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# Datasheet

## Microtech Technology

**MTF0700J16EA**

ZD-01-012

### Revision History

Version	Revise Date	Page	Content
Pre-Spec.01	2018/05/10	All	Initial Release.

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# 1. General Information

## 1.1 Application

This model is a color active matrix TFT LCD that uses Low-temperature poly-silicon TFT as a switching device. It is composed of a TFT LCD cell, IC and FPC. And it has a 7.0 (10:16) inch diagonally measured active display area with WUXGA (1200 horizontal by 1920 vertical pixel) resolution.

## 1.2 Feature

- 7 inch (10:16 diagonal)
- Low power consumption
- Thin and light weight
- High PPI, high NTSC
- High contrast ratio, and wide viewing angle
- 4 Lane MIPI Interface
- 16.7M display color by 8 bit

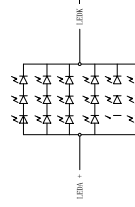
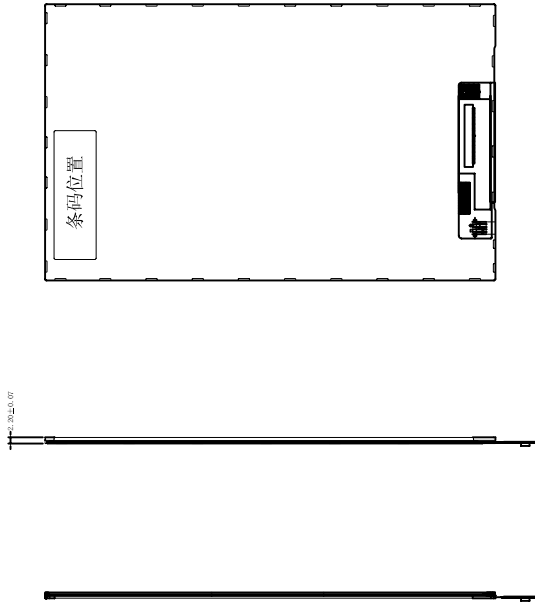
Luminance: 1000 cd/m2(Typ.)

## 1.3 Application

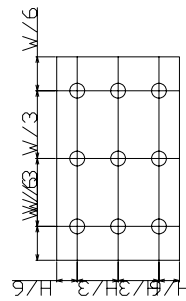
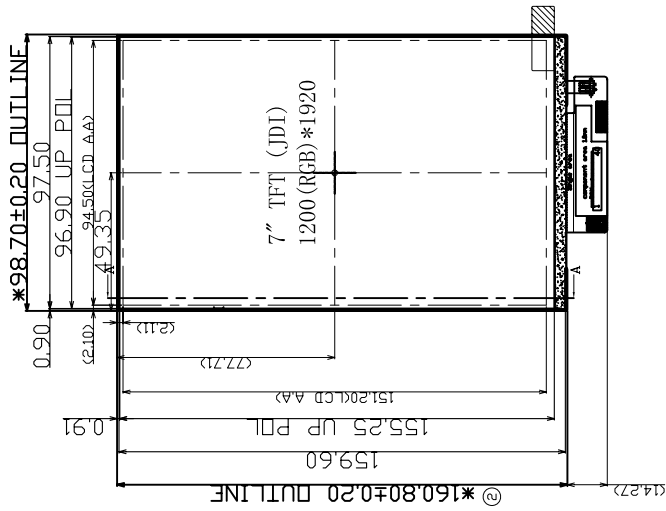
- Tablet
- Mobile
- Display terminal for AV application

## 1.4 General Specification

No.	Item	Specification	Unit
1	Size	7.02 (Diagonal)	inch
2	Driver element	LTPS TFT active matrix	
3	Resolution	1200 × 3(RGB) × 1920	
4	Display mode	Normally Black	
5	View direction(Gray Inversion)	Free	
6	Pixel pitch	0.07875(W) × 0.07875(H)	mm
7	Active area	94.5(W) × 151.2(H)	mm
8	Panel size	97.3 (W) x159.4 (H)x2.2(D) (Typ.)	mm
9	Surface treatment	Hard coating	
10	Color arrangement	RGB-stripe	
11	Interface	MIPI	
12	Panel power consumption	TBD	W
13	Weight	TBD(Typ.)	g



3\*6=18EA, 20mA\*6=120mA



测试点



- Notes:
1. Unit: mm
  2. Do not scale drawing
  3. All radii without dimension R0.20mm
  4. Luminous intensity (9 AVG):  
Module: 800cd/m<sup>2</sup> (Min), 1000cd/m<sup>2</sup> (Typ)
  5. Uniformity: 75% (Min)  
VF: 17.8V (Min); 18.0V (Typ); 18.6V (Max); IF: 120mA (Fix)
  6. The color coordinates:

	MIN	TYP	MAX
x	0.26	---	0.360
y	0.27	---	0.380

7.  $\Delta$  Modification rev. number
8. draft angle 1.0°
9. Genral Tolerance: ±0.20mm
10. Mark mold cavity identification in recess approximately where indicated
11. \*\*For important dimension ( ) for reference dimension
12. Rolls must be complied. (Use Lead-free process)

### 3. Interface Pin Assignment

Recommended connector is "F62240-H1210B" manufactured by Vigorconn Technology.

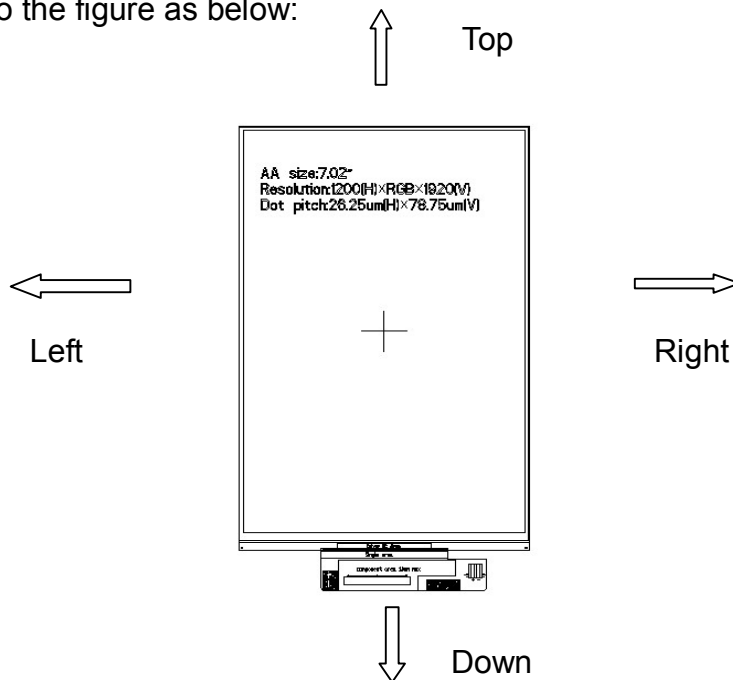
Pin No	Symbol	Function	Remark
1	NC	No connection	
2	IOVCC	Power supply for system ,IOVCC=1.8V	
3	IOVCC		
4	GND	GROUND	
5	RST	Device reset signal	
6	NC	No connection	
7	GND	GROUND	
8	MIPI_0N	MIPI Negative data signal (-)	
9	MIPI_0P	MIPI Positive data signal (+)	
10	GND	GROUND	
11	MIPI_1N	MIPI Negative data signal (-)	
12	MIPI_1P	MIPI Positive data signal (+)	
13	GND	GROUND	
14	MIPI_CKN	MIPI Negative clock signal (-)	
15	MIPI_CKP	MIPI Positive clock signal (+)	
16	GND	GROUND	
17	MIPI_2N	MIPI Negative data signal (-)	
18	MIPI_2P	MIPI Positive data signal (+)	
19	GND	GROUND	
20	MIPI_3N	MIPI Negative data signal (-)	
21	MIPI_3P	MIPI Positive data signal (+)	
22	GND	GROUND	
23	HS	Horizontal scan Signal for touch	
24	VS	Vertical scan Signal for touch	



25	GND	GROUND	
26	NC/TE	Tearing effect output signal for NVM(OTP),Let it open when not in use	
27	PWMO	PWM control signal for LED driver (CABC)	
28	NC/BIST	Enables the Test Image Generation function,if not used,connect to ground	
29	NC	No connection	
30	GND	GROUND	
31	LED-	LED cathode	
32	LED-		
33	NC	No connection	
34	VSN	Analog supply negative voltage(-5~-6V)	
35	VSN		
36	NC	No connection	
37	VSP	Analog supply positive voltage (5~6V)	
38	VSP		
39	LED+	LED anode +18.0 V	
40	LED+		

Note: Definition of scanning direction.

Refer to the figure as below:



## 4. Operation Specification

### 4.1 Absolute Maximum Ratings

(Ta=25°C)

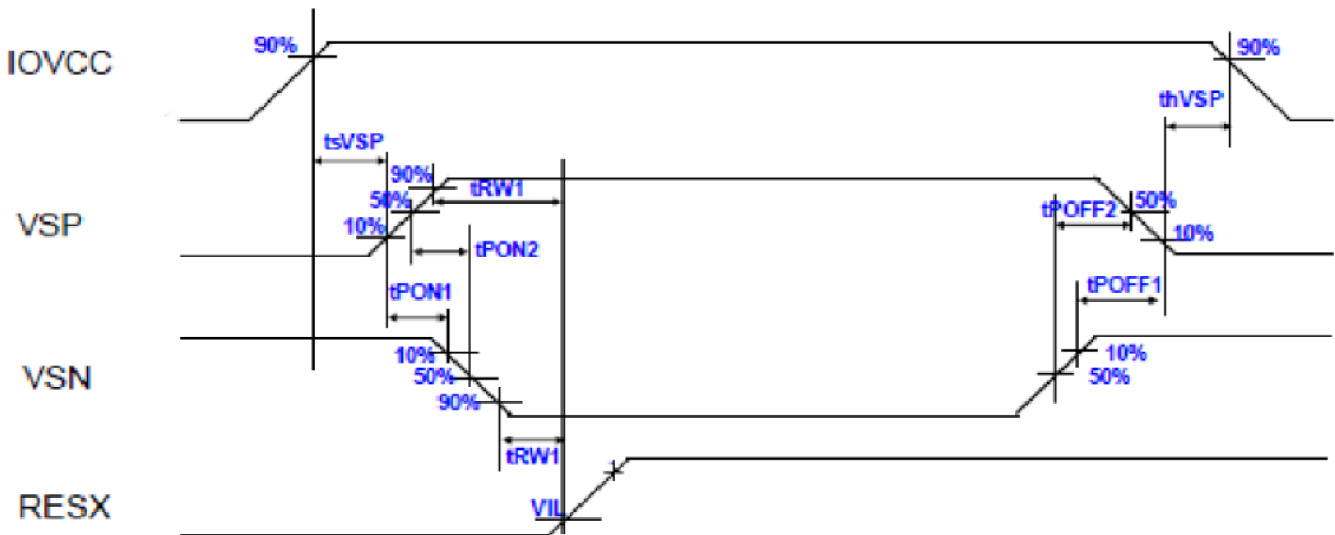
Item	Symbol	Min.	Typ.	Max.	Unit	Remark	
Power supply voltage for Analog	VSP	5.3	5.5	5.7	V		
	VSN	-5.7	-5.5	-5.3	V		
Power supply voltage for Logic	IOVCC	1.70	1.80	1.90	V		
Input signal voltage (RES)	V <sub>IL</sub>	0	-	0.3* IOVCC	V	XRES	
	V <sub>IH</sub>	0.7* IOVCC	-	IOVCC	V		
Output signal voltage (TE)	V <sub>OL</sub>	0	-	0.2* IOVCC	V	TE	
	V <sub>OH</sub>	0.8* IOVCC	-	IOVCC	V		
Input signal voltage (DSI)	Low level	V <sub>IL(DSI)</sub>	-50	-	550	mV	Low power receiver
	High level	V <sub>IH(DSI)</sub>	880	-	1350	mV	
	Input voltage	V <sub>CMRX</sub>	70	-	-	mV	High speed receiver
	Differential input low threshold	V <sub>IDTL</sub>	-70	-	-	mV	
	Differential input high threshold	V <sub>IDTH</sub>	-	-	70	mV	

Note: The recommended operating condition refers to a range in which operation of this product is guaranteed. Should this range is exceeded, the operation cannot be guaranteed even if the values may be with the absolute maximum ratings. Accordingly, please make sure that the module is used within this range

### 4.2 Current Consumption

Item	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Current for Driver	IOVCC	TBD	(12)	TBD	mA	White Pattern
	VSP	TBD	(10)	TBD	mA	
	VSN	TBD	(10)	TBD	mA	

### 4.3 Power Sequence



Item	Symbol	Unit	Mix.	Max.
IOVCC on to VSP on time	tsVSP	ms	1	-
VSP on to VSN on time	tPON1	ms	0	-
VSN on to REST on time	tRW1	ms	1	-
VSN off to VSP off time	tPOFF1	ms	0	-
VSP off to IOVCC off time	thVSP	ms	0	-

## 5. Optical Specifications

Note: Base on Taiwan Display corporation LED backlight

Ta=25°C

Item	Symbol	Condition	Values			Unit	Remark
			Min.	Typ.	Max.		
Viewing angle (CR≥ 10)	θL	Φ=180°(9 o'clock)	-	(89)	-	deg.	Note 1
	θR	Φ=0°(3 o'clock)	-	(89)	-		
	θT	Φ=90°(12 o'clock)	-	(89)	-		
	θB	Φ=270°(6 o'clock)	-	(89)	-		
Response time	TON	Normal θ=Φ=0°	-	TBD	TBD	ms	Note 3
	TOFF		-	TBD	TBD	ms	Note 3
Contrast ratio	CR		-	(1200)	-	-	Note 4
Color chromaticity	WX		-	(0.31)	-	-	Note 2
	WY		-	(0.33)	-	-	Note 5
Transmittance	Tr		-	(3.71)	-	%	
NTSC			-	(70)	-	%	

Test Conditions:

VCC=3.3V, the ambient temperature is 25°C.

The test systems refer to Note 2.

Note 1: Definition of viewing angle

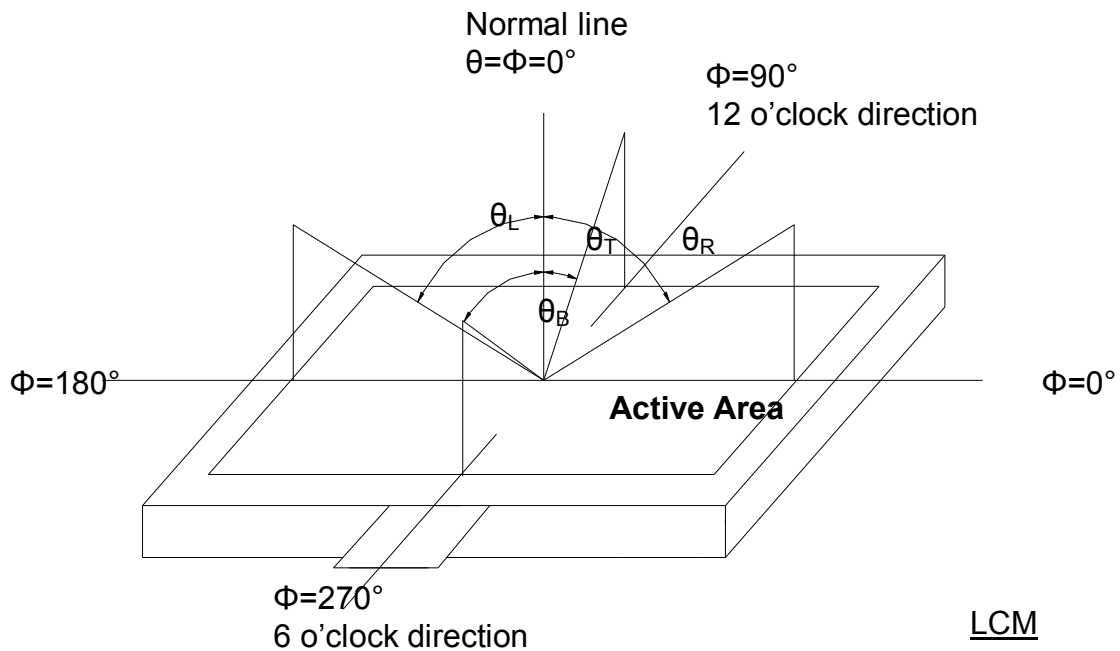


Fig. 4-1 Definition of viewing angle

Note 2: Definition of optical measurement system.

The optical characteristics should be measured in dark room. After 30 minutes operation, the optical properties are measured at the center point of the LCD screen. (Response time is measured by Photo detector TOPCON BM-7, other items are measured by BM-5A/Field of view:  $1^\circ$  /Height: 500mm.)

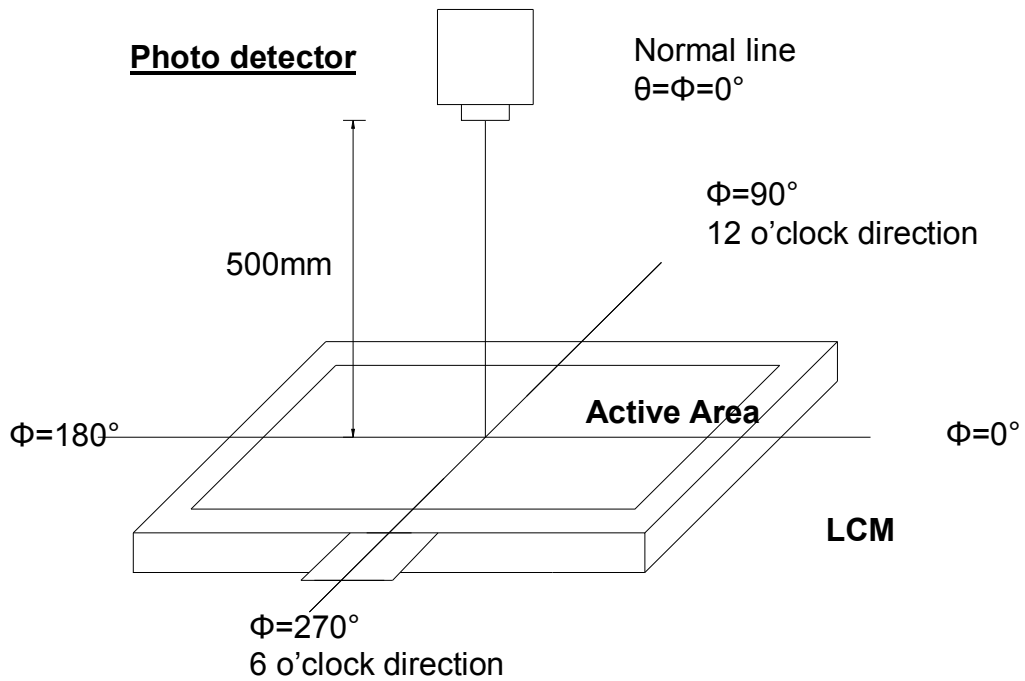


Fig. 4-2 Optical measurement system setup

Note 3: Definition of Response time

The response time is defined as the LCD optical switching time interval between “White” state and “Black” state. Rise time ( $T_R$ ) is the time between photo detector output intensity changed from 90% to 10%. And fall time ( $T_F$ ) is the time between photo detector output intensity changed from 10% to 90%.

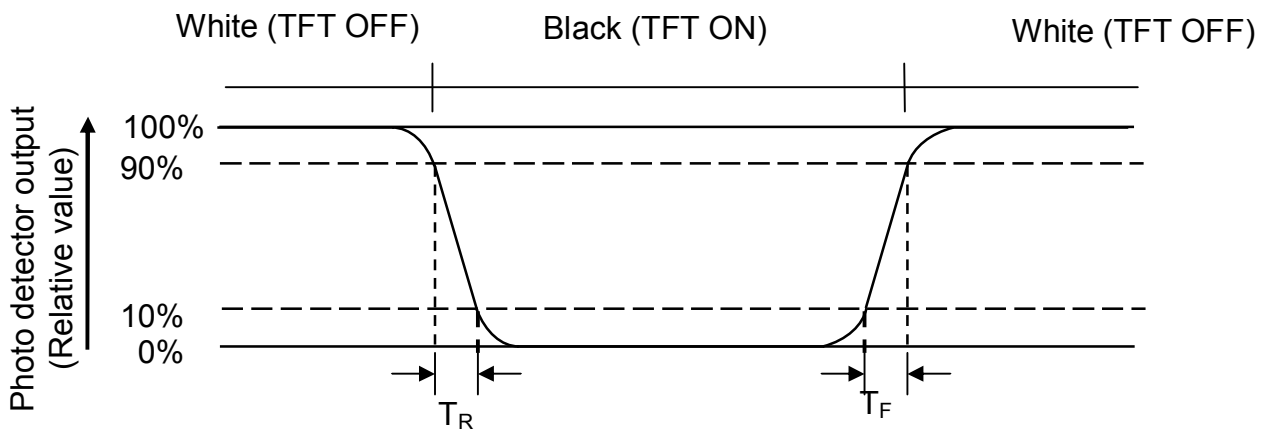


Fig. 4-3 Definition of response time

Note 4: Definition of contrast ratio

$$\text{Contrast ratio (CR)} = \frac{\text{Luminance measured when LCD on the "White" state}}{\text{Luminance measured when LCD on the "Black" state}}$$

Note 5: Definition of color chromaticity (CIE1931)

Color coordinates measured at center point of LCD.

## 6. Reliability Test Items

(Note3)

No.	Test Item	Test Conditions	Remark
1	High Temperature Storage	Ta = 60°C                          240hrs	Note 1 , Note 4
2	Low Temperature Storage	Ta = -10°C                          240hrs	Note 1 , Note 4
3	High Temperature Operation	Ts = 50°C                          240hrs	Note 2 , Note 4
4	Low Temperature Operation	Ta = 0°C                          240hrs	Note 1 , Note 4
5	Operate at High Temperature and Humidity	+40°C, 90%RH                          240hrs	Note 4
6	Thermal Shock	[(-10°C 30min)→(60°C 30min)]/cycle , (Ramp ≧ 20°C/min), 100cycles	Note 4

Note 1: Ta is the ambient temperature of samples.

Note 2: Ts is the temperature of panel's surface.

Note 3: In the standard condition, there shall be no practical problem that may affect the display function. After the reliability test, the product only guarantees operation, but don't guarantee all of the cosmetic specification.

Note 4: Before cosmetic and function test, the product must have enough recovery time, at least 2 hours at room temperature.



## 7. General Precautions

### 7.1 Safety

Liquid crystal is poisonous. Do not put it in your mouth. If liquid crystal touches your skin or clothes, wash it off immediately by using soap and water.

### 7.2 Handling

1. The LCD panel is plate glass. Do not subject the panel to mechanical shock or to excessive force on its surface.

2. The polarizer attached to the display is easily damaged. Please handle it carefully to avoid scratch or other damages.

3. To avoid contamination on the display surface, do not touch the module surface with bare hands.

4. Keep a space so that the LCD panels do not touch other components.

5. Put cover board such as acrylic board on the surface of LCD panel to protect panel from damages.

6. Transparent electrodes may be disconnected if you use the LCD panel under environmental conditions where the condensation of dew occurs.

7. Do not leave module in direct sunlight to avoid malfunction of the ICs.

### 7.3 Static Electricity

1. Be sure to ground module before turning on power or operating module.

2. Do not apply voltage which exceeds the absolute maximum rating value.

### 7.4 Storage

1. Store the module in a dark room where must keep at  $25\pm 10^{\circ}\text{C}$  and 65%RH or less.

2. Do not store the module in surroundings containing organic solvent or corrosive gas.

3. Store the module in an anti-electrostatic container or bag.

### 7.5 Cleaning

1. Do not wipe the polarizer with dry cloth. It might cause scratch.

2. Only use a soft sloth with IPA to wipe the polarizer, other chemicals might permanent damage to the polarizer.

## 8. Package Specification

### 8.1 Package Form

No.	Item	Model (Material)	Dimensions(mm)	Unit Weight (kg)	Quantity	Remark
1	LCM Module	MTF0700J16EA	97.3 (W) x159.4 (H)x2.2(D)	TBD	TBD	
2	Partition	BC Corrugated paper	TBD	TBD	TBD	
3	Corrugated Paper	B Corrugated paper	TBD	TBD	TBD	
4	Corrugated Bar	B Corrugated paper	TBD	TBD	TBD	
5	Dust-Proof Bag	PE	TBD	TBD	TBD	
6	A/S Bag	PE	TBD	TBD	TBD	
7	Carton	Corrugated paper	TBD	TBD	TBD	
8	Total weight	TBD Kg±5%				

### 8.2 Package Drawing

TBD

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