

# SPECIFICATION FOR APPROVAL

Customer : \_\_\_\_\_

Customer Part No: \_\_\_\_\_

SHINING Part No: PLCC2 1608 Mono Color

Emitted color: SN-NE1608BAAAG-N Green

SN-NE1608BAAAY-N Yellow

SN-NE1608BAAAO-N Orange

SN-NE1608BAAAR-N Red

SN-NE1608BAABR-N Red

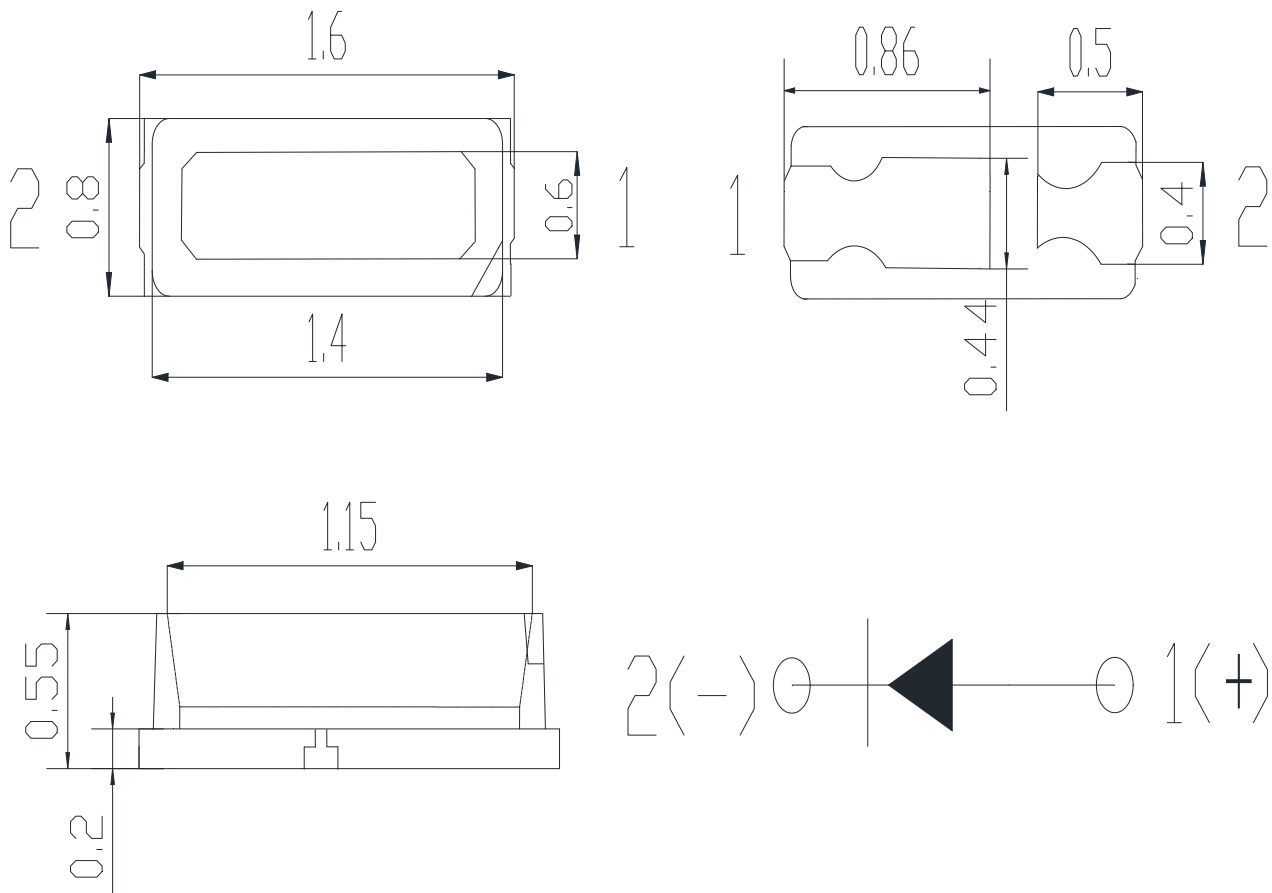
Revision History		
Date	Revision History	Prepared
2022.12.12	New Version	A/0


Confirmed By Customer	Approval by	Prepared by
	Liusan	Shaochengcheng

**Feature**

- △ Viewing angle:120 deg
- △ 1.6mm×0.8mm×0.55mm
- △ Pb-free
- △ RoHS compliant lead-free soldering compatible
- △ AEC-Q102 Qualified
- △ Precondition: Bases on JEDEC J-STD 020D Level 2a

**Package Outline**





**ATTENTION**  
OBSERVE PRECAUTIONS  
FOR HANDLING  
ELECTROSTATIC  
SENSITIVE DEVICES

**NOTES:**

1. All dimensions are in millimeters ;
2. Tolerances are ±0.2mm unless otherwise noted.

**Product Code**

SN	-	NE	1608	B	A	A	A	R	-	N
Company: Shining		Automotive	Product Size	Lead frame	Number of Chips A:One	Drive Current:20 mA	Process Code	Red		NO Zener

**Absolute maximum ratings at Ta=25°C**

Parameter	Symbol	Value	Unit
Forwardcurrent	If	25	mA
Reversevoltage	Vr	5	V
Operating temperature range	Top	-40~+110	°C
Storage temperature range	Tstg	-40~+110	°C
Pulse Forward Current (Pulse Width $\leq$ 100 $\mu$ s and Duty $\leq$ 3%)	I <sub>fp</sub>	35	mA
Electrostatic Discharge	ESD	2000	V

**Electro-optical characteristics at Ta=25°C (IF@20mA)**

Model	Part Number	Dominant wavelength(nm)		Luminous intensity (mcd)		Forward voltage(v)	
		Min.	Max.	Min.	Max.	Min.	Max.
Green	SN-NE1608BAAAG-N	520	530	900	1800	3.0	3.6
Yellow	SN-NE1608BAAAY-N	587	593	450	1125	1.8	2.4
Orange	SN-NE1608BAAAO-N	600	612	450	1125	1.8	2.4
Red	SN-NE1608BAABR-N	617	627	450	1125	1.8	2.4
Red	SN-NE1608BAAAR-N	627	637	355	715	1.8	2.4

## Electrical Characteristics at Ta=25°C

Parameter	Test Condition	Symbol	Value			Unit
			Min.	Typ.	Max.	
Viewing angle at 50% Iv	If=20mA	2 θ 1/2	--	120	--	Deg
Reverse current	Vr=5V	Ir	--	--	10	μA

NOTE: (Tolerance: IV±10%, Vf ±0.1V, WD ±1nm)

## Forward voltage range

Forward Voltage Unit: V@20mA		
Bin Code	MIN	MAX
F00	1.8	2.0
F01	2.0	2.2
F02	2.2	2.4
F03	2.4	2.6
F04	2.6	2.8
F05	2.8	3.0
F06	3.0	3.2
F07	3.2	3.4
F08	3.4	3.6

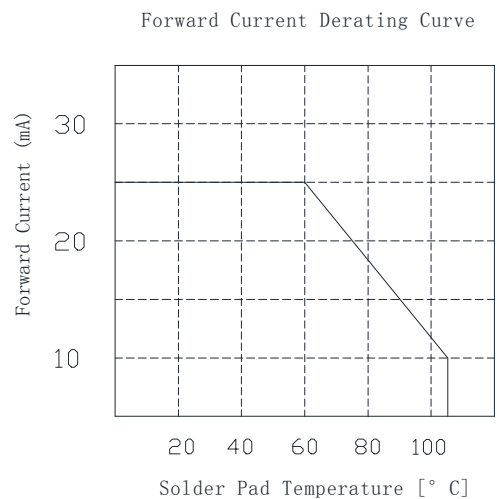
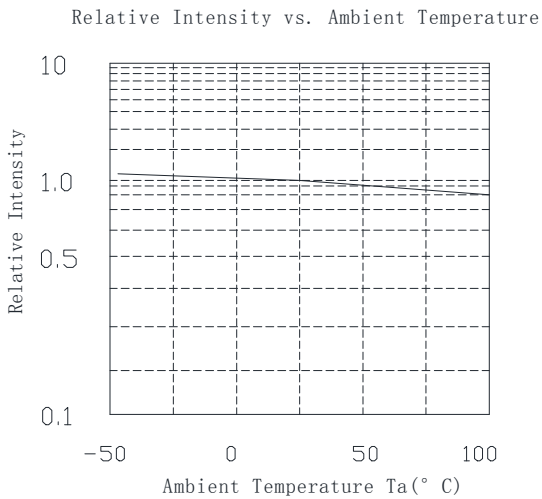
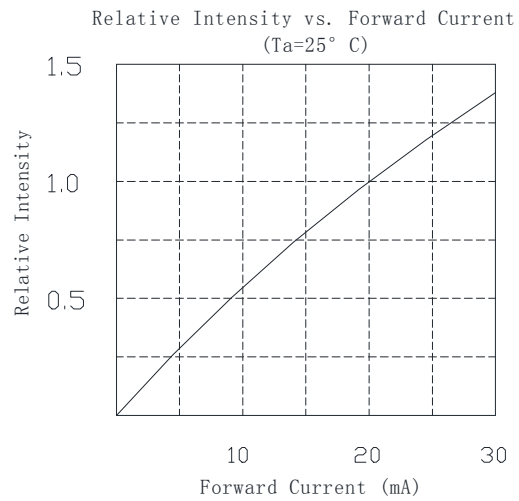
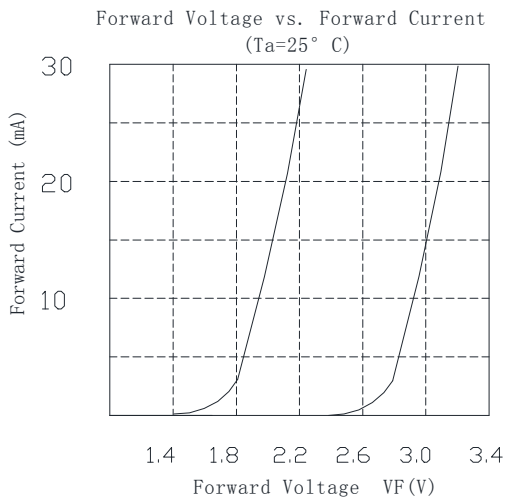
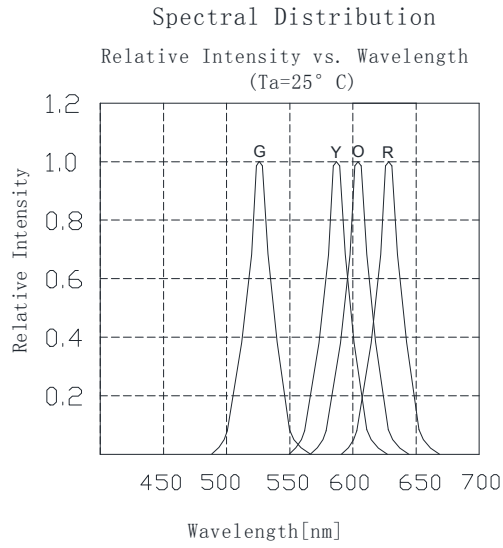
## Luminous intensity range

Luminous Intensity Unit: mcd@20mA		
Bin Code	MIN	MAX
T1	285	355
T2	355	450
U1	450	560
U2	560	715
V1	715	900
V2	900	1125
W1	1125	1400
W2	1400	1800

## Chromaticity range

Dominant Wavelength Unit: nm@20mA			
Colour	Bin Code	MIN	MAX
AG	G1	520	525
	G2	525	530
AY	YB	587	590
	YC	590	593
AO	AO	600	603
	BO	603	606
	CO	606	609
	DO	609	612
BR	R2	617	620
	R3	620	623
	R4	623	627
AR	RA	627	630
	RB	630	634
	RC	634	637

Typical optical characteristics curves



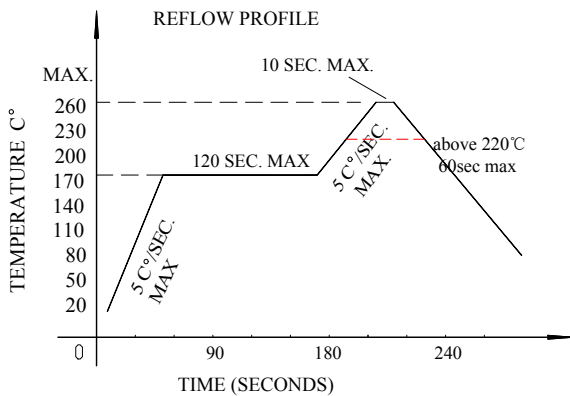
### Reflow profile

- Soldering condition
  - Recommended soldering conditions

Reflow Soldering		Hand Soldering	
Pre-heat	160~180℃	Temperature	300℃ Max.
Pre-heat time	120 seconds Max.	Soldering time	3 second Max. (one time only)
Peak temperature	260℃ Max.		
Soldering time	10 seconds Max.		
Condition	Refer to Temperature-profile		

- After reflow soldering rapid cooling should be avoided

- Temperature-profile (Surface of circuit board)  
Use the following conditions shown in the figure.



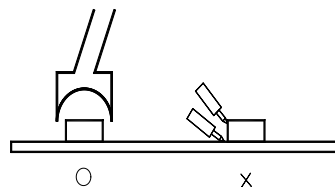
1. Reflow soldering should not be done more than two times
2. When soldering ,do not put stress on the LEDs during heating

■ Soldering iron

1. When hand soldering, keep the temperature of the iron under 300℃, and at that temperature keep the time under 3 sec.
2. The hand soldering should be done only a time
3. The basic spec is ≤ 5 sec. when the temperature of 260℃, do not contact the resin when hand soldering

■ Rework

1. Customer must finish rework within 5 sec und
2. The head of iron can not touch the resin
3. Twin-head type is preferred.



■ CAUTIONS

The encapsulated material of the LEDs is silicone . Therefore the LEDs have a soft surface on the top of package. The pressure to the top surface will be influence to the reliability of the LEDs. Precautions should be taken to avoid the strong pressure on the encapsulated part. So when using the picking up nozzle, the pressure on the silicone resin should be proper.

## Reliability

### (1) TEST ITEMS AND RESULTS

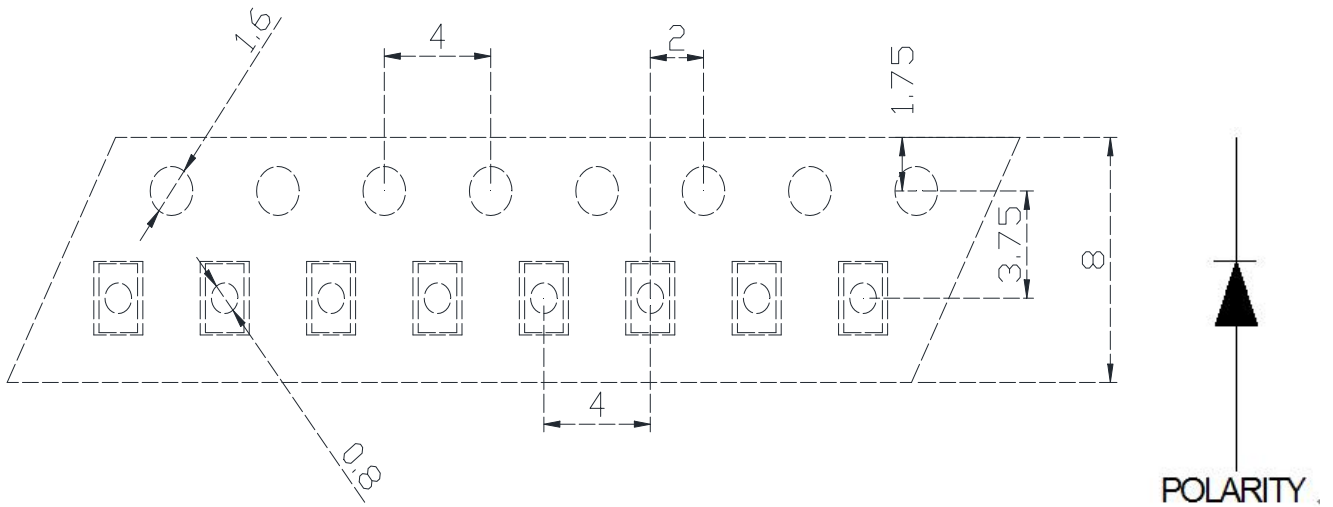
Test Item	Test Conditions	Note	Number of Damaged
Resistance to Soldering Heat(Reflow Soldering)	T <sub>sld</sub> =260℃, 10sec	3 times	0/22
Thermal Shock	-40℃ 30min ↑↓<5min 105℃ 30min	1000 cycle	0/22
High Temperature Storage	T <sub>a</sub> =110℃	1000 hrs	0/22
Humidity Heat Storage	T <sub>a</sub> =85℃ RH=85%	1000 hrs	0/22
Low Temperature Storage	T <sub>a</sub> =-40℃	1000 hrs	0/22
High Temperature Life Test	T <sub>a</sub> =110℃ I <sub>F</sub> =10mA	1000 hrs	0/22
Low Temperature Life Test	T <sub>a</sub> =-40℃ I <sub>F</sub> =25mA	1000 hrs	0/22
Temperature Cycle	-40℃ 10min ↑↓15min 105℃ 10min I <sub>F</sub> =10mA 5Min On,5Min Off	1000 cycle	0/22
High Humidity Heat Life Test	T <sub>a</sub> =60℃ RH=85% I <sub>F</sub> =25mA	1000 hrs	0/22
Pulse Life Test	T <sub>a</sub> =55℃ Pulse Forward Current 35mA Pulse Width ≤ 100 μs and Duty ≤ 3%	1000 hrs	0/22

### (2) CRITERIA FOR JUDGING THE DAMAGE

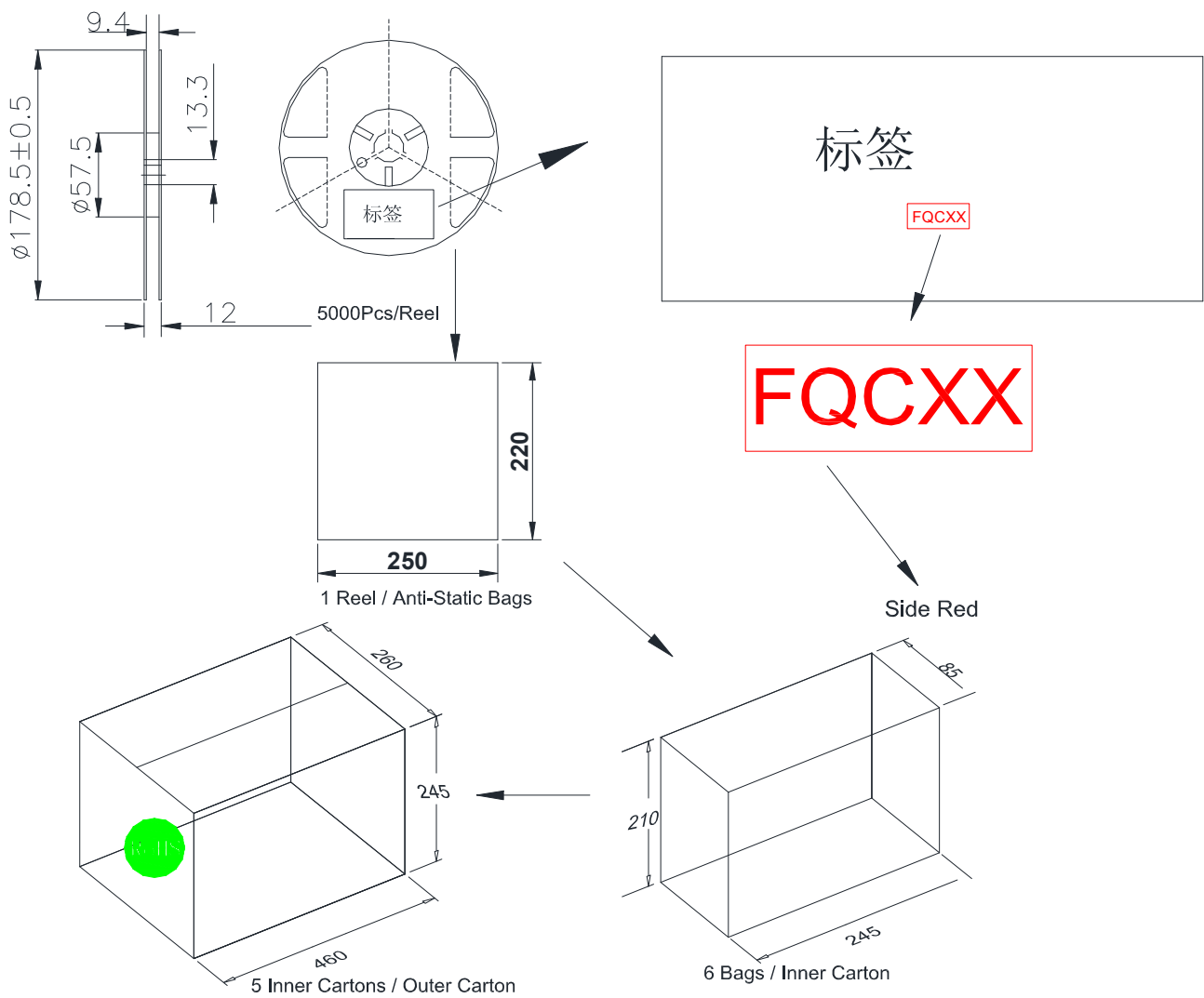
Item	Symbol	Criteria for Judgement	
		Min.	Max.
Forward Voltage	VF	-	Initial Data×1.1
Luminous Intensity	IV	Initial Data×0.8	-
Wavelength	NM	Initial-2	Initial+2



Packaging Specifications



Packaging specifications



## CAUTIONS

### Storage conditions

#### Before opening the package:

The LEDs should be kept at 30°C or less and 70%RH or less. The LEDs should be used within a year. When storing the LEDs, moisture proof packaging with absorbent material (silica gel) is recommended.

#### After opening the package:

The LEDs should be kept at 30°C or less and 50%RH or less. The LEDs should be soldered within 24 hours (1days) after opening the package. If unused LEDs remain, they should be stored in moisture proof packages, such as sealed containers with packages of moisture absorbent material (silica gel). It is also recommended to return the LEDs to the original moisture proof bag and to reseal the moisture proof bag again.

This specification shining has the right of final interpretation