



Technical Data Sheet

0402 Package Chip LED (0.45mm Height)

16-213/G6C-BN2P2B/3T/AM

Features

- Package in 8mm tape on 7" diameter reel.
- Compatible with automatic placement equipment.
- Compatible with infrared and vapor phase reflow solder process.
- Mono-color type.
- Pb-free.
- The product itself will remain within RoHS compliant version.



Descriptions

- The 16-213 SMD LED is much smaller than lead frame type components, thus enable smaller board size, higher packing density, reduced storage space and finally smaller equipment to be obtained.
- Besides, lightweight makes them ideal for miniature applications. etc.

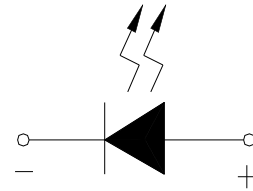
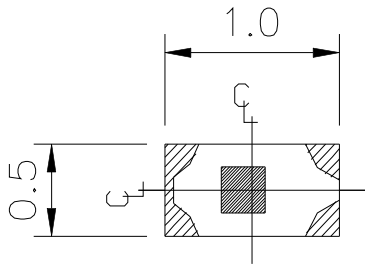
Applications

- Backlighting in dashboard and switch.
- Telecommunication: indicator and backlighting in telephone and fax.
- Flat backlight for LCD, switch and symbol.
- General use.

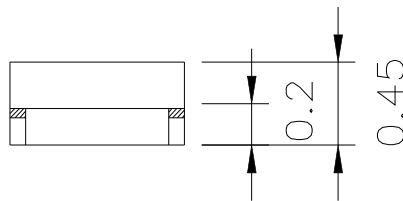
Device Selection Guide

Part No.	Chip		Resin Color
	Material	Emitted Color	
16-213/G6C-BN2P2B/3T/AM	AlGaInP	Brilliant Yellow Green	Water Clear

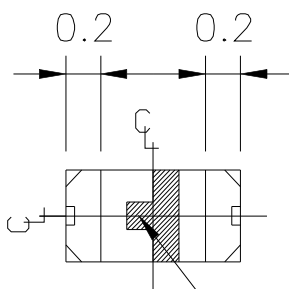
Package Outline Dimensions



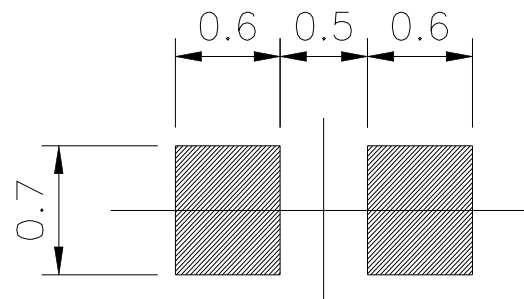
POLARITY



For Reflow Soldering



Cathode Mark



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

Absolute Maximum Ratings (Ta=25)

Parameter	Symbol	Rating	Unit
Reverse Voltage	V _R	5	V
Forward Current	I _F	25	mA
Peak Forward Current (Duty 1/10 @1KHz)	I _{FP}	60	mA
Power Dissipation	P _d	60	mW
Electrostatic Discharge (HBM)	ESD	2000	V
Operating Temperature	T _{opr}	-40 ~ +85	
Storage Temperature	T _{stg}	-40 ~ +90	
Soldering Temperature	T _{sol}	Reflow Soldering : 260 Hand Soldering : 350	for 10 sec. for 3 sec.

Electro-Optical Characteristics (Ta=25)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Luminous Intensity	I _v	36	----	72	mcd	I _F =20mA
Viewing Angle	2 1/2	----	120	----	deg	
Peak Wavelength	p	----	575	----	nm	
Dominant Wavelength	d	567.5	----	575.5	nm	
Spectrum Radiation Bandwidth		----	20	----	nm	
Forward Voltage	V _F	1.75	----	2.35	V	
Reverse Current	I _R	----	----	10	μA	V _R =5V

Notes:

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

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16-213/G6C-BN2P2B/3T/AM
Bin Range Of Luminous Intensity

Bin	Min	Max	Unit	Condition
N2	36	45	mcd	IF=20mA
P1	45	57		
P2	57	72		

Bin Range Of Dom. Wavelength

Group	Bin	Min	Max	Unit	Condition
B	C15	567.5	569.5	nm	IF=20mA
	C16	569.5	571.5		
	C17	571.5	573.5		
	C18	573.5	575.5		

Bin Range Of Forward Voltage

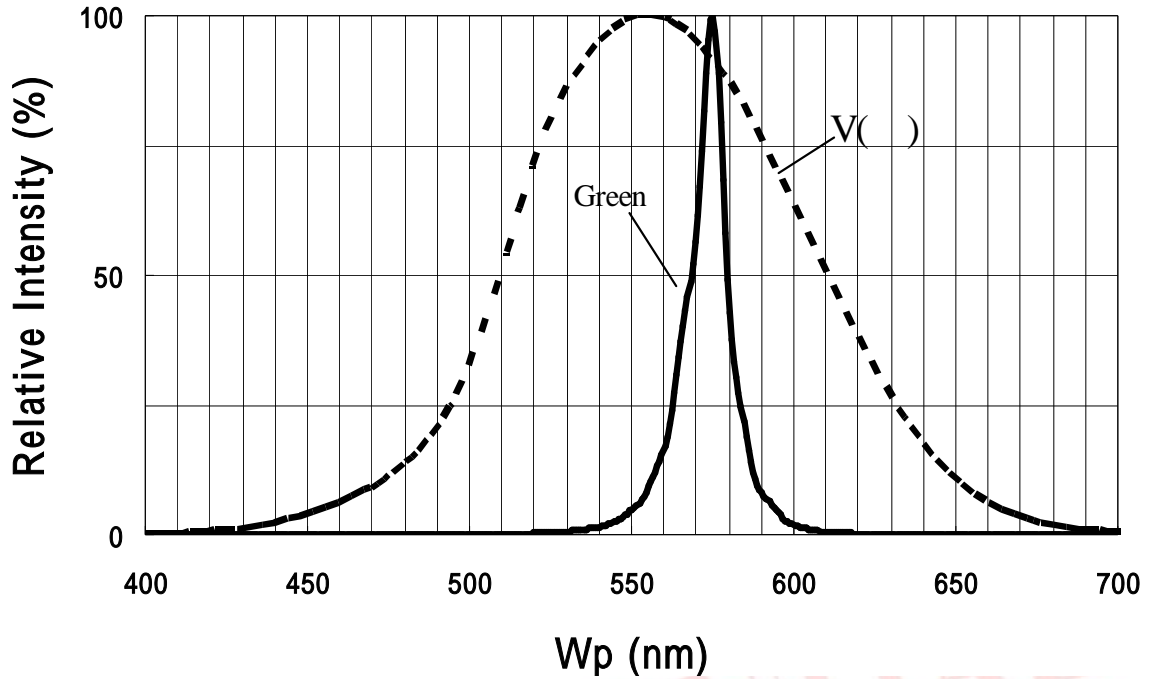
Group	Bin	Min	Max	Unit	Condition
B	0	1.75	1.95	V	IF=20mA
	1	1.95	2.15		
	2	2.15	2.35		

Notes:

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

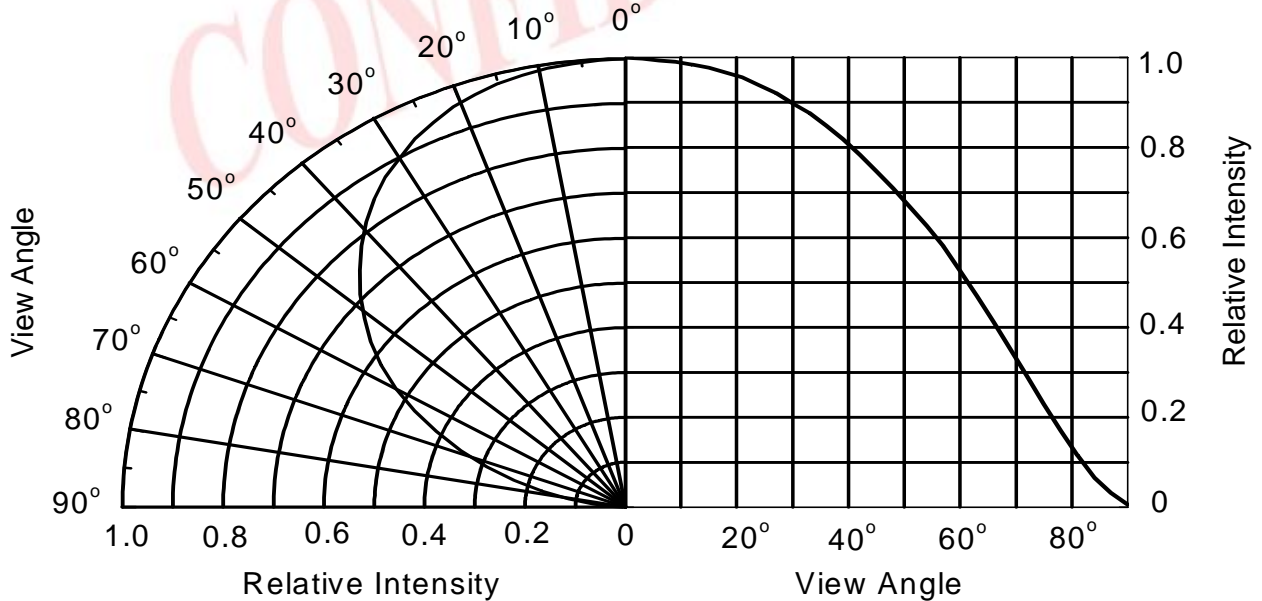
Typical Electro-Optical Characteristics Curves

- Typical curve of spectral distribution :

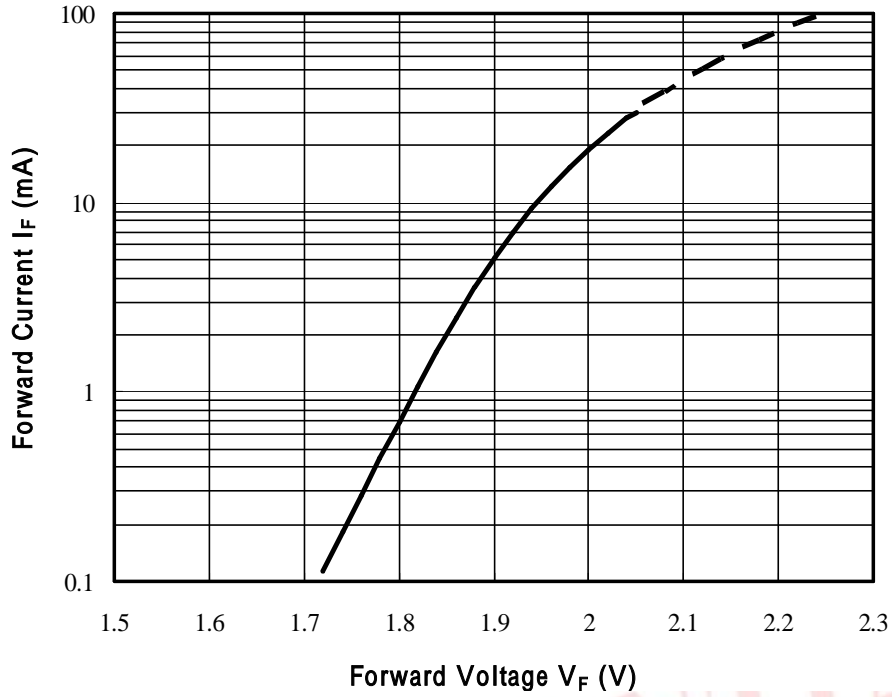


Note : $V(\lambda)$ =Standard eye response curve

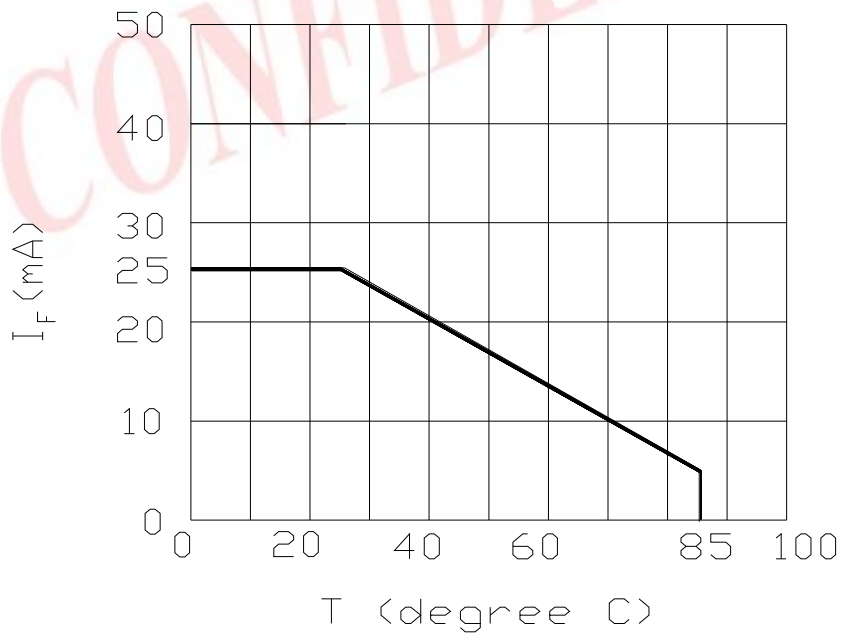
Diagram characteristics of radiation



Forward Current vs. Forward Voltage (Ta=25)



Forward current v.s. Ambient Temp.

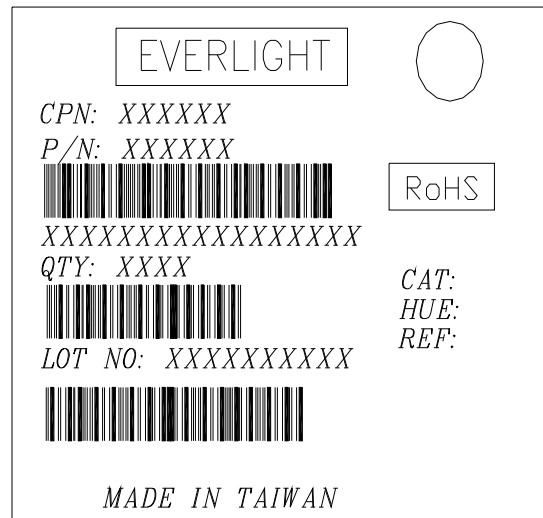


Label explanation

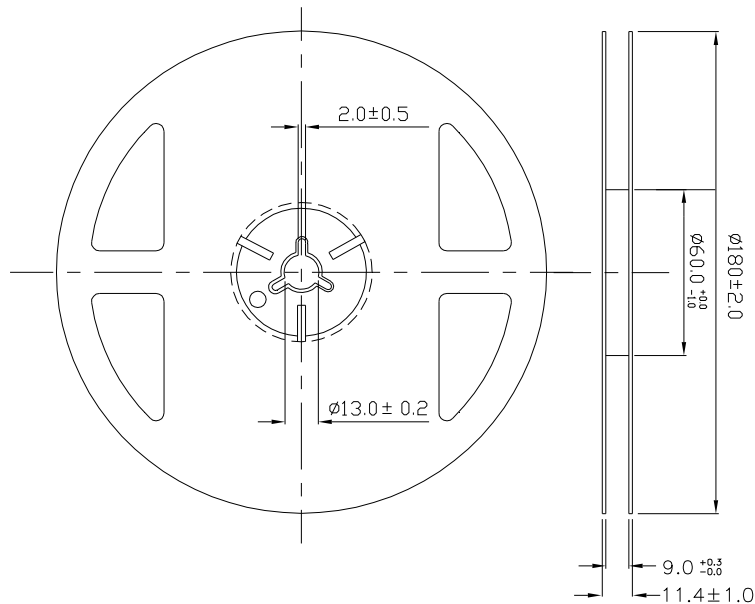
CAT: Luminous Intensity Rank

HUE: Dom. Wavelength Rank

REF: Forward Voltage Rank

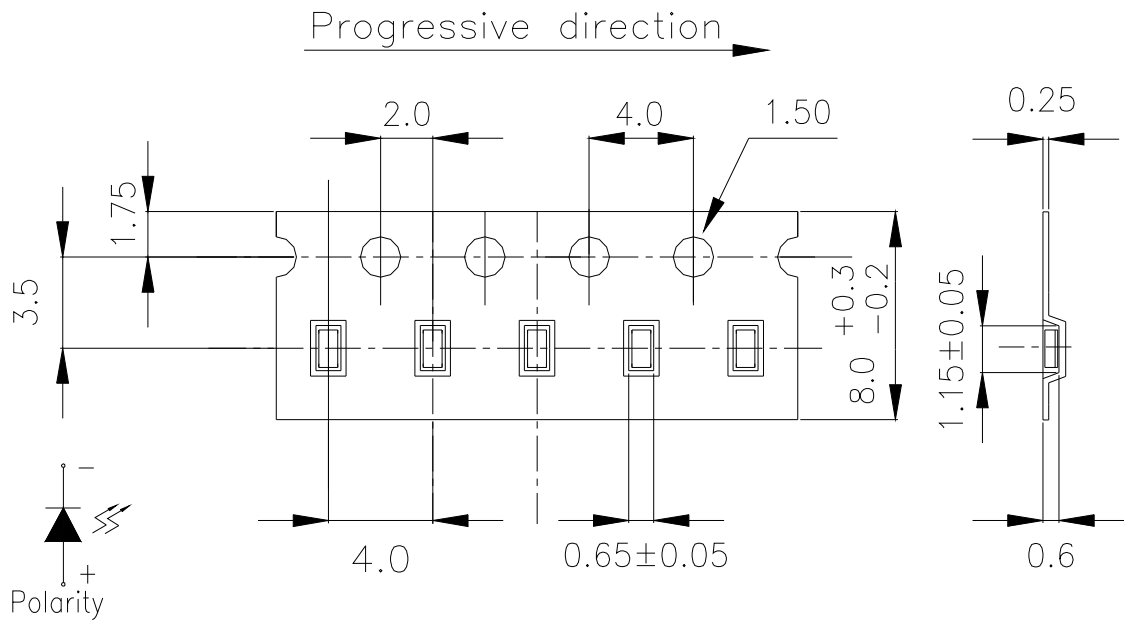


Reel Dimensions



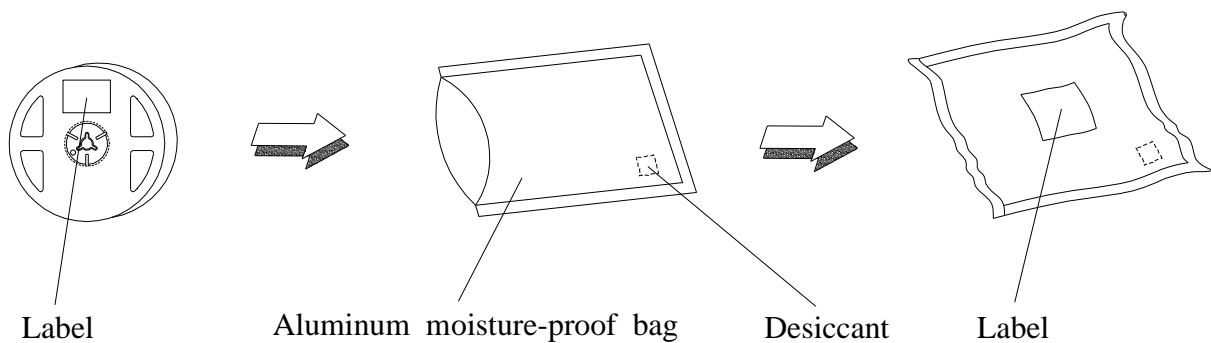
Note: The tolerances unless mentioned is ± 0.1 mm ,Unit = mm

Carrier Tape Dimensions: Loaded quantity 3000 PCS per reel



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

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 or less and 90%RH or less.

2.3 After opening the package: The LED's floor life is 1 year under 30 or less and 60% RH or less.

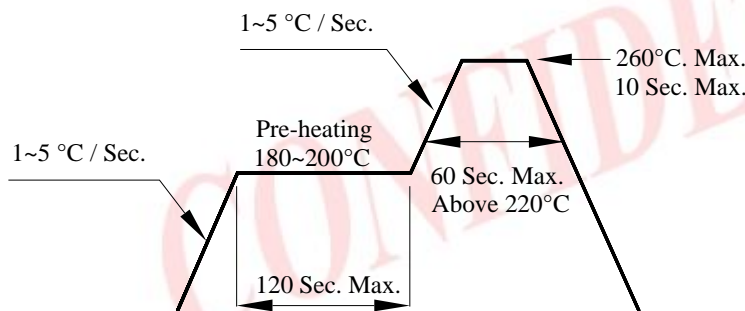
If unused LEDs remain, it should be stored in moisture proof packages.

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 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 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.