



厦门华联电子有限公司

Xiamen Hualian Electronics Co., Ltd.

产品规格书

SPECIFICATION

产品名称: 特种显示器
DESCRIPTION: LED DISPLAY
产品型号: **HTTEQ118**
PART NO.: **HTTEQ118**

拟制 Prepared	审核 Verified	批准 Approved
李思政	技术交流用	

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1. 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）

2. 特征 (DESCRIPTION)

- 外形尺寸 Package dimensions: 60mm×29.2mm×13.4mm
- 白色散射环氧封装，表面贴黑色膜片 White diffusive epoxy with the black film on the surface
- LED 芯片材料 LED chip material:

表 1 LED 芯片材料

Table1 LED chip material

芯片材料 Die Material	发光颜色 Emitted color
AlGaInP/GaAs	红色 Red



图 1 产品图

Fig.1 Photo of Product

3. 外形尺寸和电原理图(PACKAGE DIMENSIONS and CIRCUIT DIAGRAM)

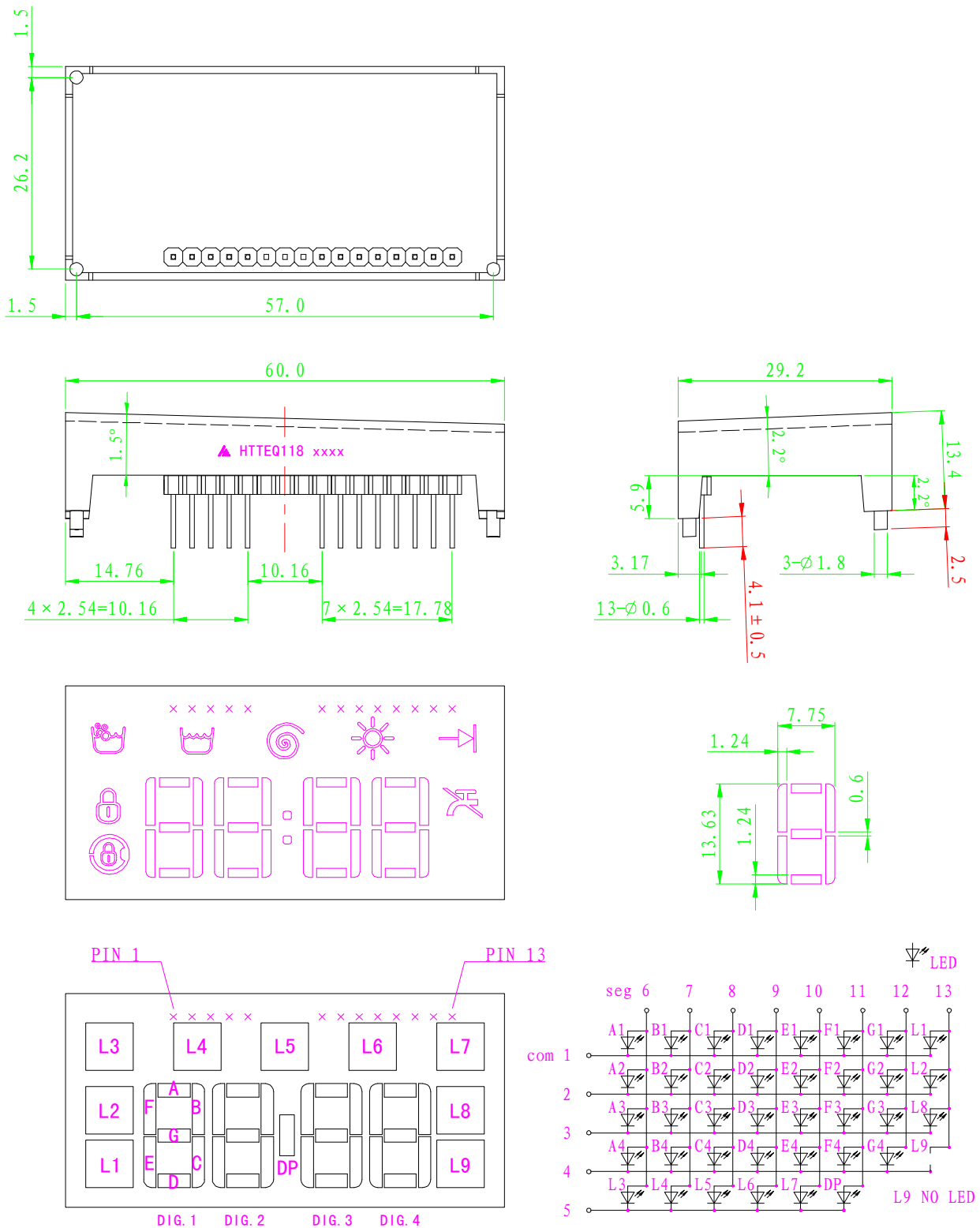


图 2 产品外形图与电原理图

Fig.2 Package Dimensions & Circuit Diagram of Product

注：未注公差：±0.25，产品变形度≤0.45mm。

Notes: All dimensions are in millimeters. Tolerances are ±0.25mm unless otherwise noted. The case warping rate ≤0.8%. (An acceptable degree of warping is 0.45mm).

4. 极限参数 (ABSOLUTE MAXIMUM RATINGS) (Ta=25°C)

表 2 极限参数

Table2 Absolute Maximum Ratings

参 数 PARAMETER	符号 SYMBOL	颜色 COLOR	额定值 MAXIMUM RATING		单位 UNIT
最大正向电流/LED Maximum Forward Current Per LED	I_{FM}	红色	15		mA
最大正向脉冲电流/LED ^a Maximum Peak Forward Current Per LED	I_{FPM}	红色	60		mA
反向电压/LED Reverse Voltage Per LED	V_R	红色	5		V
耗散功率/LED Power Dissipation Per LED	P_D	红色	37.5		mW
工作温度 Operating Temperature	T_{aop}^c		-25~+85		°C
贮存温度 Storage Temperature	T_{stg}		-30~+85		°C
焊接温度 ^b Soldering Heat	T_{sld}		波峰焊 Wave soldering	270°C/10 秒 270°C/10s 350°C/3 秒/3 次	°C
			手工焊 Manual soldering	350°C/3s/3 times (再焊接间隔 时间 10 秒以上 Soldering interval time of 10s)	
<p>^a 占空比 Duty: 1/10, 频率 Frequency: 1kHz。</p> <p>^b 离器件本体 1/16 英寸以上。 Up to 1/16 Inch from the body.</p> <p>^c 工作环境温度参数符号只在极限参数表中用 T_{aop} 表示, 其他地方用 T_a 表示。 Parameter symbol of Operating Ambiance Temperature uses T_{aop} only in table 1 Absolute Maximum Ratings, and uses T_a at other places.</p>					
<p>备注: 当工作环境温度超过 25°C 时, I_{FM}, I_{FPM} & P_D 需相应降低, 产品的推荐工作电流 I_{FM} or I_{FPM} 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。</p> <p>Notes : For operation above 25°C, the I_{FM}, I_{FPM} & P_D must be derated. The product recommended working current must not more than the 25% of the I_{FM} or I_{FPM} according to the working temperature, The higher the working current, the shorter the working life of the products; A substantial increase in the remcommended working current can be achieved by accelerating the loss of the working life.</p>					

5. 光电参数 (ELECTRICAL/OPTICAL CHARACTERISTICS) (Ta=25°C)

表 3 光电参数

Table3 Opto-Electrical Characteristics

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 =20mA / LED	红色	1.7	2.1	2.6	V
发光强度/LED Luminous Intensity Per LED	I _V	I _F =20mA / LED	红色	10	20	---	mcd
反向电流/LED Reverse Current Per LED	I _R	V _R =5V / LED	红色	---	---	10	μ A
主波长 Dominant Emission Wavelength	λ _d	I _F =20mA / LED	红色	620	625	630	nm
光谱半宽度 Spectral Line Half -Width	Δ λ	I _F =20mA / LED	红色	---	20	---	nm

注 Notes:

- 漏光程度 ≤ 5%; The case light leakage rate ≤ 5%;
- 亮度不均程度 ≤ 35%; Luminous intensity matching ratio ≤ 35%;
- 单个产品色差 ≤ 5nm; color difference of single product ≤ 5nm.
- 在不同的正向电流下, 对应的正向电压和光强见“正向电压~正向电流”和“相对光强~正向电流”曲线图; The forward voltage and luminous intensity at different currents are shown in figures “FORWARD CURRENT VS. FORWARD VOLTAGE” and “RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT” in characteristics curve.

6. 寿命曲线 (Life Data)

ROOM TEMPERATURE TEST

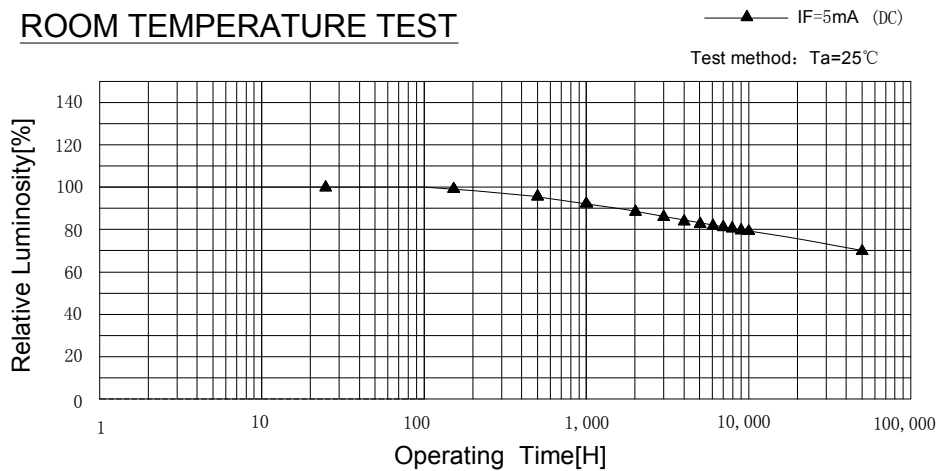


图 3 寿命曲线图

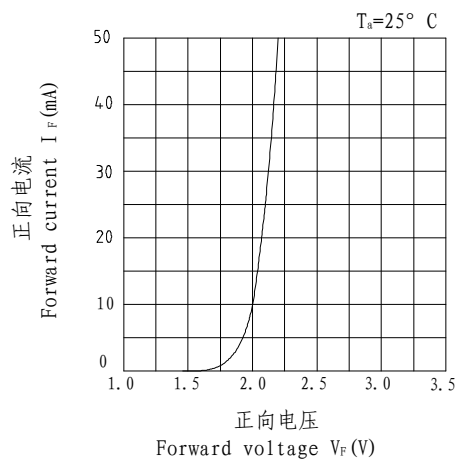
Fig.3 Life Curve

表 4 典型条件寿命表

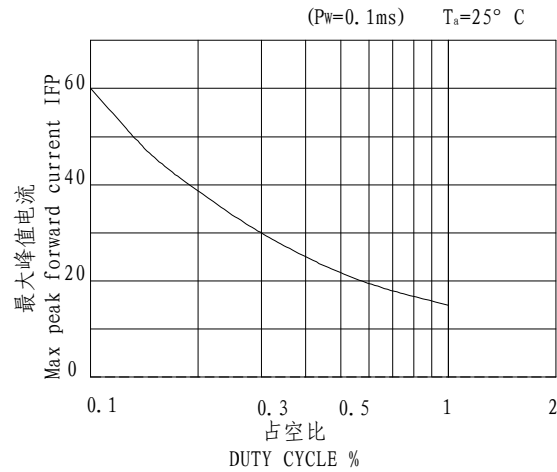
Table4 Operating time under conditions

产品寿命 Operating time	温度 Temperature	湿度 Humidity	最大工作电流 Maximum operating current
5000h	55°C	50%	15mA
6250h	60°C	65%	10mA
15000h	30°C	85%	10mA

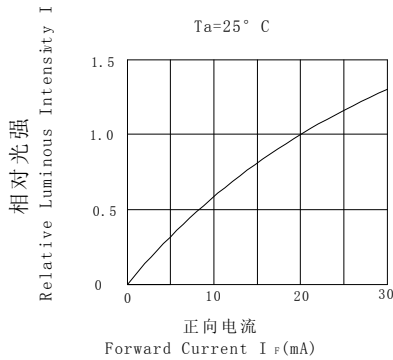
7. 晶粒曲线图 (CHARACTERISTICS CURVE)



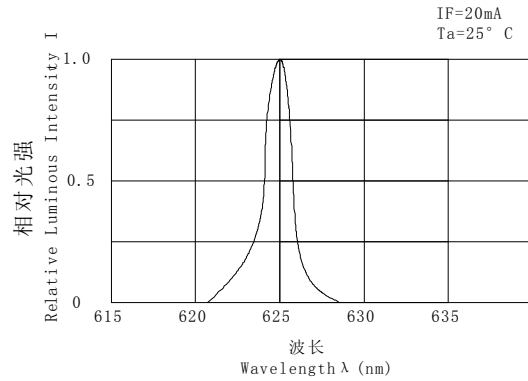
a) 正向电流—正向电压
FORWARD CURRENT VS. FORWARD VOLTAGE



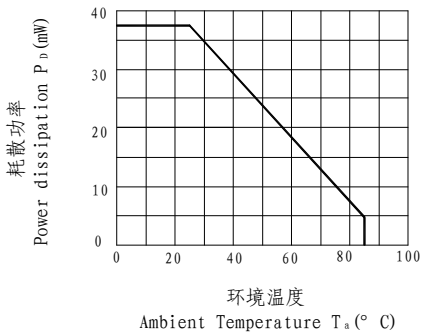
b) 最大峰值电流—占空比
MAX PEAK CURRENT VS. DUTY CYCLE %



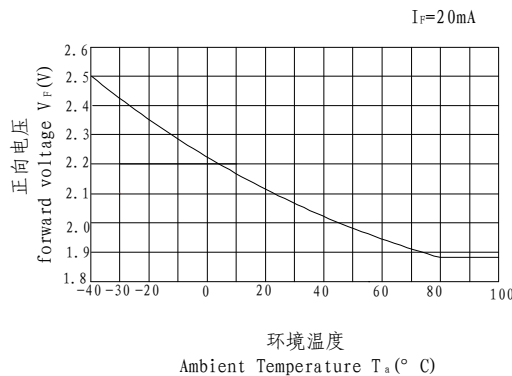
c) 相对光强—正向电流
RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT



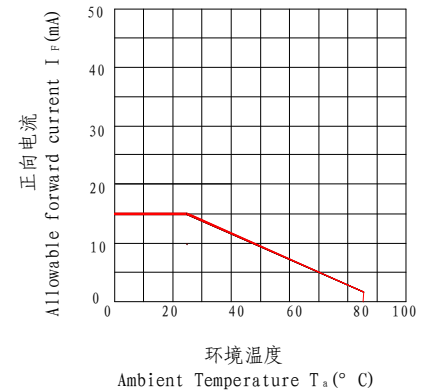
d) 相对光强—波长
RELATIVE INTENSITY VS. WAVELENGTH



e) 耗散功率—环境温度
POWER DISSIPATION VS. AMBIENT TEMPERATURE



f) 正向电压—环境温度
FORWARD VOLTAGE VS. AMBIENT TEMPERATURE



g) 正向电流—环境温度
FORWARD CURRENT VS. AMBIENT TEMPERATURE

图 4 特性曲线图
Fig.4 Characteristics Curves

8. 可靠性试验要求 (Reliability Test)

表 5 可靠性试验要求

Table5 Reliability Test

试验项目 Test Item		试验条件 test condition	判断标准 Judgment criteria	结果 results
引出端 强度试验 Terminal strength test	拉力试验 Tensile test	9.8N 拉力; (30±1)秒 F=9.8N ; t=30±1s	无损伤 Intact	0/6
	弯曲试验 bending test	4.9N 外加力; 0° ~90° ~0° ; 弯曲两次 F=4.9N; Bent twice	无损伤 Intact	0/6
引出端可焊性试验 Solderability Tests		a) 焊锡温度 Soldering temperature: (245±5)°C; b) 浸渍时间 Soaking time:(2.0±0.5)s; c) 浸入到离器件本体 the distance from the body to merging: (1.0~1.2)mm; d) 助焊剂 Welding flux: 松香 rosin 25%, 酒精 alcohol 75%; e) 无铅焊锡 Lead-free solder: Sn(95%-96.5%)/Ag(3%-4%)/Cu(0.5%-1.0%)	浸润面积≥95% 的浸渍面积 Steeped part≥ 95%	0/6
耐焊接热试验 Soldering heat test		a) 焊锡温度 Soldering temperature: (270±5)°C; b) 浸渍时间 Soaking time: (10±1)s; c) 浸渍到离器件本体the distance from the body to merging: 2mm~2.5mm; d) 助焊剂Welding flux: 松香rosin 25%, 酒精 alcohol 75%; e) 无铅焊锡Lead-free solder: Sn(95%-96.5%)/Ag(3%-4%)/Cu(0.5%-1.0%)	正向电压 $V_F(V) =$ 容许上限规格 V_{FO} $\times 1.1$ 反向漏电流 $I_R(uA) =$ 容许上 限规格 $I_{RO} \times 2.0$ 轴向亮度 $I_V(mcd) =$ 容许 下限规格 $I_{VO} \times 0.7$ Forward voltage $V_F(V) =$ upper limit $\times 1.2$ Reverse leakage current $I_R(uA) =$ upper limit $\times 2.0$ Luminous intensity $I_V(mcd) =$ lower limit $\times 0.7$	0/6
温度快速变化与 稳态湿热 Temperature cycle test		a) 试验温度 test temperature: $T_a = -30^\circ C$, $T_b = 85^\circ C$; b) 暴露时间 Exposure time: 10min; c) 转移时间 Transfer time: 2~3min; d) 循环次数 Circulation: 10cycles; 温度快速变化结束后, 在标准大气条件下恢复2小时, 继之于稳态湿热试验, 试验试验条件; After resuming for 2 hours in the standard atmospheric pressure, do the experiments of circulating humidity & heat, text condition; e) 严酷度: 温度 temperature: (40±2)°C; f) 湿度 humidity: (93±3) %; g) 时间 time: 168h;		0/6
高温高湿贮存 High temperature and humidity storage		$T_a = (65 \pm 5)^\circ C$, $RH = (93 \pm 3) \%$, 240h	0/6	
电耐久性 Consecutive operating life test		a) $T_a = (25 \pm 5)^\circ C$; b) 每段通电电流 $I_F = 5mA(DC)$; Input constant current 5mA per segment; c) 时间 time: 1000h;	0/4	
高温储存 High temperature storage life test		$T_a = (85 \pm 5)^\circ C$, 1000h	0/6	
低温储存 Lower temperature storage life test		$T_a = (-25 \pm 5)^\circ C$, 168h	0/6	
静电放电抗扰度试验 ESD test		人体模式 human body mode: 1500Ω, 100pF	1000V	0/2
		机器模式 machine mode: 0Ω, 200pF	500V	0/2

9. 使用注意事项 (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.

更改记录表

UPDATE RECORD TABLE

版次 EDITION	制定或更改日期 DATE	主要更改内容 MAIN CONTENT	拟 制 PREPARED	确 认 CHECKED
1.0	2014-7-3	新版发布	李思政	曾友华
1.1	2014-7-7	增加"Life Data", "CHARACTERISTICS CURVE" and "Reliability Test".	李思政	曾友华
2.0	2014-10-21	更新外形图 based on the final data	李思政	曾友华
3.0	2015-6-24	根据客户要求, 更改定位柱及管脚长	李思政	曾友华