



## Technical Data Sheet

### Luminosity Full Color LED

#### 61-136/BHC-DV2W1M/ET

#### Features

- Super-luminosity chip LED.
- White SMT package.
- Built in three Blue chips
- Lead frame package with individual 6 pins.
- Wide viewing angle.
- Soldering methods: IR reflow soldering.
- ESD protection.
- Pb-free.
- The product itself will remain within RoHS compliant version.



#### Descriptions

- Due to the package design, 61-136 has wide viewing angle , low power consumption and adjusting each color is possible thanks to serial connection by 6 terminal connection (Individual driving by each terminal) in case of using several number of LED. And makes it ideal for light pipe application.

#### Applications

- Amusement equipment.
- Information boards.
- Flashlight for digital camera of cellular phone.

#### Device Selection Guide

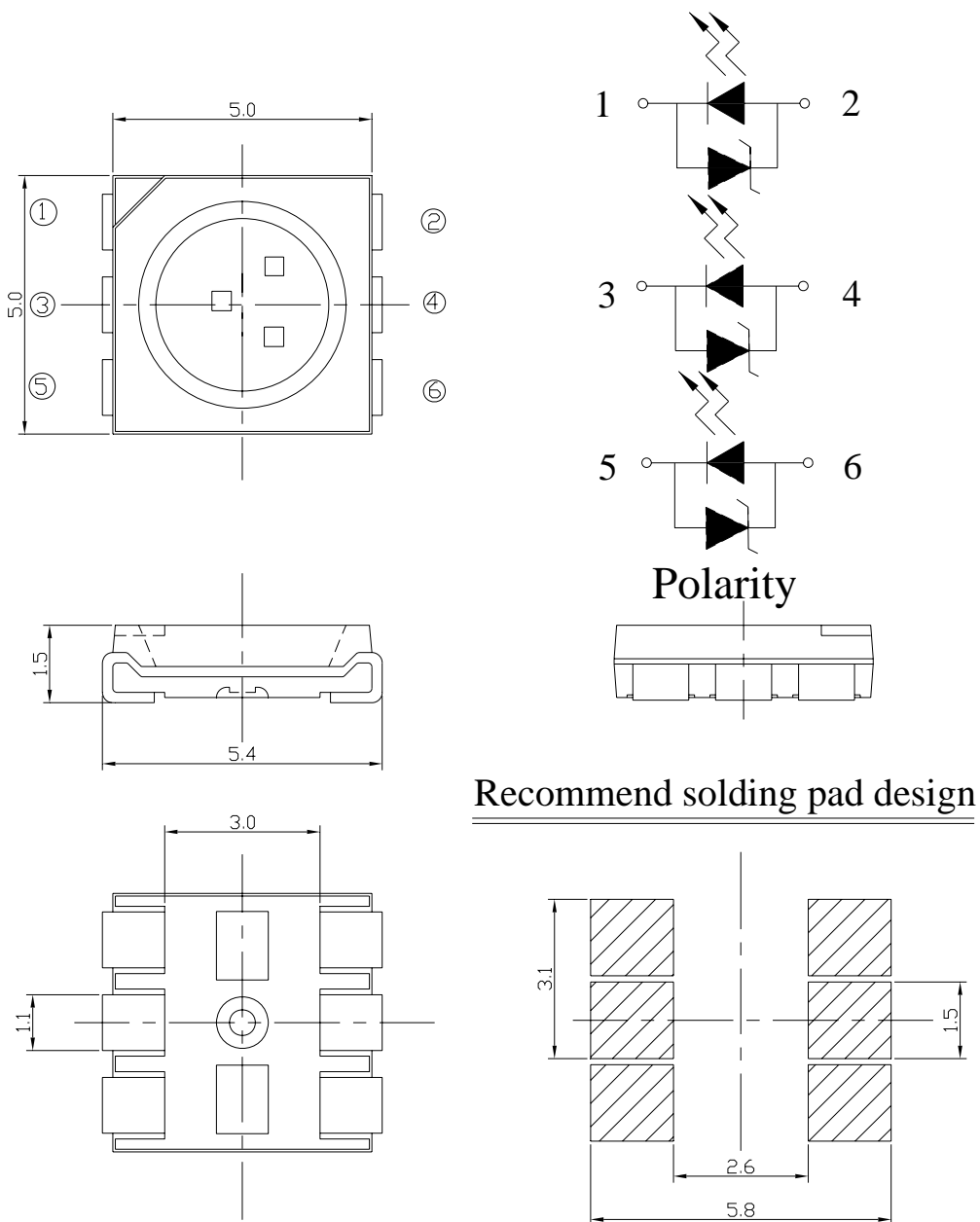
Chip		Lens Color
Material	Emitted Color	
InGaN	Blue	Water Clear

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Package Outline Dimensions



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

**Technical Data Sheet****Luminosity Full Color LED****61-136/BHC-DV2W1M/ET****Absolute Maximum Ratings (Ta=25°C)**

Parameter	Symbol	Rating	Unit
Reverse Voltage	V <sub>R</sub>	5	V
Forward Current	I <sub>F</sub>	30	mA
Peak Forward Current (Duty 1/10 @ 1KHz)	I <sub>FP</sub>	100	mA
Power Dissipation	P <sub>d</sub>	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.	

\*The value are based on 1 die performace

**Electro-Optical Characteristics (Ta=25°C)**

Parameter	Symbol	Min.	Typ.	Max.	Units	Condition
Luminous Intensity*1	I <sub>v</sub>	900	-----	1420	mcd	I <sub>F</sub> =20mA*2
Viewing Angle*1	2θ 1/2	-----	120	-----	deg	I <sub>F</sub> =20mA*2
Peak Wavelength*1	λ <sub>p</sub>	-----	468	-----	nm	I <sub>F</sub> =20mA*2
Dominant Wavelength*1	λ <sub>d</sub>	466	-----	472	nm	I <sub>F</sub> =20mA*2
Spectrum Radiation Bandwidth	Δλ	-----	20	-----	nm	I <sub>F</sub> =20mA
Forward Voltage	V <sub>F</sub>	2.75	-----	3.95	V	I <sub>F</sub> =20mA*2

\*1 When three LED dies are operated simultaneously.

\*2 For each die.

**Notes:**

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



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**61-136/BHC-DV2W1M/ET****Bin Range of Dominant Wavelength<sup>\*1</sup>**

Group	Bin Code	Min.	Max.	Unit	Condition
D	AA2	466	468	mcd	I <sub>F</sub> =20mA
	AA3	468	470		
	AA4	470	472		

**Bin Range of Luminous Intensity<sup>\*1</sup>**

Bin	Min	Max	Unit	Condition
V2	900	1120	mcd	I <sub>F</sub> =20mA
W1	1120	1420		

**Bin Range of Forward Voltage<sup>\*2</sup>**

Group	Bin Code	Min.	Max.	Unit	Condition
M	5	2.75	3.05	V	I <sub>F</sub> =20mA
	6	3.05	3.35		
	7	3.35	3.65		
	8	3.65	3.95		

\*1. When three LED dies are operated simultaneously.

\*2. For each die.

**Notes:**

- 1.Tolerance of Luminous Intensity  $\pm 11\%$
- 2.Tolerance of Dominant Wavelength  $\pm 1$  nm

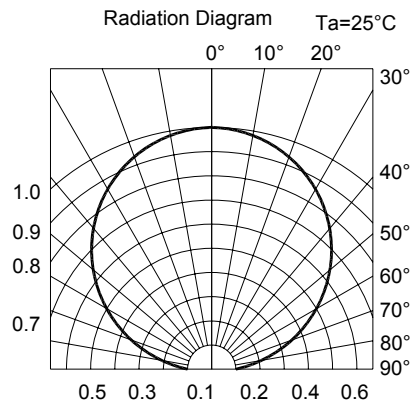
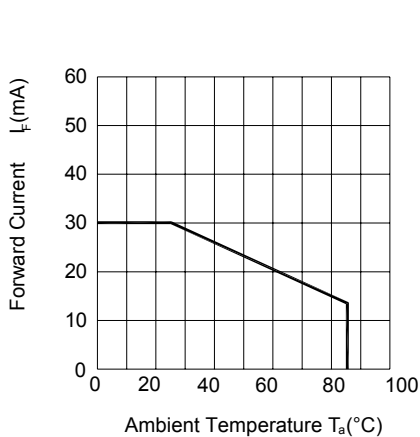
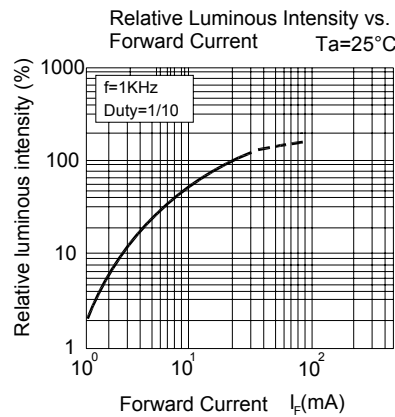
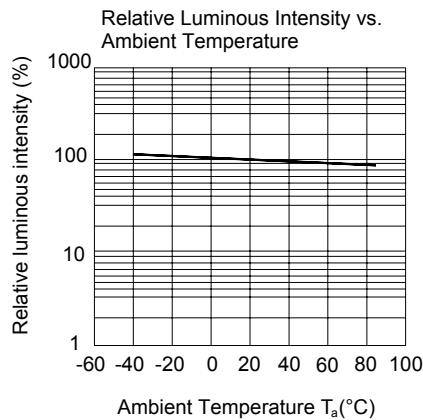
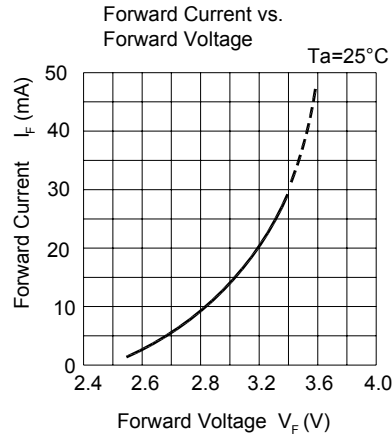
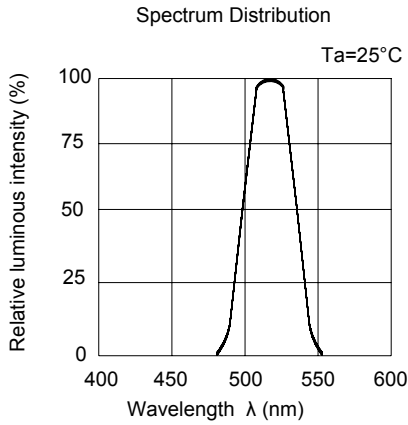


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Typical Electro-Optical Characteristics Curves





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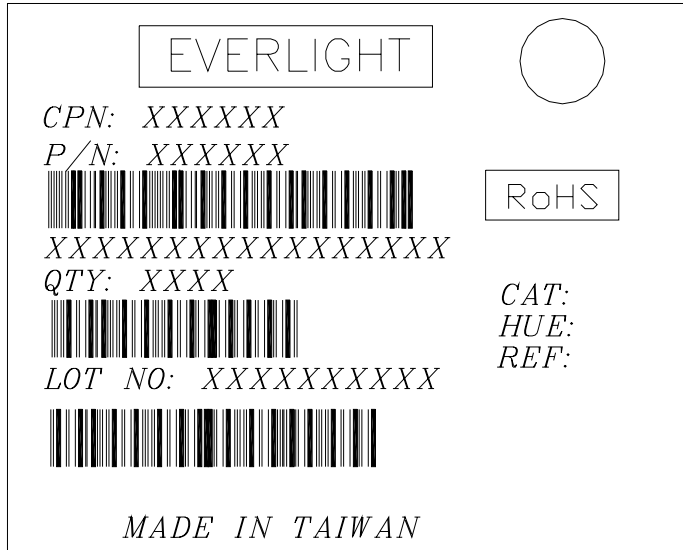
**61-136/BHC-DV2W1M/ET**

Label Explanation

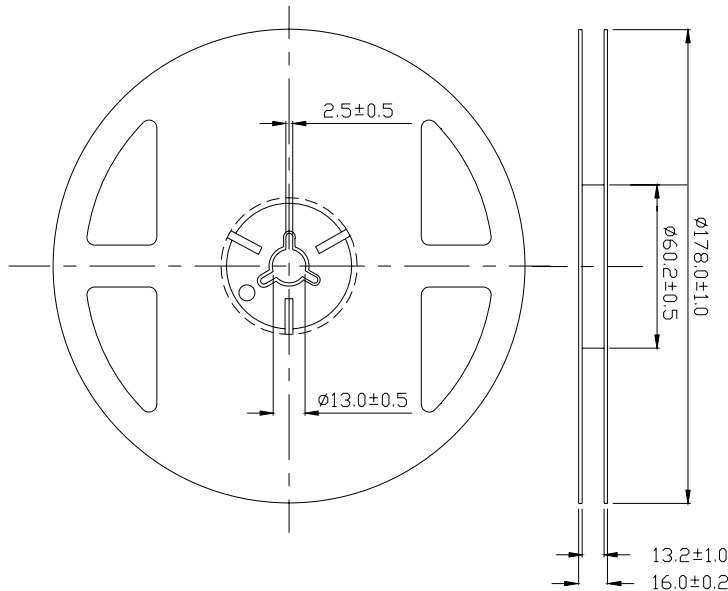
CAT: Luminous Intensity Rank

HUE: Dom. Wavelength Rank

REF: Forward Voltage Rank



Reel Dimensions



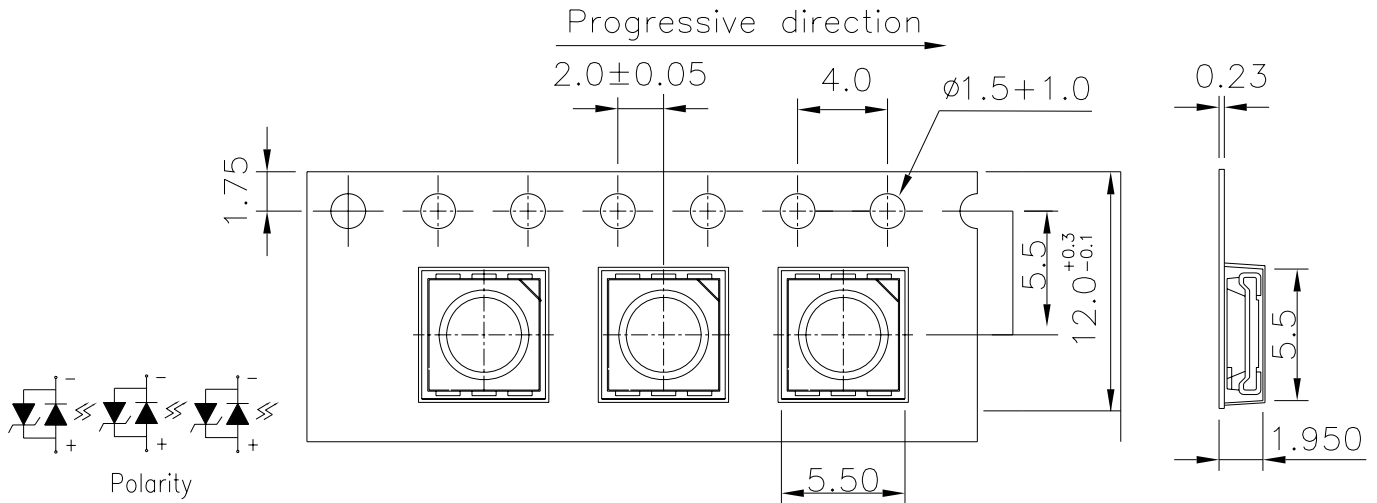
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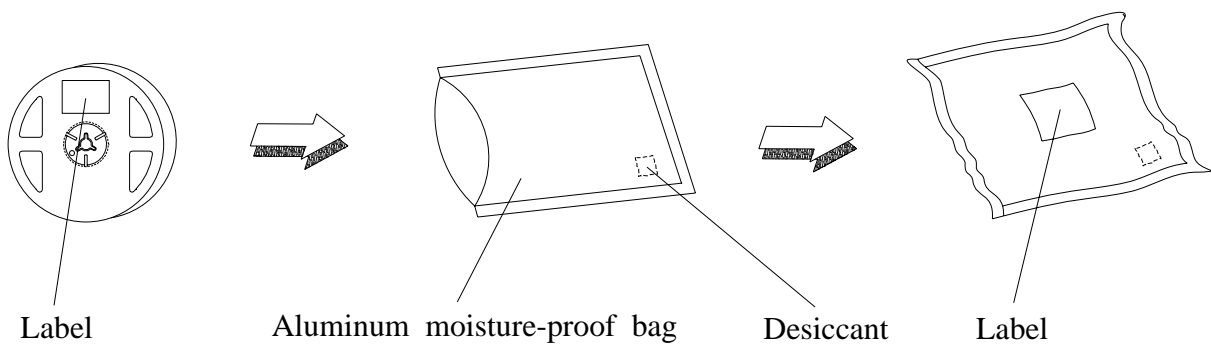
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Carrier Tape Dimensions: Loaded Quantity 800 pcs Per Reel



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

**Moisture Resistant Packaging**



**Reliability Test Items And Conditions**

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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 Min. 5sec.	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	IF = 20 mA	1000 Hrs.	22 PCS.	0/1
7	High Temperature / High Humidity	85°C / 85%RH	1000 Hrs.	22 PCS.	0/1

\* For each die



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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.

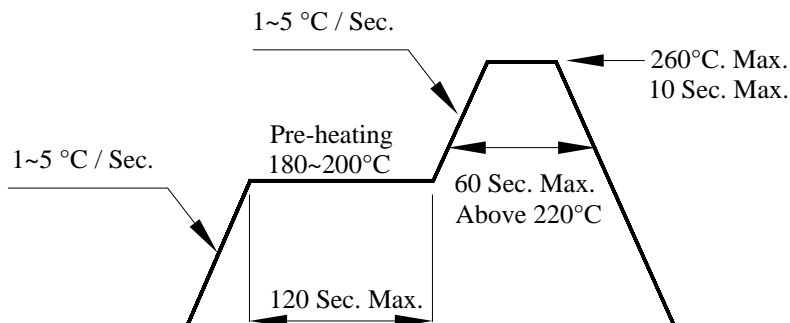
If unused LEDs remain, it should be stored in moisture proof packages.

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.

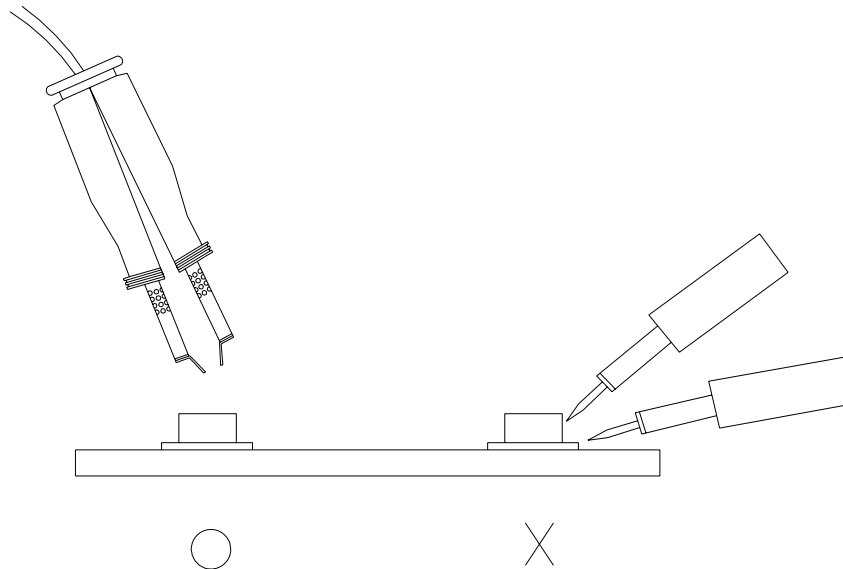
3.4 After soldering, do not warp the circuit board.

##### 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.

**Technical Data Sheet****Luminosity Full Color LED****61-136/BHC-DV2W1M/ET****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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