客户（Customer）:_____

承认书
Approval Sheet

谨致执事者：兹提供敝公司之有关详细规格及图面数据,敬请给予办理试认定手续.
同时敬请送返一份附有贵公司签认之测试认定后之样品承认书.

We are pleased in sending you herewith on specification and drawings for your approval.
Please return to us one copy “Approval sheet” with your approved signature.

型号（Model No.）：A-SI1515R6AGHB1W-B01 -2T

发文日期（Issue Date）: 2022/04/25 承认日期（Approved Date）:_____

Checking signature of Amicc

Designer	Checker	Approver
Will		

Approval signature of customer

Designer	Checker	Approver

江苏欧密格光电科技股份有限公司
Jiangsu AMICC Opto-Electronics Technology CO.,LTD.
江苏省常州市武进区武南中路 98 号
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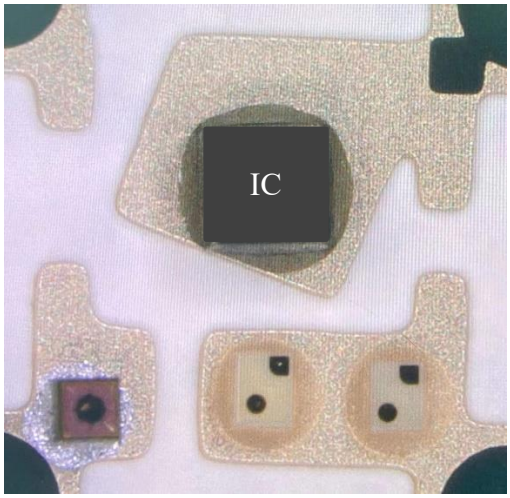
TEL:0086-519-89806999
FAX:0086-519-86523668

LED Built-in IC Type ▪ Top view Full-color 1515 Package

A-SI1515R6AGHB1W-B01-2T



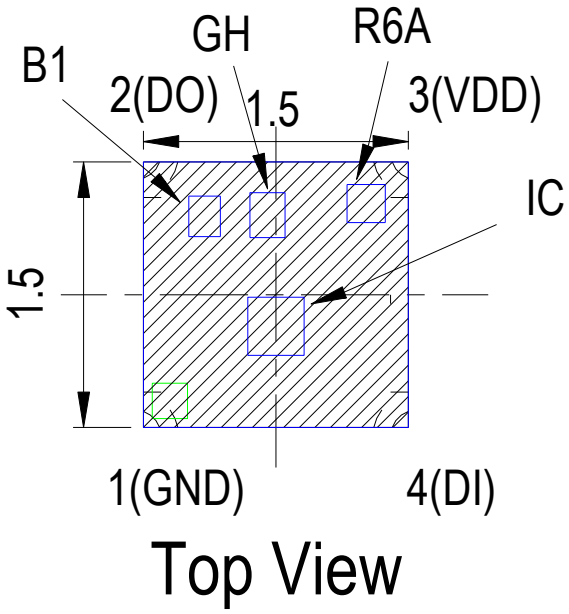
Features

- Top SMD integrated with high quality external control single line serial cascade constant current IC.
- Support for singe wire communication,serial connection.
- Constant current output current 12mA.
- Grayscale adjustable circuit 256 grayscale adjustable.
- Display data double latch,transfer data does not affect display.
- Single line data transmission, unlimited cascade.
- Built-in high-precision oscillator.
- Display maximum refresh rate up to 800Kbps.
- Pb-free
- RoHS compliant

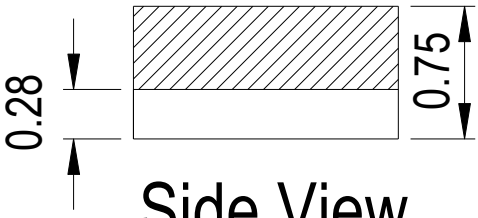
Applications

- Full color LED string light, LED full color module
- LED super hard and soft lights, LED appearance / scene lighting
- LED point light source, LED pixel screen
- LED shaped screen, Electrical equipment Marquee

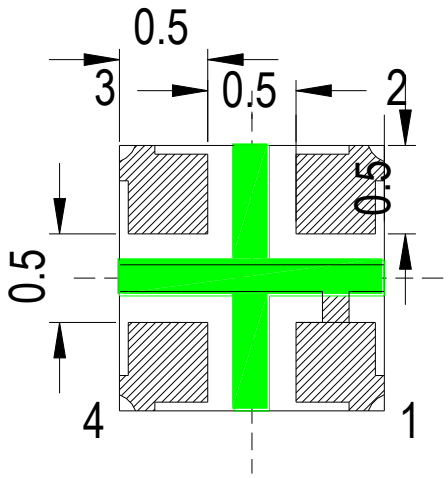
Package Dimensions



Top View

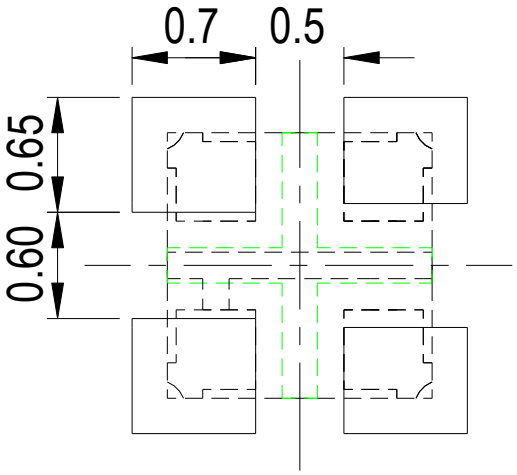


Side View



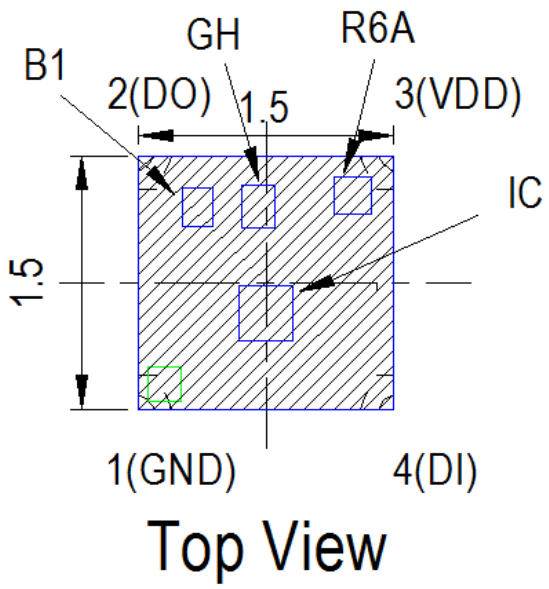
Bottom View

Recommended Solder Pad



Note:
Tolerance unless mentioned is ±0.1mm,Unit = mm

Pin diagram and functions:



NO.	Symbol	Pin name	Function description
3	VDD	Power Supply	5V±10%
4	DI	Data input	Built-in Pull down resistance
1	GND	Ground	Signal ground
2	DO	Data output	Built-in Pull down resistance@input mode

Absolute Maximum Ratings（Limit parameter,Ta=25℃，VDD=5V，VSS=0V）

Parameter	Symbol	Range	Company
Voltage	V_{DD}	-0.4～+5.5	V
Logic input voltage	V_I	-0.4～VDD+0.4	V
Working temperature	Topt	-40~+85	℃
Storage temperature	Tstg	-55~+100	℃
ESD(Human Body Model)	V_{ESD}	2K	V

Electro-Optical Characteristics ($T_{Soldering}$=25℃)

Parameter	Symbol	Color	Min.	Typ.	Max.	Unit	Condition
Luminous Intensity	IV	R6A	180	-----	285	mcd	IF=12mA
		GH	450	-----	715		
		B1	90	-----	140		
		W	360	-----	715		
Dominant Wavelength	λd	R6A	619	-----	626	nm	
		GH	519	-----	526		
		B1	465	-----	472		
Viewing Angle	$2\theta_{1/2}$	R6A/GH/B1	-----	130	-----	deg	

Notes:
1. Tolerance of Luminous Intensity ±10%.
2. Tolerance of Dominant Wavelength ±1nm.

W: Bin Range of Luminous Intensity

Bin Code	Min.	Max.	Unit	Condition
AT2	360	450	mcd	I_F=12mA
AU1	450	565		
AU2	565	715		

Note:
Tolerance of Luminous Intensity: ±10%

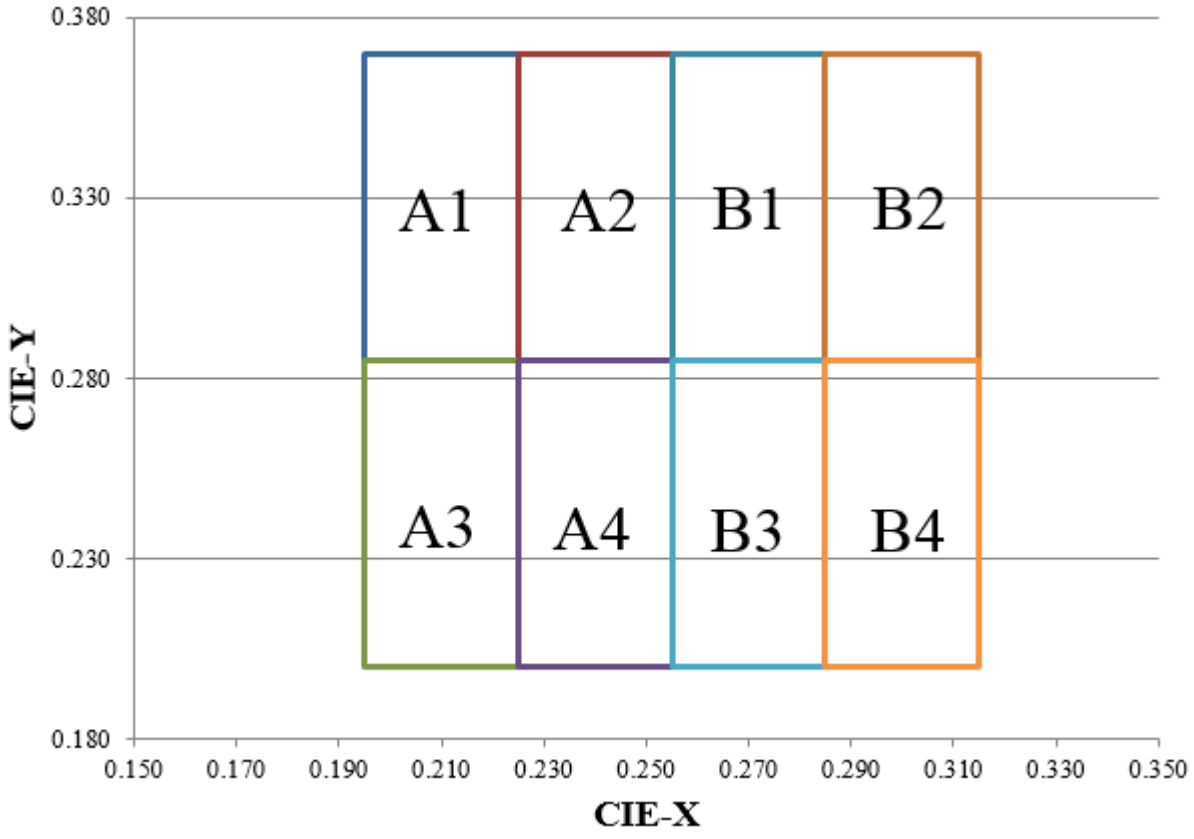
W: Bin Range of Chromaticity Coordinates

Bin Code	CIE_x	CIE_y	Bin Code	CIE_x	CIE_y
A1	0.195	0.285	B1	0.255	0.285
	0.195	0.370		0.255	0.370
	0.225	0.370		0.285	0.370
	0.225	0.285		0.285	0.285
A2	0.225	0.285	B2	0.285	0.285
	0.225	0.370		0.285	0.370
	0.255	0.370		0.315	0.370
	0.255	0.285		0.315	0.285

A3	0.195	0.200	B3	0.255	0.200
	0.195	0.285		0.255	0.285
	0.225	0.285		0.285	0.285
	0.225	0.200		0.285	0.200
A4	0.225	0.200	B4	0.285	0.200
	0.225	0.285		0.285	0.285
	0.255	0.285		0.315	0.285
	0.255	0.200		0.315	0.200

Note:
1. The value is based on driving current by 12mA.
2. Tolerance of Chromaticity Coordinates: ±0.01

The C.I.E. 1931 Chromaticity Diagram



Typical Electro-Optical Characteristics Curve(Chip code: R6A)

Fig.3-Relative Luminous Intensity vs.Junction Temperature

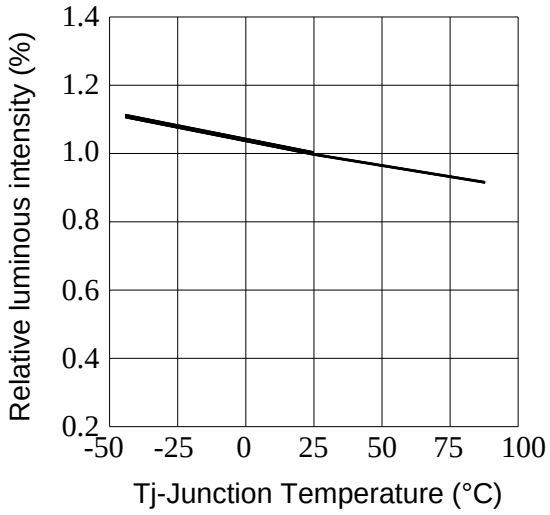


Fig.2-Relative Luminous Intensity vs. Forword Current

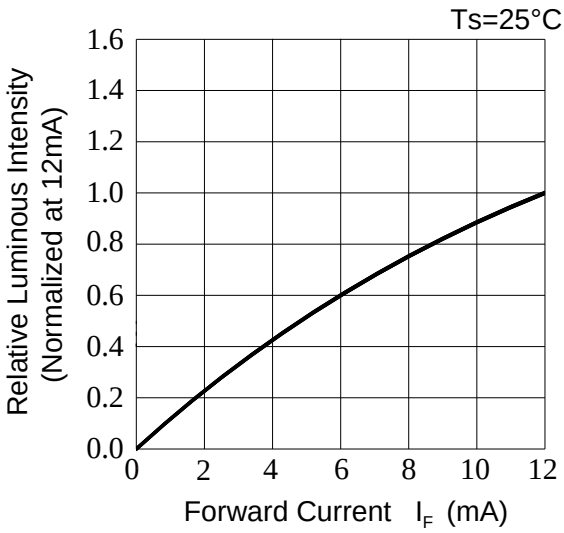


Fig.5-Max.Driving Forward Current vs.Soldering Temperture

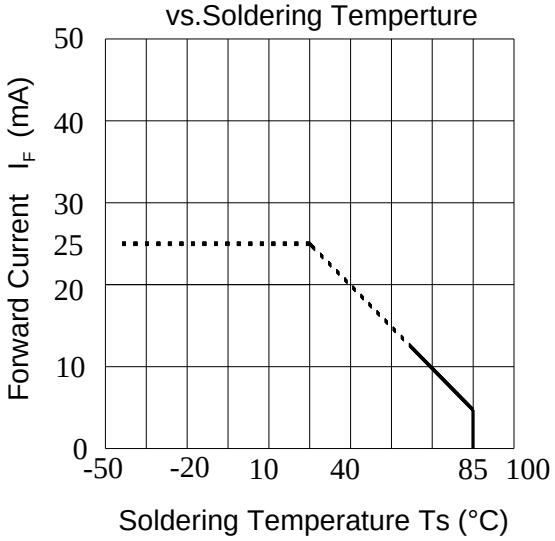
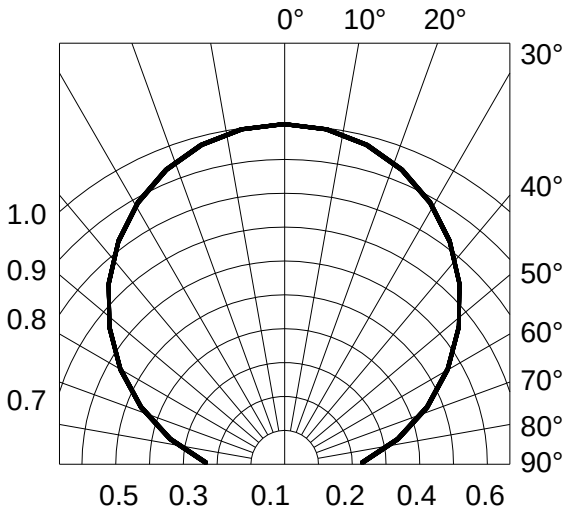


Fig.6-Radiation Diagram Ta=25°C



Typical Electro-Optical Characteristics Curve(Chip code: GH/B1)

Fig.3-Relative Luminous Intensity vs.Junction Temperature

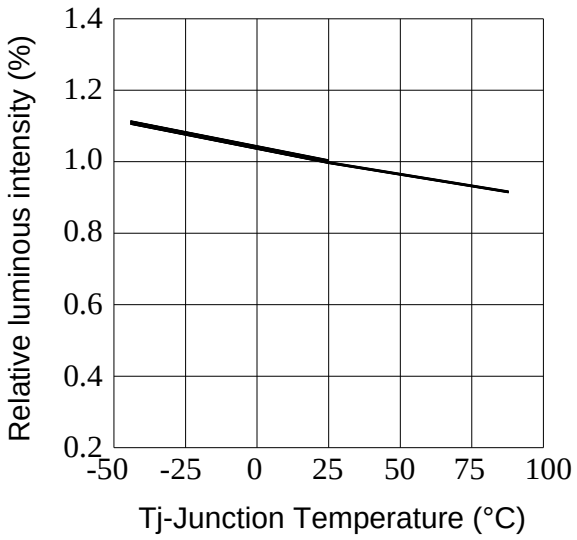


Fig.2-Relative Luminous Intensity vs. Forword Current

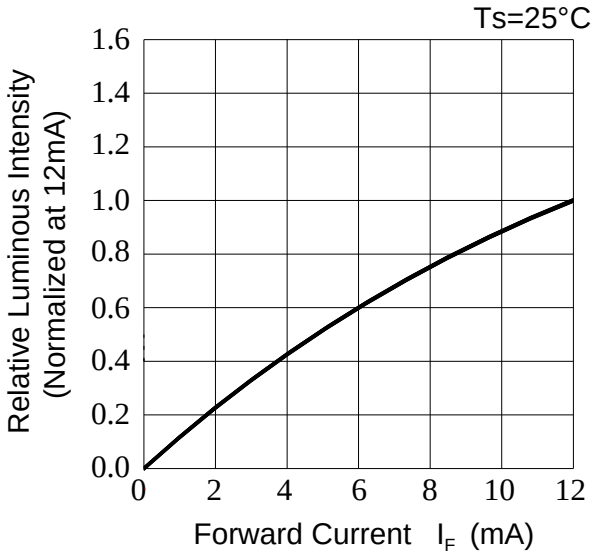


Fig.5-Max.Driving Forward Current vs.Soldering Temperture

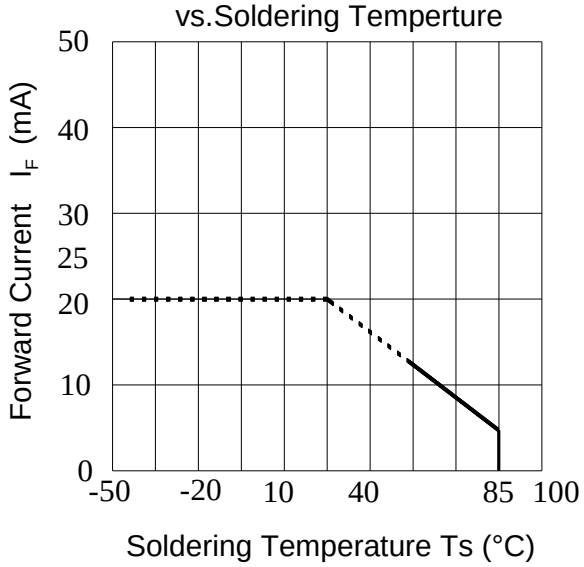
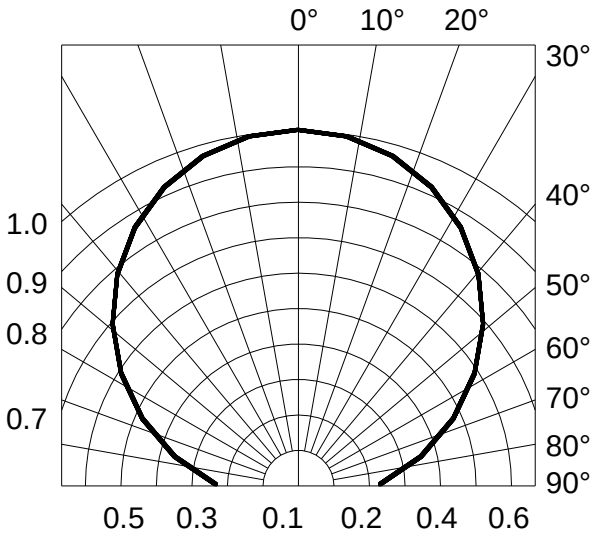


Fig.6-Radiation Diagram Ta=25°C

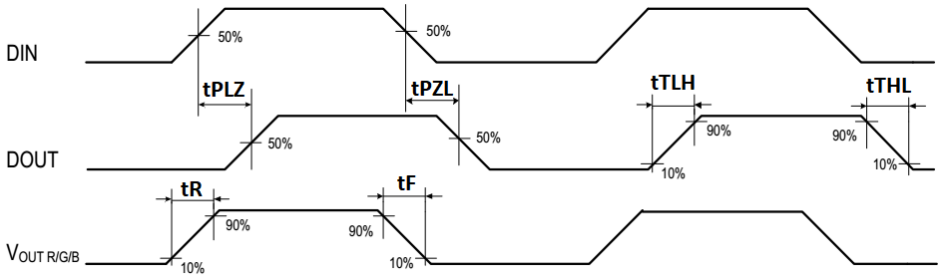


Electrical Characteristics (Without special instructions ,Ta= -40～+80℃, VDD=3.0~5.5V,VSS=0 V)

Parameter	Symbol	Min.	Avg.	Max.	Company	Test conditions
Chip internal supply voltage	V_{DD}	3.5	---	5.5	V	---
High level input voltage	V_{IH}	2.8	---	---	V	VDD=5V, Din
Low level input voltage	V_{IL}	---	---	1.6	V	VDD=5V, Din
High level output current	I_{OH}	---	-35	---	mA	High level output voltage
Low level output current	I_{OL}	---	35	---	mA	Low level output voltage
OUT R/G/B output current	I_{OUT}	---	12	---	mA	VDD=5V, VDS =1.0V
OUT R/G/B Constant current inflection point voltage	V_{DS_S}	---	0.6	---	V	VDD=5V, IOUT = 12mA
Quiescent current	I_{DD}	---	---	0.35	mA	VDD = 4. 5V IOUT ”OFF”
OUT R/G/B Output current variation	%VS.V_{DS}	---	0.5	---	%	IOUT = 12mA， VDS =1.0~3.0V
	%VS.VDD	---	0.5	---	%	IOUT =12mA， VDD = 4.5~5.5V
	%VS.T_A	---	5.0	---	%	IOUT = 12mA， TA= -40~+85℃
OUT R/G/B Port leakage current	I_{leak}	---	---	1	uA	VDS =15V， IOUT ”OFF”

Dynamic Parameter (Ta=25℃)：

Parameter	Symbol	Min.	Avg.	Max.	Company	Test conditions
OUT R/G/B Output PWM frequency	FPWM	---	1	---	KHz	IOUT=12mA
DOUT Transmission delay	TPLH	---	67	---	ns	DIN→DOUT CL=30pF
	TPZH	---	93	---	ns	
Rising time	TTLH		15		ns	
Falling time	TTHL		23		ns	
I out rise time	Tr	---	104	---	ns	CL=30pF R、G、B=12mA
	Tf	---	298	---	ns	

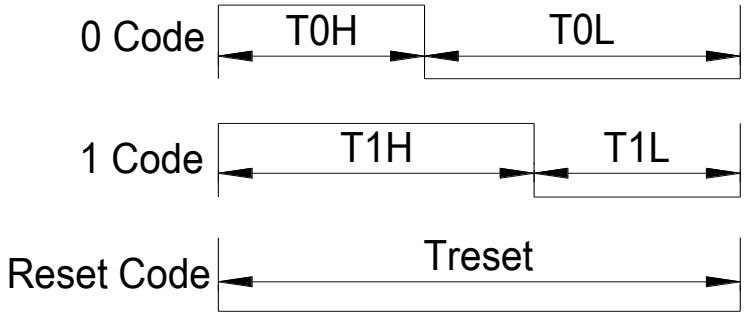


Data Transfer Time （TH+TL=1.25μs±600ns）

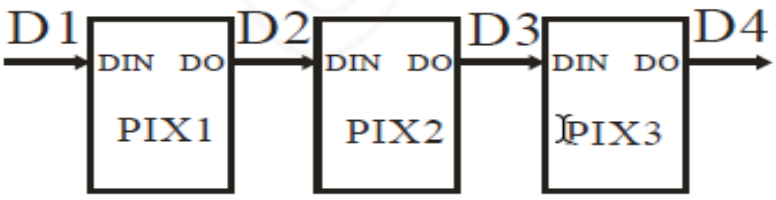
T0H	0 code, High time	0.3μs	±0.05μs
T1H	1 code, High time	0.9μs	±0.05μs
T0L	0 code, Low level time	0.9μs	±0.05μs
T1L	1 code, Low level time	0.3μs	±0.05μs
Trst	Reset,Code Low level time	＞200μs	

Timing Waveform（Ta=25℃）:

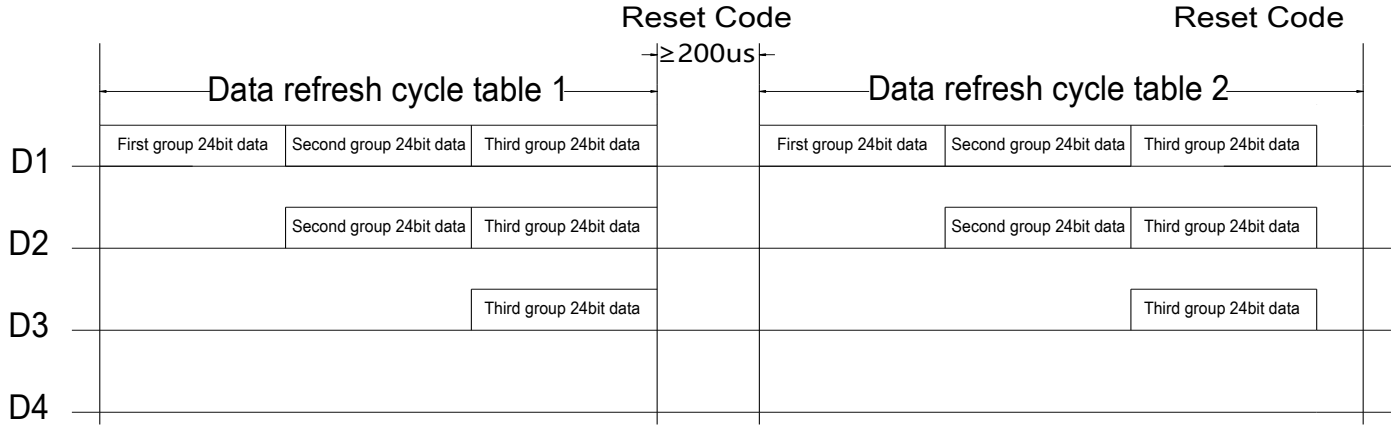
Input code type:



Connection mode:

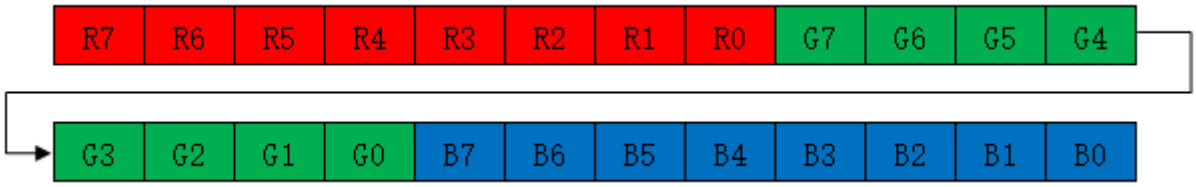


Data Transmission Mode (Ta=25℃):



Note:
Where D1 is the data sent to the MCU side, D2, D3, D4 are automatically shaping and forwarding data for cascaded circuits

24bit Data Structure（Ta=25℃）:



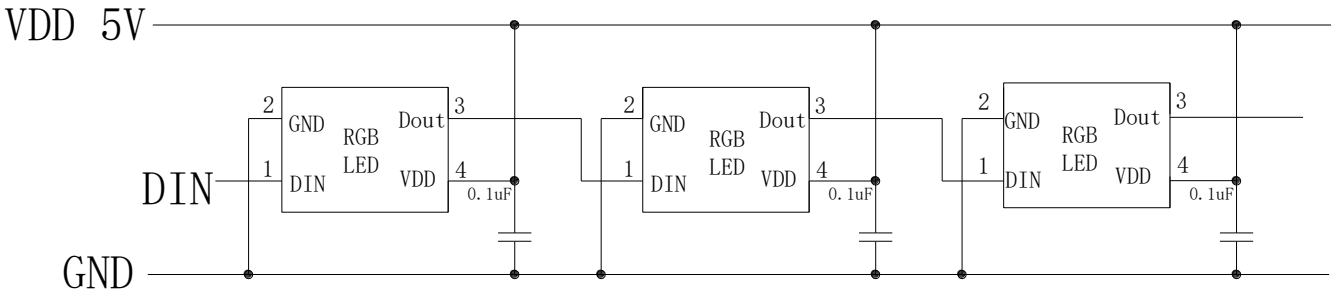
Note:
High priority, in accordance with the order of RGB to send data (R7 ~ G6 ~ B0)

RGB Current description

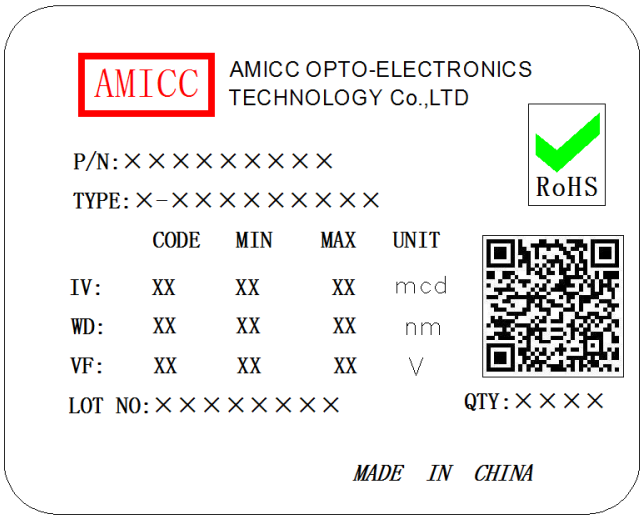
R:bit(R7-R0)	R:Current	G:bit(G7-G0)	G:Current	B:bit(B7-B0)	B:Current
00000000(00)	0mA	00000000(00)	0mA	00000000(00)	0mA
00000001(01)	0.047mA	00000001(01)	0.047mA	00000001(01)	0.047mA
01000000(40)	3mA	01000000(40)	3mA	01000000(40)	3mA
10000000(80)	6mA	10000000(80)	6mA	10000000(80)	6mA
11111111(FF)	12mA	11111111(FF)	12mA	11111111(FF)	12mA

Note:
1. This IC current is adjustable.
2. RGB Output gray level: 256.

Typical Application Circuit:

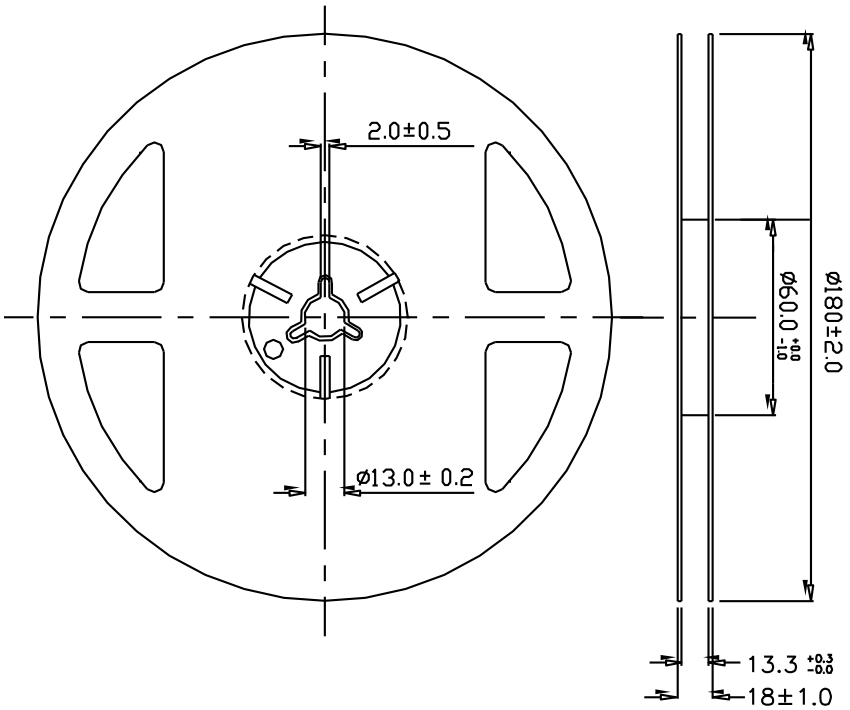


Label Explanation



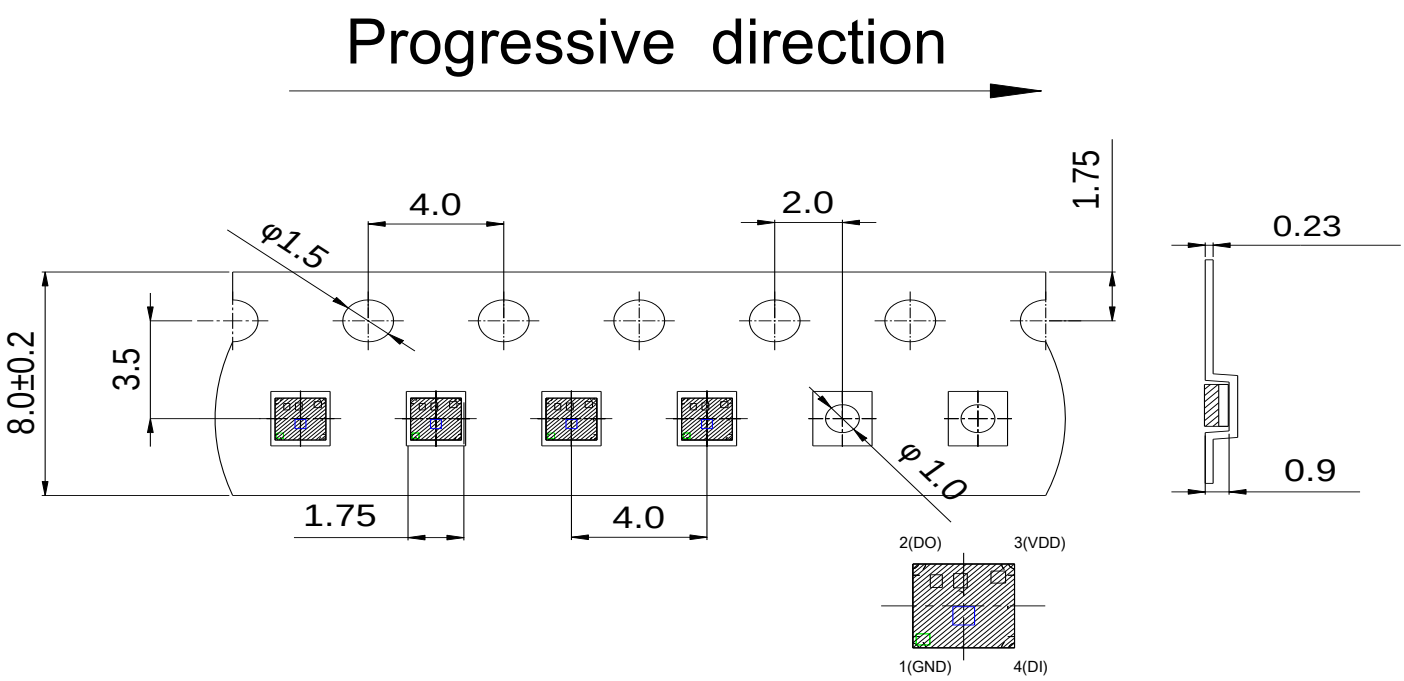
- CPN: Customer's Product Number
- P/N: Product Number
- TYPE :Part NO.
- LOT NO.: Lot Number
- QTY: Packing Quantity

Reel Dimensions



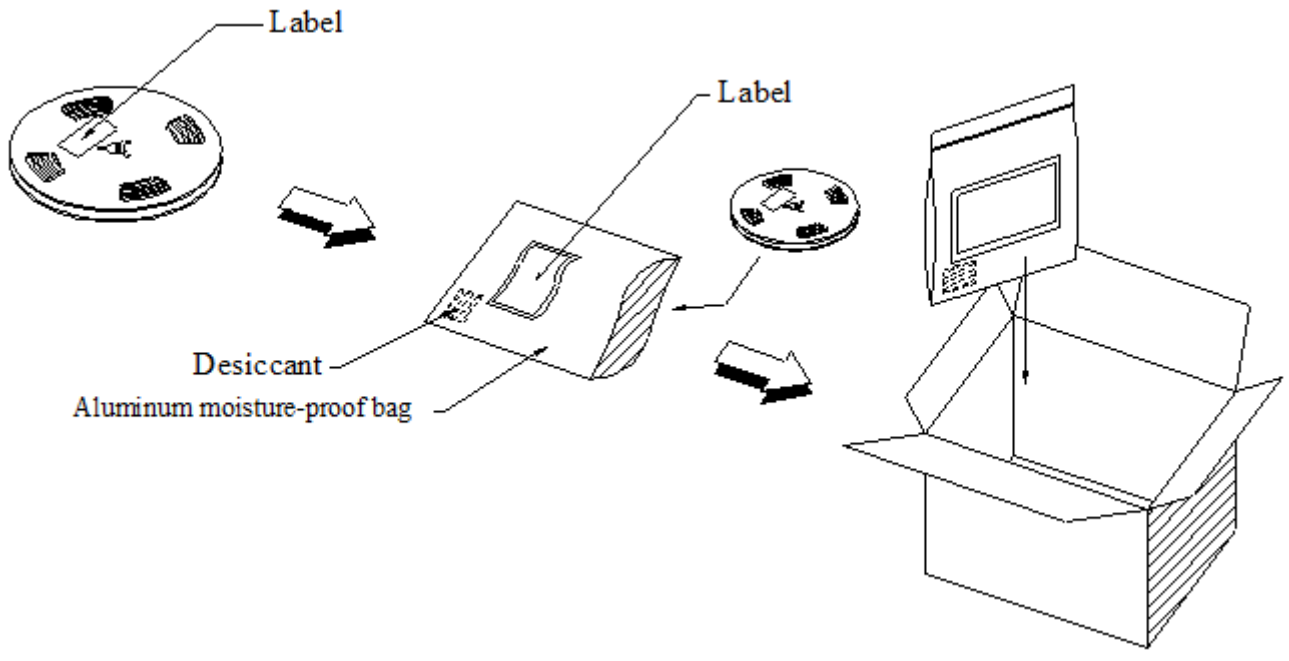
Note:
Tolerances unless mentioned ±0.1mm,Unit = mm

Carrier Tape Dimensions: Loaded Quantity 2000pcs Per Reel



Notes:
1.Tolerance unless mentioned is ±0.1mm, Unit = mm.
2.Minimum packing amount is1000pcs per reel.

Moisture Resistant Packing Process



Reliability Test Items and Conditions

The reliability of products shall be satisfied with items listed below.
Confidence level：90%
LTPD：10%

No.	Items	Test Condition	Test Hours/Cycles	Sample Size	Ac/Re
1	Reflow Soldering	Temp. : 260℃/10sec.	6 Min.	22 PCS.	0/1
2	Thermal Shock	H : +100℃ 5min ∫ 10 sec L : -10℃ 5min	300 Cycles	22 PCS.	0/1
3	Temperature Cycle	H : +100℃ 15min ∫ 5 min L : -40℃ 15min	300 Cycles	22 PCS.	0/1
4	High Temperature/Humidity	Ta=85℃,85%RH	1000 Hrs.	22 PCS.	0/1
5	Low Temperature Storage	Ta=-40℃	1000 Hrs.	22 PCS.	0/1
6	High Temperature Storage	Ta=100℃	1000 Hrs.	22 PCS.	0/1
7	DC Operation Life	Ta=25℃ VDD=5V	1000 Hrs.	22 PCS.	0/1

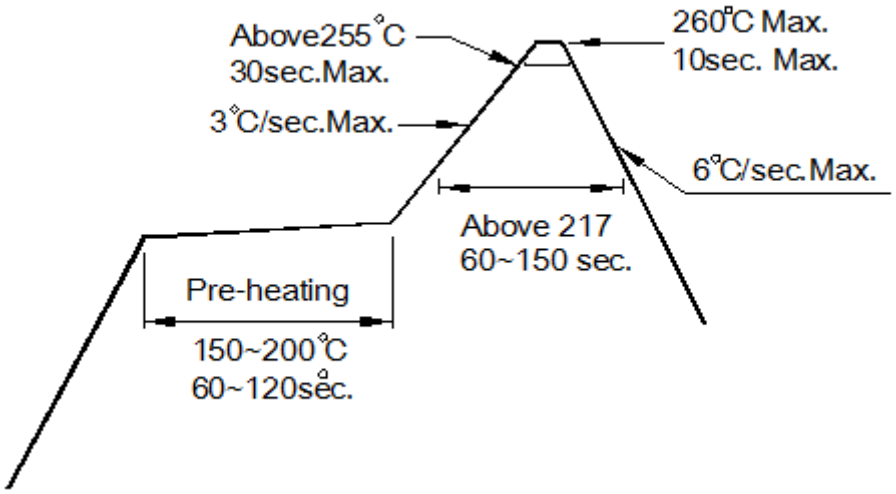
Precautions for Use

1. Dust and cleanliness
   1.1.To keep the working environment clean. Avoid dust falling onto LED surface. Open the bag on the priority, installed LED components should be stored in a clean container, etc.
   1.2. Do not use ultrasound to clean LEDs, if the product must use ultrasound, then evaluate some of the parameters affecting the LED

2.Damp-proof packing
   LED was packed in aluminum film bags to prevent LED from absorbing moisture during transportation and storage, and desiccant was placed in the bags to absorb moisture.

3. Memory
   3.1.In order to avoid LED moisture absorption, LED in bulk or pasted should be stored in a drying box or container with desiccant. Alternatively, it may be stored for a short period of time in the following environments:
   temperature: 5℃~30℃ Humidity: less than 60%
   3.2. When using LED, the aluminum film electrostatic bag should be welded quickly after opening, and the remaining LED should be sealed again. After opening the aluminum film bag, the LED should be refluxed within 1 week.
   If you need to bake, please refer to the following baking temperature:
   Bake in oven at 70 ℃ ±5 ℃ for not less than 24 hours

4. Soldering Condition
   4.1 Pb-free solder temperature profile



   4.2 Reflow soldering should not be done more than two times.
   4.3 When soldering, do not put stress on the LEDs during heating.
   4.4 After soldering, do not warp the circuit board.

5. Anti-static and surge
   5.1. Static electricity and surge can hurt LED.
   5.2. In order to protect LED, no matter what time and occasion, as long as access to the LED, have to wear antistatic wrist strap, anti-static foot straps and anti-static gloves.
   5.3. All installations and instrumentation shall be grounded.
   5.4. In circuit design, the possibility of eliminating the harm of surge to LED should be considered.

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