

深圳市光亿鸿电子

承 认 书

SPECIFICATION FOR APPROVAL

客户名称
Customer _____

品 名
Commodity _____ 贴片

产品型号
Modes No. _____ 4020RGB幻彩内置IC

样号
Sample No. _____

客户确认			
编 制 Prepared by	审 核 Checked by	核 准 Approved by	市 场 部 Market Dept.

客户确认 Customer Confirmation		客户反馈意见 Customer Suggestion
确 认 Confirmed by	审 核 Checked by	

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Applications

- OA Equipment
- Backlighting of Full Color LCD
- Automotive Equipment
- Replacement of Conventional Light Bulbs and Fluorescent Lamps

4020RGB幻彩内置IC

Features

- Package Size: 4.0(L) ×2.0(W) ×1.5(T) mm
- Silicone Packed
- Suitable for different working environment
- Super long lifetime: 30000HRs
- Anti UV
- White colors are available in(2300K- 2500K)
- Wide viewing angle (2θ 1/2=120°)

Device Selection Guide 物料选用指南

ITEM 项目	MATERIALS 物料
Resin 胶体	Silicon 硅胶
Bonding wire 焊线	合金线
Lens color 胶体颜色	Water Clear 水清透明
Dice 晶片	InGaN ALGaInP

Applicatings

- Full color LED string light, LED full color module, LED super hard and soft lights, LED guardrail tube, LED appearance / scene lighting

产品特点

- 封装尺寸: 4.0(长) ×2.0 (宽) ×1.5(高)
- 采用硅胶封装
- 适应多种工作环境
- 超长寿命: 30000 小时
- 防紫外线
- 可供白光 (2300K- 25000K)
- 宽角度 (2θ 1/2=120°)

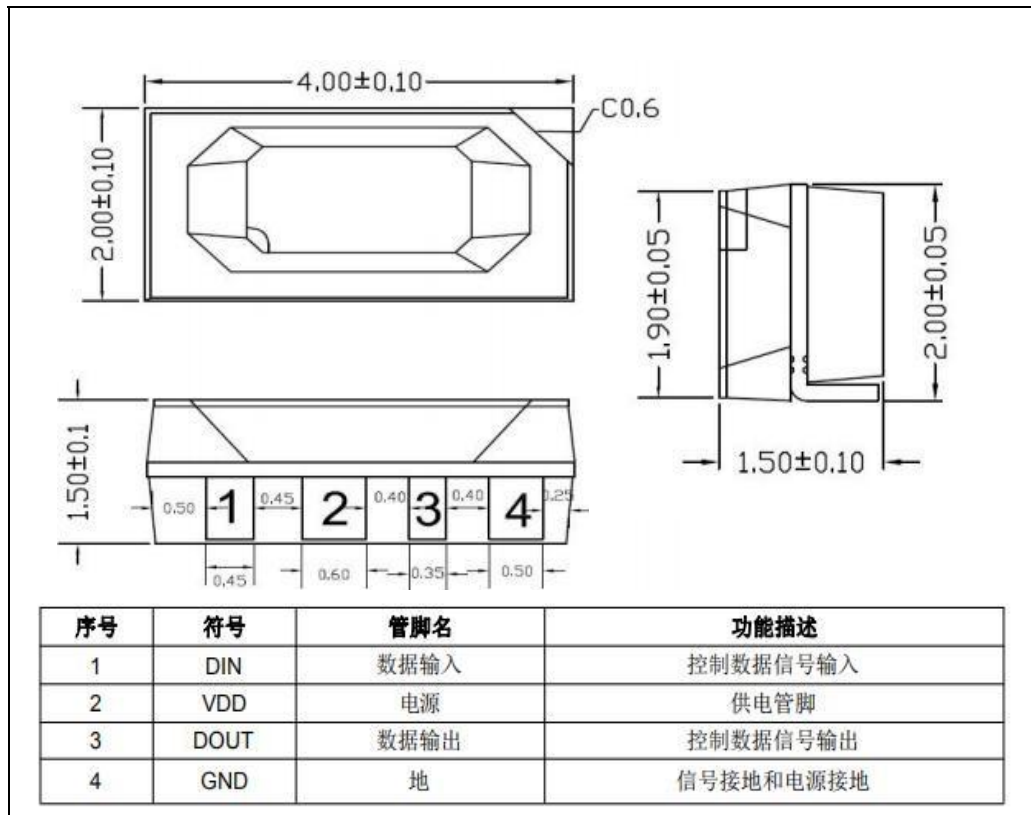
- LED point source, LED pixel screen, LED screen with a variety of electronic products, electrical equipment etc..



产品应用

- LED 全彩发光字灯串, LED 全彩模组, LED 幻彩软硬灯条, LED 护栏管, LED 外观/情景照明
- LED 点光源, LED 像素屏, LED 异形屏各种电子产品, 电器设备跑马灯

Package Dimensions



Notes:

1. All dimensions in mm tolerance is ± 0.2 mm unless otherwise noted.
2. An epoxy meniscus may extend about 1.5 mm down the leads.
3. Burr around bottom of epoxy may be 0.5 mm max.

Absolute Maximum Ratings(Ta=25°C)

Parameter参数	Symbol 符号	Rat 额定值	Unit/单位
输入范围 Input range	V_{IN}	+3.5~+5.5	V
逻辑输入电压 Logic input voltage	V_I	-0.4~ VDD+0.4	V
工作温度 Operating Temperature	Top	-20~+80°C	°C
储存温度 Storage Temperature	Tstg	-40~+85°C	°C
ESD 耐压 ESD pressure	V_{ESD}	4K	V
焊接温度 Soldering Temperature	Tsol	Max.245°C for 5 sec Max	

Electrical parameters TA=-20°C~70°C VDD=4.5~5.5V VSS=0V

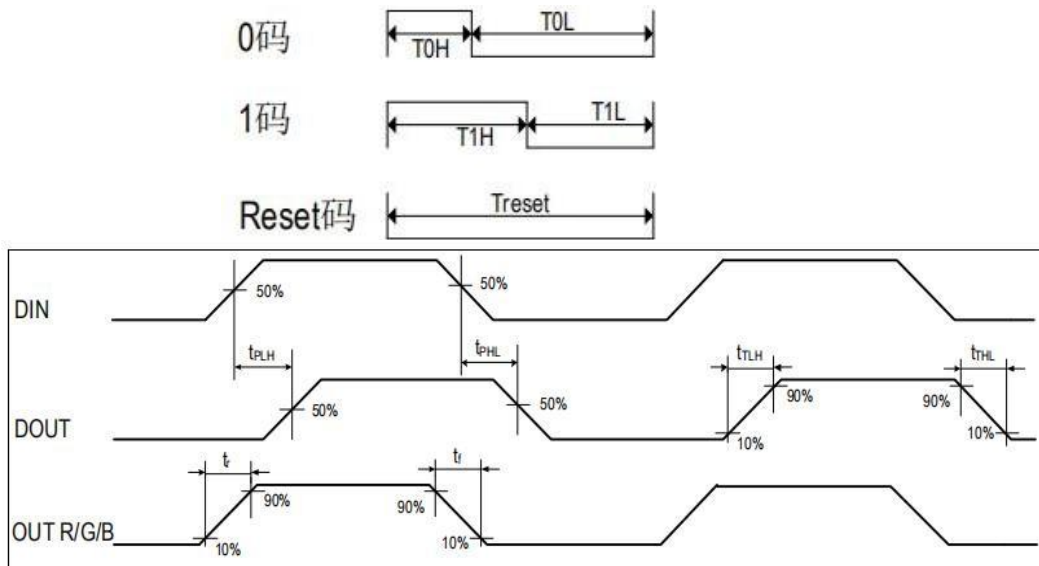
Parameter参数	符号 Symbol	最小 Min	典型 Typical	最大 Max	单位 Unit	测试条件 Testcondition
芯片内部电源电压 Chip internal power supply voltage	V_{DD}	--	5	--	V	--
R/G/B/W 端口耐压 Port pressure	$V_{DS,MAX}$	--		16	v	--
DOUT 驱动能力 Driving ability	I_{DOH}	--	49	--	mA	DOUT 接地, 最大驱动电流
	I_{DOL}	--	50	--	mA	DOUT 接正, 最大灌电流
信号输入翻转阈值 The signal input flip threshold	V_{IH}	--	3.4	--		VDD=5.0V
	V_{IL}	--	1.6	--		--
PWN 频率 Frequency	F_{PWM}	--	1.2	--	KHZ	--
静态功耗 Static power consumption	I_{DD}	--	1	--	mA	--

dynamic parameter

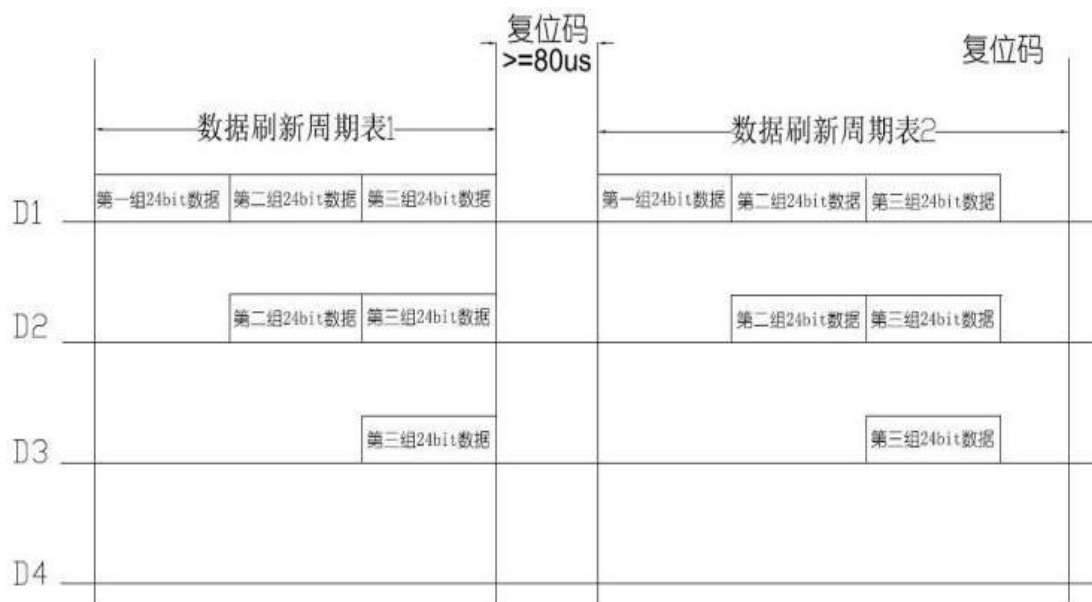
Parameter参数	符号 Symbol	最小 Min	典型 Typical	最大 Max	单位 Unit	测试条件 Testcondition
数据传输速度 Data transmission speed	fDIN	--	800	--	KHZ	占空比 67% (数据 1)
DOUT 传输延迟 Transmission delay	TPLH	--	--	500	ns	DIN→DOUT
	TPHL	--	--	500	ns	

数据传输时间 Data transmission time $TH+TL=1.25\mu s \pm 600ns$			
T0H	0 码, 高电平时间	0.3 μs	$\pm 0.15\mu s$
T1H	1 码, 高电平时间	0.6 μs	$\pm 0.15\mu s$
T0L	0 码, 低电平时间	0.9 μs	$\pm 0.15\mu s$
T1L	1 码, 低电平时间	0.6 μs	$\pm 0.15\mu s$
Trst	Reset 码, 低电平时间	80 μs	
参数 parameters			
颜色 Color	波长 wavelength (nm)	发光强度 Luminous intensity(mcd)	工作电压 working voltage(V)
红色 (Red)	620-630	400-600	1.8-2.2
绿色 (Green)	520-530	800-1000	2.8-3.4
蓝色 (Blue)	460-470	300-400	2.8-3.4

时序波形图 Timing waveform ($T_a=25^\circ C$):



数据传输方式 **Data transmission mode** ($T_a=25^{\circ}\text{C}$) :



注：其中D1为MCU端发送的数据，D2、D3、D4为级联电路自动整形转发的数据

24bit 数据结构

G7	G6	G5	G4	G3	G2	G1	G0	R7	R6	R5	R4
R3	R2	R1	R0	B7	B6	B5	B4	B3	B2	B1	B0

Reliability Test Items And Conditions / 可靠性实验

The reliability of products shall be satisfied with items listed below.

Confidence level:90%

LTPD:10%

NO.	Items/項目	Test Condition 測試標準	Test Hours/Cycles 測試時間	Sample Size 數量	Ac/Re
1	Reflow Soldering 回流焊	Temp:260°C±5°C Min. 5sec.	5 Min.	20 PCS	0/1
2	Temperature Cycle 冷熱循環測試	H:+100°C 15min ↓ 5min L:-40°C 15min	300 Cycles	20 PCS	0/1
3	Thermal Shock 高低溫測試	H:+100°C 5min ↓ 10sec L:-10°C 5min	300 Cycles	20 PCS	0/1
4	High Temperature Storage / 高溫存儲	Temp. :100°C	1000 Hrs	20 PCS	0/1
5	Low Temperature Storage/ 低溫存儲	Temp. :-40°C	1000 Hrs	20 PCS	0/1
6	DC Operating Life 常溫老化測試	If=20mA	1000 Hrs	20 PCS	0/1
7	High Temperature High Humidity/ 高溫高 濕	85°C/85%RH	1000 Hrs	20 PCS	0/1

To determine the standard

Item	Marked	Test Conditions	To determine the standard
Forward Voltage	Vf	If=20mA	Initial
Reverse Current	Ir	If=20mA	≤10 μA
Luminous Intensity	Iv	VR=5V	Single stars decay ≤ 50%, and the The average attenuation ≤ 30 %
Weldability	/	If=20mA	Immersion tin an area of more than 95 %
Vibration Test	/	If=20mA	Light and significant damage did not die
Drop test	/	If=20mA	Light and significant damage did not die

Label explanation

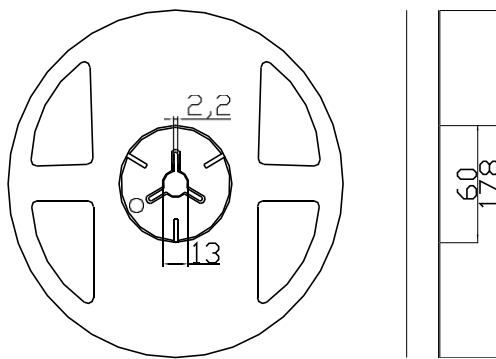
Iv: Luminous Intensity Rank

Bin: Chromaticity Coordinates Rank

VF: Forward Voltage Rank.

QTY Packing quantity

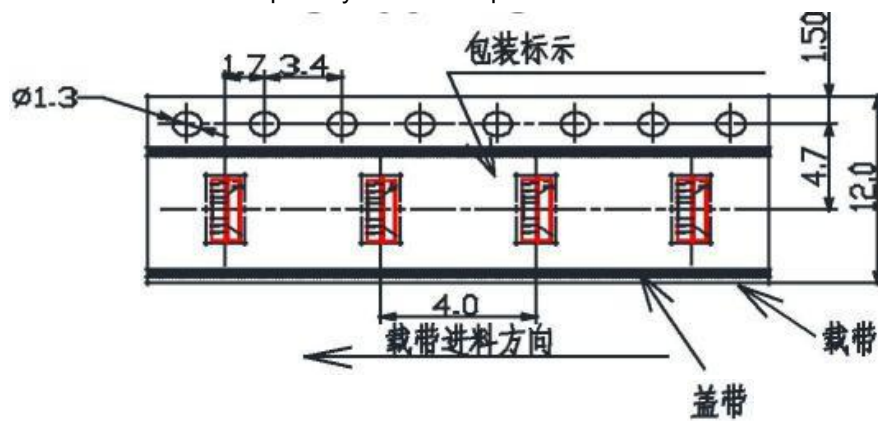
Reel Dimensions



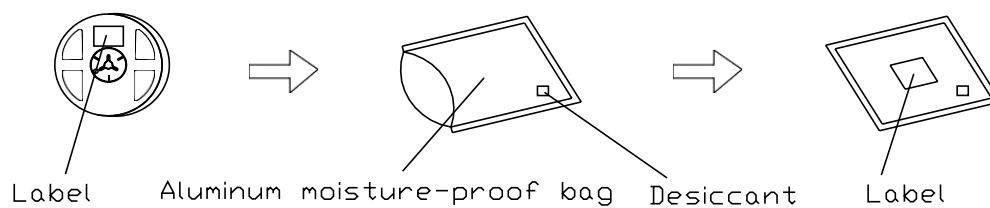
Note: The tolerances unless mentioned is $\pm 0.1\text{mm}$ Unit=mm

Carrier Tape Dimensions:

Loaded quantity 2000 PCS per reel.



Moisture Resistant Packaging



Precautions For Use

1. Over-current-proof

Customer must apply resistors for protection, otherwise slight voltage shift will cause big current change(Burn out will happen).

2. Storage

2.1 Do not open moisture proof bag before the products are ready to use.

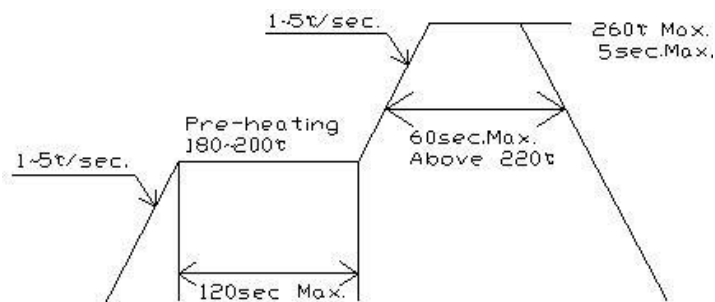
2.2 Before opening the package:The LEDs should be kept at 30°C or less and 90%RH or less.

2.3 After opening the package:The LED's floor life is 1 year under 30 deg C or less and 60%RH or less.If unused LEDs remain, it should be stored in moisture proof packages.

2.4 If the moisture absorbent material(silica gel)has faded away or the LEDs have exceeded the storage time,baking treatment should be performed using the following conditions.Baking treatment:60±5°C for 24 hours.

3. Soldering Condition

3.1 Pb-free solder temperature profile



3.2 Reflow soldering should not be done more than two times.

3.3 When soldering,do not put stress on the LEDs during heating.

3.4 After soldering,do not warp the circuit board.

4. Soldering Iron

Each terminal is to go to the tip of soldering iron temperature less than 350°C for 3 seconds within once in less than the soldering iron capacity 25W.

Leave two seconds and more intervals,and do soldering of each terminal. Be careful because the damage of the product is often started at the time of the hand solder.