BRIGHTEK

BRIGHTEK (EUROPE) LIMITED

Brighten Up The World With LED !

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

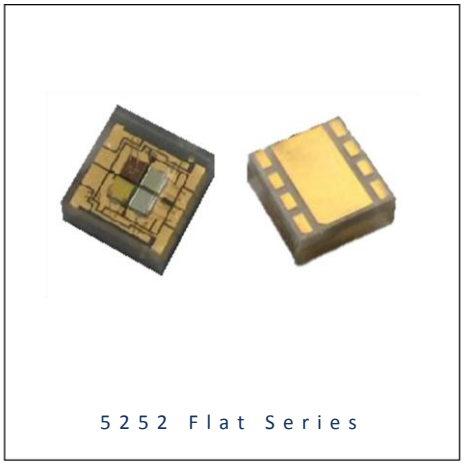
PRODUCT DATASHEET

ATTENTION
OBSERVE PRECAUTIONS FOR HANDLING ELECTROSTATIC SENSITIVE DEVICES

- ▶ Ceramic High Power
- ▶ 5252 Flat 1.3t Series
- ▶ Cool White / Red / Green / Blue

Release Date: 09 November 2015 Version: A1.0

N0M19S93



5252 Flat Series

5252 Flat Series

RoHS Compliant

FEATURES (White/Red/Green/Blue*):

- **Package:** Ceramic SMT Package with Silicon Lens
- **Forward Current:** 350/350/350/350mA
- **Forward Voltage (typ.):** 3.1/2.0/3.2/3.1V
- **Luminous Flux (typ.):** 95/35/60/22lm @350mA
- **Colour:** Cool White/Red/Green/Blue
- **CCT/Wavelength:** 6500K/625/520/460nm
- **Viewing angle:** 135/135/135/135°
- **Materials:**
  - Die: InGaN/AlGaInP/InGaN/InGaN
  - Resin: Silicon (Water Clear)
- **Operating Temperature:** -40~+85°C
- **Storage Temperature:** -40~+100°C
- **ESD:** 2000V (HBM: MIL-STD-883 Class 2)
- **Grouping parameters:**
  - Forward voltage
  - Luminous flux
  - CCT/Wavelength
- **Soldering methods:** IR Reflow soldering
- **Preconditioning:** MSL 2 according to J-STD020
- **Packing:** 12mm tape Max. 500pcs/reel, ø180mm (7'')

APPLICATIONS:

- Decoration Lighting
- Wall Washer
- Spot Light
- Outdoor Lighting
- Mini Projector

CHARACTERISTICS:

Absolute Maximum Characteristics (Ta=25°C)

Parameter	Symbol	Ratings	Unit
Forward Current	I_F	350/350/350/350*	mA
Maximum Forward Current	I_{MAX}	700/700/700/700	mA
Pulse Current D=0.01s Duty 1/10	I_{FP}	1200/1200/1200/1200	mA
Reverse Voltage	V_R	-5	V
Reverse Current @5V	I_R	10	μA
Electrostatic Discharge (HBM)	ESD	2000	V
Junction Temperature	T_j	125	°C
Thermal Resistance	R_{TH}	2.5~4	°C/W
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 White/Red/Green/Blue.

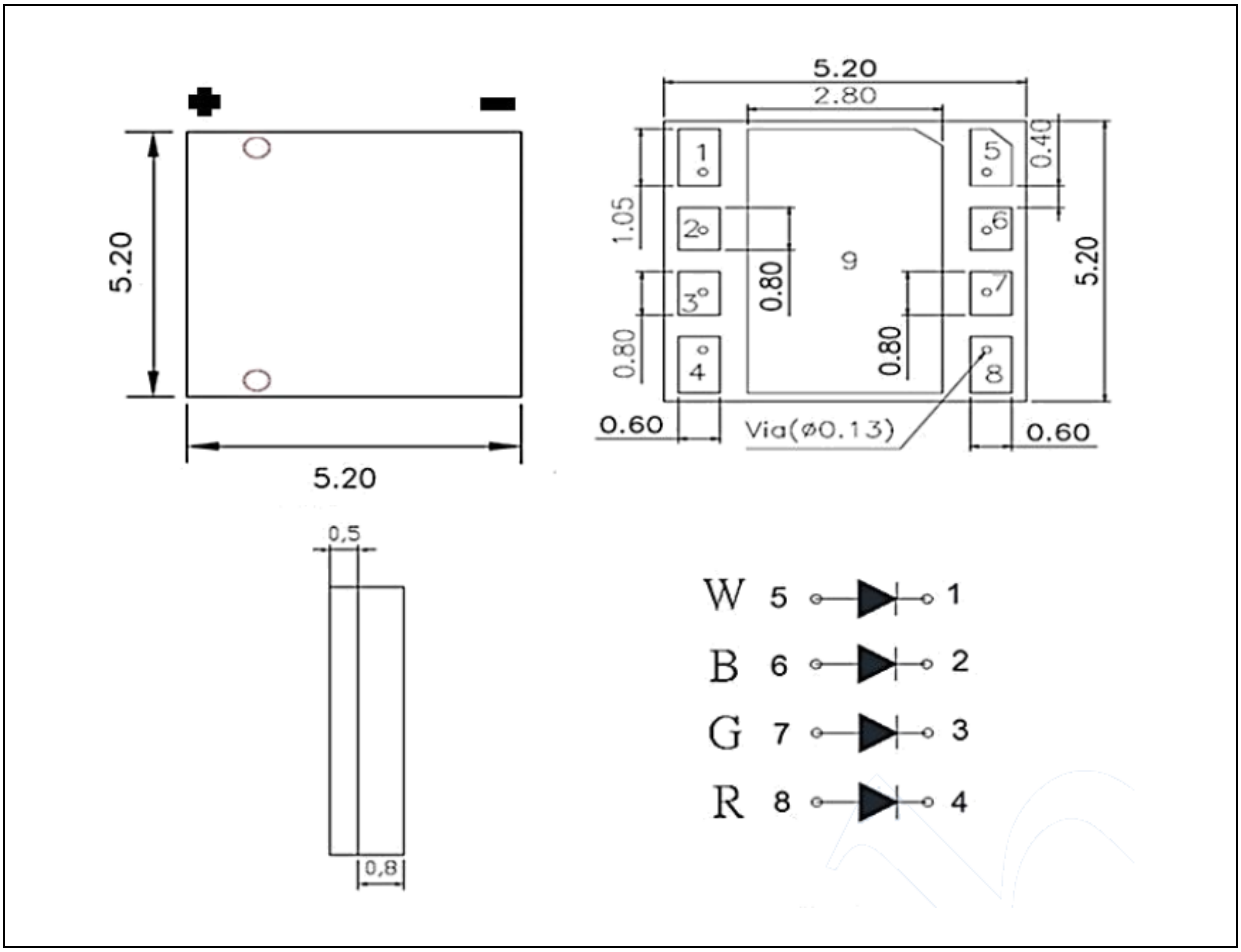
Electrical & Optical Characteristics (Ta=25°C)

Parameter	Symbol	Values			Unit	Test Condition
		Min.	Typ.	Max.		
White - Forward Voltage	V_F	2.8	3.1	3.6	V	I_F=350mA
White - Luminous Flux	Φ_V	80	95	110	lm	I_F=350mA
White – Colour Temperature	CCT	5000	6500	8220	K	I_F=350mA
Red - Forward Voltage	V_F	1.8	2.0	2.6	V	I_F=350mA
Red - Luminous Flux	Φ_V	20	35	50	lm	I_F=350mA
Red - Wavelength	W_P	620	625	630	nm	I_F=350mA
Green - Forward Voltage	V_F	3.0	3.2	3.8	V	I_F=350mA
Green - Luminous Flux	Φ_V	40	60	80	lm	I_F=350mA
Green - Wavelength	W_P	515	520	530	nm	I_F=350mA
Blue - Forward Voltage	V_F	2.8	3.1	3.6	V	I_F=350mA
Blue - Luminous Flux	Φ_V	12	22	30	lm	I_F=350mA
Blue - Wavelength	W_P	450	460	465	nm	I_F=350mA
Viewing Angle	$2\theta_{1/2}$	---	135	---	deg	I_F=350mA

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

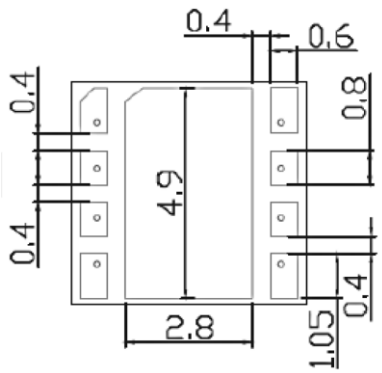
OUTLINE DIMENSION:

Package Dimension:

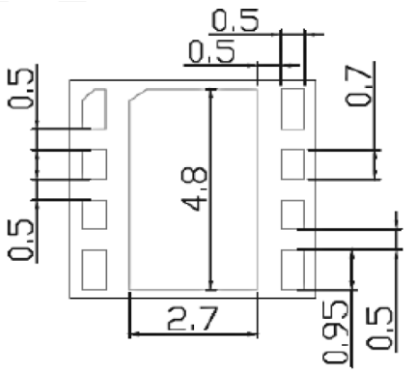


1. All dimensions are in millimetre (mm).
2. Tolerance ±0.1mm, unless otherwise noted.

Recommended Soldering Pad Dimension:



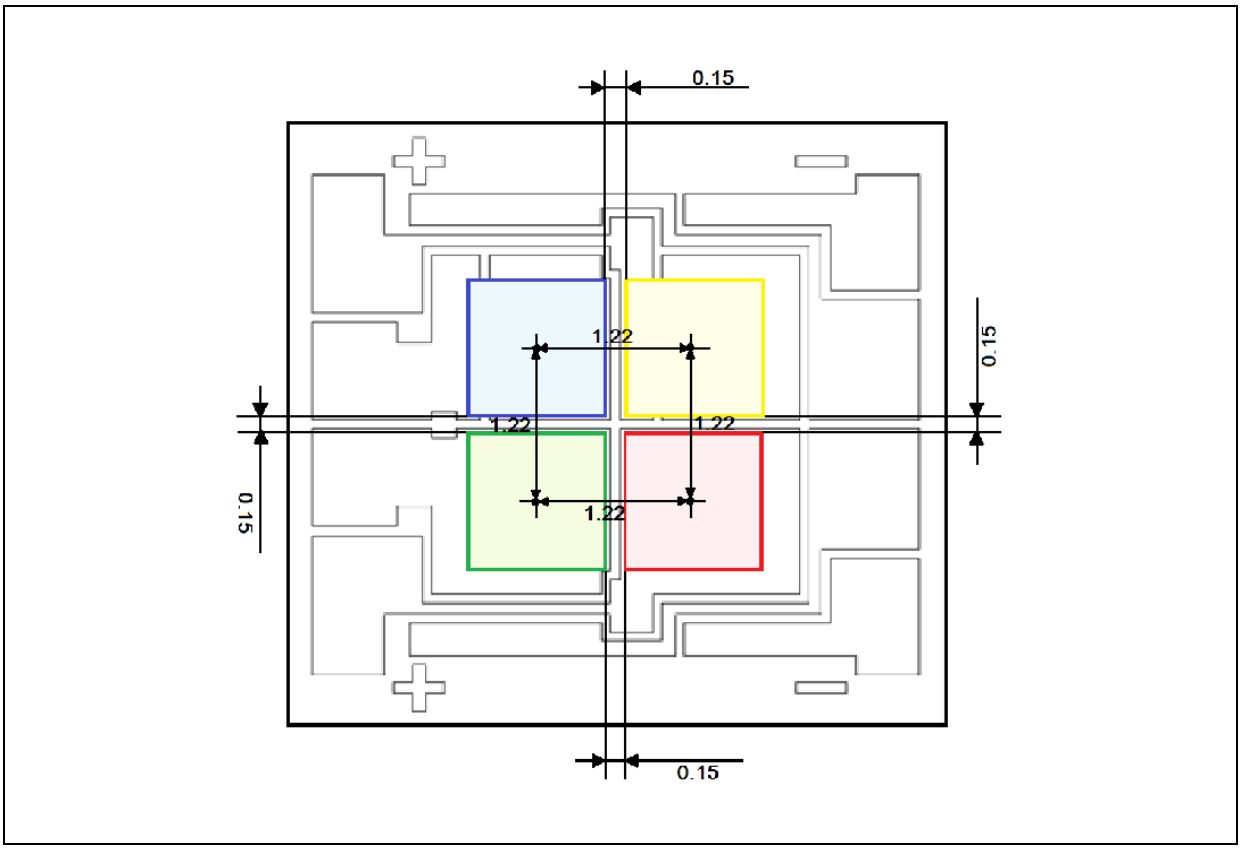
Recommended PCB Solder Pad



Recommended Stencil Pattern

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

Die Arrangement:



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

BINNING GROUPS:

Forward Voltage Classifications (I_F = 350mA):

Code		Min.	Max.	Unit
VA	W	2.8	3.6	V
	R	1.8	2.6	
	G	3.0	3.8	
	B	2.8	3.6	

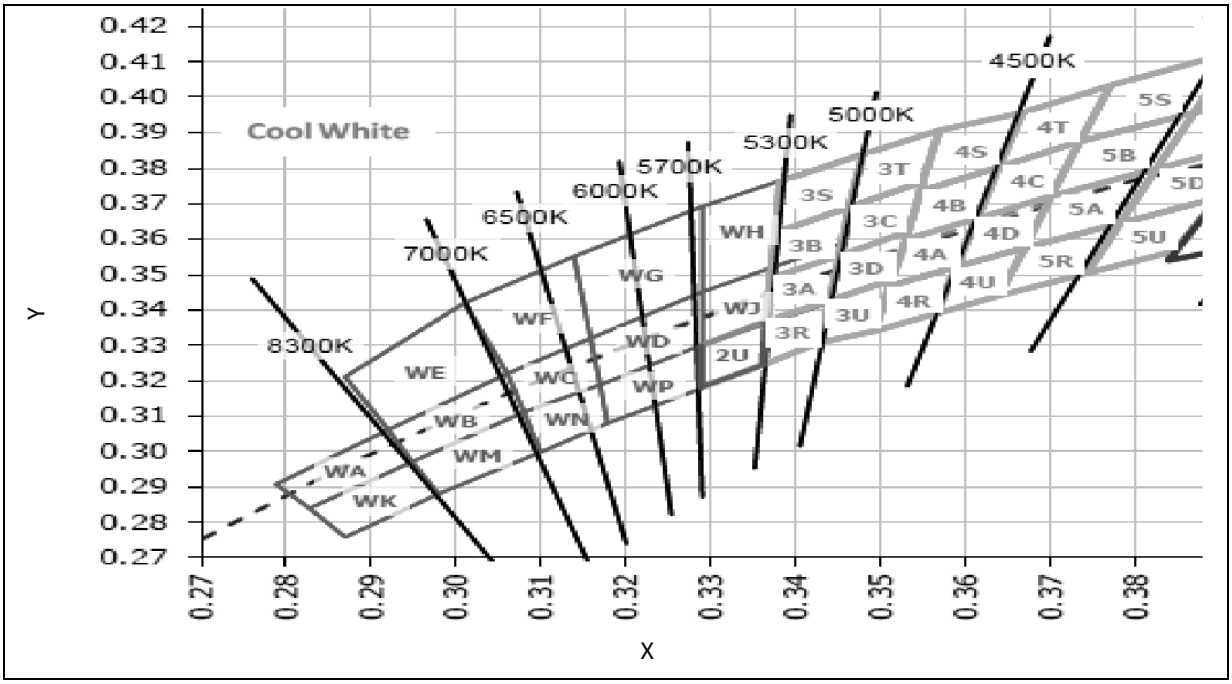
Luminous Flux Classifications (I_F = 350mA):

Code		Min.	Max.	Unit
LA	W	80	110	lm
	R	20	50	
	G	40	80	
	B	12	30	

CCT/Wavelength Classifications (I_F = 350mA):

Code		Min.	Max.	Unit
CB1	W	5000	8220	K/nm
	R	620	630	
	G	515	530	
	B1	450	465	

CIE CHROMATICITY DIAGRAM:

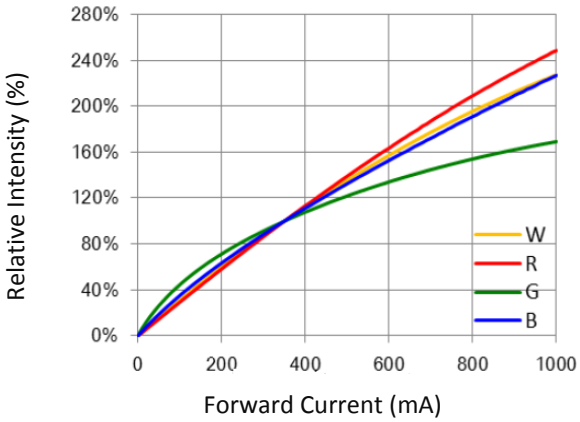


Chromaticity Coordinates Classifications (I_F = 350mA):

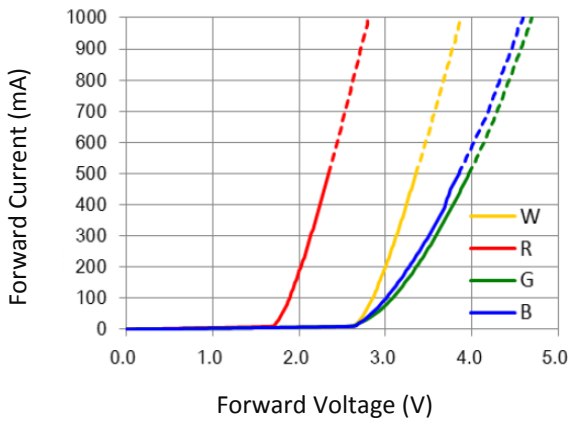
	1		2		3		4	
	X	Y	X	Y	X	Y	X	Y
WE	0.3010	0.3420	0.3060	0.3220	0.2920	0.3060	0.2870	0.3210
WB	0.3060	0.3220	0.3080	0.3110	0.2950	0.2970	0.2920	0.3060
WM	0.3080	0.3110	0.3100	0.3000	0.2980	0.2880	0.2950	0.2970
WF	0.3010	0.3420	0.3060	0.3220	0.3160	0.3320	0.3140	0.3550
WC	0.3160	0.3320	0.3170	0.3190	0.3080	0.3110	0.3060	0.3220
WN	0.3170	0.3190	0.3180	0.3080	0.3100	0.3000	0.3080	0.3110
WG	0.3290	0.3690	0.3290	0.3450	0.3160	0.3320	0.3140	0.3550
WD	0.3290	0.3450	0.3290	0.3300	0.3170	0.3190	0.3160	0.3320
WP	0.3290	0.3300	0.3290	0.3183	0.3180	0.3080	0.3170	0.3190
WH	0.3472	0.3845	0.3449	0.3581	0.3290	0.3450	0.3290	0.3690
WJ	0.3449	0.3581	0.3439	0.3428	0.3290	0.3300	0.3290	0.3450
2U	0.3290	0.3300	0.3366	0.3369	0.3361	0.3245	0.3290	0.3180
3S	0.3381	0.3762	0.3480	0.3840	0.3463	0.3687	0.3376	0.3616
3B	0.3376	0.3616	0.3463	0.3687	0.3451	0.3554	0.3371	0.3490
3A	0.3371	0.3490	0.3451	0.3554	0.3440	0.3427	0.3366	0.3369
3R	0.3366	0.3369	0.3440	0.3428	0.3429	0.3307	0.3361	0.3245

ELECTRO-OPTICAL CHARACTERISTICS:

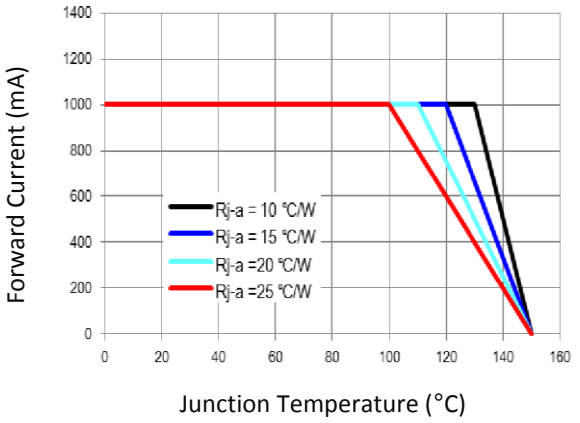
Relative Intensity v.s. Forward Current



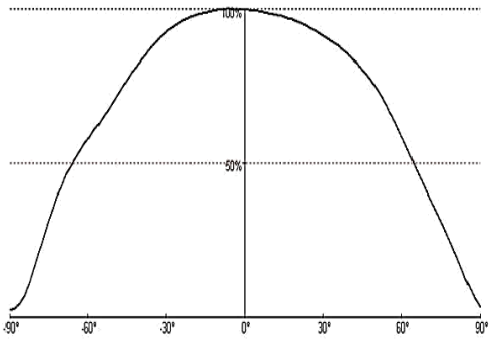
Forward Current v.s. Forward Voltage



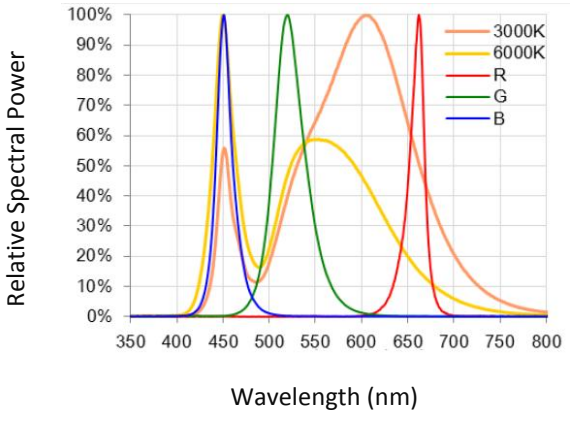
Thermal Design for De-rating



Directive Radiation

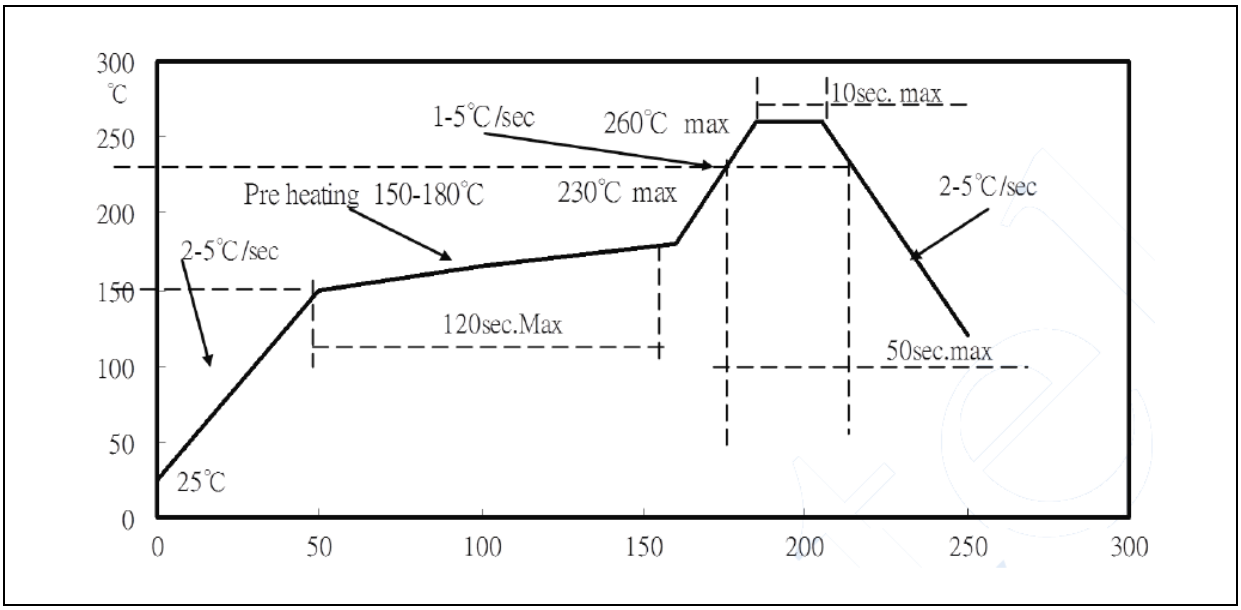


Luminous Spectrum



RECOMMENDED SOLDERING PROFILE:

Lead-free Solder:

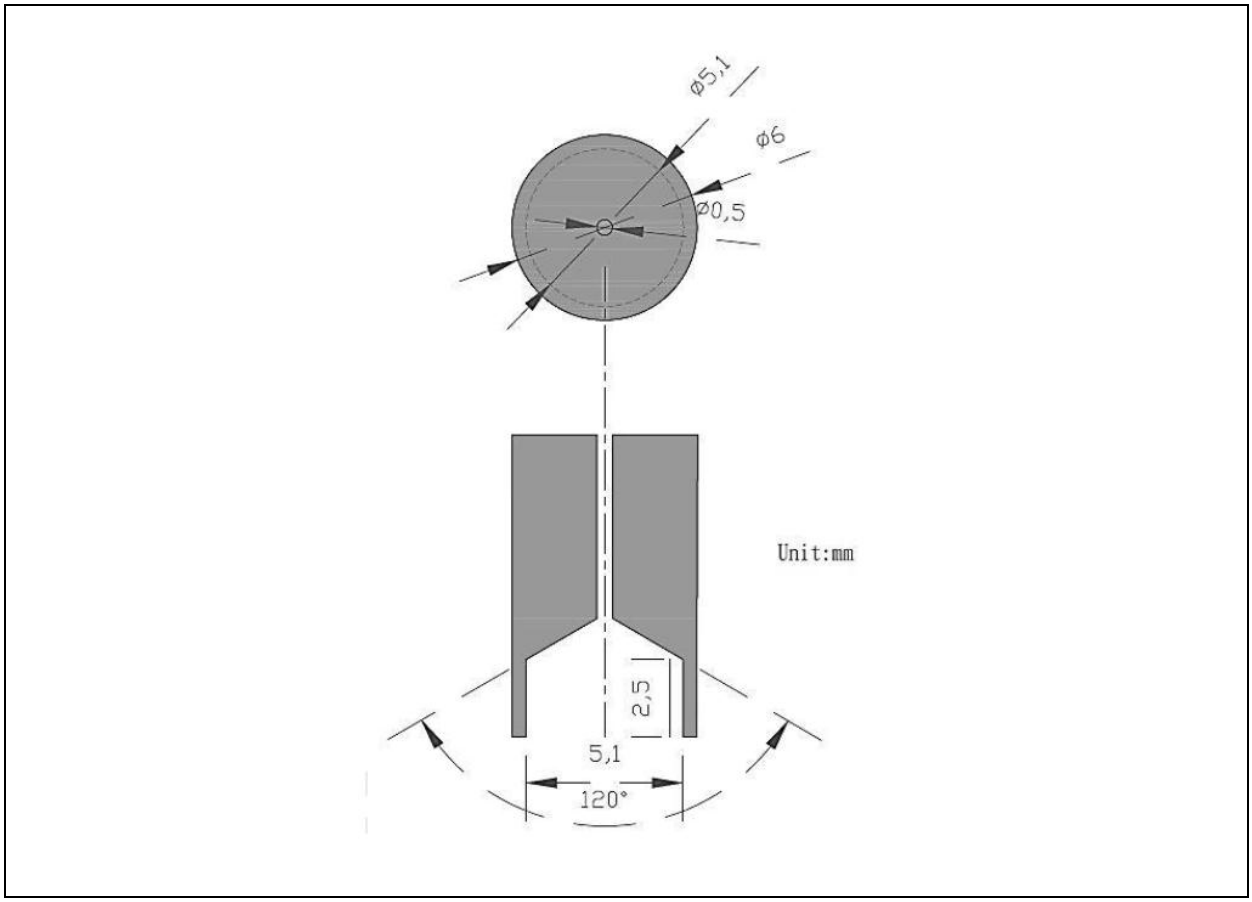


Note:

1. Maximum reflow soldering: 3 times.
2. The 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.

RECOMMENDED NOZZLE FOR SMT:

Recommended Pick & Place Nozzle:



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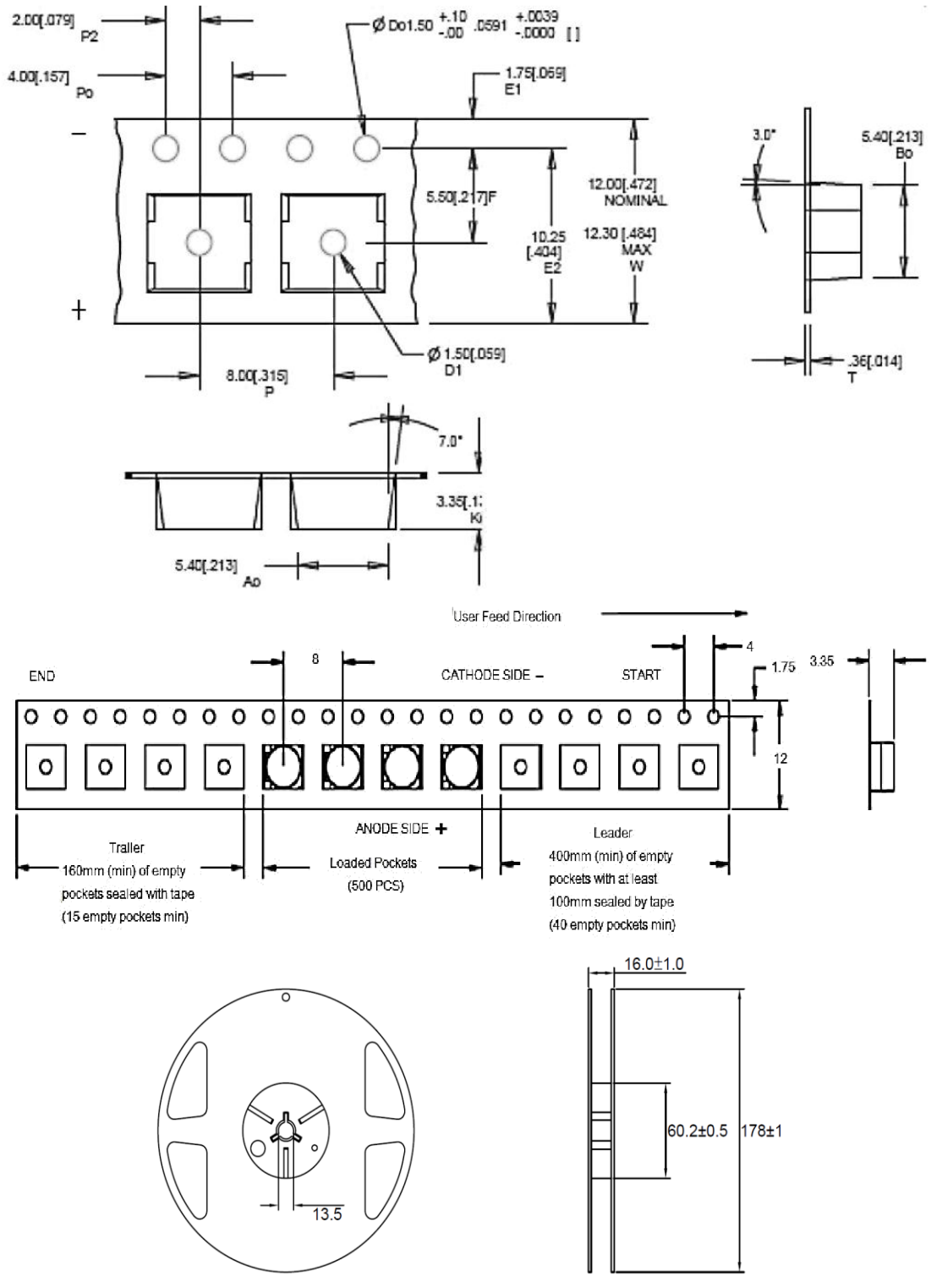
PACKING SPECIFICATION:

Reel Dimension:

100pcs/reel (Maximum 500pcs/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 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 descanting agent and apply baking at 60°C±5°C for 15hrs before use.

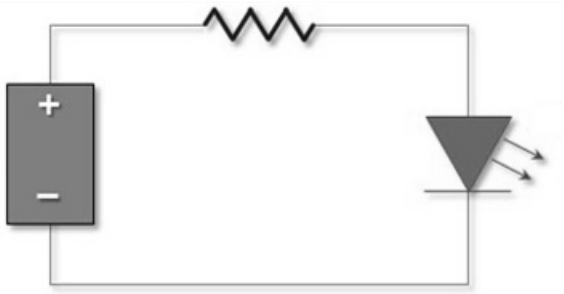
Baking:

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:

- 70±3°C x 24hrs and <5%RH, taped / reel package.
- 100±3°C x 2hrs, bulk (loose) package.
- 130±3°C x 30min, bulk (loose) 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	09/11/2015	Datasheet set-up.