

BD

广东波达电子科技有限公司

Guangdong Boda Electronic TECHNOLOGY CO.LTD.

产品确认书

CONFIRMATION

客 户 Customer _____

产 品 名 称 Product Name: LED 数码管 _____

我 司 型 号 Mfg Mpn: WTD3911ASR-3 _____

客 户 料 号 Cpn: _____

日 期 Date: 2022-3-5 _____

客户确认 (Customer approval)

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注意事项: 本产品确认书双方签字后正式生效, 本产品确认书合共 6 页; 本产品
确认书一式两份, 版本由使用方与供方共同维护任何对内容的改动必须经双方同意, 并
以书面文件的形式发布。

1. 概述 (GENERAL)

数码管是一种显示数字和字符（冒号、小数点）的半导体 LED 显示器件，可根据客户要求设计外形和显示内容。它是以 LED 芯片为光源，通过设计不同的反射罩进行导光来显示数字和字符。与其他显示器件相比，具有工作电压低、功耗低、多色彩、高可靠性、高稳定性、长寿命等特点，广泛应用于空调、冰箱、微波炉、洗衣机等各种显示系统。

Digital Display is a semiconductor LED display showing number and characters such as colons and decimal point. The profile and pattern are designed according to customer's requirement. Based on LED chip as light source, it shows number and characters through the design of reflector which guides the light to the surface. Comparing with other displays, it has characteristics with low voltage, low power consumption, multi-color, high reliability, high stability and long-life. It is widely used in air conditioner, refrigerator, electric stove, washing machine and other display systems.

2. 特性 (FEATURES)

- 高可靠性 High reliability
- 响应快 Fast Response time
- 低电流驱动 Low drive current
- 低功耗 Low power requirement
- 符合 RoHS 要求 RoHS Compliant
- ESD 敏感器件，静电防护等级：1000V（人体模式）/ 500V（机器模式）

Electrostatic sensitive device, Electrostatic discharge (ESD) ability: 1000V (Human body mode) / 500V (Machine mode)

3. 特征 (DESCRIPTION)

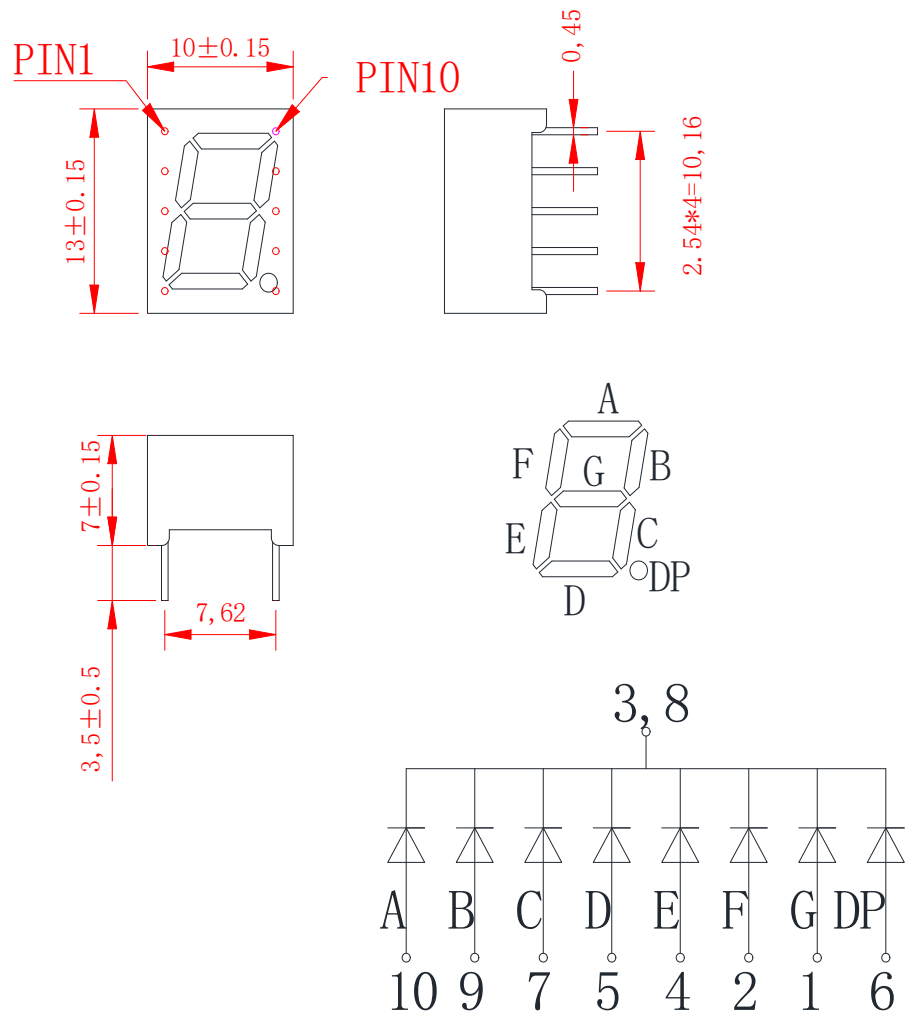
- 外形尺寸 Package dimensions: 13mm × 10mm × 7.0mm
- 白色散射环氧封装，黑色表面 White diffusive epoxy with black face
- LED 芯片材料 LED chip material:

表 1 LED 芯片材料

Table1LED chip material

芯片材料 Die Material	发光光色 Emitted color
AlGaInP/GaAs	红色 Red

4. 外形尺寸及电路图：（PACKAGE DIMENSIONS and CIRCUIT DIAGRAM）



未注公差：±0.3mm

Notes: All dimensions are in millimeters. Tolerances are ±0.3mm unless otherwise noted.

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5. 极限参数 ($T_A=25^{\circ}\text{C}$) :

Absolute Maximum Ratings ($T_A=25^{\circ}\text{C}$)

参 数 PARAMETER	符号 SYMBOL	颜色 COLOR	额定值 MAXIMUM RATING		单位 UNIT
持续正向电流/LED Continuous Forward Current Per LED	I_F	红色 Red	20		mA
峰值电流/LED Peak Current Per Dice (duty cycle 1/10, 1kHz) Per LED	I_{PF}	红色 Red	80		mA
反向电压/LED Reverse Voltage Per LED	V_R	红色 Red	5		V
耗散功率/LED Power Dissipation Per LED	P_D	红色 Red	46		mW
工作温度 Operating Temperature	T_{opr}		$-25\sim+85$		$^{\circ}\text{C}$
贮存温度 Storage Temperature	T_{stg}		$-35\sim+85$		$^{\circ}\text{C}$
焊接温度 Soldering Heat	T_{sol}		波峰焊 Wave soldering	预热: $130^{\circ}\text{C}<15$ 秒 $130^{\circ}\text{C}<15\text{sec}$ 浸锡: $260^{\circ}\text{C}<3$ 秒 $260^{\circ}\text{C}<3\text{sec}$	$^{\circ}\text{C}$
			手工焊 Manual soldering	$260^{\circ}\text{C} <5$ 秒 $260^{\circ}\text{C} <5\text{sec}$ $280^{\circ}\text{C} \leq 1$ 秒 $280^{\circ}\text{C} \leq 1\text{sec}$	

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- a 占空比 Duty: 1/10, 频率Frequency: 1kHz。
b 离器件本体1/16 英寸以上。 Up to 1/16 Inch from the body.
c 工作环境温度参数符号只在极限参数表中用 T_{opr} 表示, 其他地方用 T_a 表示。
Parameter symbol of Operating Ambiance Temperature uses T_{opr} only in table 1
Absolute Maximum Ratings, and uses T_a at other places.

备注: 当工作环境温度超过 25°C时, I_F , I_{PF} & P_D 需相应降低, 产品的推荐工作电流 I_F or I_{PF} 不超过在工作温度下其极限值的1/4; 工作电流越大, 产品的寿命越短; 过度超出推荐电流将加速寿命的缩短。

Notes : For operation above 25°C,the I_F , I_{PF} & P_D must be derated.The product recommended working current must not more than the 25% of the I_F or I_{PF} according to the working temperature, The higher the working current, the shorter the working life of the products; A substantial increase in the recommended working current can be achieved by accelerating the loss of the working life.

6. 电气和光学特性 Electro-Optical Characteristics ($T_a=25^\circ\text{C}$)

参数 PARAMETER	符号 SYMBOL	测试条件 TEST CONTION	颜色 COLOR	MIN	TYP	MAX	单位 UNIT
正向电压/LED Forward Voltage Per LED	V_F	$I_F=20\text{mA}$ / LED	红色 Red	1.6	2.0	2.3	V
发光强度/LED Luminous Intensity Per LED	I_V	$I_F=20\text{mA}$ / LED	红色 Red	20	23	27	mcd
反向电流/LED Reverse Current Per LED	I_R	$V_R=5\text{V}$ / LED	红色 Red	---	---	10	μA
主波长 Dominmant Emission Wavelength	λ_d	$I_F=20\text{mA}$ / LED	红色 Red	639	640	643	nm
光谱半宽度 Spectral Line Half-Width	$\Delta\lambda$	$I_F=20\text{mA}$ / LED	红色 Red	---	20	---	nm

注 Notes:

- 漏光程度 $\leq 5\%$; The case light leakage rate $\leq 5\%$;
- 亮度不均程度 $\leq 35\%$; Luminous intensity matching ratio $\leq 35\%$;
- 单个产品色差 $\leq 5\text{nm}$; Color difference of single product $\leq 5\text{nm}$.
- 变形度 $\leq$ 长度 1%; Bending $\leq$ Length*1%.

注意: 以上为内置晶片参数 Note: The above are chip parameters.

7. 注意事项 (Precautions for use)

① 白光 LED 芯片的抗静电能力弱, 包装, 使用装配等全过程务必采取防静电保护措施, 如佩戴防静电手环、防静电腕带, 所有的装置、设备、机器、桌子、地面都必须防静电接地。

The White LED is electrostatic sensitive device, so static electricity and surge will damage the LED. It is required to wear a wrist-band when handling the LED. All device, equipment, machinery, desk and ground must be properly grounded.

② 当使用此产品时, 请遵从规格书中给出的极限参数值的要求和指示。客户使用时因超出极限参数 要求而造成的损失, 我司不承担任何责任。

When using this product, please observe the absolute maximum ratings and the instructions for using outlined in these specification sheets. We assume no responsibility for any damage resulting from use of the product, which does not comply with the absolute maximum ratings and the instructions included in these specification sheets.