

## Technical Data Sheet

### Side View LEDs (Height 0.8mm)

---

**99-213/GHC-YW1X1E/2C**

#### Features

- Side view LED.
- Lead frame package with individual 2 pins.
- Wide viewing angle.
- Soldering methods: IR reflow soldering.
- Pb-free.
- The product itself will remain within RoHS compliant version.



#### Descriptions

- The 99-213 series is available in soft orange, green, blue and yellow. Due to the package design, the LED has wide viewing angle, low power consumption. This feature makes the LED ideal for light guide application.

#### Applications

- LCD back light.
- Mobile phones .
- Indicators.
- Illuminations.
- Switch lights.

#### Device Selection Guide

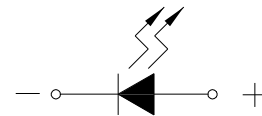
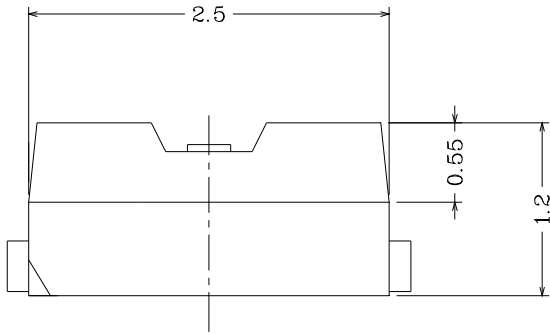
Chip	Emitted Color	Resin Color
Material		
InGaN	Brilliant Green	Water Clear

## Technical Data Sheet

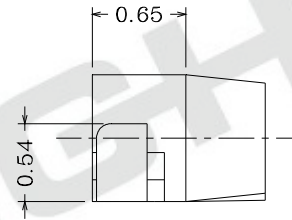
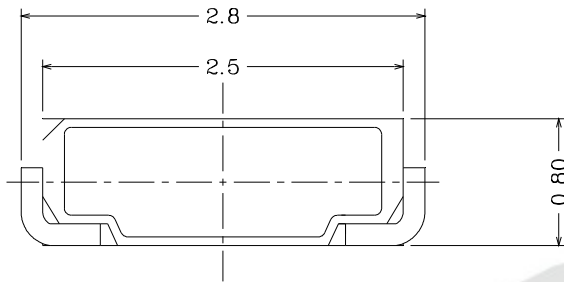
### Side View LEDs (Height 0.8mm)

**99-213/GHC-YW1X1E/2C**

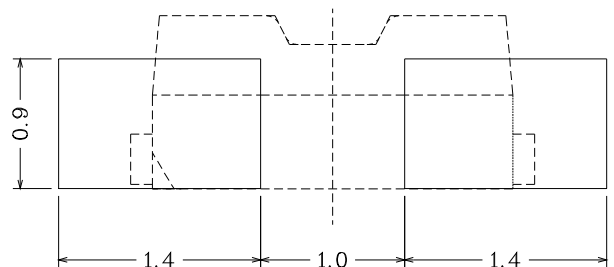
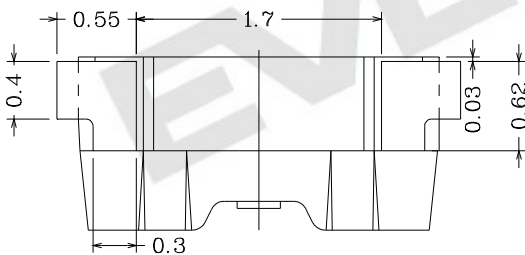
#### Package Outline Dimensions



Polarity



Recommended soldering pad design



**Notes:** Tolerances Unless Dimension  $\pm 0.1\text{mm}$ , Unit = mm

# Technical Data Sheet

## Side View LEDs (Height 0.8mm)

**99-213/GHC-YW1X1E/2C**

### Absolute Maximum Ratings (Ta=25 )

Parameter	Symbol	Rating	Unit
Reverse Voltage	V <sub>R</sub>	5	V
Forward Current	I <sub>F</sub>	25	mA
Peak Forward Current (Duty 1/10 @10ms)	I <sub>FP</sub>	100	mA
Power Dissipation	P <sub>d</sub>	95	mW
Electrostatic Discharge(HBM)	ESD	150	V
Operating Temperature	T <sub>opr</sub>	-40 ~ +85	
Storage Temperature	T <sub>stg</sub>	-40 ~ +90	
Soldering Temperature	T <sub>sol</sub>	Reflow Soldering : 260 for 10 sec. Hand Soldering : 350 for 3 sec.	

1. The products are sensitive to static electricity and must be carefully taken when handling products.

### Electro-Optical Characteristics (Ta=25 )

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Luminous Intensity	I <sub>v</sub>	1120	-----	2250	mcd	I <sub>F</sub> =20mA
Viewing Angle	2θ <sub>1/2</sub>	-----	120	-----	deg	
Peak Wavelength	λ <sub>p</sub>	-----	518	-----	nm	
Dominant Wavelength	λ <sub>d</sub>	520	-----	535	nm	
Spectrum Radiation Bandwidth	λ	-----	35	-----	nm	
Forward Voltage	V <sub>F</sub>	2.75	-----	3.65	V	
Reverse Current	I <sub>R</sub>	-----	-----	50	uA	V <sub>R</sub> =5V

#### Notes:

1. Tolerance of Luminous Intensity: ±11%
2. Tolerance of Dominant Wavelength: ±1nm
3. Tolerance of Forward Voltage: ±0.1V

## Technical Data Sheet

### Side View LEDs (Height 0.8mm)

**99-213/GHC-YW1X1E/2C**

#### Bin Range of Luminous Intensity

Bin Code	Min.	Max.	Unit	Condition
W1	1120	1420	mcd	I <sub>F</sub> =20mA
W2	1420	1800		
X1	1800	2250		

#### Bin Range of Dominant Wavelength

Group	Bin Code	Min.	Max.	Unit	Condition
Y	X	520	525	nm	I <sub>F</sub> =20mA
	Y	525	530		
	Z	530	535		

#### Bin Range of Forward Voltage

Groups	Bin Code	Min.	Max.	Unit	Condition
E	5	2.75	3.05	V	I <sub>F</sub> =20mA
	6	3.05	3.35		
	7	3.35	3.65		

#### Notes:

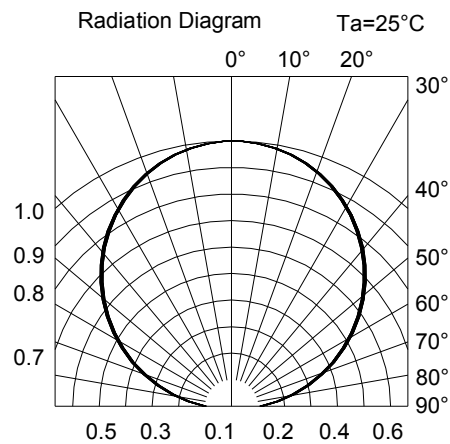
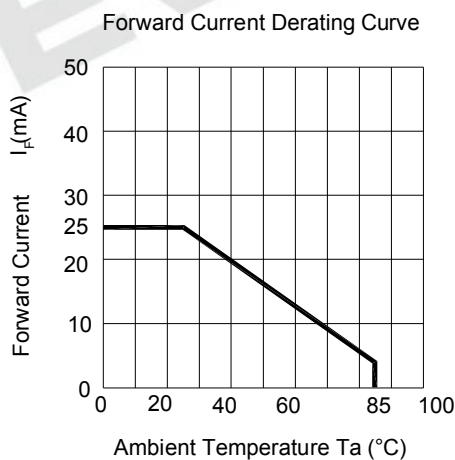
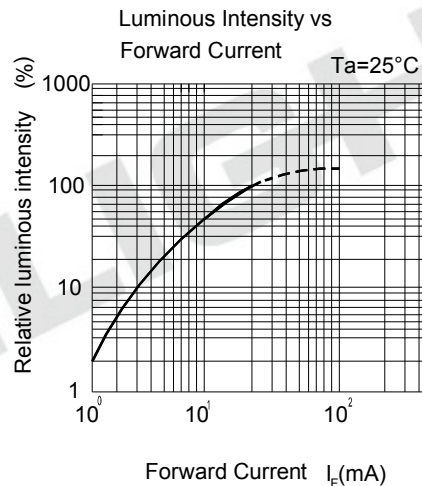
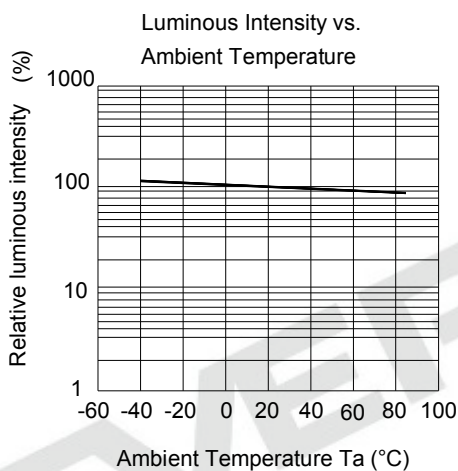
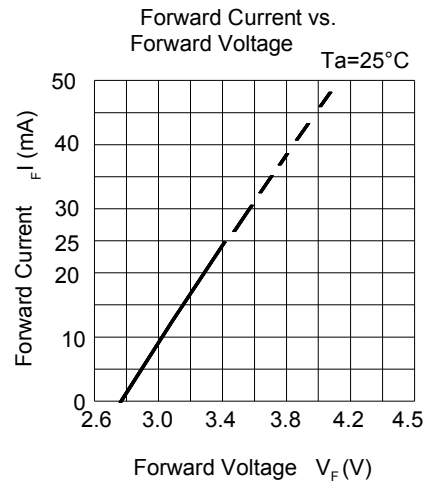
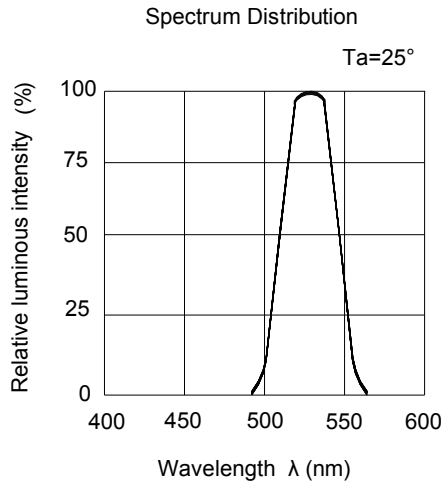
1. Tolerance of Luminous Intensity:  $\pm 11\%$
2. Tolerance of Dominant Wavelength:  $\pm 1\text{nm}$
3. Tolerance of Forward Voltage:  $\pm 0.1\text{V}$

## Technical Data Sheet

### Side View LEDs (Height 0.8mm)

### 99-213/GHC-YW1X1E/2C

#### Typical Electro-Optical Characteristics Curves



## Technical Data Sheet

### Side View LEDs (Height 0.8mm)

**99-213/GHC-YW1X1E/2C**

#### Label Explanation

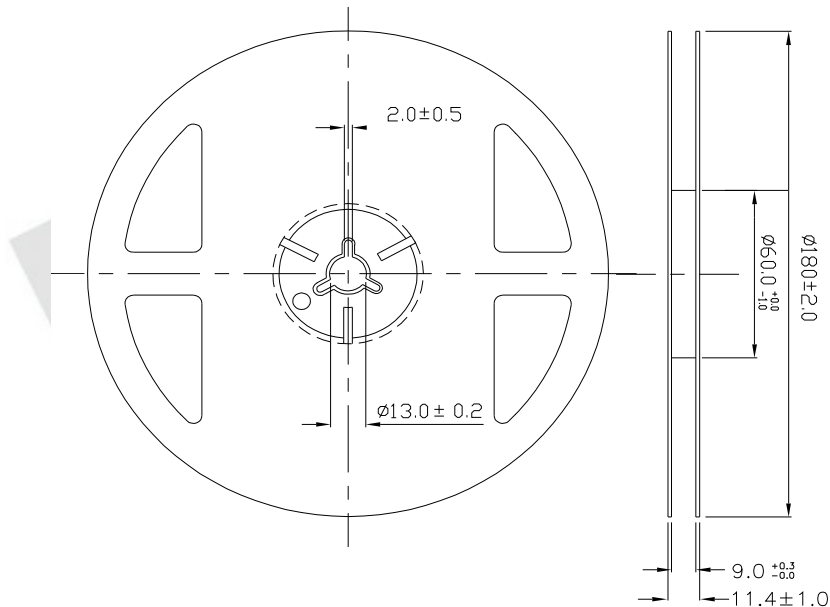
**CAT: Luminous Intensity Rank**

**HUE: Dom. Wavelength Rank**

**REF: Forward Voltage Rank**



#### Reel Dimensions

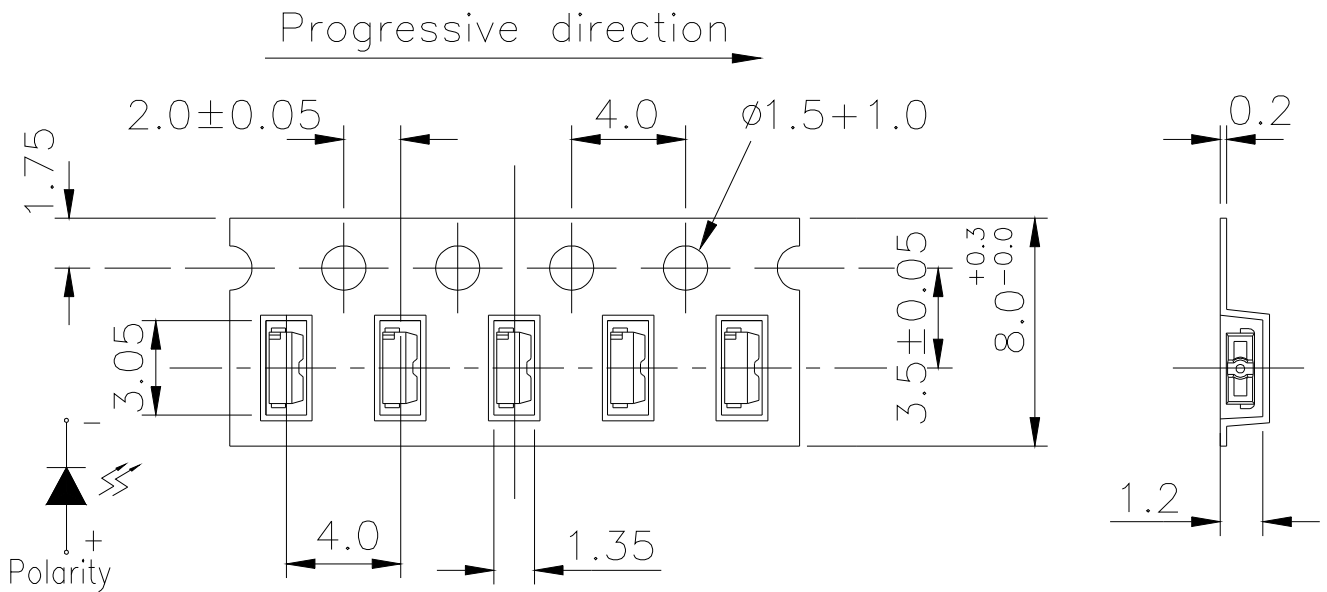


**Note:** The tolerances unless mentioned is  $\pm 0.1$ mm; Unit = mm

**Technical Data Sheet**  
**Side View LEDs (Height 0.8mm)**

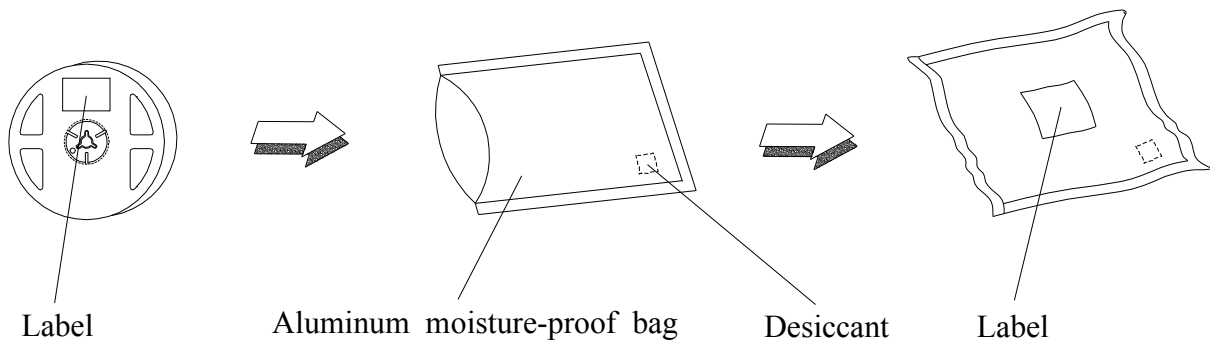
**99-213/GHC-YW1X1E/2C**

**Carrier Tape Dimensions: Loaded Quantity 2000 pcs Per Reel**



**Note:** 1. The tolerances unless mentioned is ±0.1mm; Unit = mm  
 2. Minimum packing amount is 250/500/1000/2000 pcs per reel

**Moisture Resistant Packaging**



# Technical Data Sheet

## Side View LEDs (Height 0.8mm)

**99-213/GHC-YW1X1E/2C**

### 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 ±5 Max. 10 sec.	6 Min.	22 pcs.	0/1
2	Temperature Cycle	H : +100 15min ∫ 5 min L : -40 15min	300 Cycles	22 pcs.	0/1
3	Thermal Shock	H : +100 5min ∫ 10 sec L : -10 5min	300 Cycles	22 pcs.	0/1
4	High Temperature Storage	Temp. : 100	1000 Hrs.	22 pcs.	0/1
5	Low Temperature Storage	Temp. : -40	1000 Hrs.	22 pcs.	0/1
6	DC Operating Life	I <sub>F</sub> = 20 mA / 25	1000 Hrs.	22 pcs.	0/1
7	High Temperature / High Humidity	85 /85%RH	1000 Hrs.	22 pcs.	0/1



## Technical Data Sheet

### Side View LEDs (Height 0.8mm)

**99-213/GHC-YW1X1E/2C**

#### 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 Moisture proof bag should only be opened immediately prior to usage.

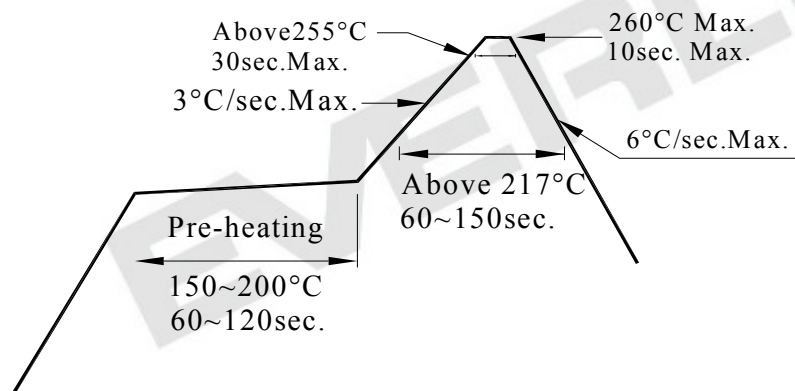
2.2 Environment should be less than 30 and 90% RH when moisture proof bag is opened.

2.3 After opening the package MSL Conditions stated on page 1 of this spec should not be exceeded.

2.4 If the moisture sensitivity card indicates higher than acceptable moisture, the component should be baked at min. 60deg +/-5deg 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.

## Technical Data Sheet

### Side View LEDs (Height 0.8mm)

---

**99-213/GHC-YW1X1E/2C**

#### 4. Soldering Iron

Each terminal is to go to the tip of soldering iron temperature less than 350 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.

#### 5. Repairing

Repair should not be done after the LEDs have been soldered. When repairing is unavoidable, a double-head soldering iron should be used (as below figure). It should be confirmed beforehand whether the characteristics of the LEDs will or will not be damaged by repairing.

