BRIGHTEK

BRIGHTEK (EUROPE) LIMITED

Brighten Up The World With LED!

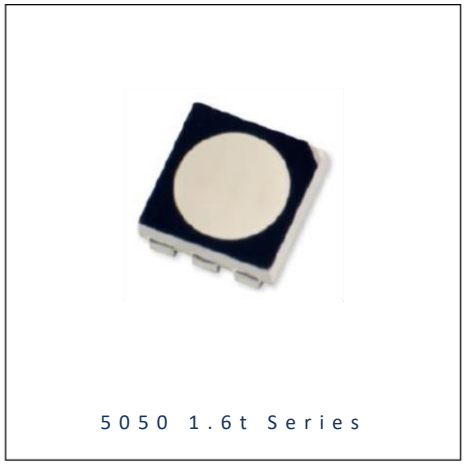
ISO/TS 16949:2009 BS EN ISO 14001:2004 QC 080000 IECQ HSPM

PRODUCT DATASHEET

- ▶ PLCC6 SMD
- ▶ 5050 1.6t Series
- ▶ Red / Green / Blue

Release Date: 03 June 2022 Version: A1.1

N0M03S91BS



5050 1.6t Series

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RoHS Compliant

FEATURES (Red/Green/Blue*):

- **Package:** PLCC6 RGB Black Surface SMD Package
- **Forward Current:** 20/20/20mA
- **Forward Voltage (typ.):** 1.9/3.2/3.2V
- **Luminous Flux (typ.):** 850/1850/330mcd@20mA
- **Colour:** Red/Green/Blue
- **CCT/Wavelength:** 625/525/470nm
- **Viewing angle:** 120/120/120°
- **Materials:**
  - Die: AlGaInP/InGaN/InGaN
  - Resin: Silicone (White Diffused)
- **Operating Temperature:** -40~+85°C
- **Storage Temperature:** -40~+100°C
- **ESD:** 1000V (HBM)
- **Grouping parameters:**
  - Forward voltage
  - Luminous intensity
  - Dominant Wavelength
- **Soldering methods:** IR Reflow soldering
- **Preconditioning:** MSL 5 according to JEDEC
- **Packing:** 12mm tape with max.1000pcs/reel, ø180mm (7'')

APPLICATIONS:

- RGD Display
- Decoration Lighting
- Light Strip
- Commercial Lighting
- Consumer Goods

CHARACTERISTICS:

Absolute Maximum Characteristics (Ta=25°C)

Parameter	Symbol	Ratings	Unit
Forward Current	I_F	50/30/30*	mA
Pulse Forward Current (duty 1/10; width 0.1ms)	I_{MAX}	100	mA
Power Dissipation	P_D	100/80/80	mW
Reverse Voltage	V_R	5	V
Reverse Current @5V	I_R	10	μA
Electrostatic Discharge (HBM)	ESD	1000	V
Junction Temperature	T_j	110	°C
Soldering Temperature	T_{sol}	260	°C
Operating Temperature	T_{OPR}	-40~+85	°C
Storage Temperature	T_{STG}	-40~+100	°C

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

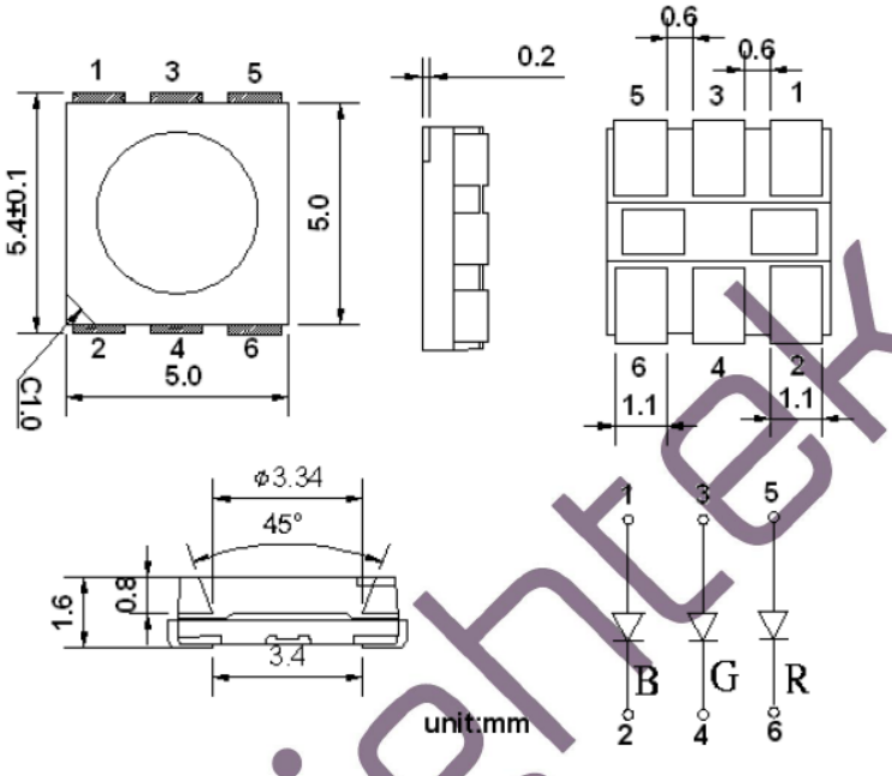
Electrical & Optical Characteristics (Ta=25°C)

Parameter	Symbol	Values			Unit	Test Condition
		Min.	Typ.	Max.		
Red - Forward Voltage	V_F	1.8	1.9	2.6	V	I_F=20mA
Red - Luminous Intensity	I_V	---	850	---	mcd	I_F=20mA
Red - Wavelength	W_P	615	---	630	nm	I_F=20mA
Green - Forward Voltage	V_F	2.8	3.2	3.6	V	I_F=20mA
Green - Luminous Intensity	I_V	---	1850	---	mcd	I_F=20mA
Green - Wavelength	W_P	520	---	535	nm	I_F=20mA
Blue - Forward Voltage	V_F	2.8	3.2	3.6	V	I_F=20mA
Blue - Luminous Intensity	I_V	---	330	---	mcd	I_F=20mA
Blue - Wavelength	W_P	461	---	476	nm	I_F=20mA
Viewing Angle	$2\theta_{1/2}$	---	120	---	deg	I_F=20mA

1. Luminous intensity (I_V) ±5%, Forward Voltage (V_F) ±0.1V; Wavelength ±1nm.

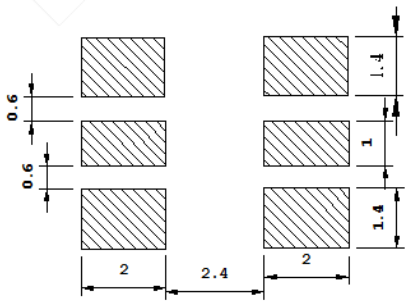
OUTLINE DIMENSION:

Package Dimension:



1. All dimensions are in millimetre (mm).
2. Tolerance ±0.1mm, unless otherwise noted.

Recommended Soldering Pad Dimension:



Recommended PCB Solder Pad

1. Dimensions are in millimetre (mm).
2. Tolerance ±0.1mm with angle tolerance ±0.5°.

BINNING GROUPS:

Forward Voltage Classifications (I_F = 20mA):

Code	Min.	Max.	Unit
R	1.8	2.6	V
G	2.8	3.6	
B	2.8	3.6	

Luminous Intensity Classifications (I_F = 20mA):

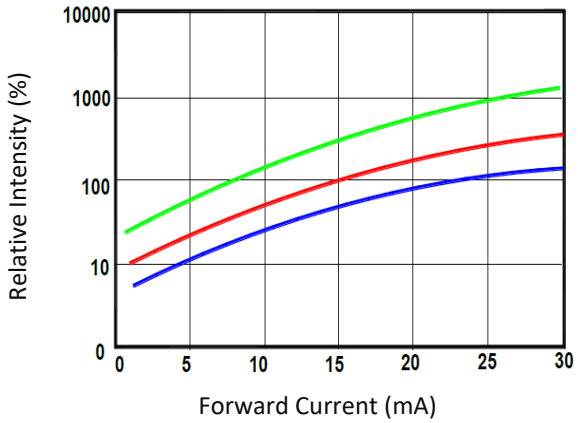
Code		Min.	Max.	Unit
R	12	600	750	mcd
	13	750	940	
	14	940	1180	
G	12	1280	1600	
	13	1600	2000	
	14	2000	2500	
B	11	250	310	
	12	310	390	
	13	390	490	

Wavelength Classifications (I_F = 20mA):

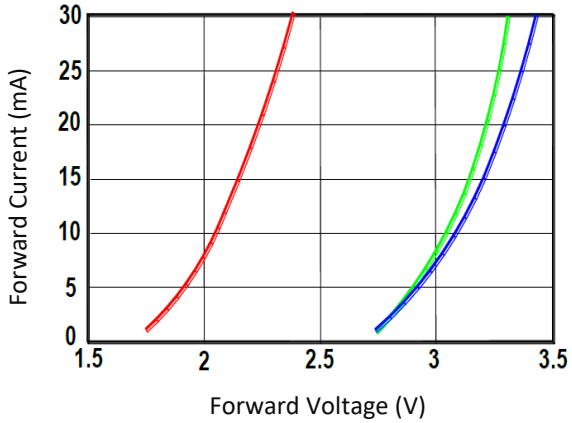
Code		Min.	Max.	Unit
R	2	615	620	nm
	3	620	625	
	4	625	630	
G	2	520	525	
	3	525	530	
	4	530	535	
B	2	461	466	
	3	466	471	
	4	471	476	

ELECTRO-OPTICAL CHARACTERISTICS:

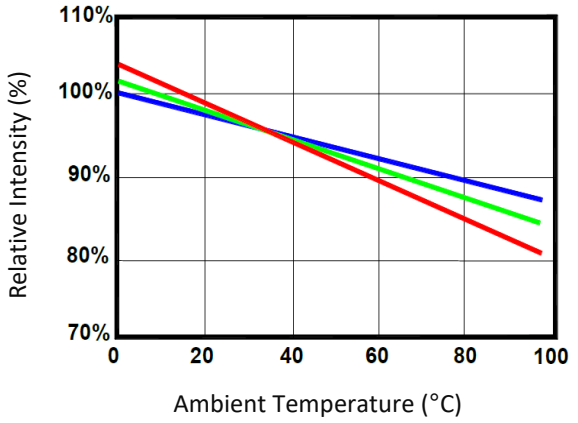
Relative Intensity v.s. Forward Current



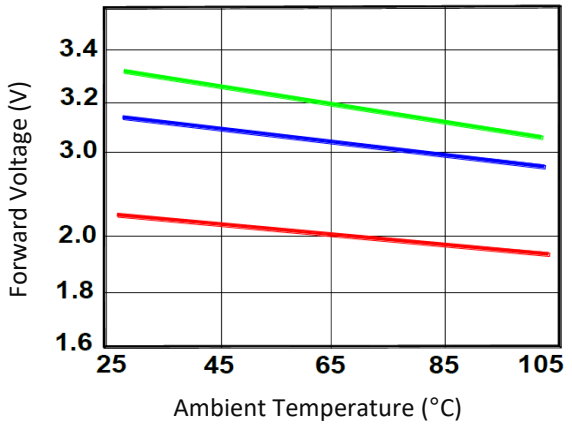
Forward Current v.s. Forward Voltage



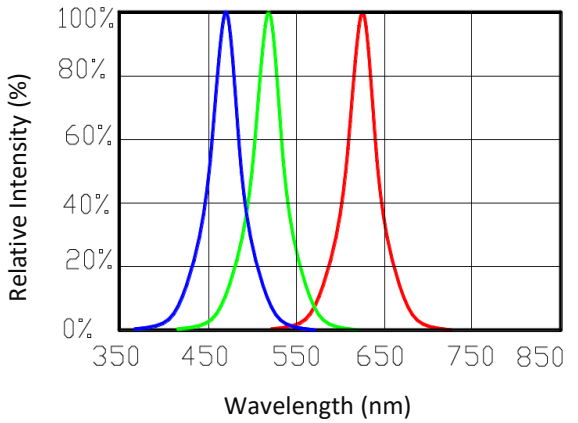
Relative Intensity v.s. Ambient Temperature



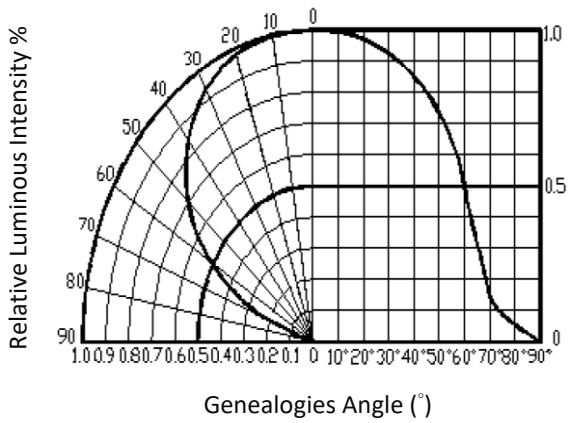
Forward Voltage v.s. Ambient Temperature



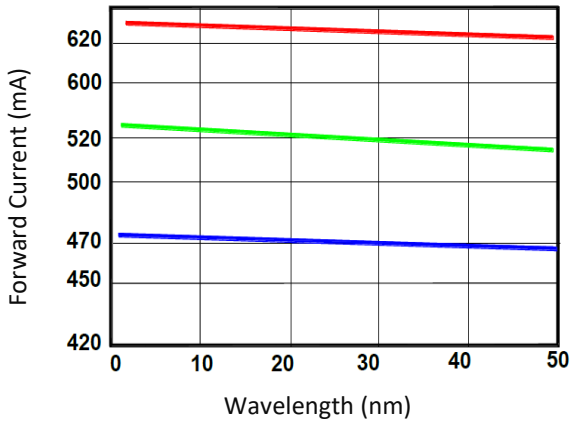
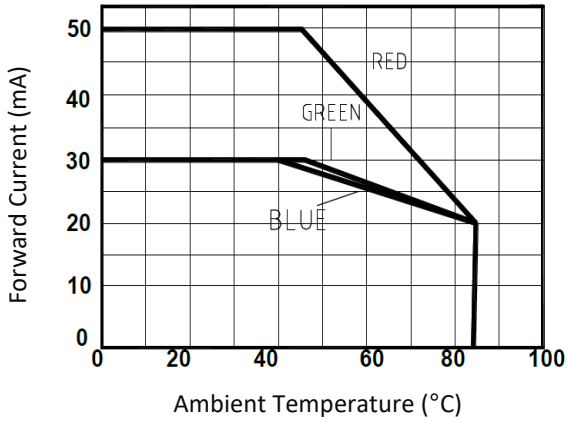
Relative Spectral Distribution



Directive Radiation

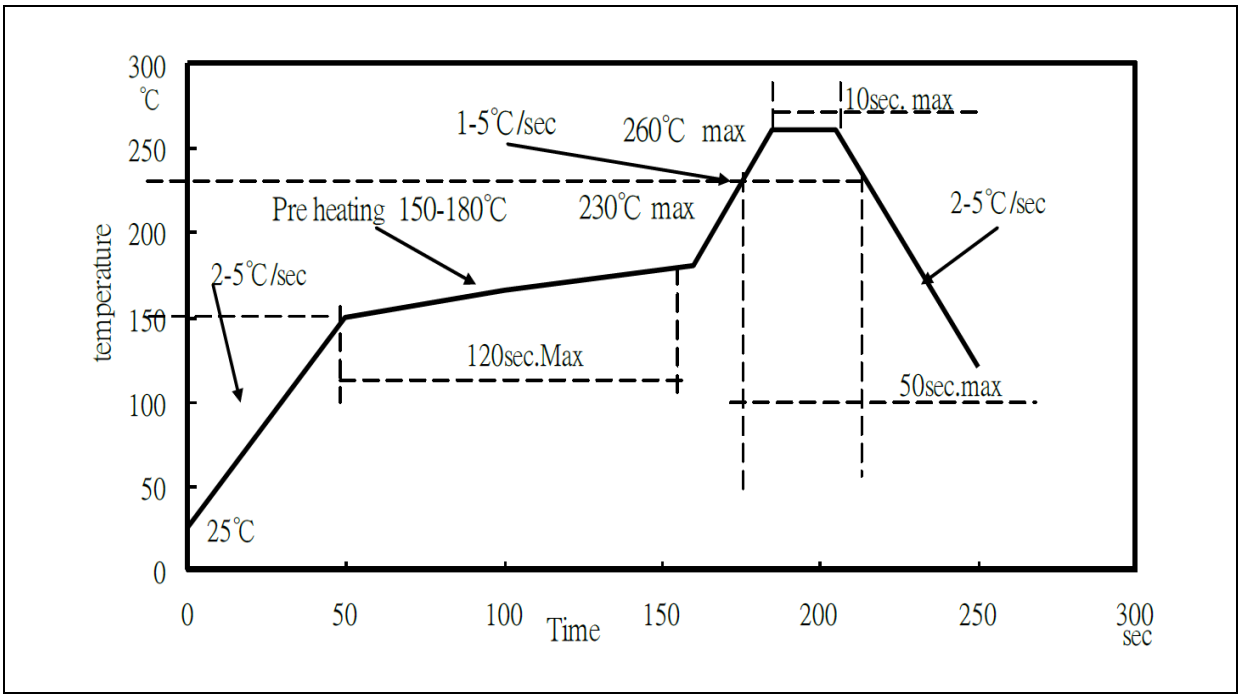


ELECTRO-OPTICAL CHARACTERISTICS:

Wavelength Shift v.s. Forward Current	Maximum Current v.s. Ambient Temperature
	

RECOMMENDED SOLDERING PROFILE:

Lead-free IR Reflow Solder:



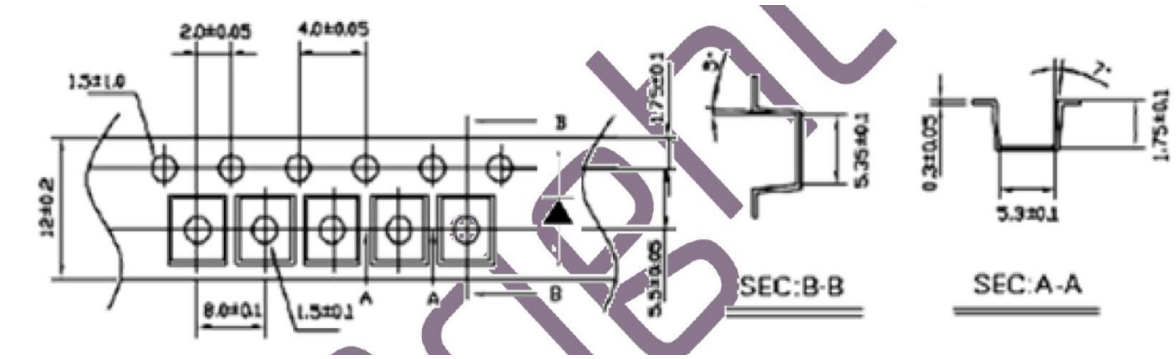
Note:

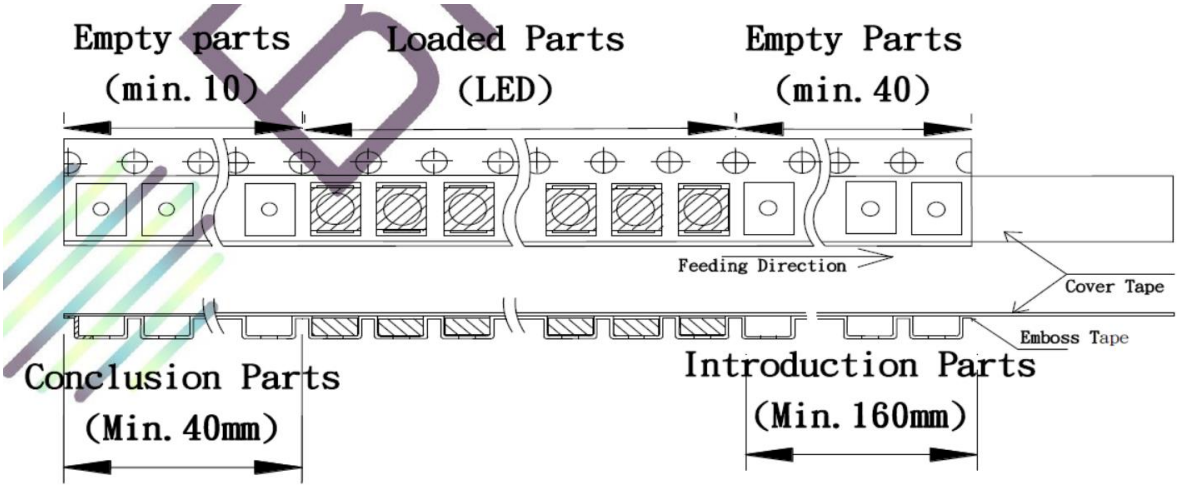
1. Maximum reflow soldering: 3 times.
2. Recommended soldering temperature 240°C; maximum soldering temperature is 260°C.
3. Before, during, and after soldering, should not apply stress on the components and PCB board.

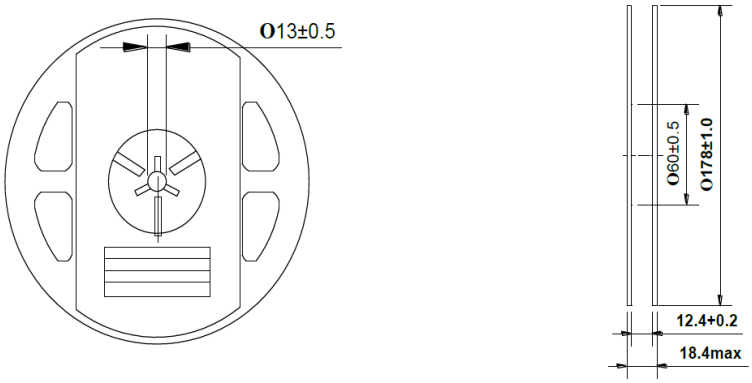
PACKING SPECIFICATION:

Reel Dimension:

Max.1000pcs/reel







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 descanting agent <10% R.H. and apply baking before use.

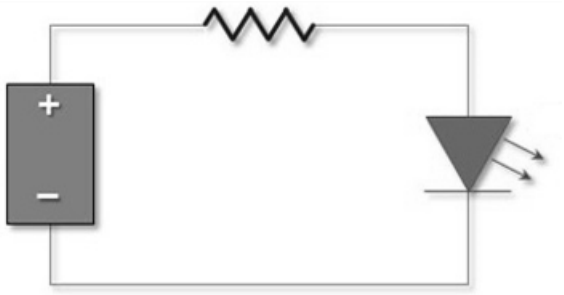
Baking:

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:

- 65±3°C x 6hrs 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 handing 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	12/12/2019	Datasheet set-up.
A1.1	03/06/2022	New datasheet format.