



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

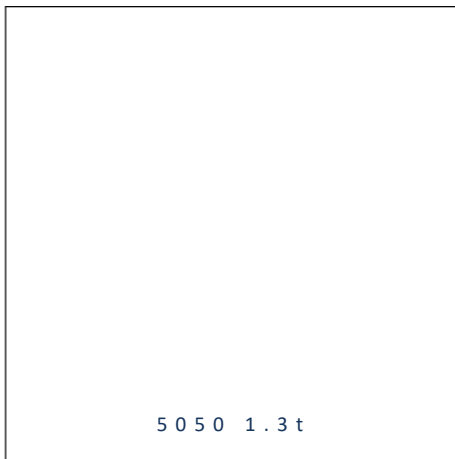


- ▶ PLCC6 SMD
- ▶ 5050 Extended 1.3t
- ▶ Red (630nm) / Green (525nm) / Blue (470nm)

NOM31S15



Release Date: 14 May 2020 Version: A1.0



5050 Extended 1.3t

FEATURES (Red/Green/Blue):

- **Package:** PLCC6 Top View RGB Multicolour LED
- **Forward Current:** 150/150/150mA*
- **Forward Voltage (typ.):** 1.9/3.2/3.2V
- **Luminous Flux (typ.):** 21/30/8lm@150mA
- **Colour:** Red/Green/Blue
- **Wavelength:** 630/525/470nm
- **Viewing angle:** 120°
- **Materials:**
 - Die: AlGaInP/InGaN/InGaN
 - Resin: Epoxy (White Clear)
- **Operating Temperature:** -20~+80°C
- **Storage Temperature:** -30~+100°C
- **ESD:** 500V (HBM)
- **Grouping parameters:**
 - Forward Voltage
 - Luminous Flux
 - Dominant Wavelength
- **Soldering methods:** Reflow soldering
- **Preconditioning:** MSL 3 according to JEDEC
- **Packing:** 16mm tape with Max.2000pcs/reel, ø330mm (13'')
 - * In the order of Red/Green/Blue.

APPLICATIONS:

- Portable Light
- Decoration Lighting
- Commercial Lighting
- Wall Washer
- Torch Light
- Light Bar

CHARACTERISTICS:

Absolute Maximum Characteristics (Ta=25°C)

| Parameter | Symbol | Ratings | Unit |
|--|------------------|--------------|------|
| Forward Current | I _F | 150/150/150* | mA |
| Pulse Forward Current (duty 1/10; 10KHz) | I _{FP} | 300/300/300 | mA |
| Power Dissipation | P _D | 360/540/540 | mW |
| Electrostatic Discharge (HBM) | ESD | 500 | V |
| Junction Temperature | T _J | 125 | °C |
| Operating Temperature | T _{OPR} | -20~+80 | °C |
| Storage Temperature | T _{STG} | -30~+100 | °C |

1. * In the order of Red/Green/Blue.

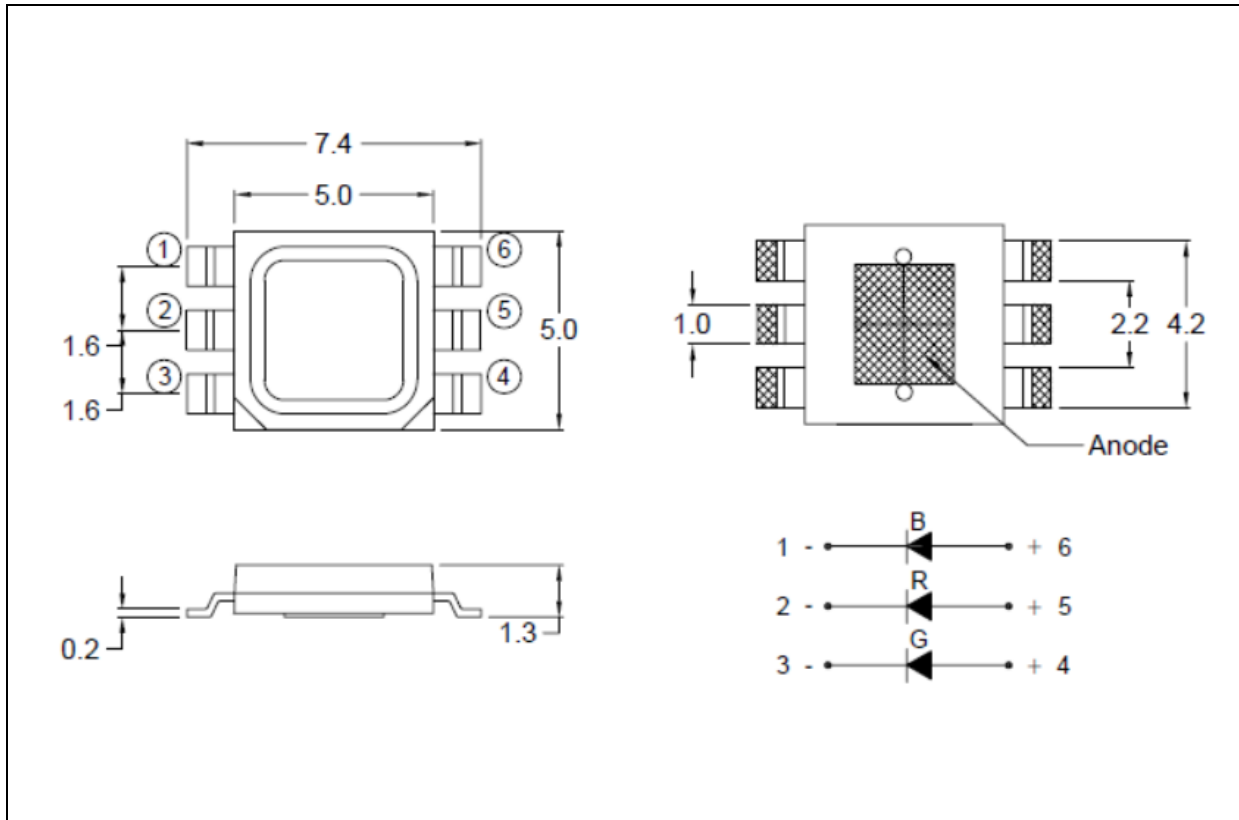
Electrical & Optical Characteristics (Ta=25°C)

| Parameter | Symbol | Values | | | Unit | Test Condition |
|-------------------------|-------------------|--------|------|------|------|-----------------------|
| | | Min. | Typ. | Max. | | |
| Red - Forward Voltage | V _F | 1.5 | --- | 2.4 | V | I _F =150mA |
| Red - Luminous Flux | I _V | 18 | 21 | --- | lm | I _F =150mA |
| Red - Wavelength | W _P | --- | 630 | --- | nm | I _F =150mA |
| Green - Forward Voltage | V _F | 2.8 | --- | 3.6 | V | I _F =150mA |
| Green - Luminous Flux | I _V | 27 | 30 | --- | lm | I _F =150mA |
| Green - Wavelength | W _P | --- | 525 | --- | nm | I _F =150mA |
| Blue - Forward Voltage | V _F | 2.8 | --- | 3.6 | V | I _F =150mA |
| Blue - Luminous Flux | I _V | 6 | 8 | --- | lm | I _F =150mA |
| Blue - Wavelength | W _P | --- | 470 | --- | nm | I _F =150mA |
| Viewing Angle | 2θ _{1/2} | --- | 120 | --- | deg | I _F =150mA |

1. Luminous Flux (I_V) ±10%, Forward Voltage (V_F) ±0.1V, Wavelength (W_P) ±1nm

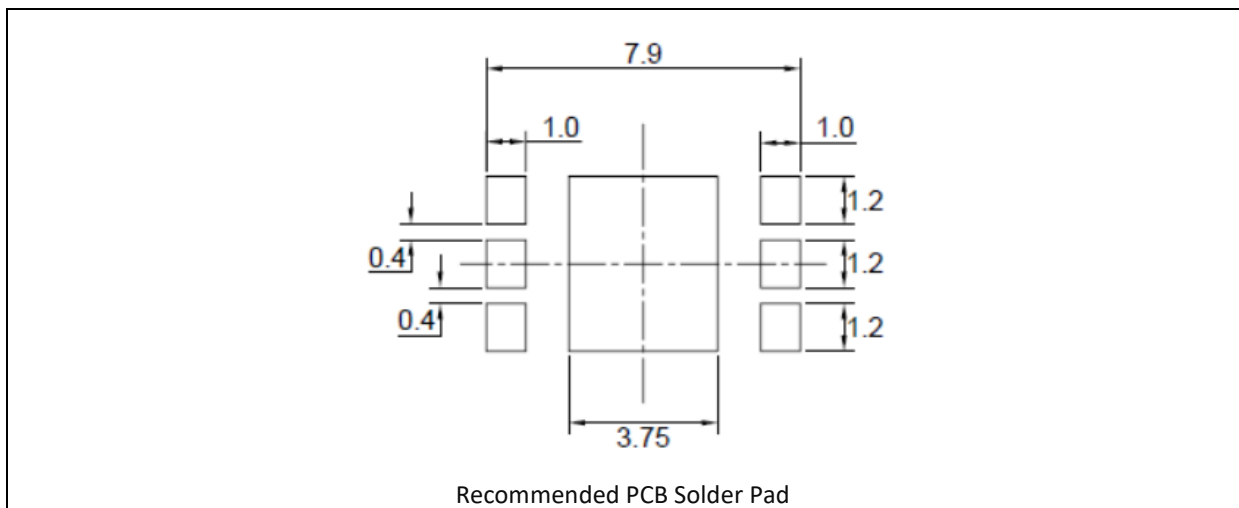
OUTLINE DIMENSION:

Package Dimension:



1. All dimensions are in millimetre (mm).
2. Tolerance ± 0.2 mm, unless otherwise noted.

Recommended Soldering Pad Dimension:



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

BINNING GROUPS:

 Forward Voltage Classifications ($I_F = 150\text{mA}$):

| Code | | Min. | Max. | Unit |
|------|-------|------|------|------|
| VRGB | Red | 1.5 | 2.4 | V |
| | Green | 2.8 | 3.6 | |
| | Blue | 2.8 | 3.6 | |

 Luminous Flux Classifications ($I_F = 150\text{mA}$):

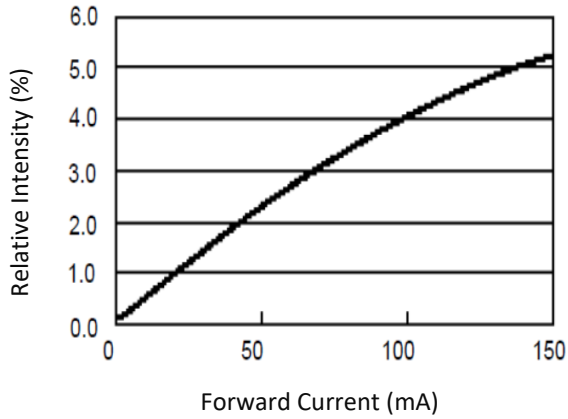
| Code | | Min. | Max. | Unit |
|------|------|------|------|------|
| Red | F18T | 18 | 21 | lm |
| | F21T | 21 | 24 | |
| | F24T | 24 | 27 | |

| Code | | Min. | Max. | Unit |
|-------|------|------|------|------|
| Green | F27T | 27 | 30 | lm |
| | F30T | 30 | 33 | |
| | F33T | 33 | 36 | |

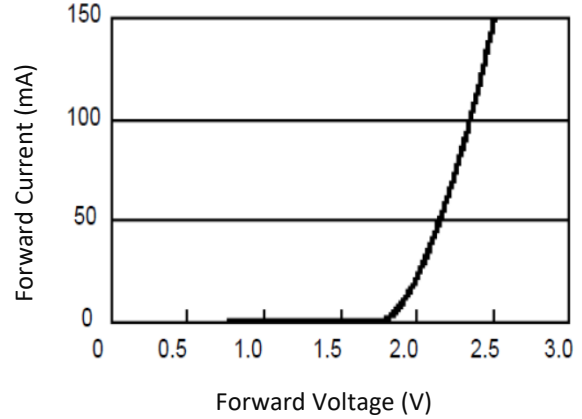
| Code | | Min. | Max. | Unit |
|------|------|------|------|------|
| Blue | F6T | 6 | 9 | lm |
| | F9T | 9 | 12 | |
| | F12T | 12 | 15 | |

ELECTRO-OPTICAL CHARACTERISTICS (RED):

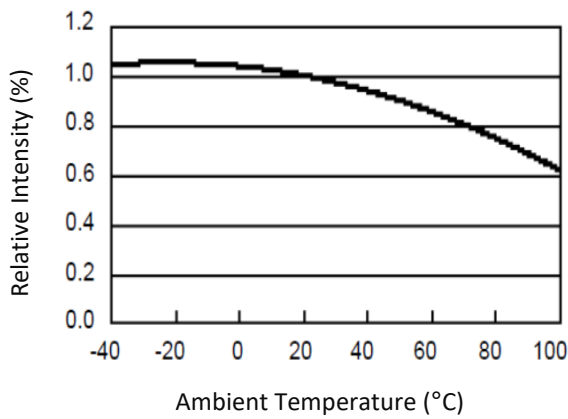
Relative Intensity v.s. Forward Current



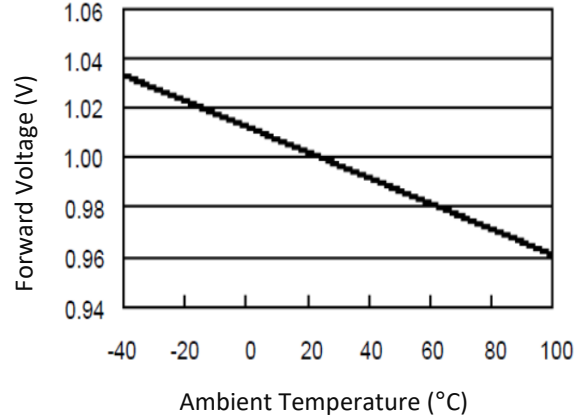
Forward Current v.s. Forward Voltage



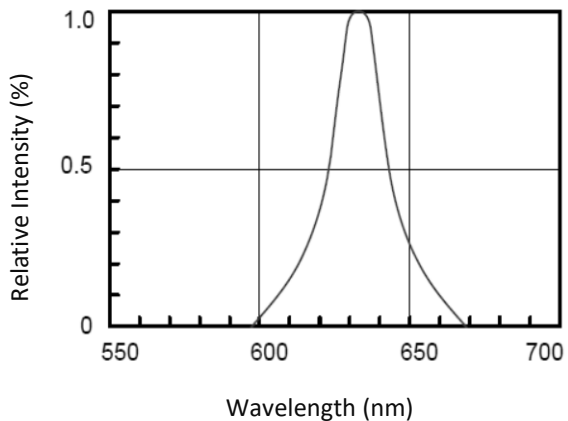
Relative Intensity v.s. Ambient Temperature



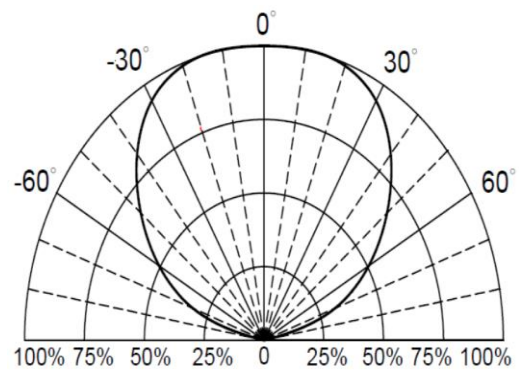
Forward Voltage v.s. Ambient Temperature



Relative Spectral Distribution

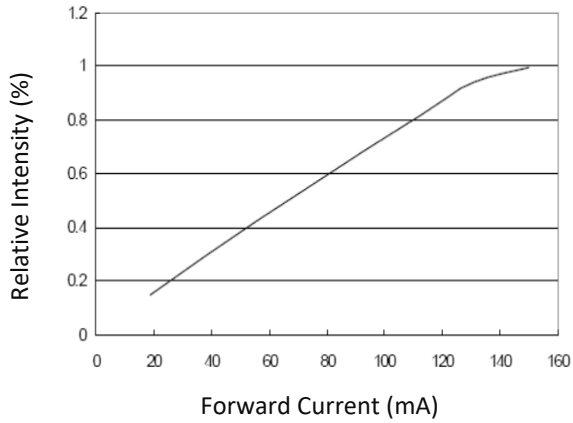


Directive Radiation

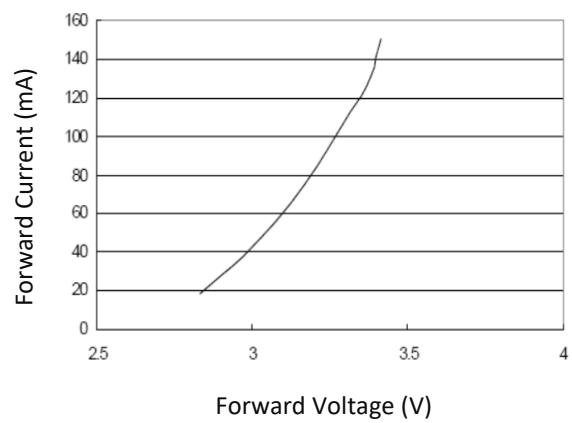


ELECTRO-OPTICAL CHARACTERISTICS (GREEN):

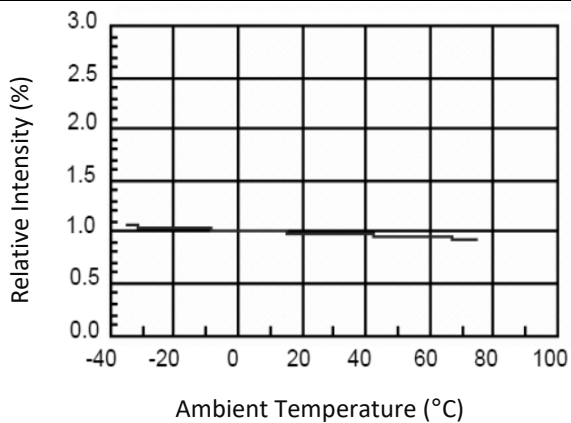
Relative Intensity v.s. Forward Current



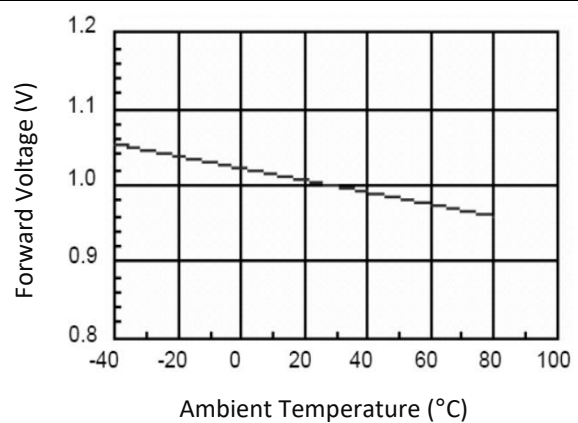
Forward Current v.s. Forward Voltage



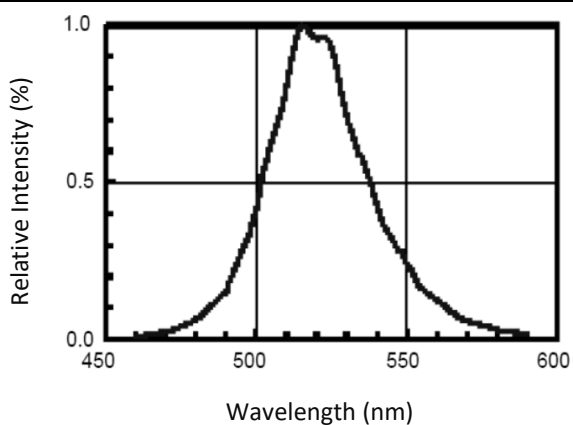
Relative Intensity v.s. Ambient Temperature



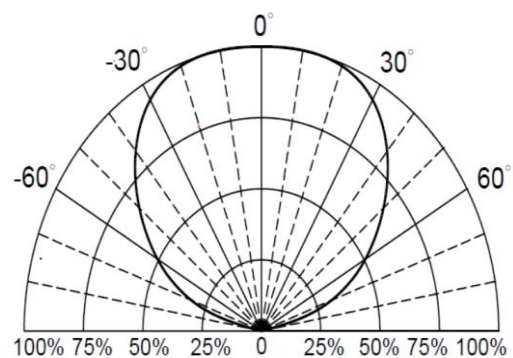
Forward Voltage v.s. Ambient Temperature



Relative Spectral Distribution

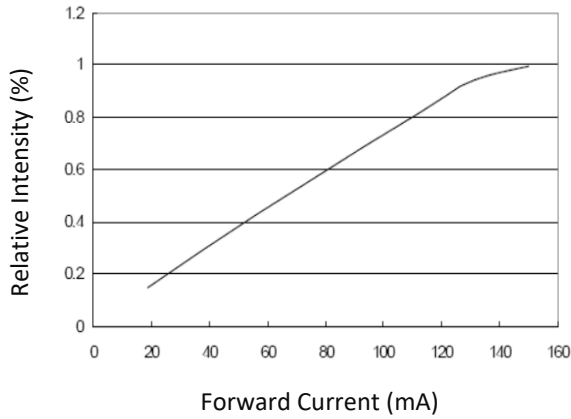


Directive Radiation

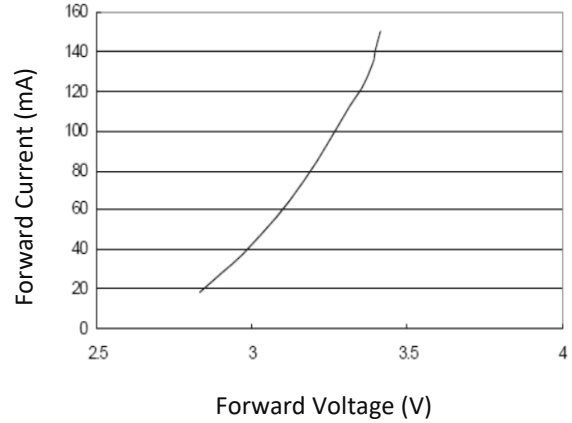


ELECTRO-OPTICAL CHARACTERISTICS (BLUE):

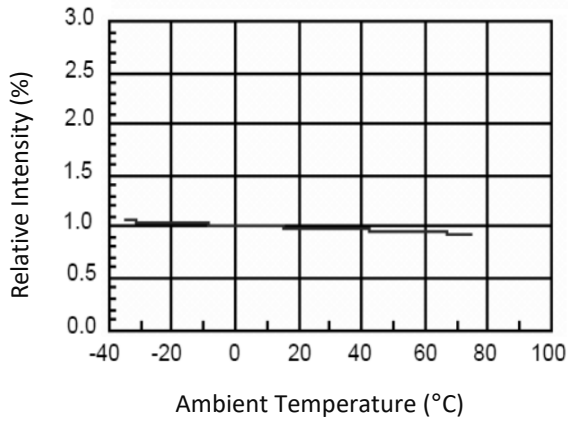
Relative Intensity v.s. Forward Current



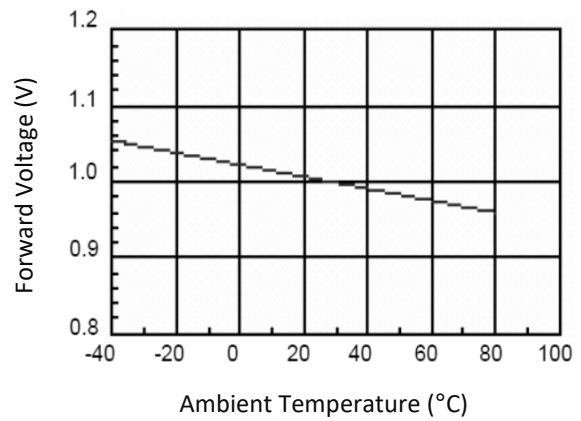
Forward Current v.s. Forward Voltage



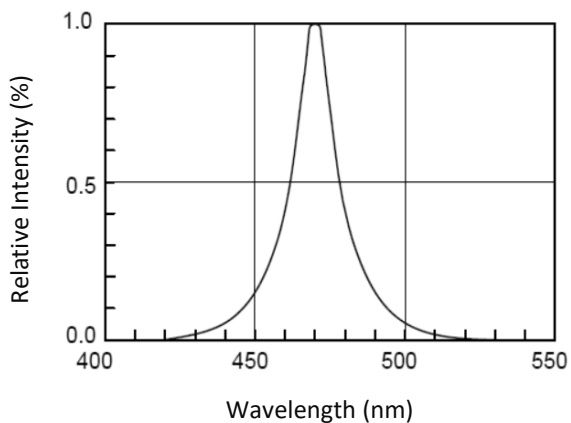
Relative Intensity v.s. Ambient Temperature



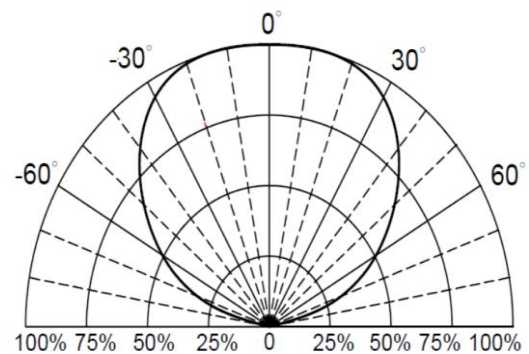
Forward Voltage v.s. Ambient Temperature



Relative Spectral Distribution

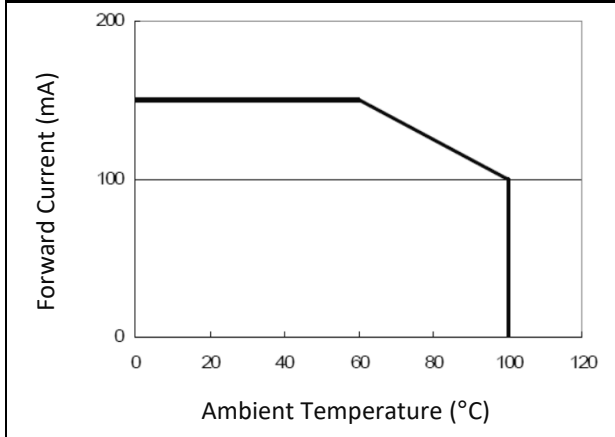


Directive Radiation



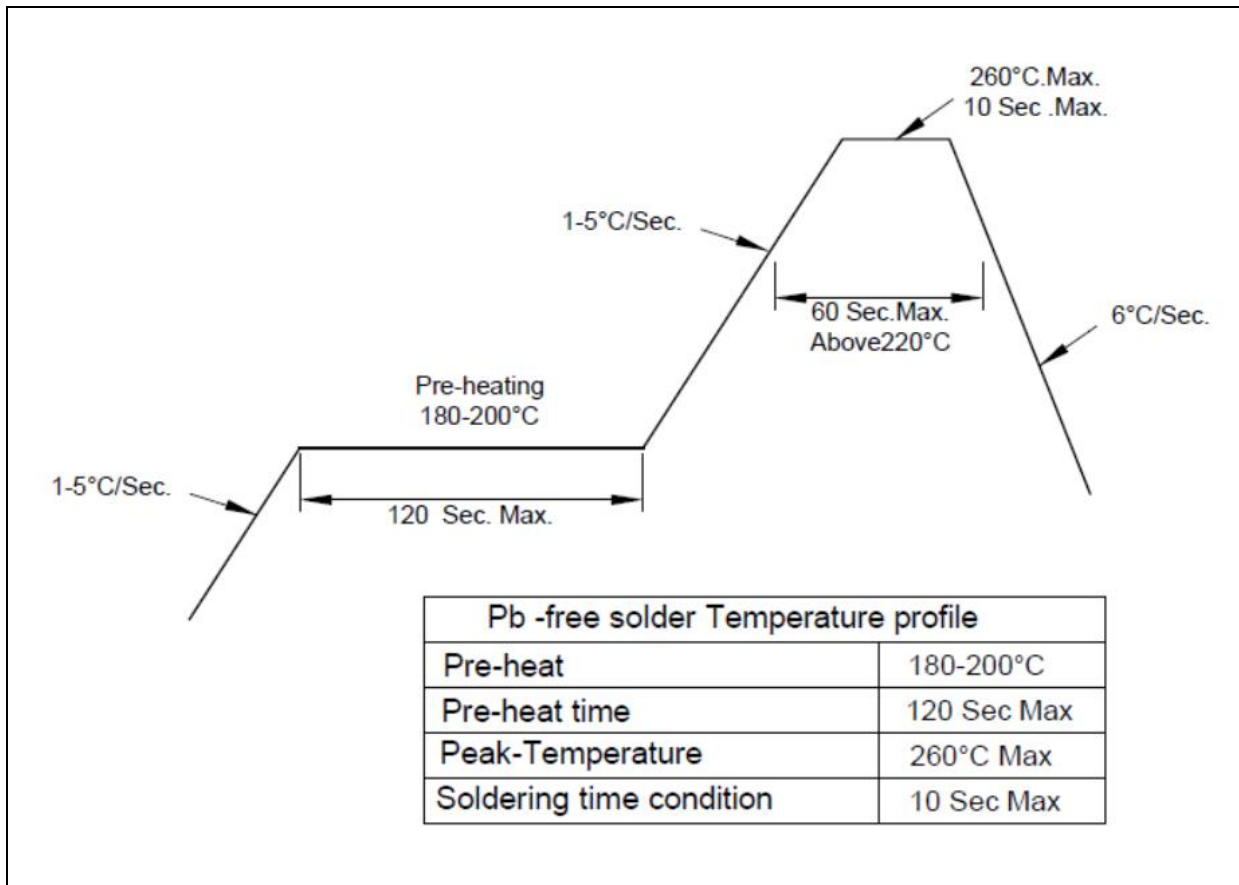
ELECTRO-OPTICAL CHARACTERISTICS:

Temperature v.s. Forward Current



RECOMMENDED SOLDERING PROFILE:

Lead-free Solder:



Note:

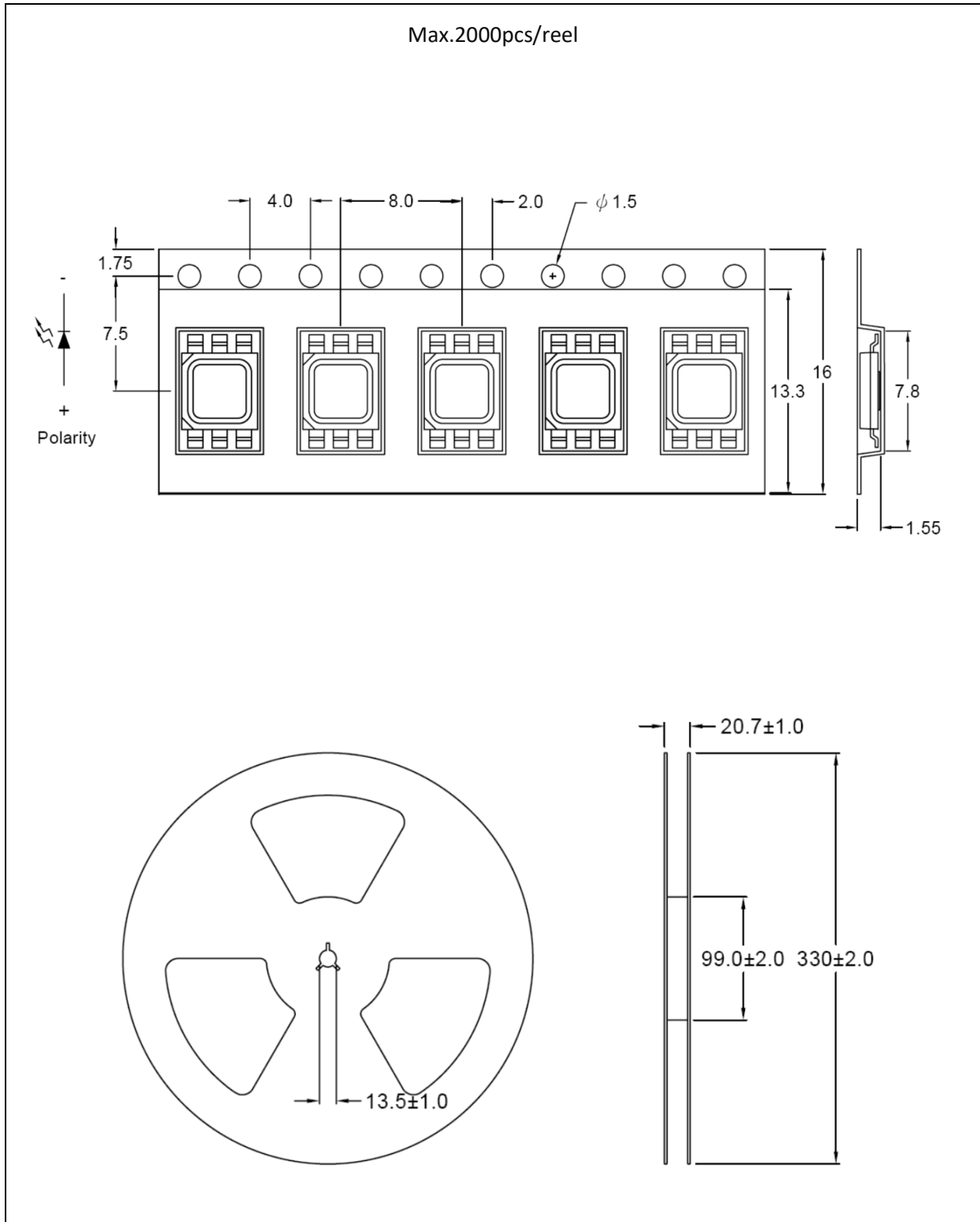
1. Maximum reflow soldering: 2 times.
2. Recommended reflow temperature is 240°C; the maximum soldering temperature should be limited to 260°C.
3. Before, during, and after soldering, should not apply stress on the components and PCB board.

Hand Solder:

1. Do not exceed 3 seconds at maximum 320°C under soldering iron.
2. One time only.

PACKING SPECIFICATION:

Reel Dimension:



PRECAUTIONS OF USE:

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 months 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 <10% R.H. and apply baking before use.

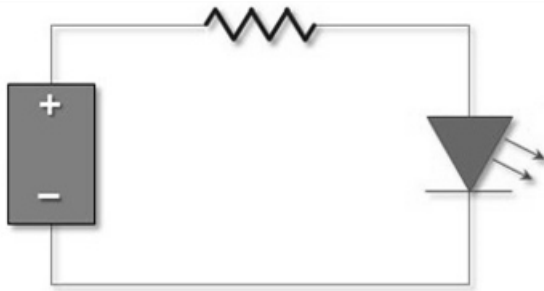
Baking:

It is recommended to bake the LED before soldering if the pack has been unsealed for longer than 24hrs. The suggested baking conditions are as followings:

- 60±5°C x 12hrs and <5%RH, taped / reel package.

It's normal to see slight color fading of carrier (light yellow) after baking in process.

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-electrosatic 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:

| Version | Date | Summary of Revision |
|---------|------------|---------------------|
| A1.0 | 14/05/2020 | Datasheet set-up. |