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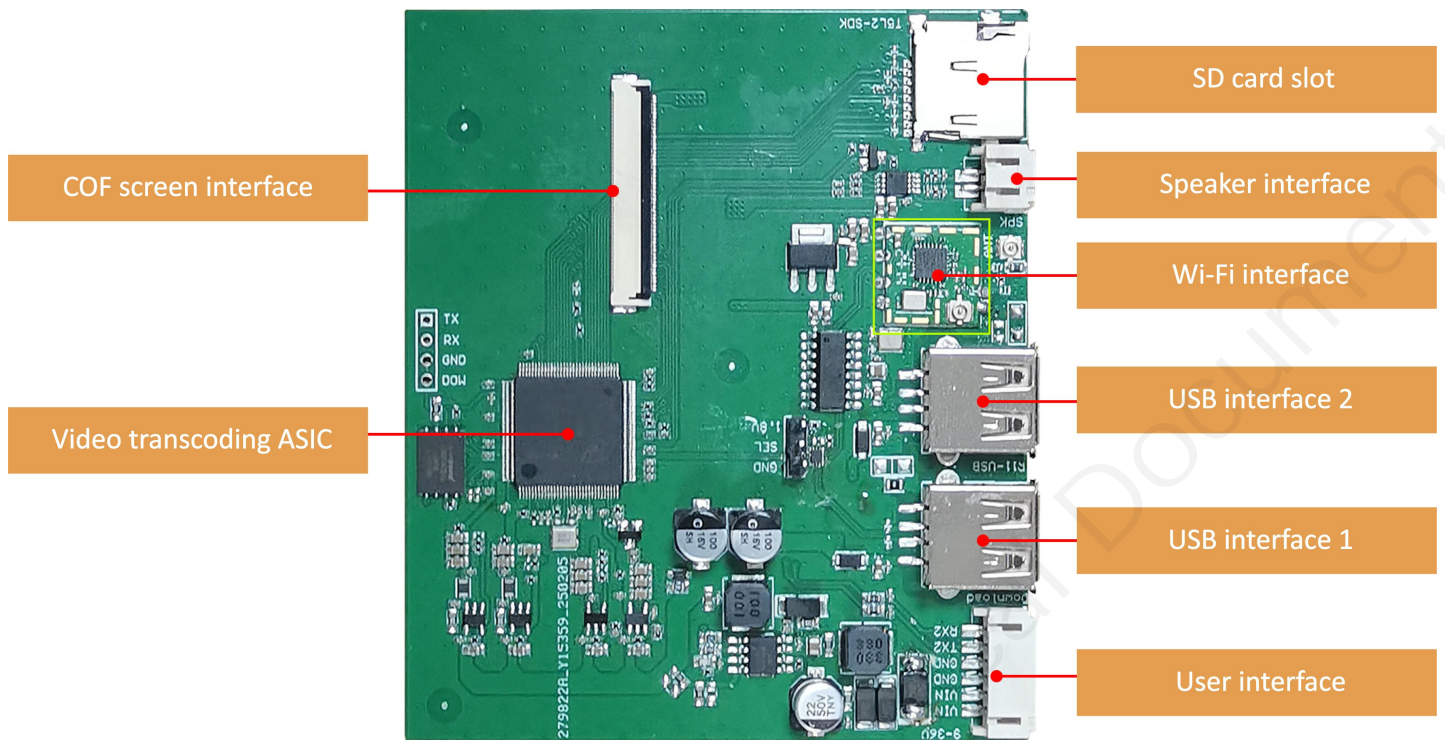
# DMG10600F070_01WTCVD

**Features:**

- **Powered by T5L2 ASIC, running DGUS II HMI platform.**

- **7.0 inch, 1024*600 resolution, IPS-TFT LCD.**

- **Onboard WiFi module, enabling WiFi connectivity.**

- **Onboard Video transcoding ASIC, equipped with a standard background, realize online download, audio and video playback, and audio and video playback of U disk.**



**Note: The laminated screen and PCBA are shipped separately.**

# 1. Hardware and interface

## 1.1 Hardware interface diagram



Hardware interface diagram

## 1.2 Hardware and interface description

| No. | Item | Description |
|-----|------|-------------|
| 1 | T5L2 ASIC | DWIN independently developed, mass production in 2019. Dual 8051 cores, GUI and application run on separate 8051 cores. |
| 2 | User interface | 6Pin_2.0mm socket for power supply and serial communication. |
| 3 | COF screen interface | 50Pin interface, support up to 10.1 inch 1024*600 resolution COF screen. |
| 4 | Flash | 16MB (1*16MB NOR Flash) of COF screen for storing UI files like fonts, images, music, with over 100,000 erase/write cycles. 128MB NAND Flash of Video transcoding ASIC. |
| 5 | Video transcoding ASIC | Used to implement the audio and video playback function. |
| 6 | USB interface 1 | For use with the Video transcoding ASIC, it can be used to connect a computer to download program of firmware and files. |
| 7 | USB interface 2 | For use with the Video transcoding ASIC, it can be used to connect U disk for playback MP4 video files. |
| 8 | Short circuit | Use the jumper cap to choose between USB port 1 or USB port 2. |
| 9 | WiFi module | WiFi module for connecting to the cloud platform to update remotely. |
| 10 | Speaker interface | 2Pin_2.0mm socket, speaker interface. |
| 11 | SD card slot | For DGUS project file downloads (UI, CFG files, kernel, etc.), 4 Mb/s rate. |

## 2. Specification parameters

### 2.1 Display parameters

| LCD Type | IPS, TFT LCD. |
|---|---|
| Viewing Angle | Wide viewing angle (85°/85°/85°/85° typical), high contrast, and good color reproduction. |
| Resolution | 1024×600 (support 0°/90°/180°/270°) |
| Active Area (AA) | 154.21mm (W)×85.92mm (H) |
| Viewing Area (VA) | 154.21mm (W)×85.92mm (H) |
| Backlight | LED |
| Backlight Service Life | >20000 hours |
| Brightness | 250nit |
| Brightness Control | 100-level brightness adjustment (Flickering may occur at 1%-30% of max brightness; not recommended for use in this range) |
| Note: Use dynamic screen saver to prevent afterimages from prolonged fixed page display. | |

### 2.2 Touch parameters

| Type | Capacitive touch panel. |
|---|---|
| Structure | G+G structure with tempered glass surface and hardness ≥ 6H. |
| Light Transmittance | >85% |

## 2.3 Serial interface parameters

| Mode | UART2: TTL | | | | |
|------|------------|------|------|------|------|
| **Voltage Level** | Test Condition | Min | Typ | Max | Unit |
| | Output 1, Iout = 1mA | 4.78 | 5.0 | - | V |
| | Output 0, Iout = -1mA | - | - | 0.4 | V |
| | Input 1, Iin = 1mA | 2.5 | 5.0 | - | V |
| | Input 0, Iin = -1mA | - | - | 1.0 | V |
| **Baud Rate** | 3150~3225600bps, typical value of 115200bps. | | | | |
| **Data Format** | UART2: N81 | | | | |
| **Interface Cable** | 6Pin_2.0mm | | | | |

## 2.4 Electrical specifications

| Rated Power | <5W | |
|-------------|-----|---|
| **Operating Voltage** | 9-36V, typical value of 12V. | |
| **Operating Current** | 358mA | VCC=12V, max backlight. |
| **Recommended power supply: 12V 1A DC.** | | |

## 2.5 Operating environment

| Operating Temperature | -10℃ to 60℃ (12V @ 60% RH) |
|-----------------------|-----------------------------|
| **Storage Temperature** | -20℃ to 70℃ |
| **Anti-UV** | None |
| **Conformal Coating** | None |
| **Operating Humidity** | 10%-90%RH, typical value of 60% RH. |

# 3. Reliability test

## 3.1 Electrostatic discharge test

Test temperature: 25°C. Test humidity: 50%RH.

Test process: Place the product on the test bench fixture (approximately 15cm in height), and perform contact and air discharge tests on the smart LCM. Observe if any freezing, black or white screen, flickering, or rebooting occurs during the test.
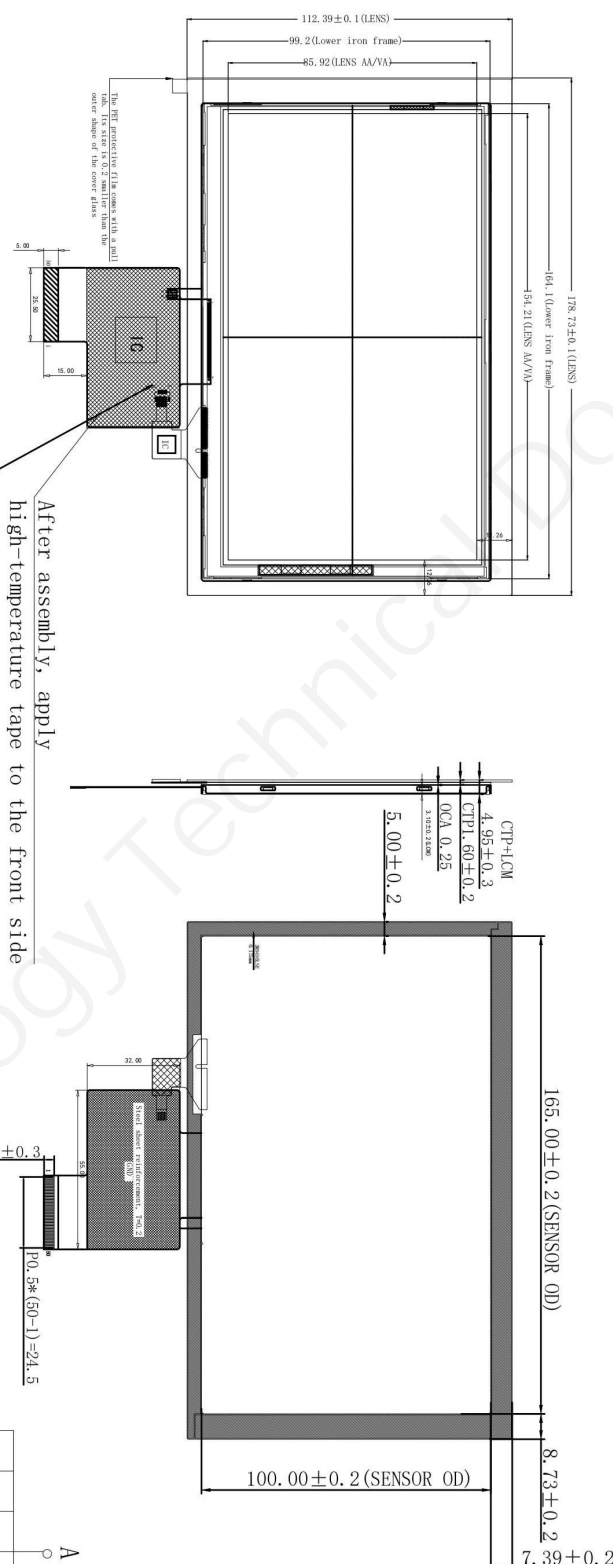
Test conclusion: The product's ESD performance meets GB/T 17626.2 Class B standards.

| Discharge Type | Discharge Value | Result |
|---|---|---|
| Air discharge | ±8KV | Normal operation |

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## 4. Packaging & dimensions

| Form Factor | PCBA: 93.50mm (W)×79.80mm (H) ×10.10mm (T)<br>LCM+CTP: 178.73mm (W)×112.39mm (H) ×4.95mm (T) |
|---|---|
| Net Weight | 210g |

**Packaging Standards**

| Model | Dimensions | Layer | Quantity/Layer | Quantity(Pcs) |
|---|---|---|---|---|
| Carton1： | 220mm(L)×160mm(W)×47mm (H) | - | - | - |
| Carton2： | 250mm(L)×200mm(W)×80mm (H) | - | - | - |
| Carton3： | 320mm(L)×270mm(W)×80mm (H) | - | - | - |
| Carton4： | 450mm(L)×350mm(W)×300mm (H) | - | - | - |
| Carton5： | 600mm(L)×450mm(W)×300mm (H) | - | - | - |

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# G+G structure with domestic glass, black cover glass

## Front view

## Side view

## Back view

NOTE:
1. Structure: G+G domestic glass, black, green glass
2. IC:GT911 12*21 channels:
3. Transmittance: 85% MIN:
4. *indicates the key dimension. The chamfer of the lens is not marked:
C: 0.125±0.05, minimum R angle: 0.5±0.1;
5. Surface hardness: ≥6H;
6. Operating temperature: -20-70℃;
7. Storage temperature: -20-70℃;
8. Dimensional tolerance for unmarked dimensions is ±0.2mm;
9. Compliant with RoHS standard:
10. The 4.7K pull-up resistors for SCL and SDA are designed on the FPC;
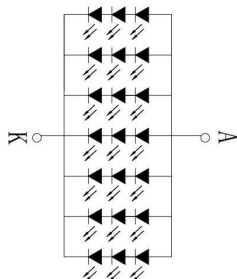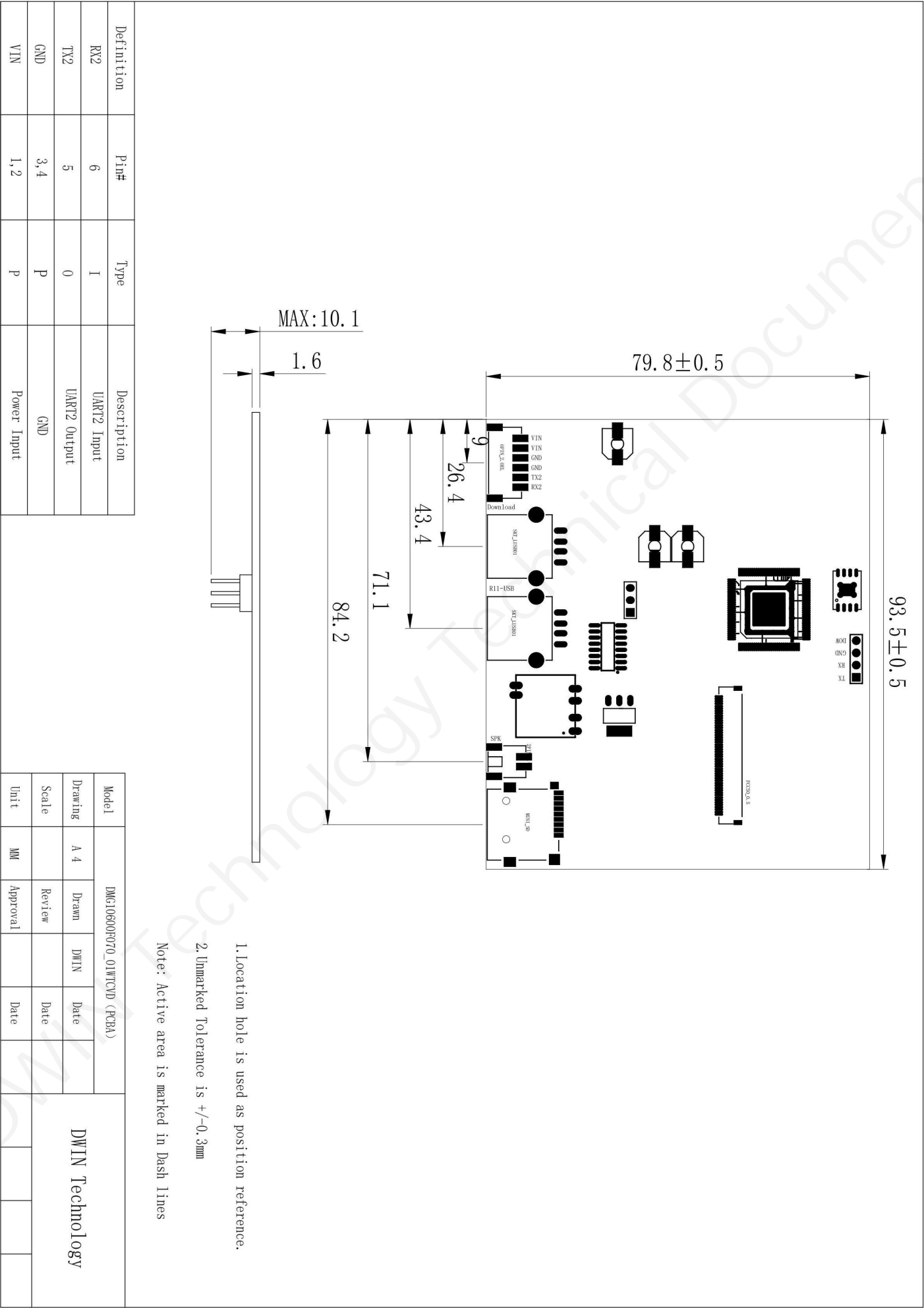11. Communication voltage is 3.3V, and operating voltage is 3.3V.

PIN Definition

| PIN# | Name |
|---|---|
| 1 | VDD-3.3V |
| 2 | RST |
| 3 | SCL |
| 4 | INT |
| 5 | SDA |
| 6 | GND |

Both Sda and Sql need to be pulled up with a 4.7k resistor

After assembly, apply high-temperature tape to the front side

The PET protective film comes with a pull tab. Its size is 0.2 smaller than the outer shape of the cover glass

112.39±0.1 (LENS)
99.2 (Lower iron frame)
85.92 (LENS AA/VA)
178.73±0.1 (LENS)
164.1 (Lower iron frame)
154.21 (LENS AA/VA)

CTP+LCM
CTP1.60±0.2
OCA 0.25
4.95±0.3
0CA 0.25
5.00±0.2

165.00±0.2 (SENSOR OD)
100.00±0.2 (SENSOR OD)
8.73±0.2
7.39±0.2
3.5±0.3
P0.5*(50-1)=24.5
32.00

LED circuit diagram
(3 in series and 7 in parallel)
K
A

LCD PIN Definition

| PIN# | Name | PIN# | Name |
|---|---|---|---|
| 1 | +5V | 26 | P26 |
| 2 | +5V | 27 | P25 |
| 3 | GND | 28 | P24 |
| 4 | GND | 29 | P23 |
| 5 | GND | 30 | P22 |
| 6 | ADC7 | 31 | P21 |
| 7 | ADC6 | 32 | P20 |
| 8 | ADC5 | 33 | P17 |
| 9 | ADC3 | 34 | P16 |
| 10 | ADC1 | 35 | P15 |
| 11 | +3.3V | 36 | P14 |
| 12 | SPK | 37 | P13 |
| 13 | SD_CD | 38 | P12 |
| 14 | SD_CK | 39 | P11 |
| 15 | SDD3 | 40 | P10 |
| 16 | SDD2 | 41 | TX4 |
| 17 | SDD1 | 42 | RX4 |
| 18 | SDD0 | 43 | TX5 |
| 19 | PWM0 | 44 | RX5 |
| 20 | PWM1 | 45 | P00 |
| 21 | P33 | 46 | P01 |
| 22 | P32 | 47 | P02 |
| 23 | P31 | 48 | P03 |
| 24 | P30 | 49 | TX2 |
| 25 | P27 | 50 | RX2 |

REVISION RECORD

| | | VER | DATE |
|---|---|---|---|
| 1 | First Edition | V1 | 20240805 |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |

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| | | |
|---|---|---|
| CUSTOMER NAME : | | |
| DESIGN : | | DMG10600F070_01WTCVD (LCM+CTP) |
| DRAWN BY | | RELEASE: V1 SENSOR: |
| CHECKED BY | | DATE:2024/08/05 INIT: |
| APPROVED BY | | DATE: SCALE: 1:1 ANGLES: ±0.1° |

TOLERANCES : ±0.2
UNIT : mm
SHEET : 1/1
PROJ. CODE:

| Definition | Pin# | Type | Description |
|---|---|---|---|
| RX2 | 6 | I | UART2 Input |
| TX2 | 5 | O | UART2 Output |
| GND | 3,4 | P | GND |
| VIN | 1,2 | P | Power Input |



MAX:10.1
1.6
79.8±0.5
93.5±0.5
84.2
71.1
43.4
26.4
9

| Model | DMG10600F070_01WTCVD（PCBA） | | | |
|---|---|---|---|---|
| Drawing | A4 | Drawn | DWIN | Date |
| Scale | | Review | Date | |
| Unit | MM | Approval | Date | |

Note: Active area is marked in Dash lines
2. Unmarked Tolerance is +/-0.3mm
1. Location hole is used as position reference.

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## 5. T5L series IC features

(1) Mature and stable 8051 core which is the most widely used with the maximum operating frequency of T5L is up to 250MHz, 1T(single instruction cycle)high speed operation.

(2) Separate GUI CPU Core running DGUS II System:

- High-speed display memory, 2.4GB/S bandwidth.

- 2D hardware acceleration, the decompression speed of JPEG is up to 200fps@1280*800 and the UI with animation and icons as its main feature is extremely cool and smooth.

- Images and icons stored in JPEG format. Adopt Low-cost 16Mbytes SPI Flash.

- Support CTP or RTP with adjustable sensitivity and maximum 400 Hz touch frequency.

- 1-way 15bit 32Ksps PWM digital power amplifier driver loudspeaker, save power amplifier cost and achieve high signal-to-noise ratio and sound quality restoration.

- 128Kbytes variable storage space for exchanging data with OS CPU Core and memory.

- Support DGUS development and simulation on PC. Support background remote upgrade.

(3) Separate CPU (OS CPU) core runs user 8051 code or DWIN OS system and user CPU is omitted in practical application:

- Standard 8051 architecture and instruction set, 64Kbytes code space, 32Kbytes on-chip RAM.

- 64 bit integer mathematical operation unit (MDU), including 64 bit MAC and 64 bit divider.

- 28 IOs, 4-channel UARTs, 1-channel CAN, up to 8-channel 12-bit A/Ds and 2-channle 16-bit PWM of adjustable resolution.

- Support IAP on-line simulation and debugging with unlimited number of breakpoints.

- Upgrade code online through DGUS system.

(4) 1Mbytes on-chip Flash with DWIN patent encryption technology ensure code and data security.

(5) Operating temperature ranges from -40°C to +85°C(IC operating temperature customizable from -55°C to 105°C).

**DWIN encourages users to design your own customized product based on T5L**

# 6. Revision records

| Rev | Revise Date | Content | Editor |
|-----|-------------|---------|--------|
| 00 | 2025-02-27 | First Edition | Xu Ying |

Please contact us if you have any questions about the use of this document or our products, or if you would like to know the latest information about our products:

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Thank you all for continuous support of DWIN, and your approval is the driving force of our progress!

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