



BRIGHTTEK
BRIGHTTEK (EUROPE) LIMITED

Brighten up The World With LED!



ISO 9001:2009

ISO 14001:2004

IEC 60000 IECQ HSP90

PRODUCT DATASHEET



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

NOM19S95



Release Date: 25 February 2016 Version: A1.0



5252 Flat Series



FEATURES (White/Red/Green/Blue):

- **Package:** Ceramic SMT Package with Silicon Lens
- **Forward Current:** 350/350/350/350mA*
- **Forward Voltage (typ.):** 3.2/2.2/3.4/3.2V
- **Luminous Flux (typ.):** 75/40/70/20lm@350mA
- **Colour:** Warm White/Red/Green/Blue
- **CCT/Wavelength:** 2900K/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")

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

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	μ A
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

- * In the order of White/Red/Green/Blue.

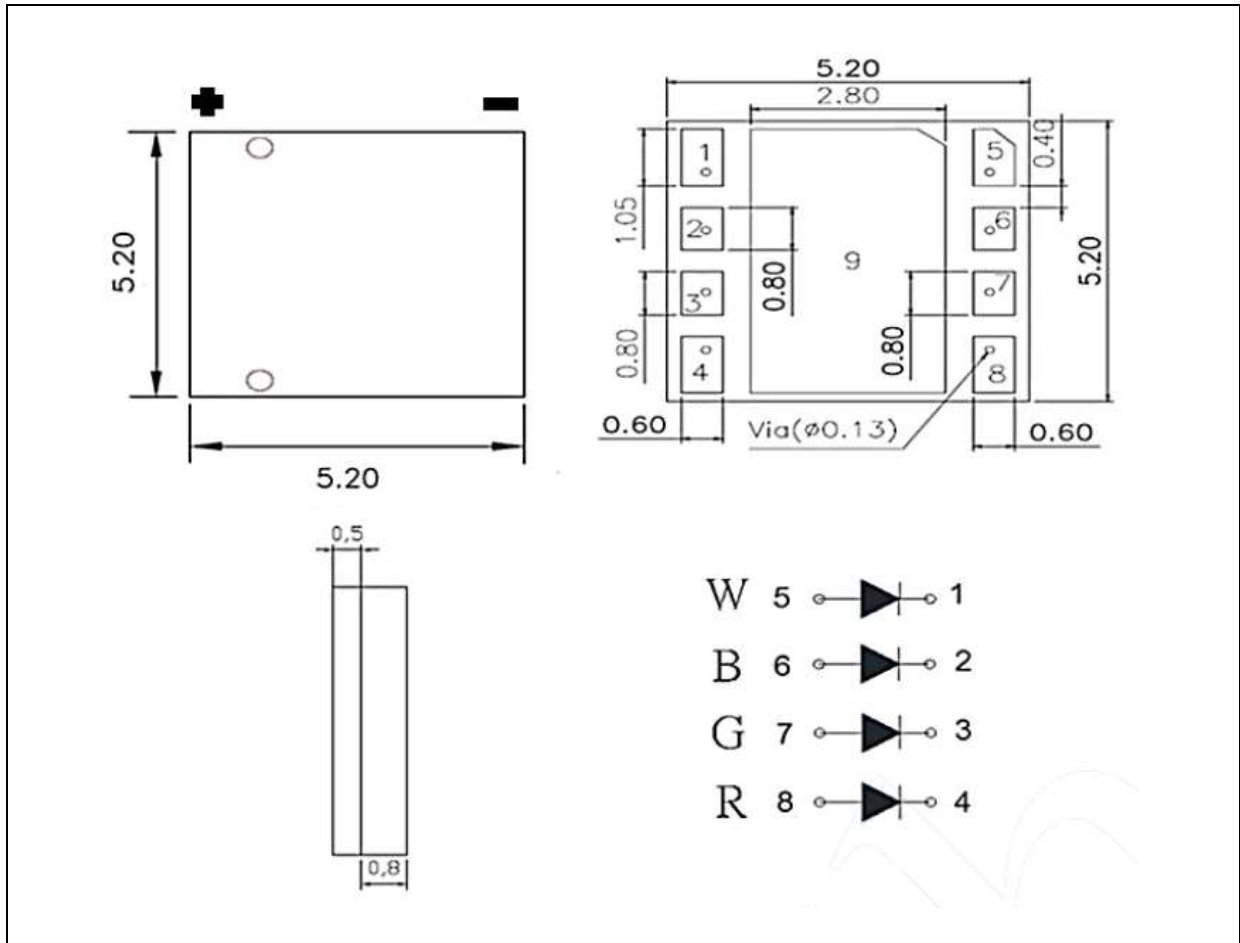
Electrical & Optical Characteristics (Ta=25°C)

Parameter	Symbol	Values			Unit	Test Condition
		Min.	Typ.	Max.		
White - Forward Voltage	V_F	2.8	3.2	3.6	V	$I_F=350mA$
White - Luminous Flux	Φ_V	60	75	90	lm	$I_F=350mA$
White – Colour Temperature	CCT	2580	2900	3220	K	$I_F=350mA$
Red - Forward Voltage	V_F	1.8	2.2	2.6	V	$I_F=350mA$
Red - Luminous Flux	Φ_V	30	40	50	lm	$I_F=350mA$
Red - Wavelength	W_p	620	625	630	nm	$I_F=350mA$
Green - Forward Voltage	V_F	3.0	3.4	3.8	V	$I_F=350mA$
Green - Luminous Flux	Φ_V	60	70	80	lm	$I_F=350mA$
Green - Wavelength	W_p	515	520	530	nm	$I_F=350mA$
Blue - Forward Voltage	V_F	2.8	3.2	3.6	V	$I_F=350mA$
Blue - Luminous Flux	Φ_V	10	20	25	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) $\pm 5\%$, Forward Voltage (V_f) $\pm 0.1V$

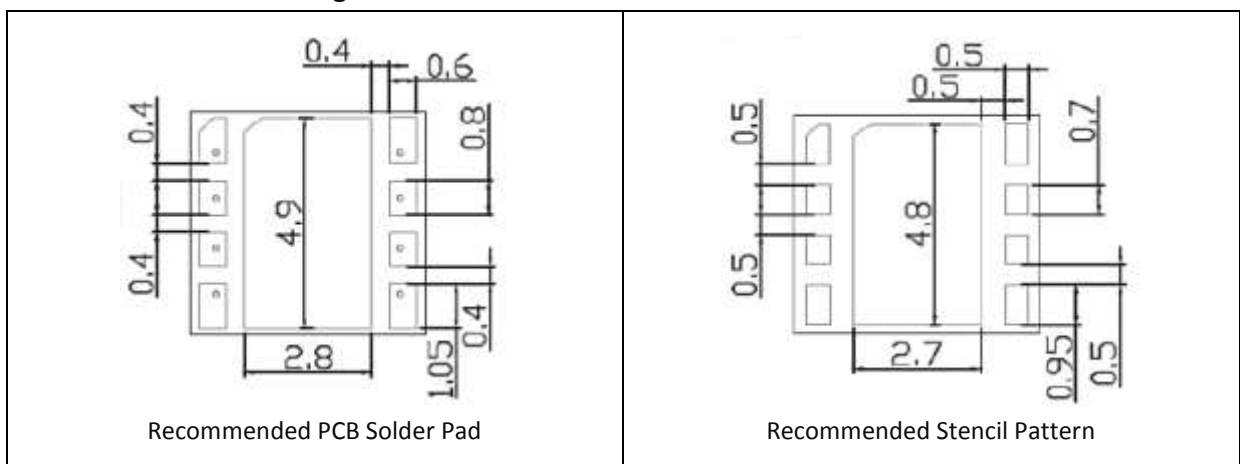
OUTLINE DIMENSION:

Package Dimension:



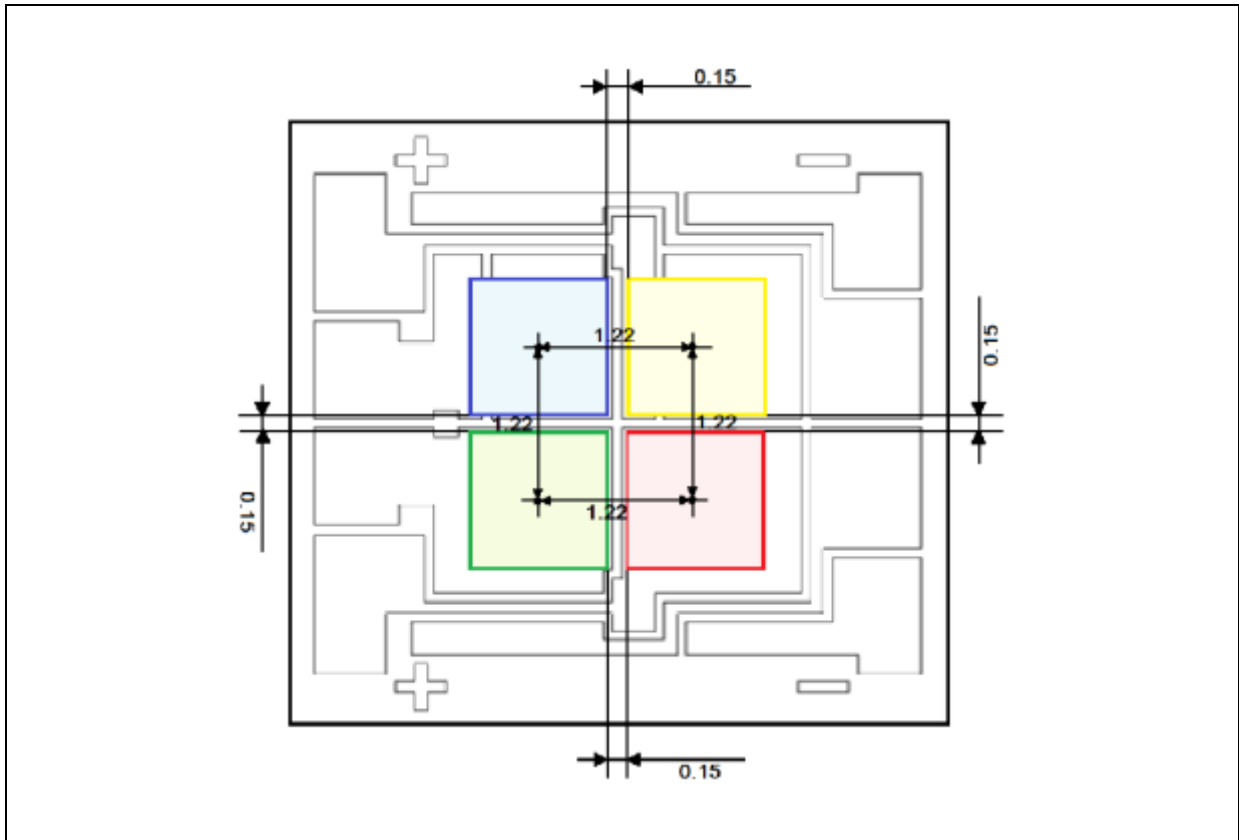
1. All dimensions are in millimetre (mm).
2. Tolerance $\pm 0.1\text{mm}$, unless otherwise noted.

Recommended Soldering Pad Dimension:



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

Die Arrangement:



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

BINNING GROUPS:

 Forward Voltage Classifications ($I_F = 350\text{mA}$):

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	

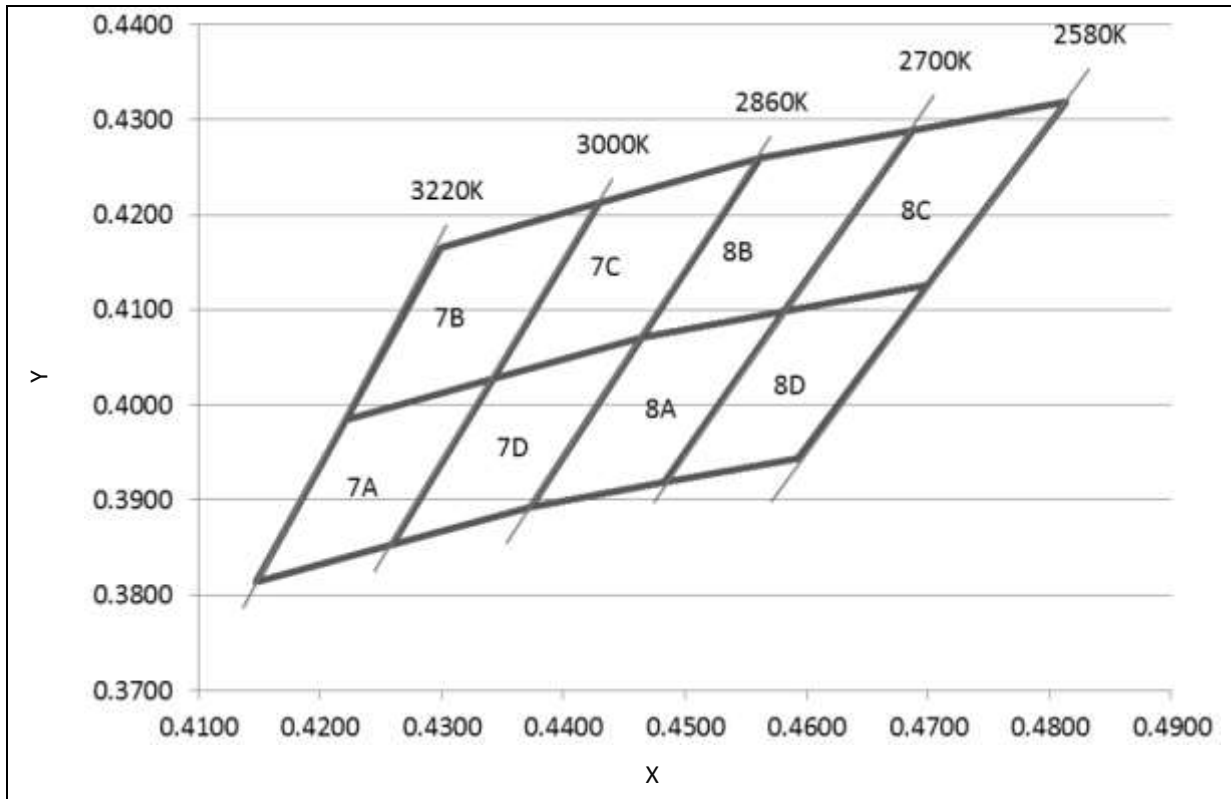
 Luminous Flux Classifications ($I_F = 350\text{mA}$):

Code		Min.	Max.	Unit
LA	W	60	90	lm
	R	30	50	
	G	60	80	
	B	10	25	

 CCT/Wavelength Classifications ($I_F = 350\text{mA}$):

Code		Min.	Max.	Unit
CB1	W	2580	3220	K/nm
	R	620	630	
	G	515	530	
	B1	450	465	

CIE CHROMATICITY DIAGRAM:

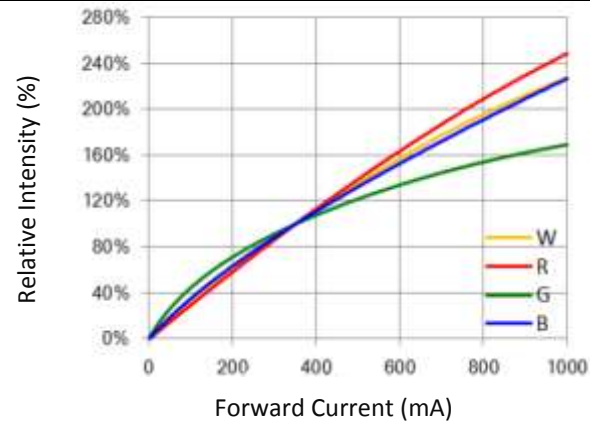


Chromaticity Coordinates Classifications ($I_F = 350\text{mA}$):

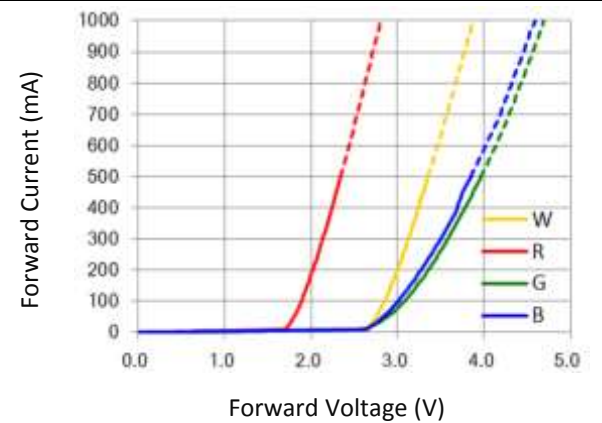
	1		2		3		4	
	X	Y	X	Y	X	Y	X	Y
7A	0.4221	0.3984	0.4342	0.4028	0.4259	0.3853	0.4147	0.3814
7B	0.4299	0.4165	0.4430	0.4212	0.4342	0.4028	0.4221	0.3984
7C	0.4430	0.4212	0.4562	0.4260	0.4465	0.4071	0.4342	0.4028
7D	0.4342	0.4028	0.4465	0.4071	0.4373	0.3893	0.4259	0.3853
8A	0.4465	0.4071	0.4582	0.4099	0.4483	0.3919	0.4373	0.3893
8B	0.4562	0.4260	0.4687	0.4289	0.4582	0.4099	0.4465	0.4071
8C	0.4687	0.4289	0.4813	0.4319	0.4700	0.4126	0.4582	0.4099
8D	0.4582	0.4099	0.4700	0.4126	0.4593	0.3944	0.4483	0.3919

ELECTRO-OPTICAL CHARACTERISTICS:

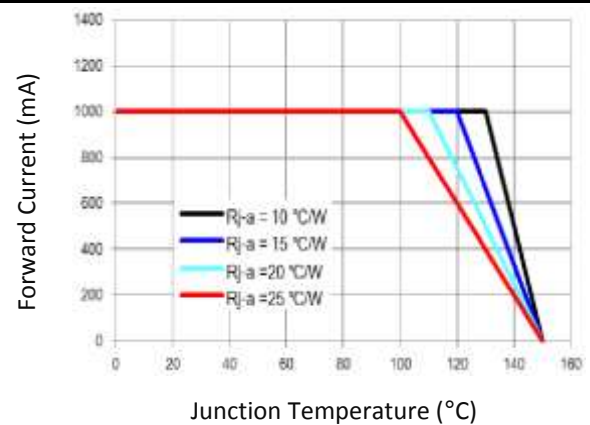
Relative Intensity v.s. Forward Current



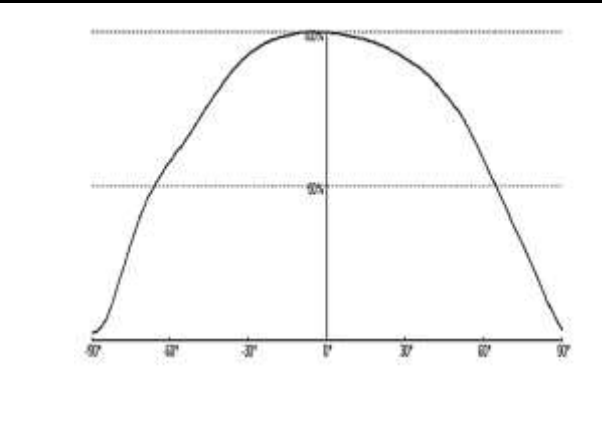
Forward Current v.s. Forward Voltage



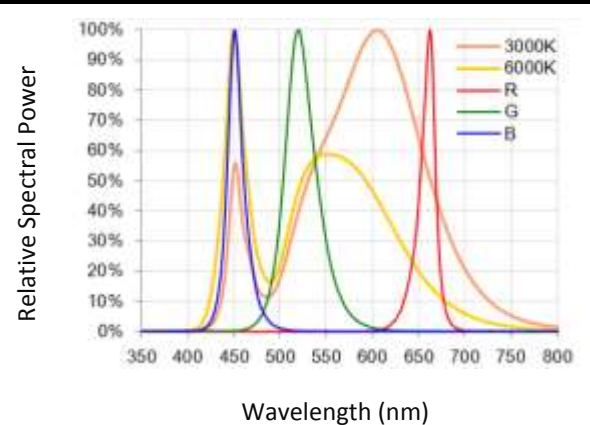
Thermal Design for De-rating



Directive Radiation

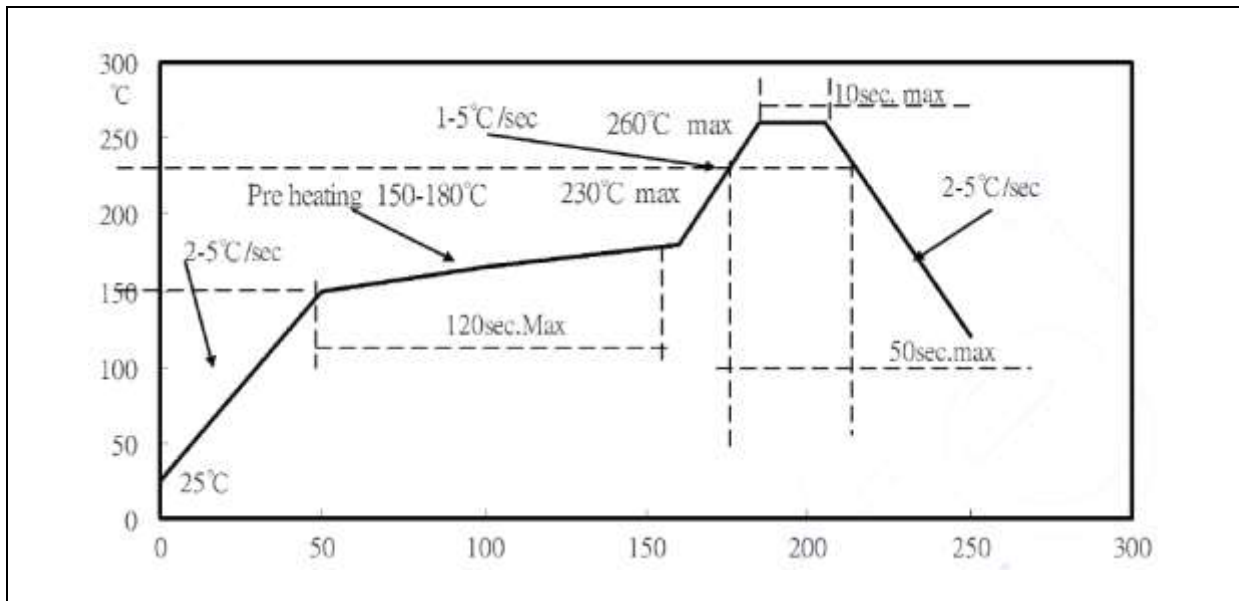


Luminous Spectrum



RECOMMENDED SOLDERING PROFILE:

Lead-free Solder:

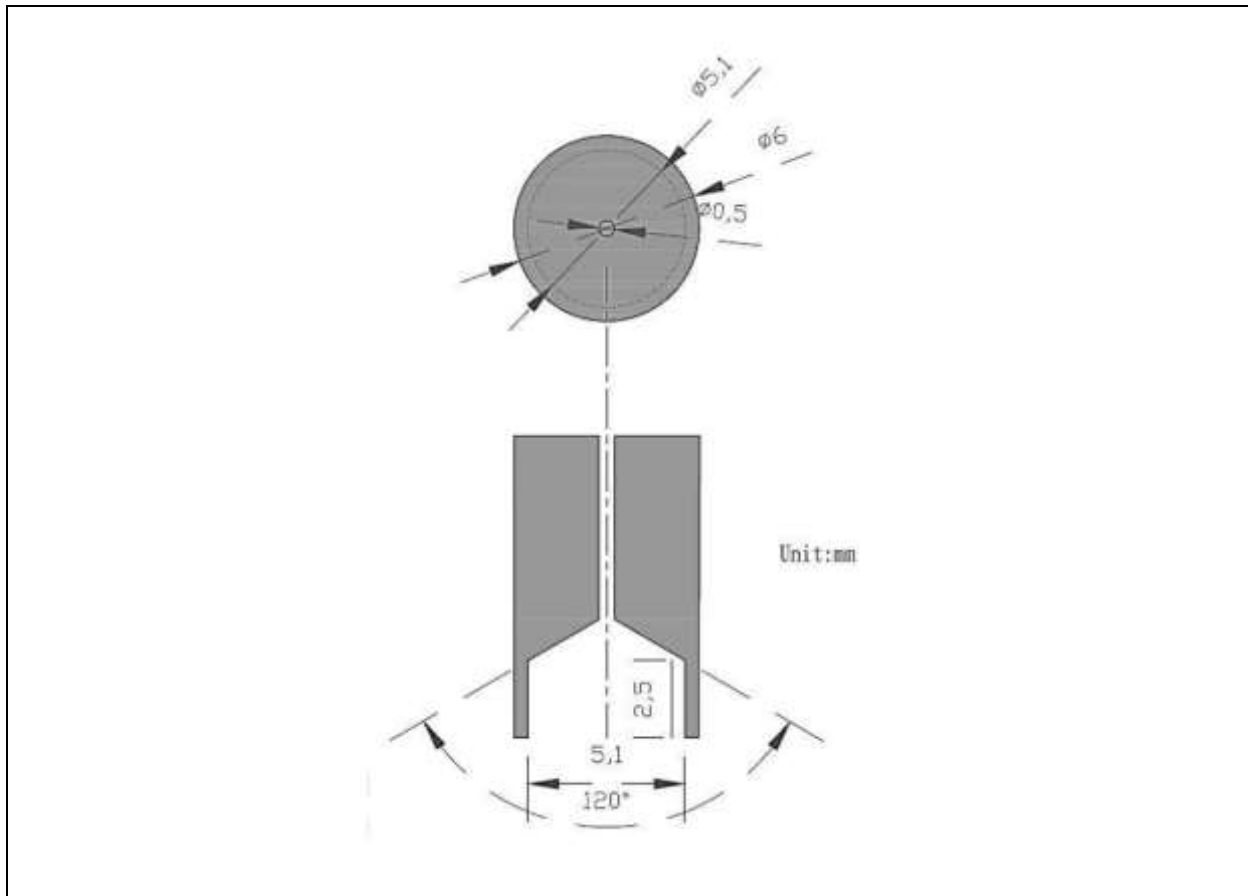


Note:

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:

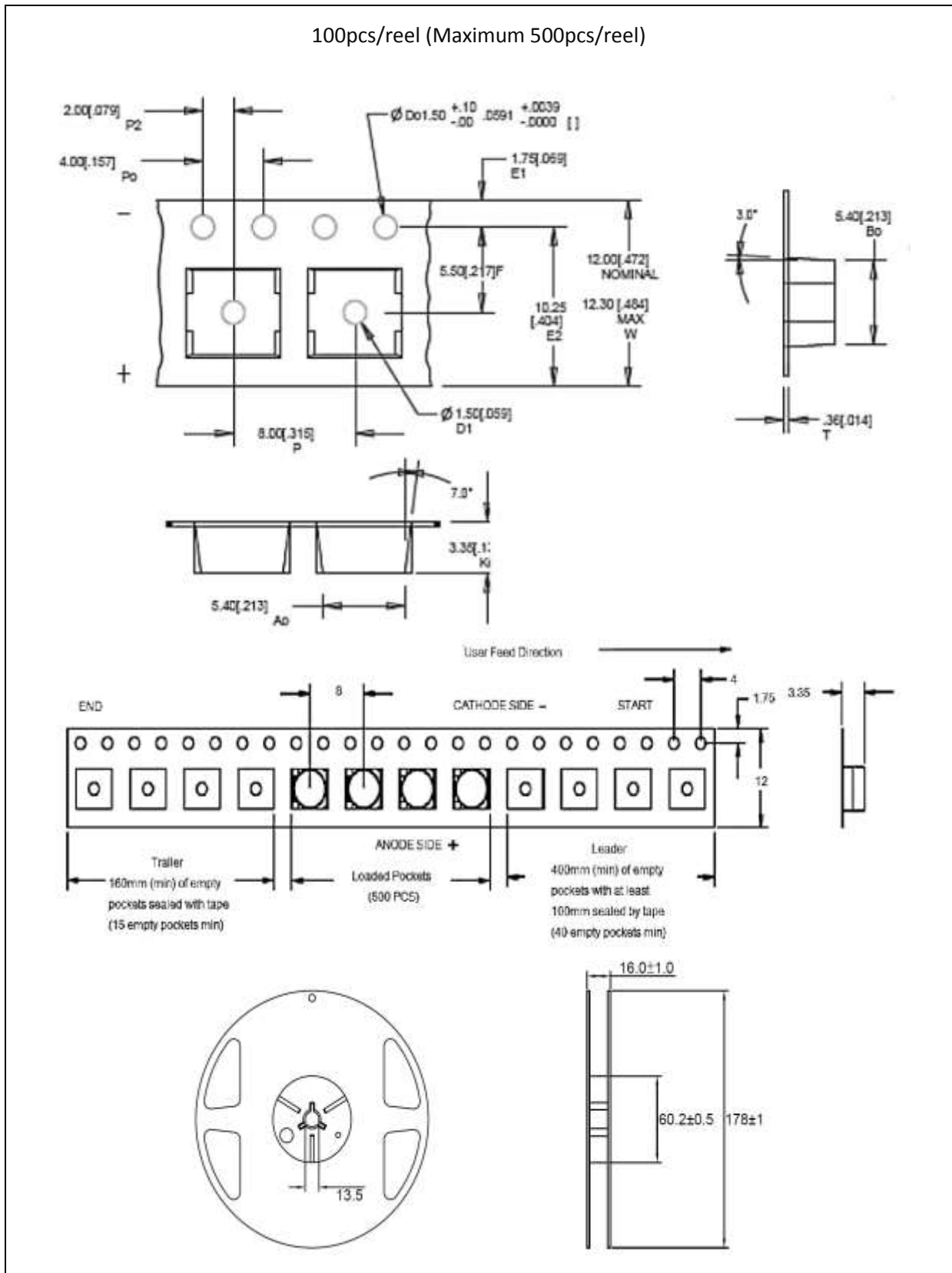
Recommended Pick & Place Nozzle:



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

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 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 15hrs before use.

Baking:

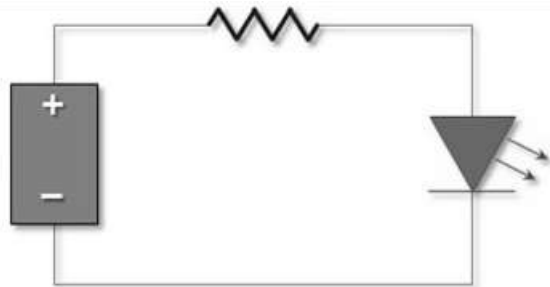
It is recommended to bake the LED before soldering if the pack has been unsealed for longer than 24hrs.

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-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	25/02/2016	Datasheet set-up.