



**BRIGHTTEK**  
**BRIGHTTEK (EUROPE) LIMITED**

*Brighten up The World With LED!*



ISO/TS 16949:2009



BS EN ISO 14001:2004



QC 080000 IECQ HSPM

## PRODUCT DATASHEET



- ▶ Lead Frame
- ▶ 3228 1.7t Series
- ▶ Red (625nm) / Green (525nm) / Blue (465nm)

NOM25S71



Release Date: 27 January 2016 Version: A1.0



### Lead Frame Series

**RoHS**  
Compliant



#### FEATURES:

- **Package:** Lead Frame White Package Top View 3228 RGB
- **Forward Current:** 2/2/2mA\*
- **Forward Voltage (typ.):** 1.8/2.7/2.8V
- **Luminous Intensity (typ.):** 110/400/110mcd @2mA
- **Colour:** Red/Green/Blue
- **Wavelength:** 625/525/465nm
- **Viewing angle:** 120/120/120°
- **Materials:**
  - Die: AlGaInP/InGaN/InGaN
  - Resin: Silicone (Water Clear)
- **Operating Temperature:** -55~+100°C
- **Storage Temperature:** -55~+100°C
- **ESD:** 3000/2000/2000V
- **Grouping parameters:**
  - Forward voltage
  - Luminous intensity
  - Dominant Wavelength
- **Soldering methods:** Hand Solder / PB Free Reflow
- **Preconditioning:** acc. to JEDEC Level 3
- **Packing:** 12mm tape with 1000/reel, ø180mm (7")

\* in the order of Red/Green/Blue

#### APPLICATIONS:

- Backlighting
- Indication Light
- Switch light
- Dashboard
- Keyboard

## CHARACTERISTICS:

### Absolute Maximum Characteristics (Ta=25°C)

Parameter	Symbol	Ratings	Unit
Forward Current	$I_F$	25/30/30*	mA
Peak Forward Current Duty 1/10@10KHz	$I_{FP}$	100/120/120	mA
Reverse Current @5V	$I_R$	5/5/5	$\mu$ A
Power Dissipation	PD	55/87/90	mW
Electrostatic Discharge	ESD	3000/2000/2000	V
Operating Temperature	$T_{OPR}$	-55~+100	°C
Storage Temperature	$T_{STG}$	-55~+100	°C

\* in the order of Red/Green/Blue

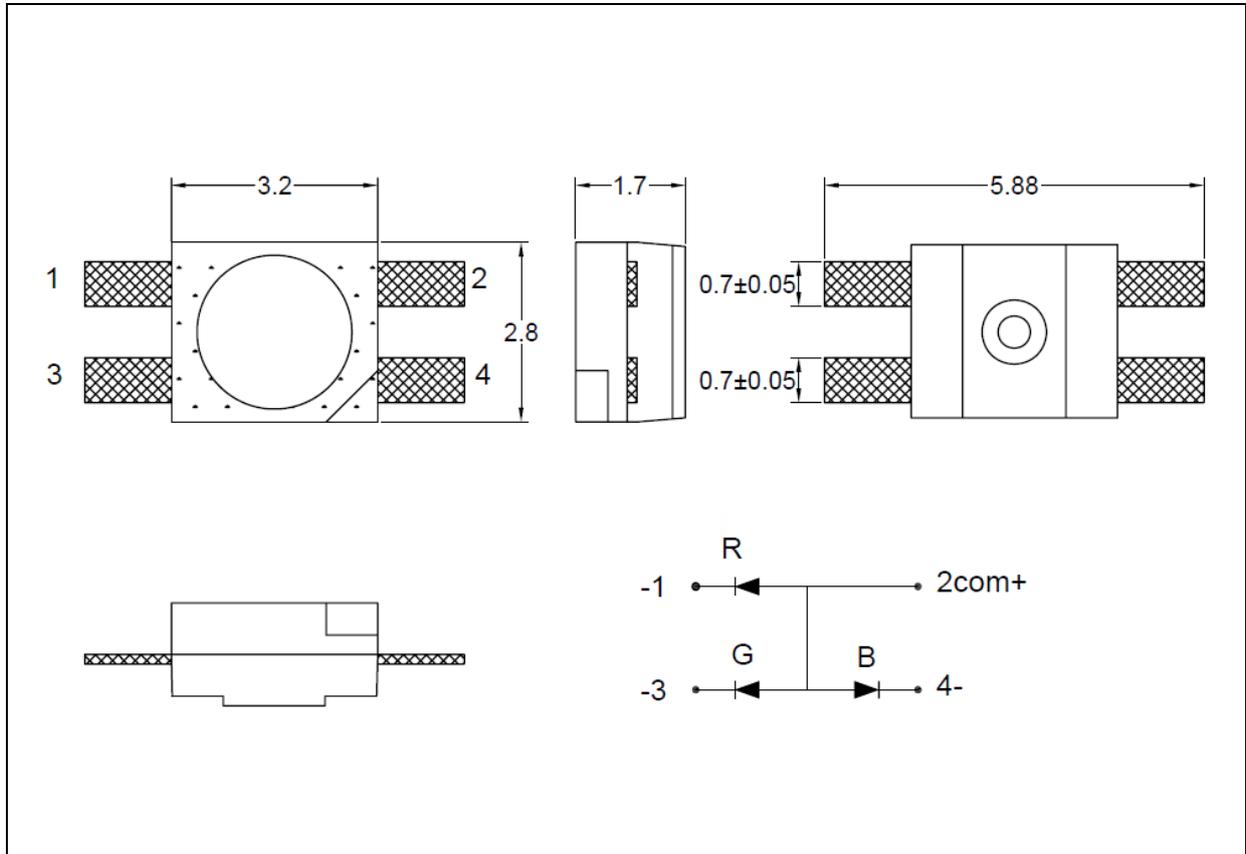
### Electrical & Optical Characteristics (Ta=25°C)

Parameter	Symbol	Values			Unit	Test Condition
		Min.	Typ.	Max.		
Forward Voltage	$V_F$	1.5/2.4/2.5	---	2.2/2.9/3.0	V	$I_F=2mA$
Luminous Intensity	$I_V$	40/200/40	110/400/110	180/600/180	mcd	$I_F=2mA$
Dominant Wavelength	$\lambda_D$	620/520/460	---	630/530/470	nm	$I_F=2mA$
Spectral Line Half Bandwidth	$\Delta \lambda$	---	20/36/30	---	nm	$I_F=2mA$
Viewing Angle	$2\theta_{1/2}$	---	120/120/120	---	deg	$I_F=2mA$

1. Luminous intensity ( $I_V$ )  $\pm 15\%$ , Forward Voltage ( $V_F$ )  $\pm 0.1V$ , Dominant Wavelength ( $\lambda_D$ )  $\pm 1nm$ .

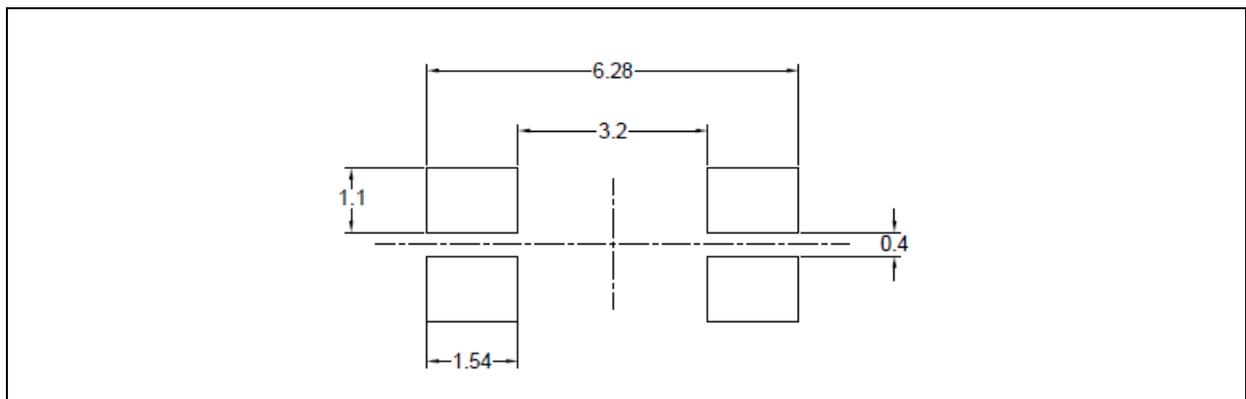
## OUTLINE DIMENSION:

Package Dimension:



1. All dimensions are in millimetre (mm).
2. Tolerance  $\pm 0.2\text{mm}$ , unless otherwise noted.

Recommended Soldering Pad Dimension:



1. Dimensions are in millimetre (mm).
2. Tolerance  $\pm 0.1\text{mm}$  with angle tolerance  $\pm 0.5^\circ$ .

**BINNING GROUPS:**


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 Forward Voltage Classifications ( $I_F = 2\text{mA}$ ):

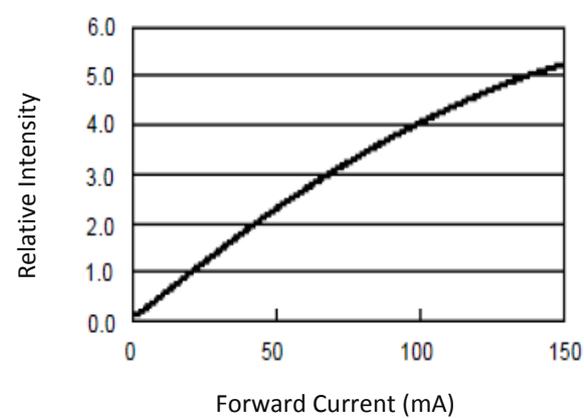
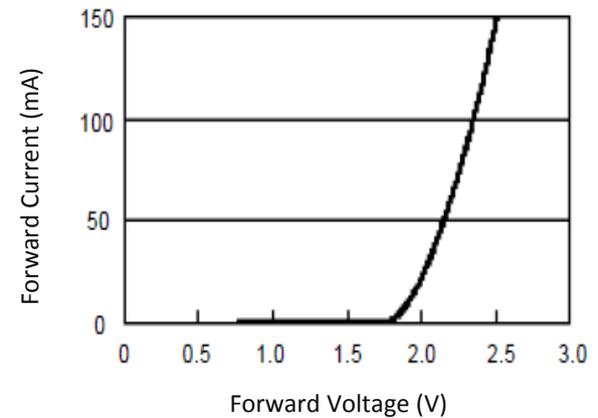
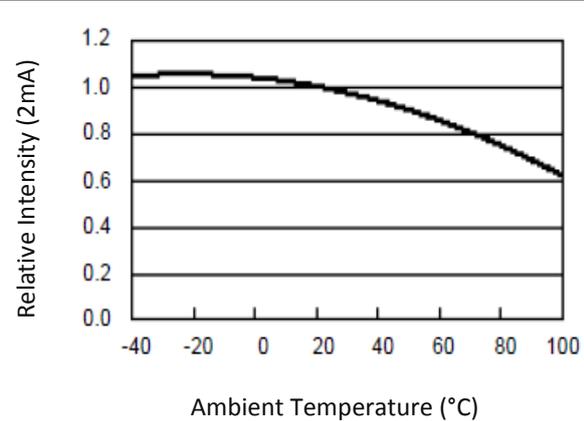
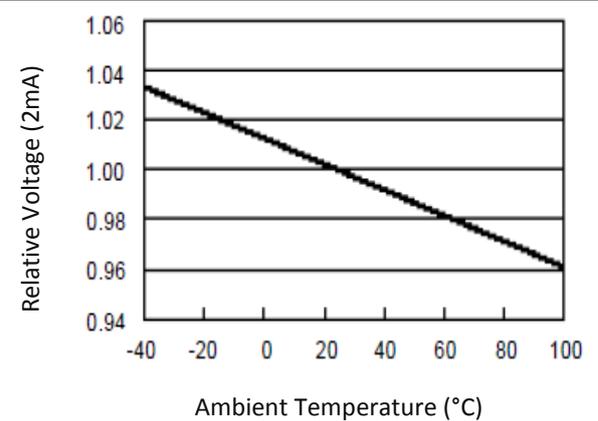
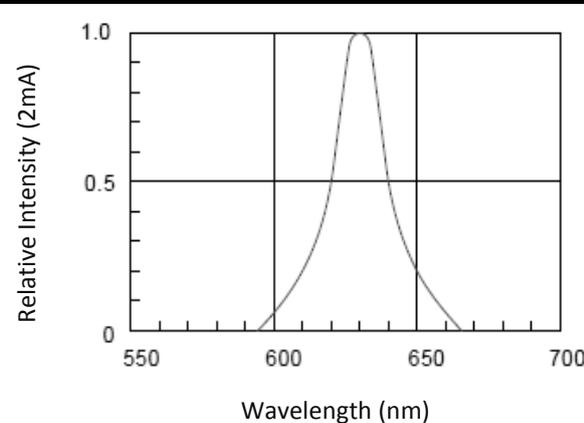
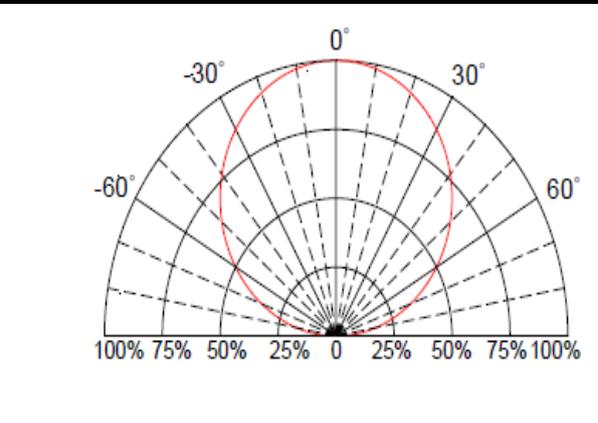
Code	Min.	Max.	Unit
Red	1.5	2.2	V
Green	2.4	2.9	
Blue	2.5	3.0	

 Luminous Intensity Classifications ( $I_F = 2\text{mA}$ ):

Code	Min.	Max.	Unit
Red R	40	180	mcd
Green G	200	600	mcd
Blue B	40	180	mcd

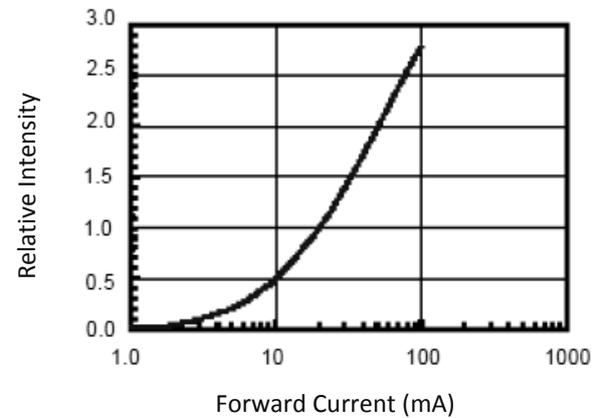
 Dominant Wavelength Classifications ( $I_F = 2\text{mA}$ ):

Code	Min.	Max.	Unit
Red	620	630	nm
Green	520	530	
Blue	460	470	

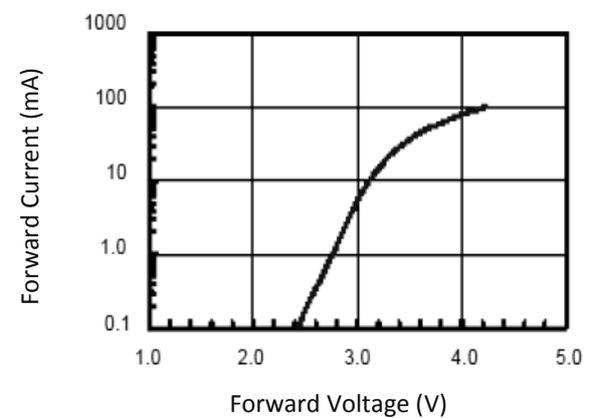
**ELECTRO-OPTICAL CHARACTERISTICS (RED):**
**Relative Intensity v.s. Forward Current**

**Forward Current v.s. Forward Voltage**

**Relative Intensity v.s. Temperature**

**Relative Forward Voltage v.s. Temperature**

**Relative Intensity v.s. Wavelength**

**Directive Radiation**


## ELECTRO-OPTICAL CHARACTERISTICS (GREEN):

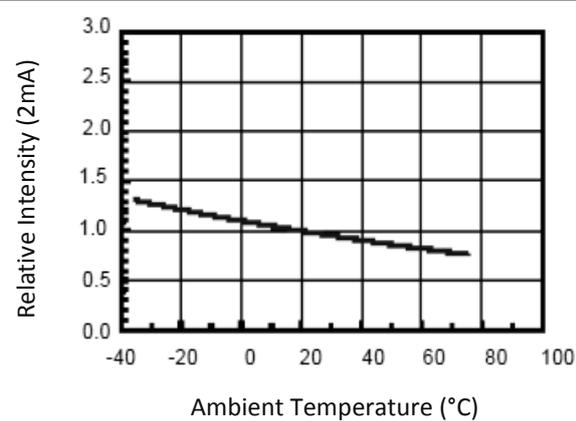
Relative Intensity v.s. Forward Current



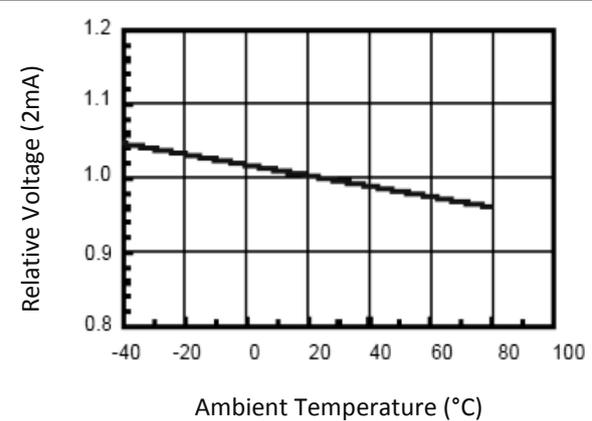
Forward Current v.s. Forward Voltage



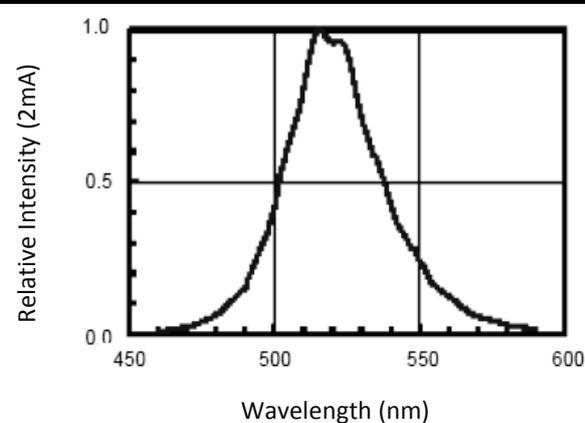
Relative Intensity v.s. Temperature



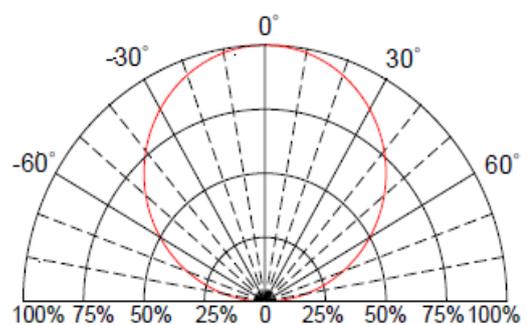
Relative Forward Voltage v.s. Temperature



Relative Intensity v.s. Wavelength

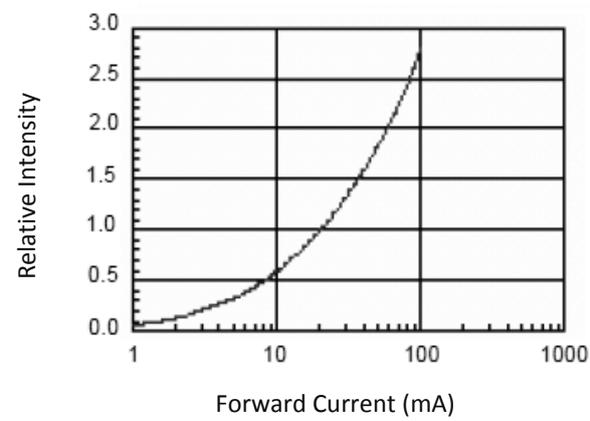


Directive Radiation

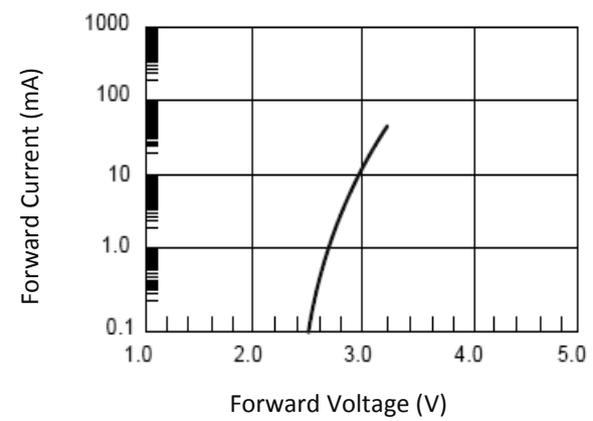


## ELECTRO-OPTICAL CHARACTERISTICS (BLUE):

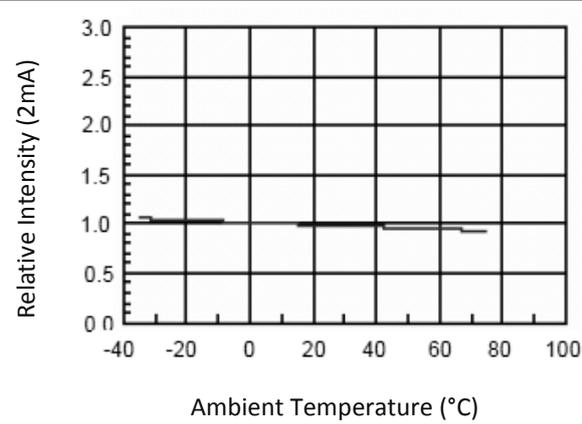
Relative Intensity v.s. Forward Current



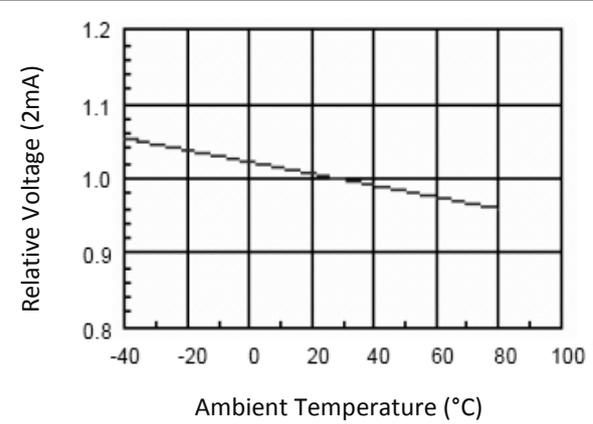
Forward Current v.s. Forward Voltage



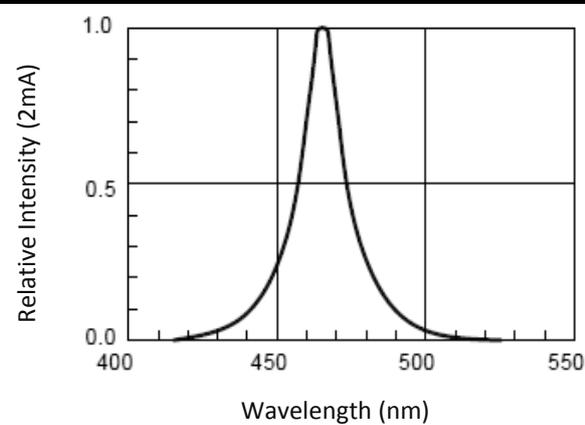
Relative Intensity v.s. Temperature



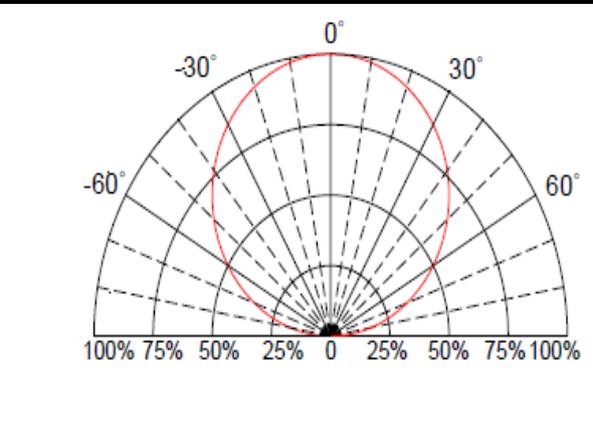
Relative Forward Voltage v.s. Temperature



Relative Intensity v.s. Wavelength



Directive Radiation



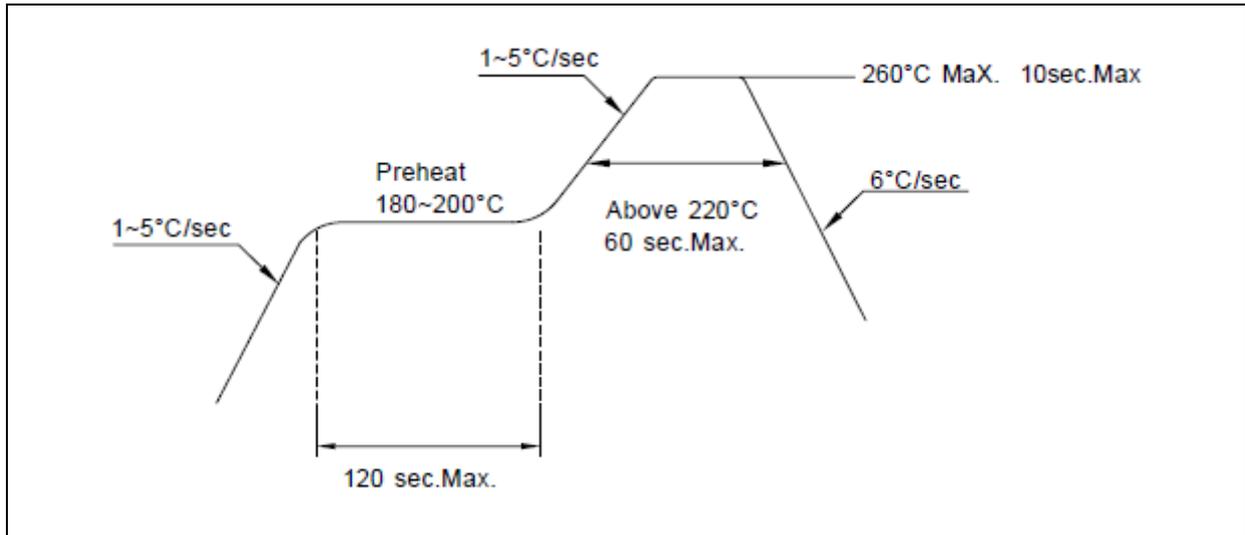
## RECOMMENDED SOLDERING PROFILE:

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Hand Solder:

One time  $\leq 320^{\circ}\text{C}$  3 seconds maximum.

Lead-free Solder:

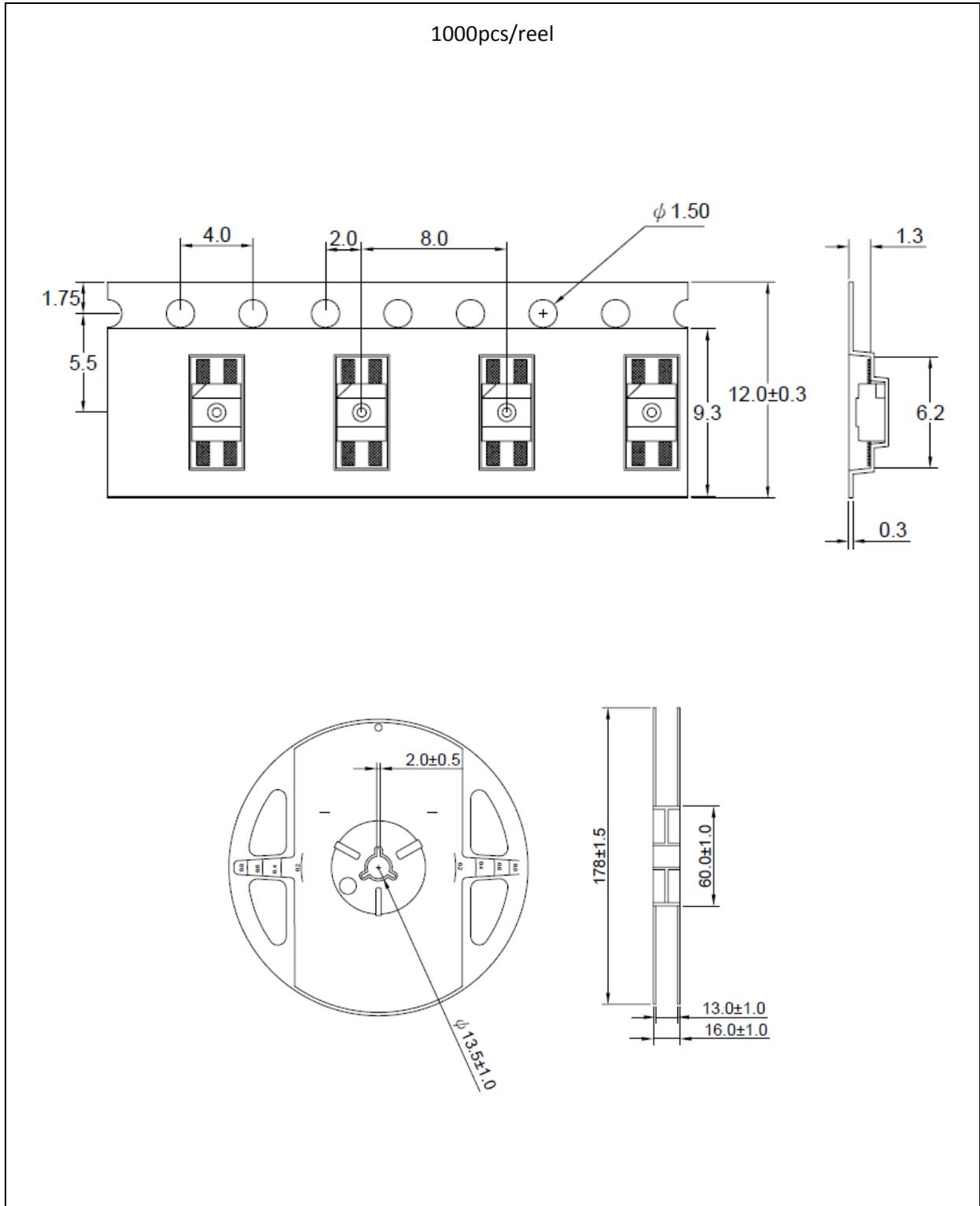


Note:

1. Maximum reflow soldering: 2 times.
2. Before, during, and after soldering, should not apply stress on the components and PCB board.

**PACKING SPECIFICATION:**

Reel Dimension:



## PRECAUTIONS OF USE:

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### Storage:

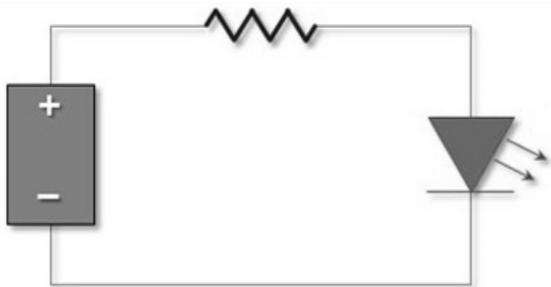
It is recommended to store the products in the following conditions:

- Humidity: 60% R.H. Max.
- Temperature: 5°C~30°C (41°F ~86°F).

Shelf life in sealed bag: 12 month at 5°C~30°C and <60% R.H.

Once the package is opened, the products should be used within a week. Otherwise, they should be kept in a damp-proof box with desiccating agent and apply baking at 60°C±5°C for 24hrs before use.

### Testing Circuit:



Must apply resistor(s) for protection (over current proof).

### Cleaning:

Use alcohol-based cleaning solvents such as isopropyl alcohol to clean the LED carrier / package. Avoid putting any stress force directly on to the LED lens.

### ESD (Electrostatic Discharge):

Static Electricity or power surge will damage the LED. Use of a conductive wrist band or anti-electrostatic glove is recommended when handling the LED all time. All devices, equipment, machinery, work tables, and storage racks must be properly grounded.

In the events of manual working in process, make sure the devices are well protected from ESD at any time.

**REVISION RECORD:**

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Version	Date	Summary of Revision
A1.0	27/01/2016	Datasheet set-up.