# EVERLIGHT EVERLIGHT ELECTRONICS CO.,LTD.

## **Technical Data Sheet**

# 1206 Package Chip LED (1.1mm Height)

## 15-21/W1D-APQHY/2T

#### **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.

#### **Descriptions**

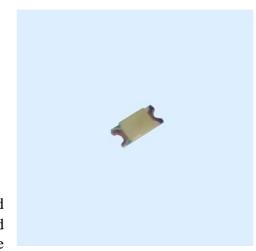
- The 15-21 SMD Taping is much smaller than lead frame type components, thus enable smaller board size, higher packing density, reduced storage space and finally smaller equipment to be obtained.
- Besides, lightweight makes them ideal for miniature applications. etc.

#### **Applications**

- Automotive: 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**

DADEN.	Chip		T (C.)	
PART No.	Material	<b>Emitted Color</b>	Lens Color	
15-21/W1D-APQHY/2T	InGaN	White	Yellow Diffused	



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Device No:DSE-151-W01

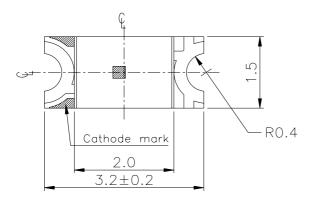
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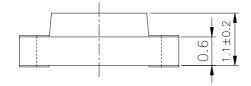
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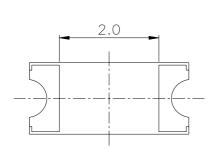
# **Package Outline Dimensions**

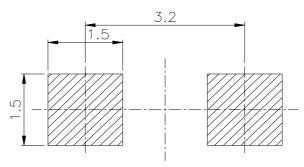






For reflow soldering (propose)





**Note:** The tolerance unless mentioned is  $\pm 0.1$ mm, unit is mm

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## **Absolute Maximum Ratings (Ta=25℃)**

Parameter	Symbol	Rating	Unit
Reverse Voltage	$V_R$	5	V
Forward Current	<b>I</b> F	25	mA
Operating Temperature	Topr	-40 ~ +85	$^{\circ}$
Storage Temperature	Tstg	-40 ~ +90	$^{\circ}$
Soldering Temperature	Tsol	260 (for 5 seconds)	$^{\circ}\!\mathbb{C}$
Electrostatic Discharge	ESD	150	V
Power Dissipation	Pd	110	mW
Peak Forward Current (Duty 1/10 @1KHz)	IFP	100	mA

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

Parameter	Symbol	Min.	Тур.	Max.	Unit	Condition
Luminous Intensity	Iv	45	72	112	mcd	
Viewing Angle	2 0 1/2		140		deg	IF=5mA
Forward Voltage	VF	2.70	2.90	3.15	V	
Reverse Current	Ir			50	$\mu$ A	V <sub>R</sub> =5V

## Bin Range Of Luminous Intensity & Forward Voltage

Symbol	Bin Code	Min.	Max.	Unit	Condition
Iv	P	45.0	72.0	1	
	Q	72.0	112	mcd	
VF	15	2.70	2.85		IF=5mA
	16	2.85	3.00	V	
	17	3.00	3.15		

#### Notes:

1. Tolerance of Luminous Intensity ±10%

2.Tolerance of Forward Voltage ±0.1V

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## **Chromaticity Coordinates Specifications for Bin Grading**

 $I_F = 5mA$ 

Groups	Bin Code	CIE_x	CIE_y
	1	0.274	0.226
		0.274	0.258
		0.294	0.286
		0.294	0.254
		0.274	0.258
	2	0.274	0.291
	2	0.294	0.319
		0.294	0.286
		0.294	0.254
	2	0.294	0.286
	3	0.314	0.315
A		0.314	0.282
A	4	0.294	0.286
		0.294	0.319
		0.314	0.347
		0.314	0.315
	5	0.314	0.282
		0.314	0.315
		0.334	0.343
		0.334	0.311
	6	0.314	0.315
		0.314	0.347
		0.334	0.376
		0.334	0.343

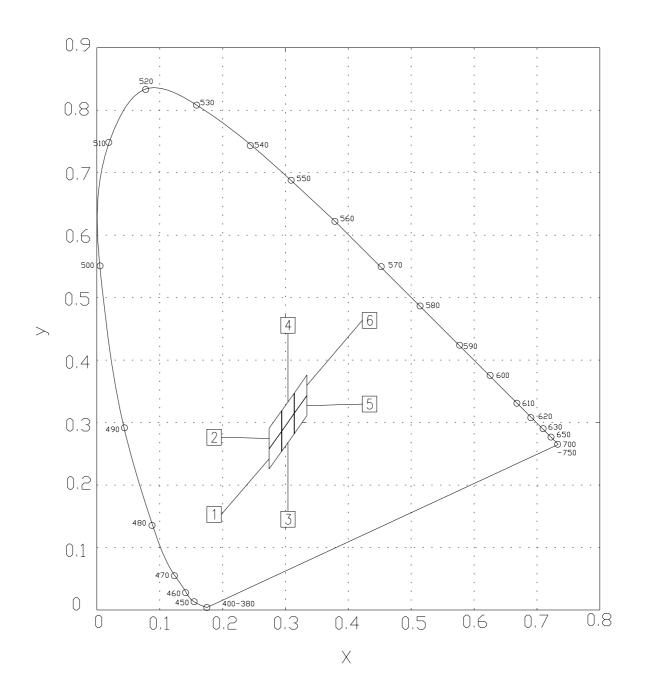
#### Notes:

- 1.The C.I.E. 1931 chromaticity diagram (Tolerance ±0.01).
- 2. The products are sensitive to static electricity and care must be fully taken when handling products.

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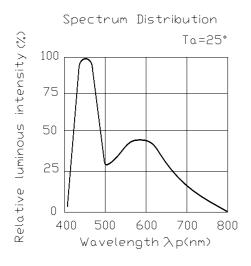
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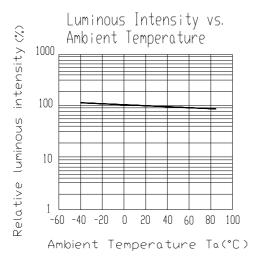
# **CIE Chromaticity Diagram**

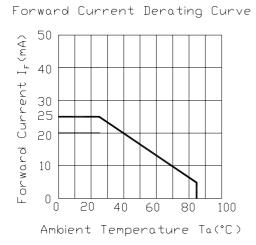


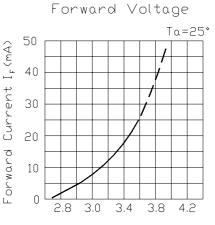
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## **Typical Electro-Optical Characteristics Curves**

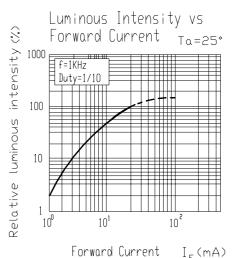


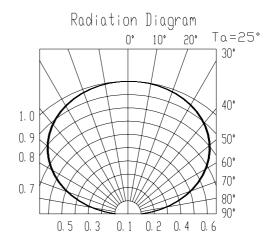






Forward Voltage(V)-volts

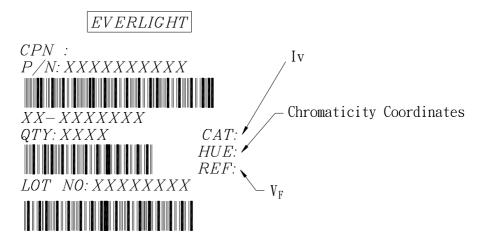




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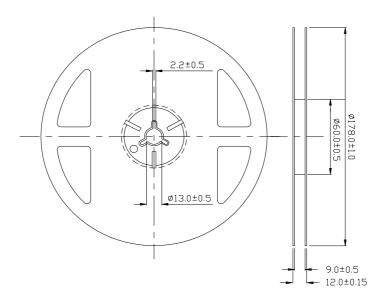
## Label explanation

CAT: Luminous Intensity Rank HUE: Chromaticity Coordinates REF: Forward Voltage Rank



MADE IN TAIWAN

#### **Reel Dimensions**

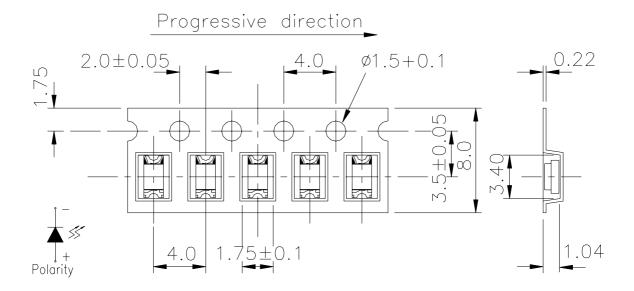


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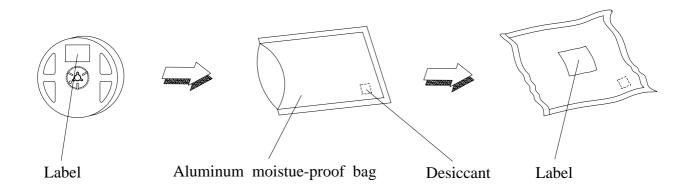
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# Carrier Tape Dimensions: Loaded quantity 2000 PCS per reel



**Note:** The tolerance unless mentioned is  $\pm 0.1$ mm, unit is mm

## **Moisture Resistant Packaging**



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#### **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°C±5°C Min. 5sec.	6 Min.	22 PCS.	0/1
2	Temperature Cycle	$H: +100^{\circ}\mathbb{C}$ 15min $\int$ 5 min $L: -40^{\circ}\mathbb{C}$ 15min	300 Cycles	22 PCS.	0/1
3	Thermal Shock	$H: +100^{\circ}\mathbb{C}$ 5min $\int 10 \sec$ $L: -10^{\circ}\mathbb{C}$ 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°€	1000 Hrs.	22 PCS.	0/1
6	DC Operating Life	$I_F = 20 \text{ mA}$	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).

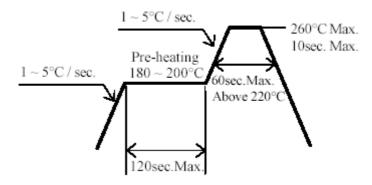
#### 2. Storage

- 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 The LEDs should be used within a year.
- 2.4 After opening the package, the LEDs should be kept at  $30^{\circ}$ C or less and 70%RH or less.
- 2.5 The LEDs should be used within 168 hours (7 days) after opening the package.
- 2.6 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 :  $60\pm5^{\circ}$ 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 280°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.

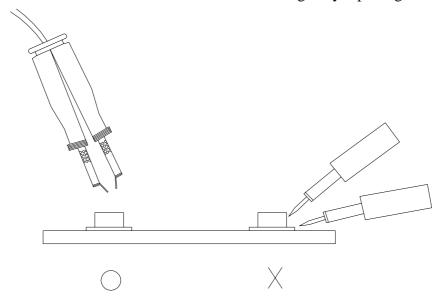
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#### 5.Repairing

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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