

Technical Data Sheet

Side View LEDs (Height 0.8mm)

99-213/B7C-AT1U1N/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

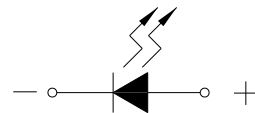
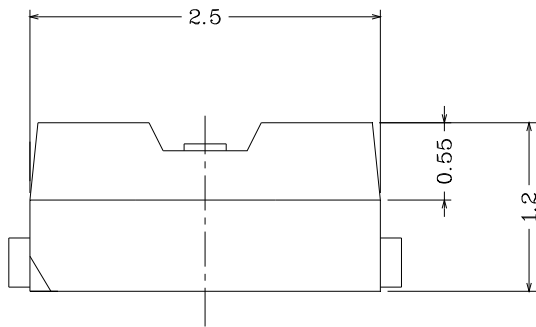
Chip		Resin Color
Material	Emitted Color	
InGaN	Blue	Water Clear

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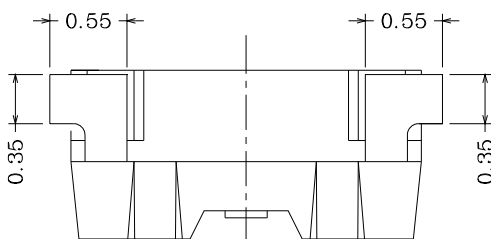
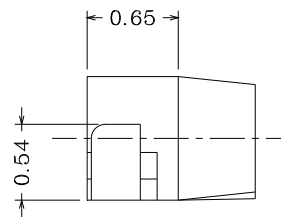
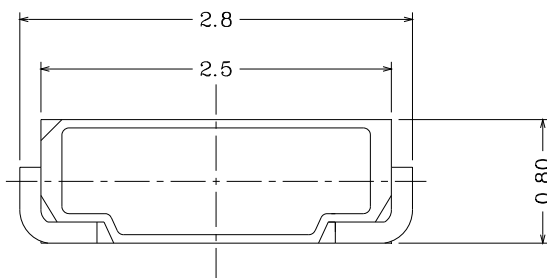
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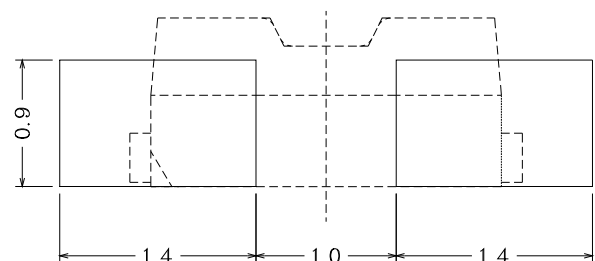
Package Outline Dimensions



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/B7C-AT1U1N/2C****Absolute Maximum Ratings (Ta=25°C)**

Parameter	Symbol	Rating	Unit
Reverse Voltage	V _R	5	V
Forward Current	I _F	30	mA
Peak Forward Current (Duty 1/10 @10ms)	I _{FP}	100	mA
Power Dissipation	P _d	110	mW
Electrostatic Discharge(HBM)	ESD	2000	V
Operating Temperature	Topr	-40 ~ +85	°C
Storage Temperature	Tstg	-40 ~ +90	°C
Soldering Temperature	Tsol	Reflow Soldering : 260 °C for 10 sec. Hand Soldering : 350 °C for 3 sec.	

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

Electro-Optical Characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Luminous Intensity	I _v	285	-----	565	mcd	I _F =20mA
Viewing Angle	2θ _{1/2}	-----	110	-----	deg	
Peak Wavelength	λ _p	-----	468	-----	nm	
Dominant Wavelength	λ _d	464.5	-----	476.5	nm	
Spectrum Radiation Bandwidth	Δλ	-----	26	-----	nm	
Forward Voltage	V _F	2.70	-----	3.70	V	V _R =5V
Reverse Current	I _R	-----	-----	50	uA	

Notes:

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

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Bin Code	Min.	Max.	Unit	Condition
T1	285	360	mcd	$I_F=20\text{mA}$
T2	360	450		
U1	450	565		

Bin Range of Dominant Wavelength

Group	Bin Code	Min.	Max.	Unit	Condition
A	A9	464.5	467.5	nm	$I_F=20\text{mA}$
	A10	467.5	470.5		
	A11	470.5	473.5		
	A12	473.5	476.5		

Bin Range of Forward Voltage

Groups	Bin Code	Min.	Max.	Unit	Condition
N	10	2.70	2.90	V	$I_F=20\text{mA}$
	11	2.90	3.10		
	12	3.10	3.30		
	13	3.30	3.50		
	14	3.50	3.70		

Notes:

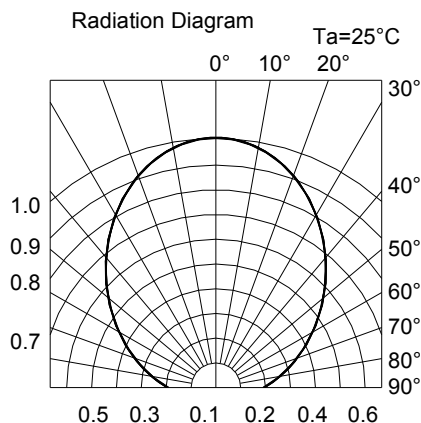
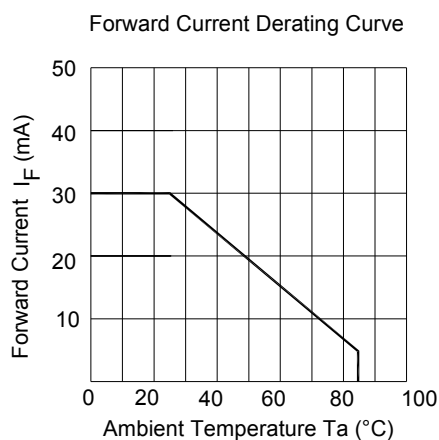
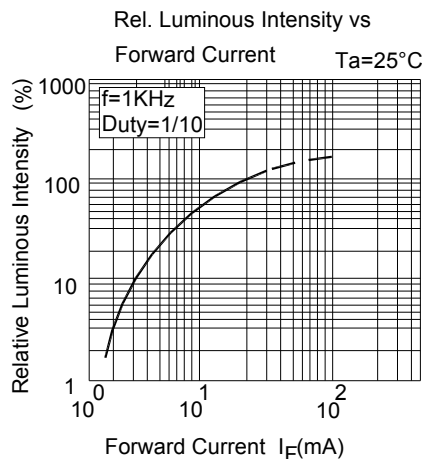
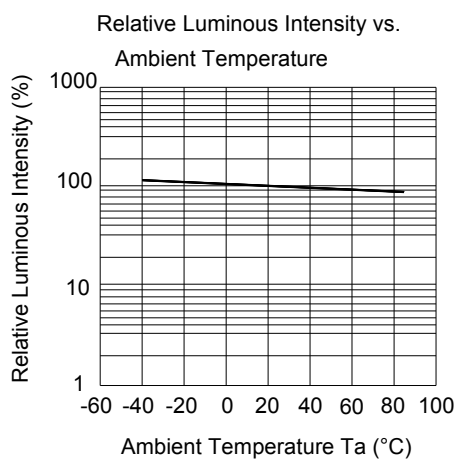
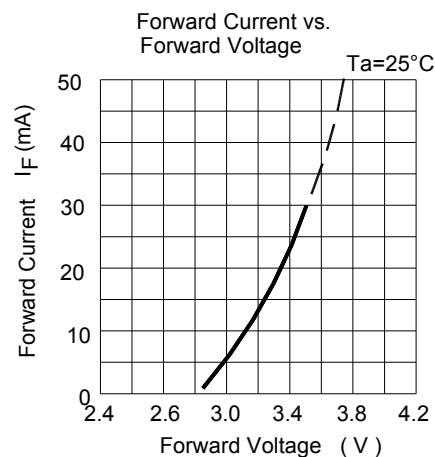
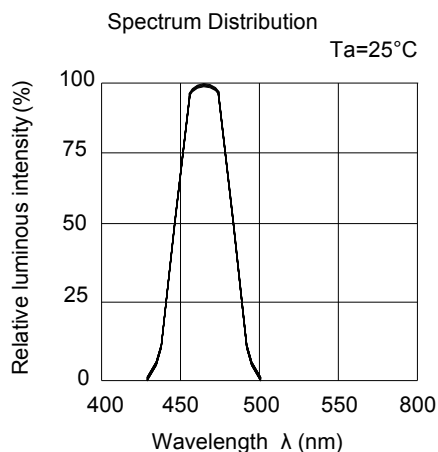
1. Tolerance of Luminous Intensity: $\pm 11\%$
2. Tolerance of Dominant Wavelength: $\pm 1\text{nm}$
3. Tolerance of Forward Voltage: $\pm 0.1\text{V}$

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Typical Electro-Optical Characteristics Curves



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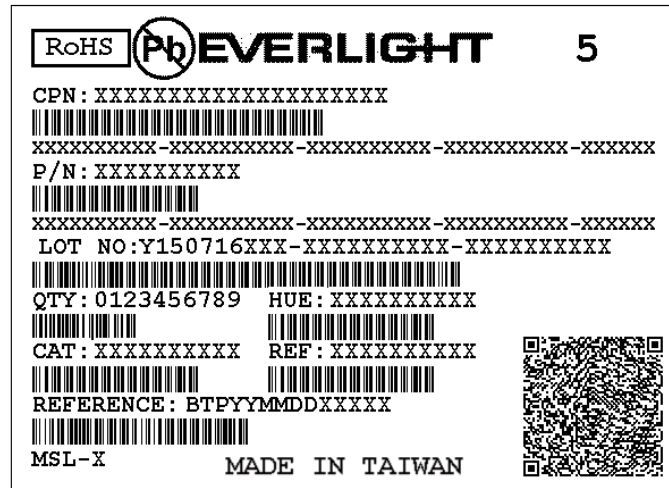
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Label Explanation

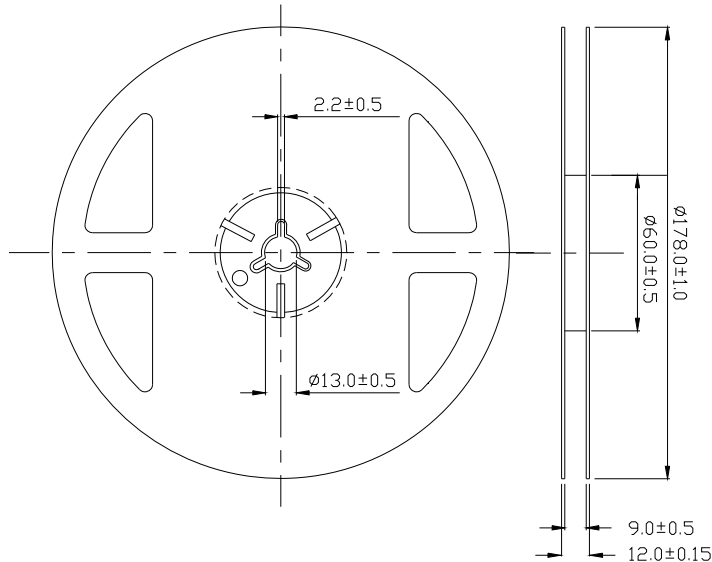
CAT: Luminous Intensity Rank

HUE: Dom. Wavelength Rank

REF: Forward Voltage Rank



Reel Dimensions



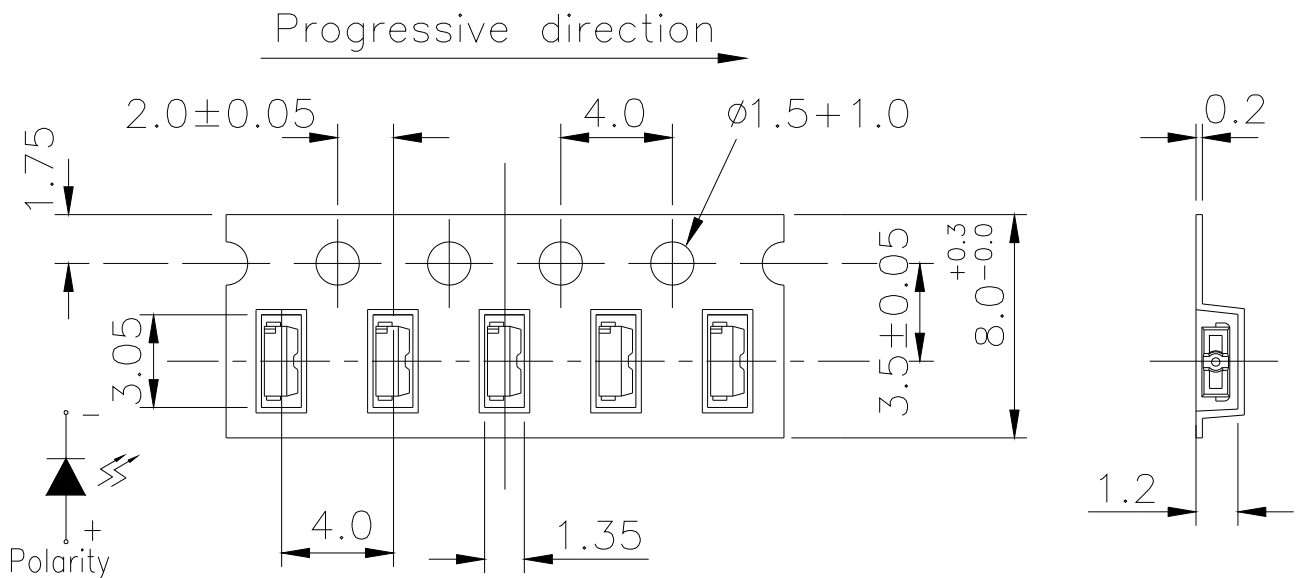
Note: The tolerances unless mentioned is $\pm 0.1\text{mm}$; Unit = mm

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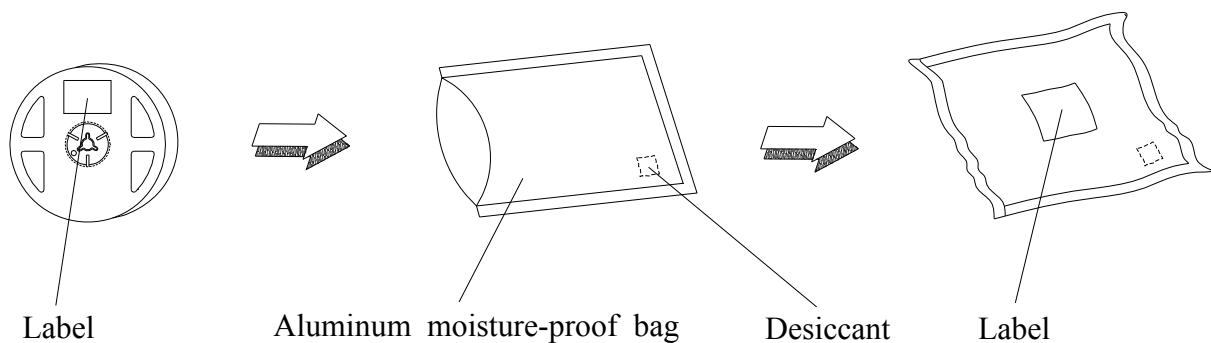
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Carrier Tape Dimensions: Loaded Quantity 2000 pcs Per Reel



Note: 1. The tolerances unless mentioned is ± 0.1 mm; Unit = mm

Moisture Resistant Packaging



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

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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°C or less and 60% RH or less.

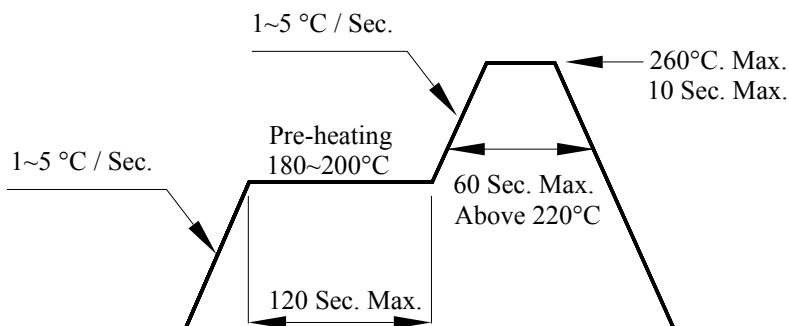
If unused LEDs remain, it should be stored in moisture proof packages.

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.

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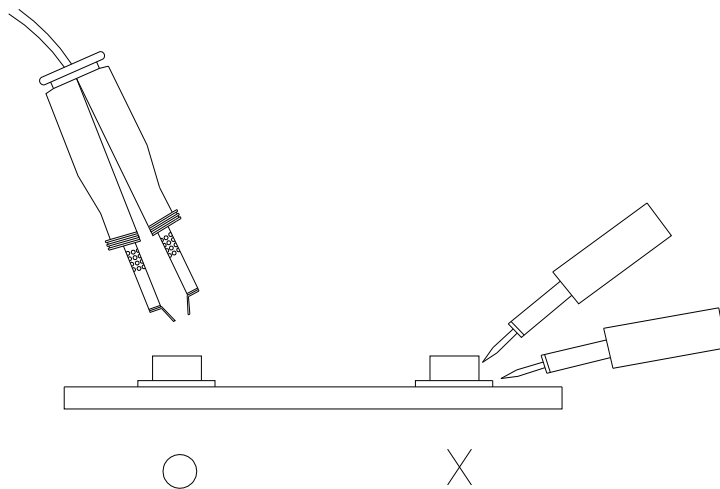
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4. Soldering Iron

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.

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.



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