



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

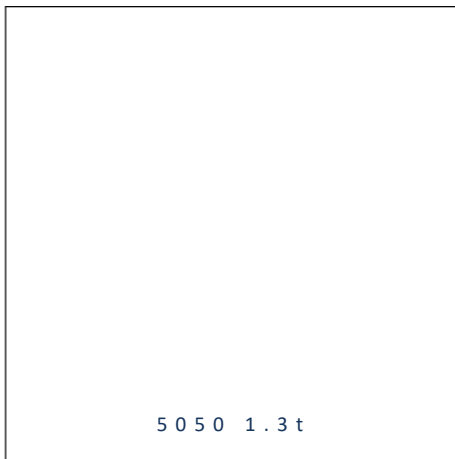


- ▶ PLCC6 SMD
- ▶ 5050 Extended 1.3t
- ▶ Red (625nm) / Green (525nm) / Blue (465nm)

NOM45S21



Release Date: 09 March 2018 Version: A1.0



5050 Extended 1.3t

FEATURES (Red/Green/Blue):

- **Package:** PLCC6 Top View RGB Multicolour LED
- **Forward Current:** 100/100/100mA*
- **Forward Voltage (typ.):** 1.9/3.1/3.1V
- **Luminous Flux (typ.):** 14.4/21/6.6lm@100mA
- **Colour:** Red/Green/Blue
- **Wavelength:** 625/525/465nm
- **Viewing angle:** 120°
- **Materials:**
 - Die: AlGaInP/InGaN/InGaN
 - Resin: Epoxy (White Clear)
- **Operating Temperature:** -40~+85°C
- **Storage Temperature:** -40~+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	100/100/100*	mA
Pulse Forward Current (duty 1/10; 10KHz)	I _{FP}	300/300/300	mA
Power Dissipation	P _D	240/360/360	mW
Electrostatic Discharge (HBM)	ESD	500	V
Junction Temperature	T _J	125	°C
Operating Temperature	T _{OPR}	-40~+85	°C
Storage Temperature	T _{STG}	-40~+100	°C

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

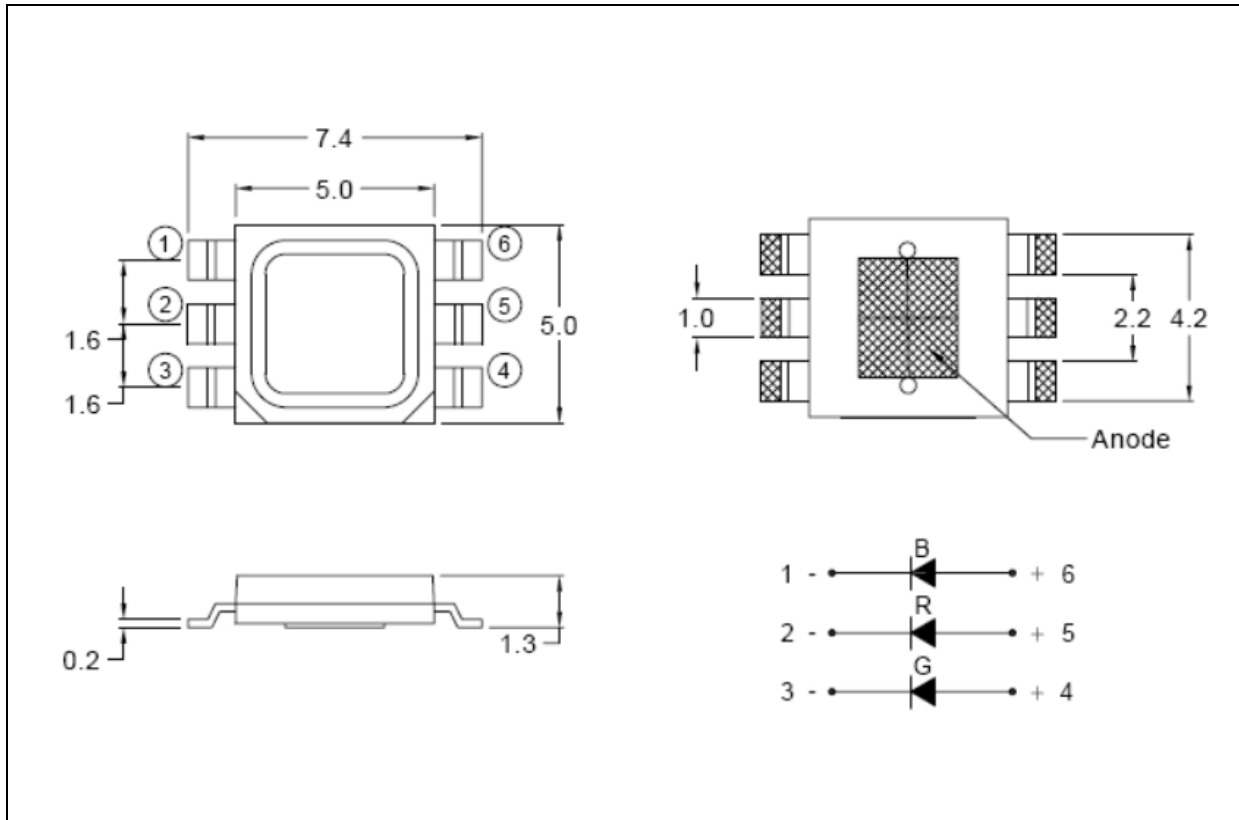
Electrical & Optical Characteristics (Ta=25°C)

Parameter	Symbol	Values			Unit	Test Condition
		Min.	Typ.	Max.		
Red - Forward Voltage	V _F	1.5	---	2.4	V	I _F =100mA
Red - Luminous Flux	I _V	11	---	21.5	lm	I _F =100mA
Red - Wavelength	W _P	---	625	---	nm	I _F =100mA
Green - Forward Voltage	V _F	2.6	---	3.6	V	I _F =100mA
Green - Luminous Flux	I _V	19	---	36.5	lm	I _F =100mA
Green - Wavelength	W _P	---	525	---	nm	I _F =100mA
Blue - Forward Voltage	V _F	2.6	---	3.6	V	I _F =100mA
Blue - Luminous Flux	I _V	5	---	8.8	lm	I _F =100mA
Blue - Wavelength	W _P	---	465	---	nm	I _F =100mA
Viewing Angle	2θ _{1/2}	---	120	---	deg	I _F =100mA

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

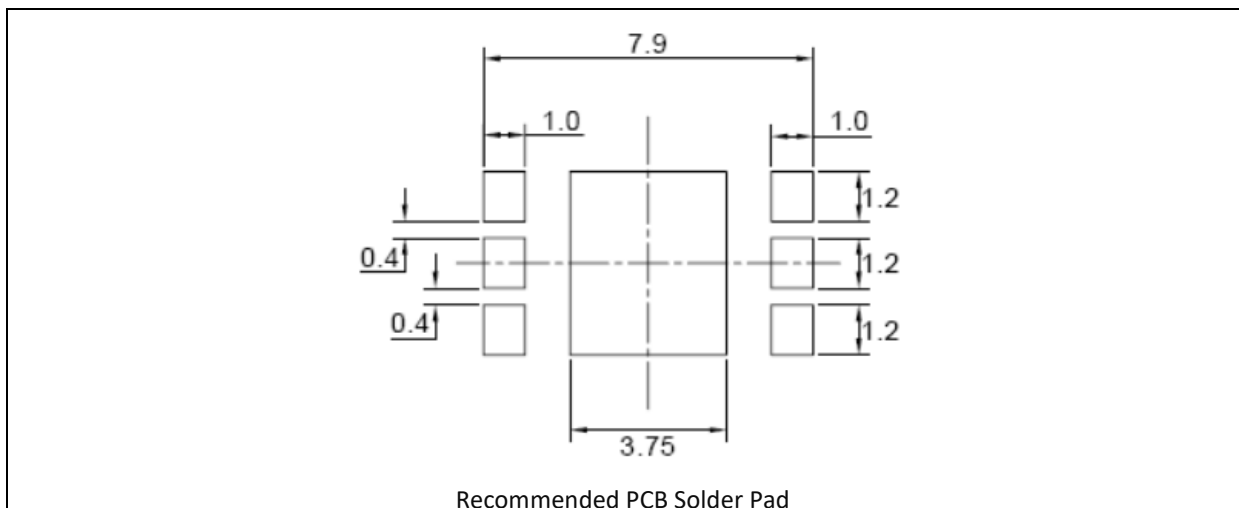
OUTLINE DIMENSION:

Package Dimension:



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

Recommended Soldering Pad Dimension:



Recommended PCB Solder Pad

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

BINNING GROUPS:

 Forward Voltage Classifications ($I_F = 100\text{mA}$):

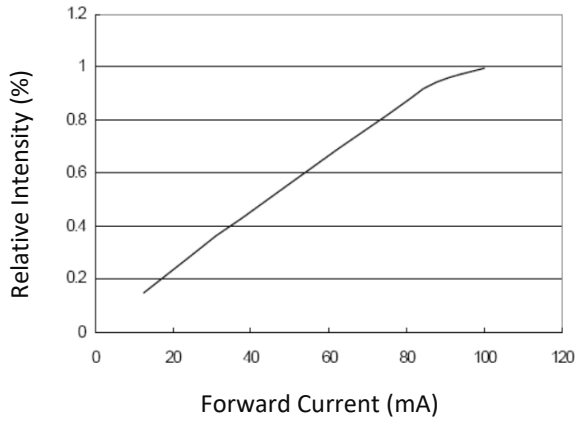
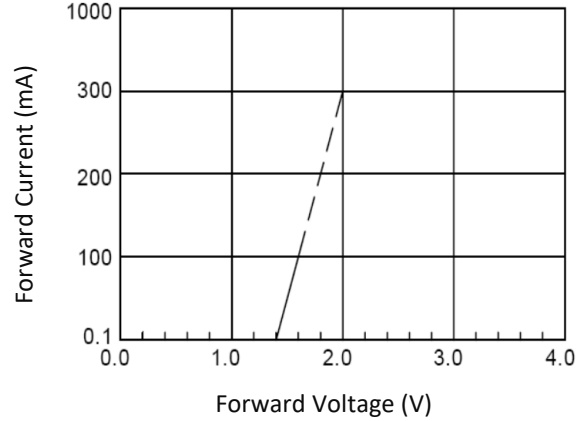
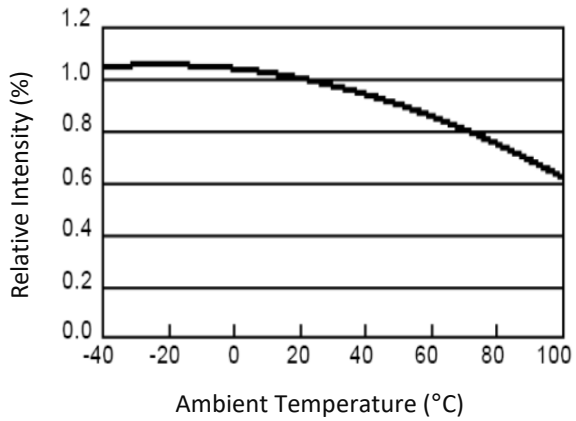
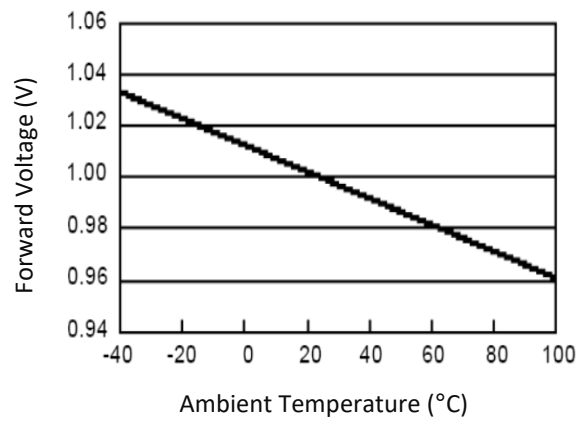
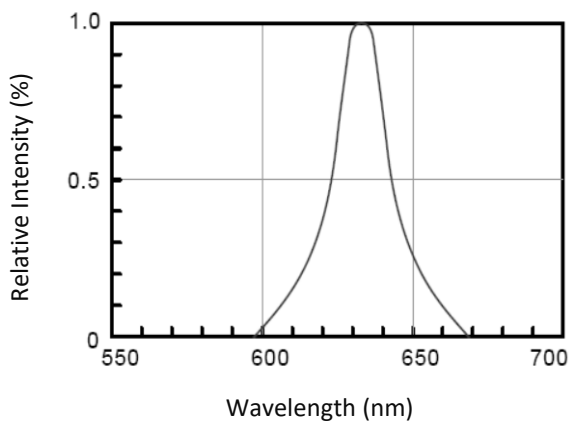
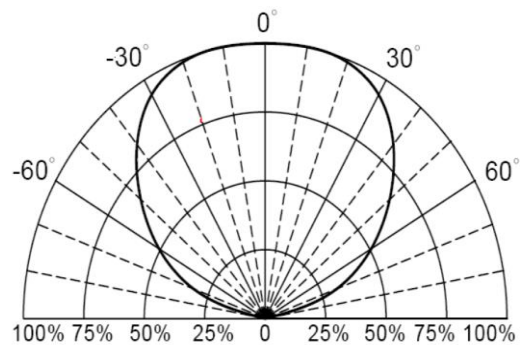
Code		Min.	Max.	Unit
VRGB	Red	1.5	2.4	V
	Green	2.6	3.6	
	Blue	2.6	3.6	

 Luminous Flux Classifications ($I_F = 100\text{mA}$):

Code		Min.	Max.	Unit
Red	R1	11	12	lm
	R2	12	13.2	
	R3	13.2	14.5	
	R4	14.5	16	
	R5	16	17.6	
	R6	17.6	19.5	
	R7	19.5	21.5	

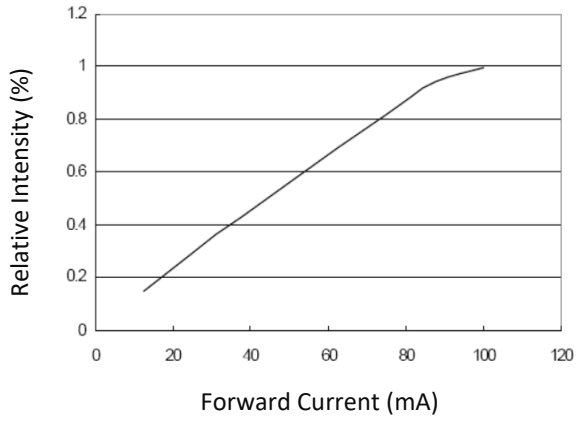
Code		Min.	Max.	Unit
Green	G1	19	21	lm
	G2	21	23	
	G3	23	25	
	G4	25	27.5	
	G5	27.5	30.2	
	G6	30.2	33.2	
	G7	33.2	36.5	

Code		Min.	Max.	Unit
Blue	B1	5	5.5	lm
	B2	5.5	6	
	B3	6	6.6	
	B4	6.6	7.2	
	B5	7.2	8	
	B6	8	8.8	

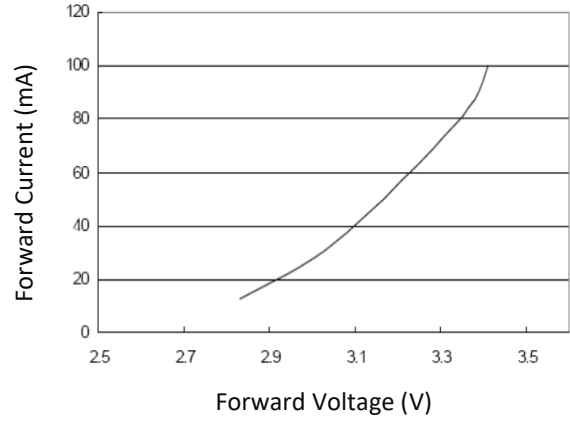
ELECTRO-OPTICAL CHARACTERISTICS (RED):
Relative Intensity v.s. Forward Current

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):

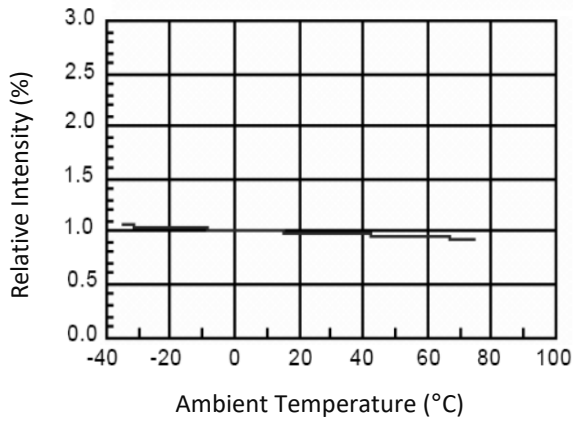
Relative Intensity v.s. Forward Current



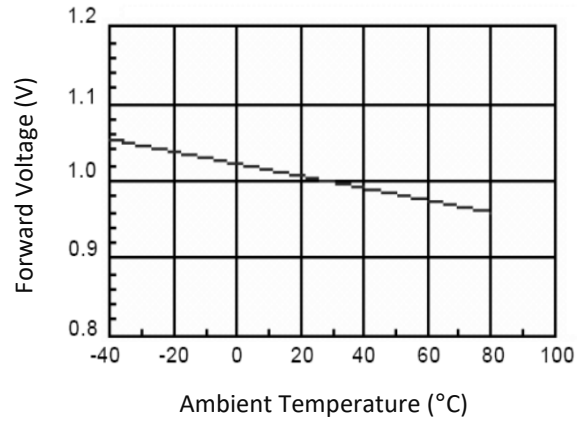
Forward Current v.s. Forward Voltage



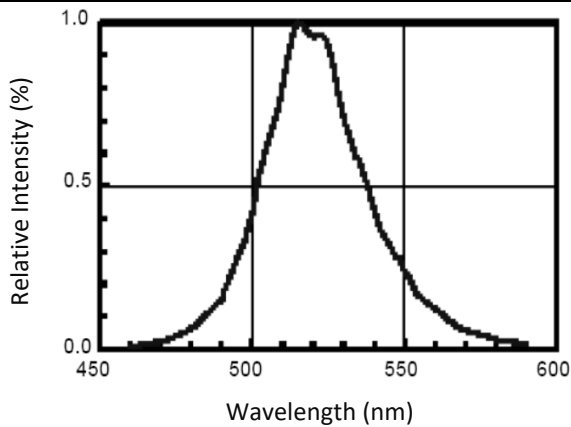
Relative Intensity v.s. Ambient Temperature



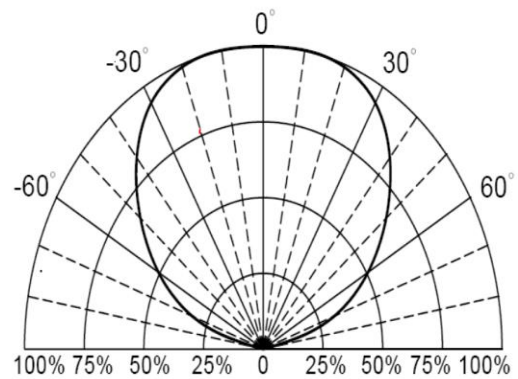
Forward Voltage v.s. Ambient Temperature



Relative Spectral Distribution

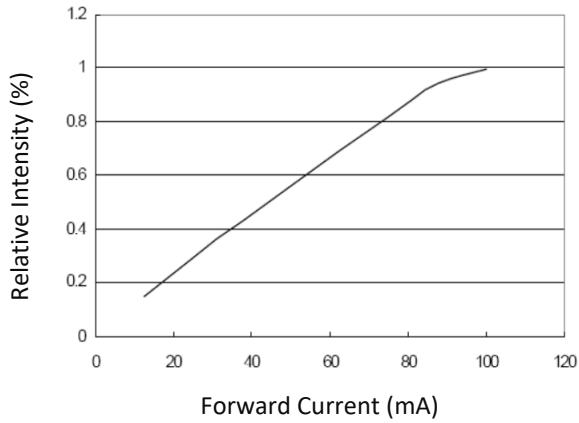


Directive Radiation

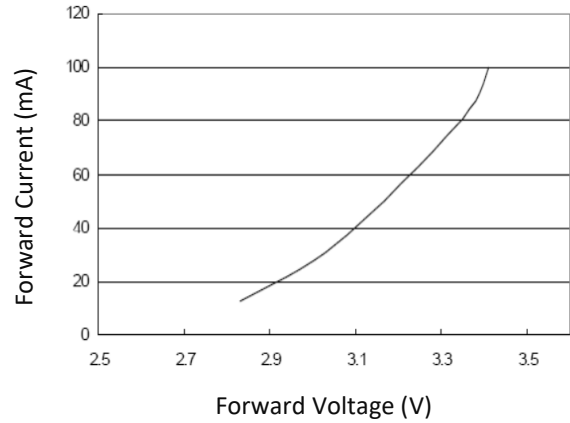


ELECTRO-OPTICAL CHARACTERISTICS (BLUE):

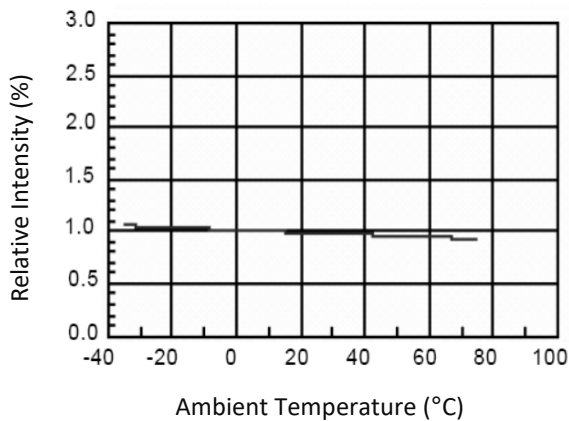
Relative Intensity v.s. Forward Current



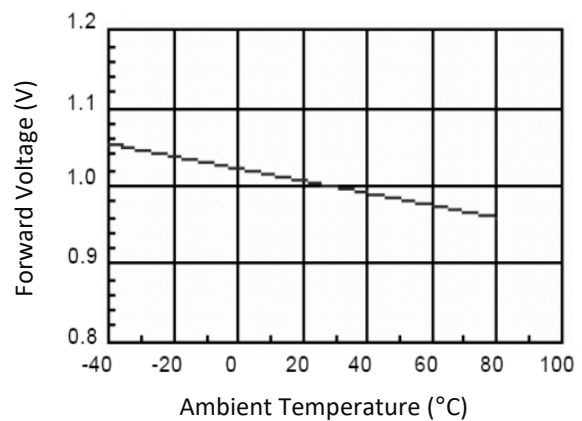
Forward Current v.s. Forward Voltage



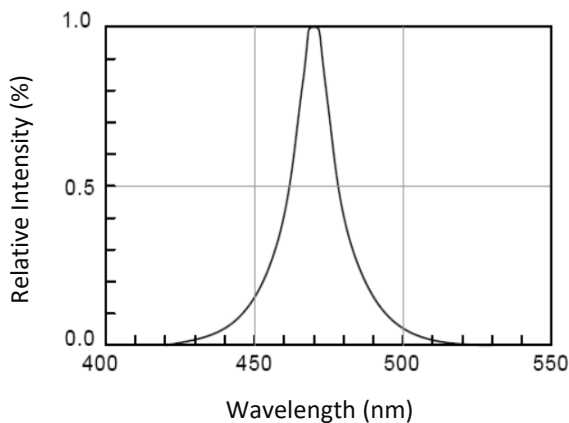
Relative Intensity v.s. Ambient Temperature



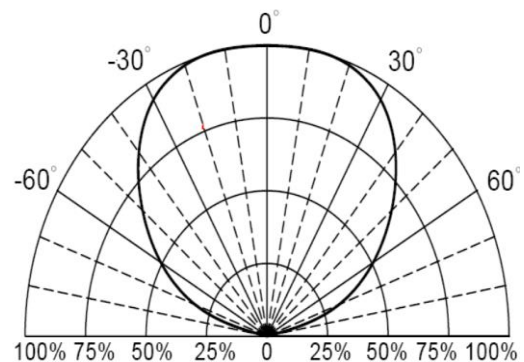
Forward Voltage v.s. Ambient Temperature



Relative Spectral Distribution

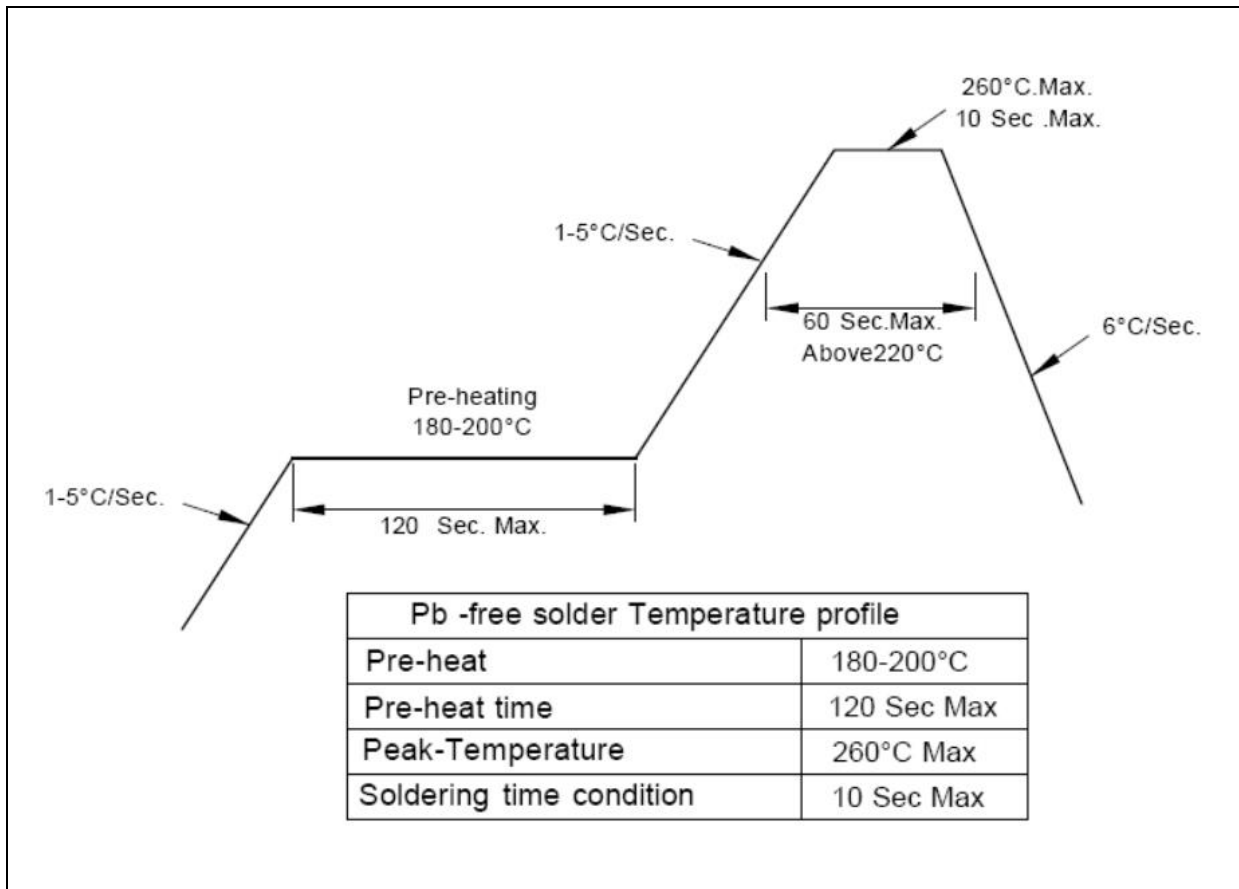


Directive Radiation



RECOMMENDED SOLDERING PROFILE:

Lead-free Solder:



Note:

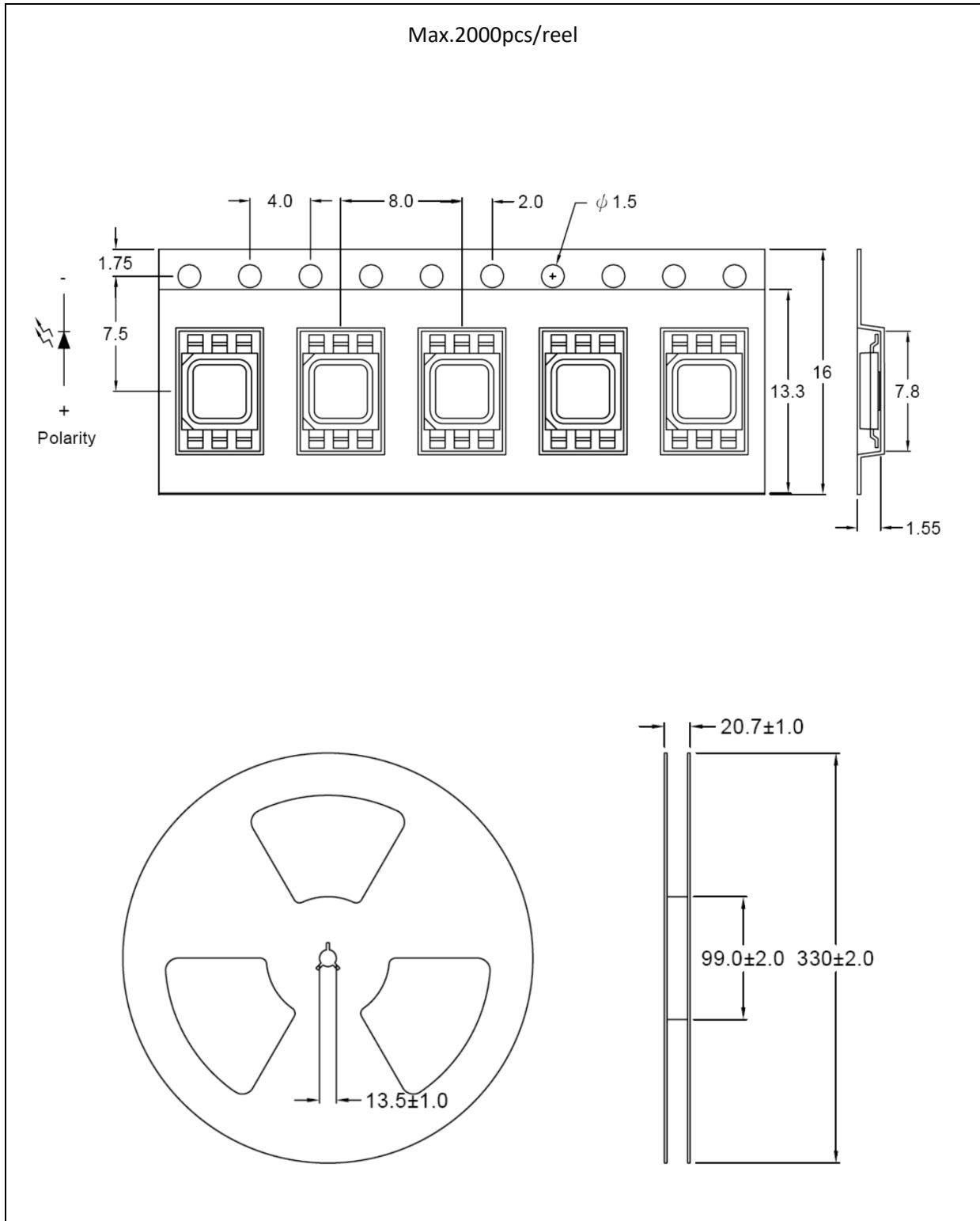
1. Maximum reflow soldering: 2 times.
2. Recommended reflow temperature is 240°C; the maximum soldering temperature should be limited to 260°C.
3. Before, during, and after soldering, should not apply stress on the components and PCB board.

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 and apply baking at 60°C±5°C for 15hrs 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-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:

Version	Date	Summary of Revision
A1.0	09/03/2018	Datasheet set-up.