IC | Integrated Circuit |
| I2C | Inter-Integrated Circuit |
| LCD | Liquid Crystal Display |
| LCM | Liquid Crystal Module |
| LED | Light Emitting Diode |
| LEDA | Light Emitting Diode Anode |
| LEDK | Light Emitting Diode Cathode |
| LVDS | Low-Voltage Differential Signaling |
| TFT | Thin Film Transistor |

# Appendix B – List of Tables & Figures

## List of Tables



## List of Figures

# Appendix C – Revision History

Document Title: DP-1011-01A Datasheet

Document Reference No.: BRT_000477

Clearance No.: BRT#242

Product Page: https://brtchip.com/product-category/products/

Document Feedback: Send Feedback

| Revision | Changes | Date |
|---|---|---|
| Version 1.0 | Initial Release | 01-09-2025 |