



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



- ▶ EMC 4-PINs SMD
- ▶ 5050 0.70t
- ▶ Cool White 6500K / Warm White 2700K

NOD68S49



Release Date: 17 December 2024 Version: A1.1



5050 EMC Series

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FEATURES:

- **Package:** Top View EMC Package with Duo Whites
- **Forward Current:** 100/100mA *
- **Forward Voltage (typ.):** 36.0/33.5V
- **Luminous Flux (typ.):** 410/375lm@100mA
- **Colour:** Cool White/Warm White
- **Colour Temperature (typ.):** 6500/2700K
- **Viewing Angle:** 120°
- **Materials:**
 - Die: InGaN/InGaN
 - Resin: Silicon (Yellow Diffused)
- **Operating Temperature:** -40~+105°C
- **Storage Temperature:** -40~+105°C
- **Grouping Parameters:**
 - Forward Voltage
 - Luminous Flux
 - CIE Chromaticity
- **Soldering Methods:** Reflow Soldering
- **MSL Level:** MSL3 according to J-STD020
- **Packing:** 12mm tape with max.2000/reel, ø178mm (7")

* in order of Cool White/Ware White

APPLICATIONS:

- General Lighting
- Architectural Lighting
- Portable Lighting
- Commercial Lighting
- Indoor Lighting
- Downlight & Spotlight
- Streetlight
- Tunnel Light

CHARACTERISTICS:

Absolute Maximum Characteristics ($T_a=25^{\circ}\text{C}$)

Parameter	Symbol	Ratings	Unit
DC Forward Current	I_F	100	mA
Pulse Forward Current (Duty 1/10, width \leq 100 μ S)	I_{PF}	240	mA
Power Dissipation	P_D	3800	mW
Reverse Voltage	V_R	7	V
Reverse Current @10V	I_R	10	μ A
Junction Temperature	T_j	120	$^{\circ}\text{C}$
Thermal Resistance (Junction to Solder Point) (6500K/2700K)	R_{THJ-SP}	7/5	$^{\circ}\text{C}/\text{W}$
Thermal Resistance (Junction to Solder Point) (Mixed)	R_{THJ-SP}	4	$^{\circ}\text{C}/\text{W}$
Operating Temperature	T_{OPR}	-40~+105	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	-40~+105	$^{\circ}\text{C}$
Soldering Temperature	T_{SOL}	230/260 for 10S	$^{\circ}\text{C}$
Colour Rendering Index	CRI	typ.90	---

1. R_{THJ-SP} is the thermal resistance from LED junction to solder point on MCPCB with electrical power.

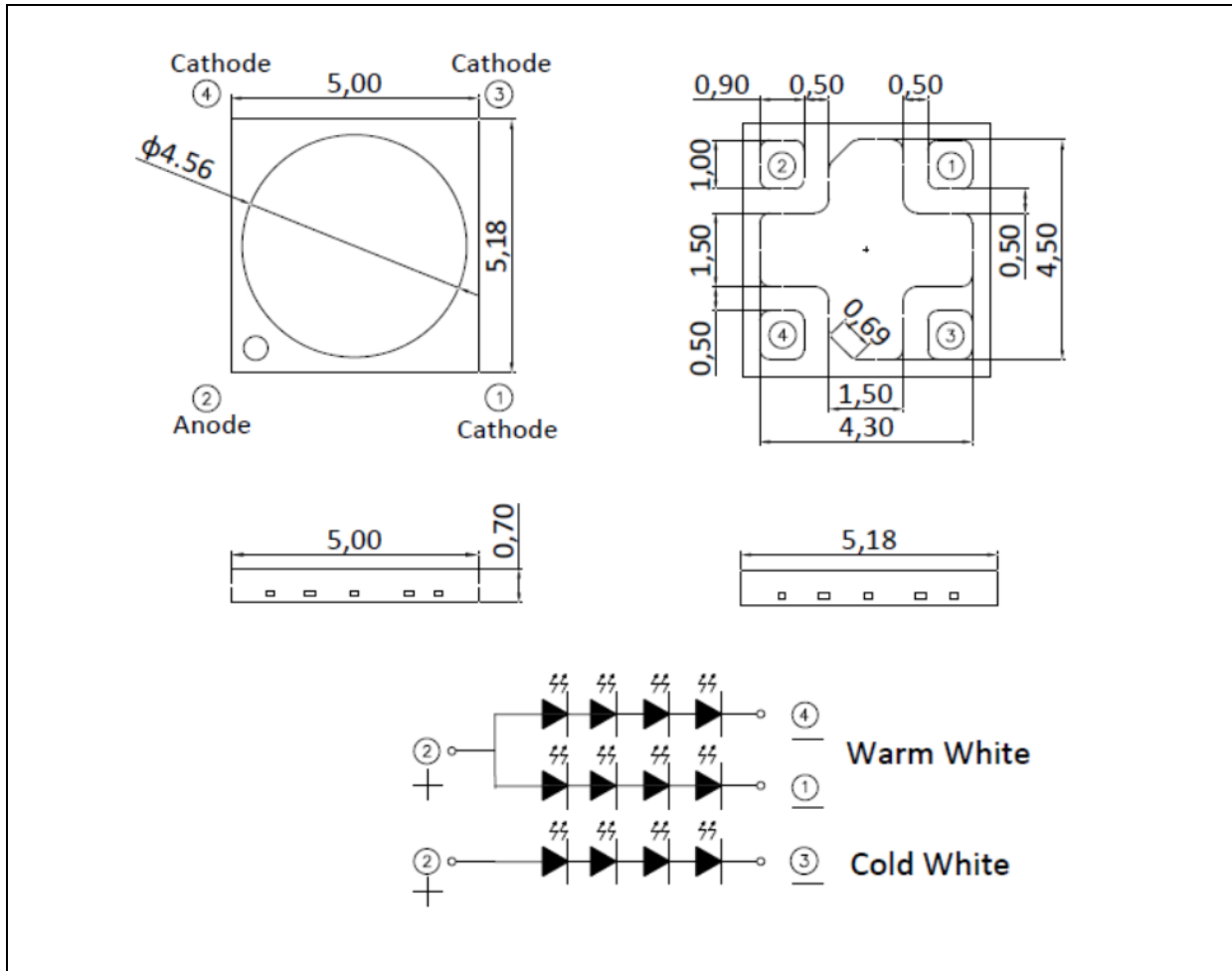
Electrical & Optical Characteristics ($T_a=25^{\circ}\text{C}$)

Parameter	Symbol	Values			Unit	Test Condition
		Min.	Typ.	Max.		
Forward Voltage	V_F	34.0/32.0 *	36.0/33.5	38.0/36.0	V	$I_F=100\text{mA}$
Luminous Flux	Φ_V	---/---	410/375	---/---	lm	$I_F=100\text{mA}$
Colour Temperature	CCT	---/---	6500/2700	---/---	K	$I_F=100\text{mA}$
Viewing Angle	$2\theta_{1/2}$	---	120	---	deg	$I_F=100\text{mA}$

2. Luminous flux (Φ_V) $\pm 7\%$, Forward Voltage (V_F) $\pm 0.1\text{V}$, CRI ± 2
3. * in order of Cool White/Ware White

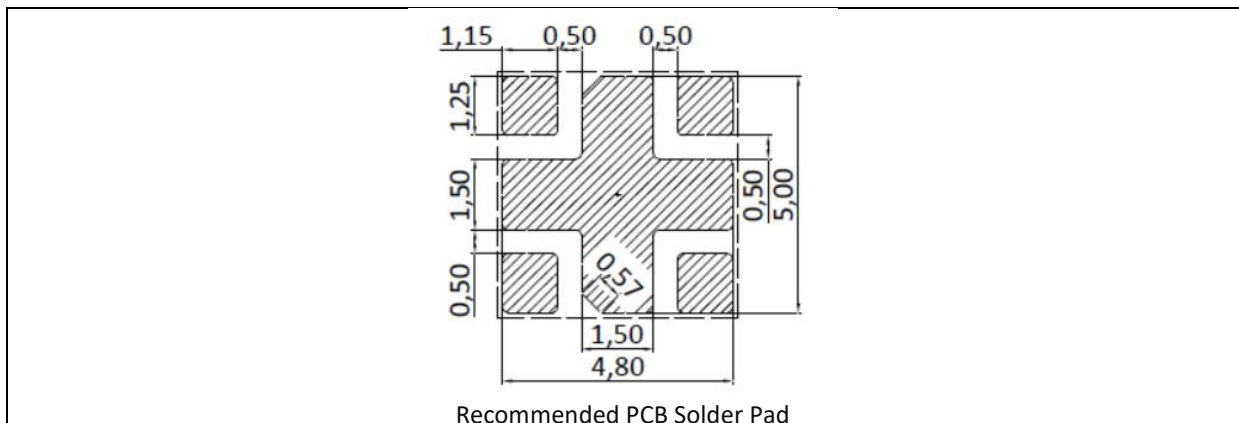
OUTLINE DIMENSION:

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 ± 0.2 mm with angle tolerance $\pm 0.5^\circ$.

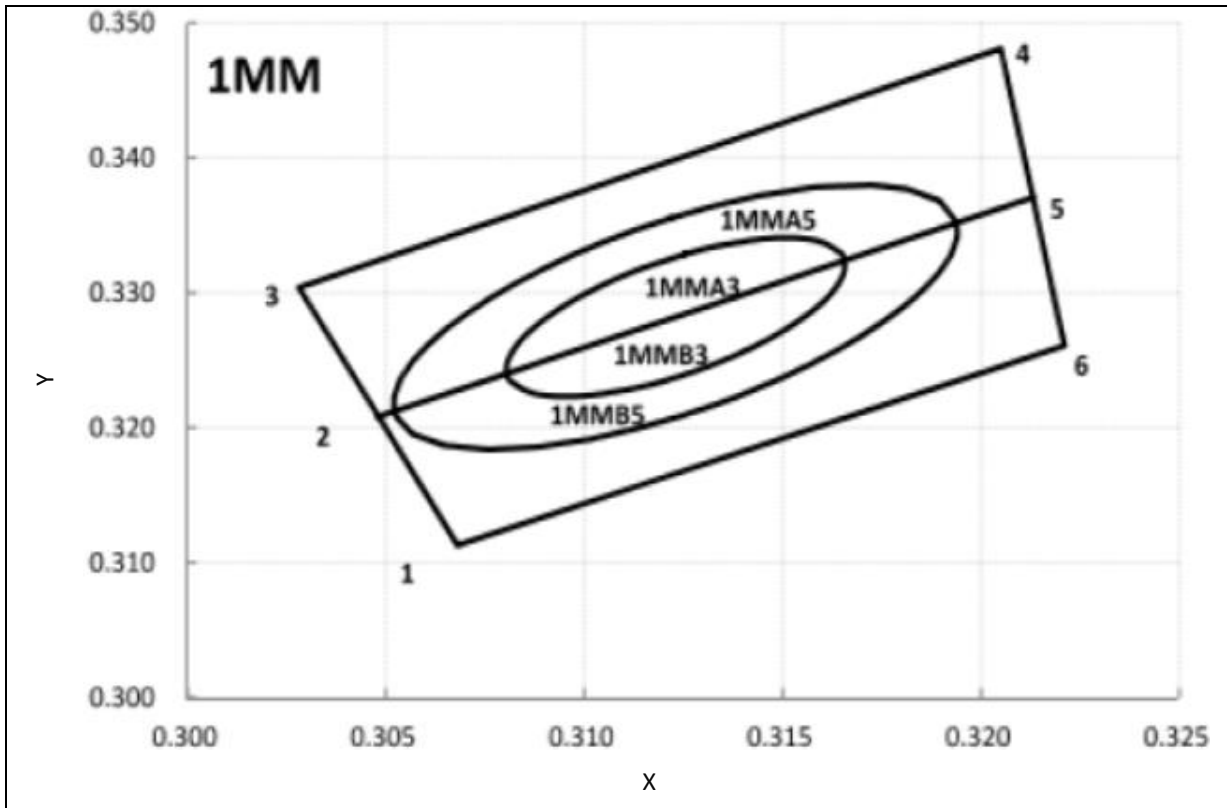
BINNING GROUPS:

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

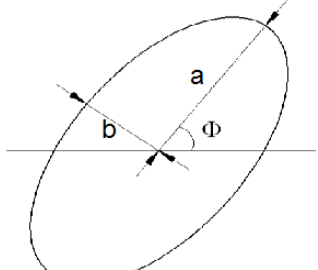
Code	Min.	Max.	Unit
AC3	32	34	V
AC2	34	36	
AC1	36	38	

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

Code	Min.	Max.	Unit
3L	300	400	lm
3M	400	500	
3N	500	600	

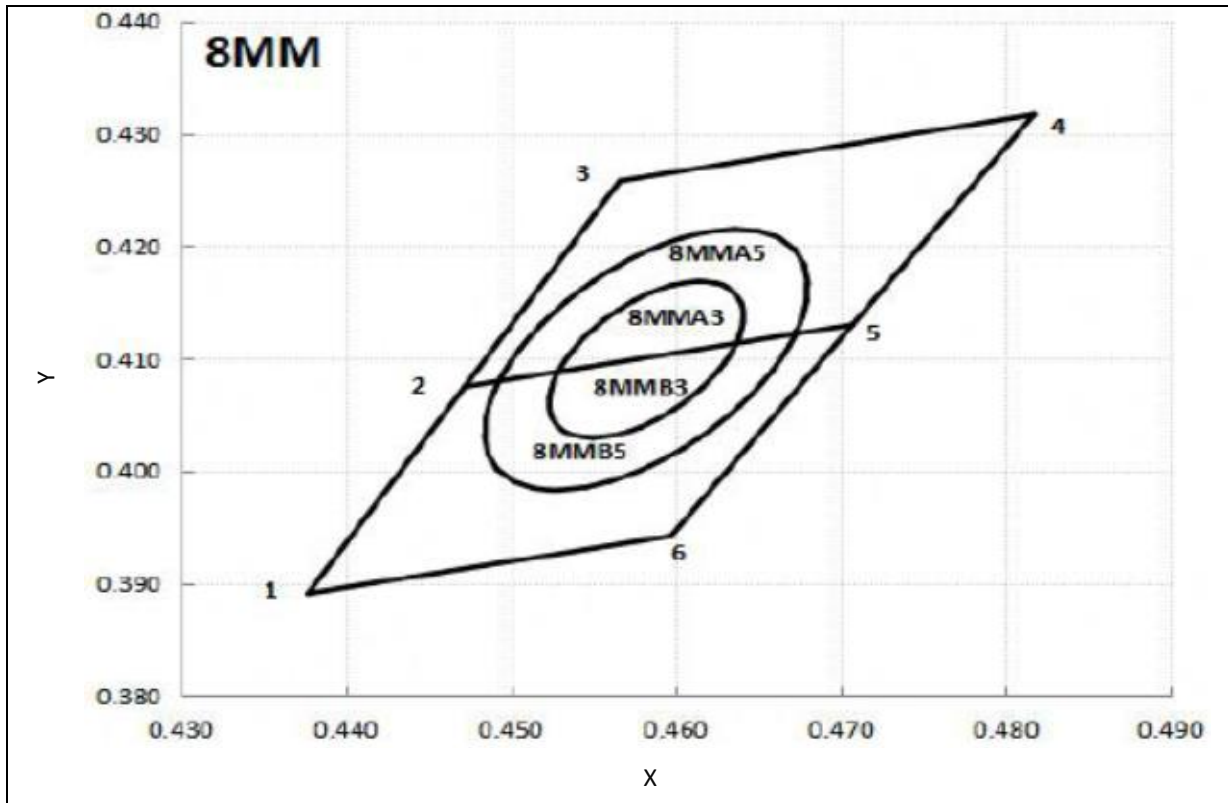
CIE CHROMATICITY DIAGRAM (6500K):

Chromaticity Coordinates Classifications ($I_F = 100\text{mA}$):

Code	Centre		Radius		Angle
	X	Y	a	b	Φ
1MM-3STEP	0.3130	0.3290	0.006690	0.002850	58.34
1MM-5STEP	0.3130	0.3290	0.011150	0.004750	58.34


Chromaticity Coordinates Classifications ($I_F = 100\text{mA}$):

	1		2		3		4	
	X	Y	X	Y	X	Y	X	Y
1MM-1256	0.3075	0.3121	0.3055	0.3217	0.3220	0.3379	0.3228	0.3269
1MM-2345	0.3055	0.3217	0.3035	0.3312	0.3212	0.3489	0.3220	0.3379

CIE CHROMATICITY DIAGRAM (2700K):

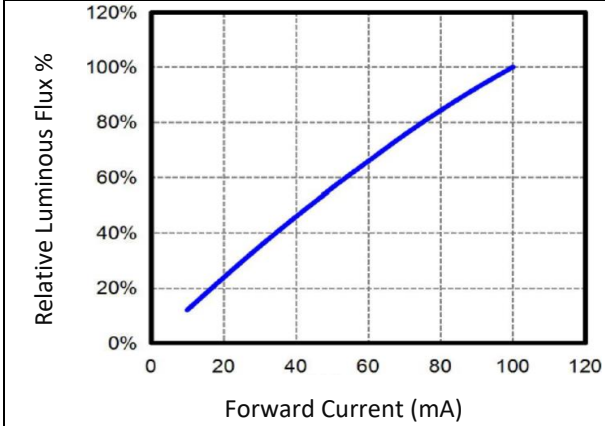
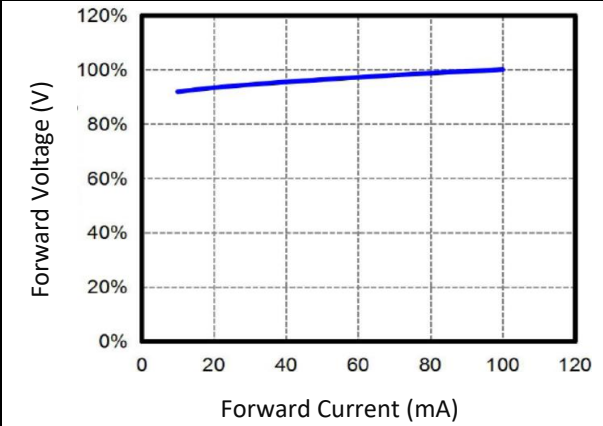
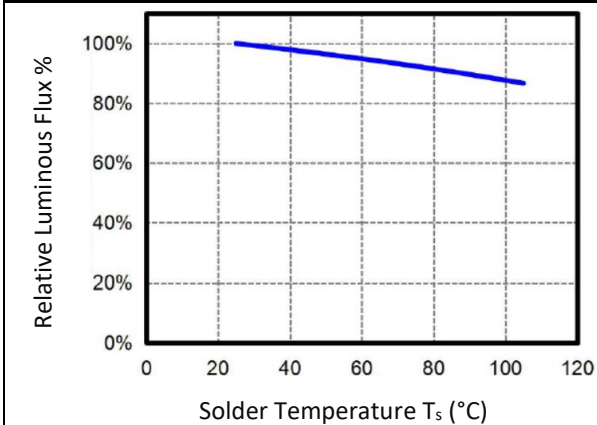
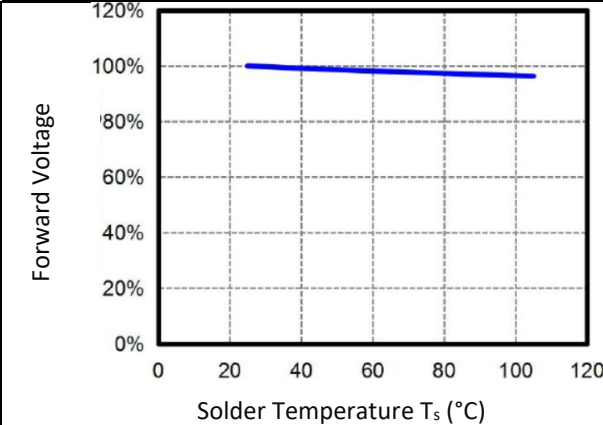
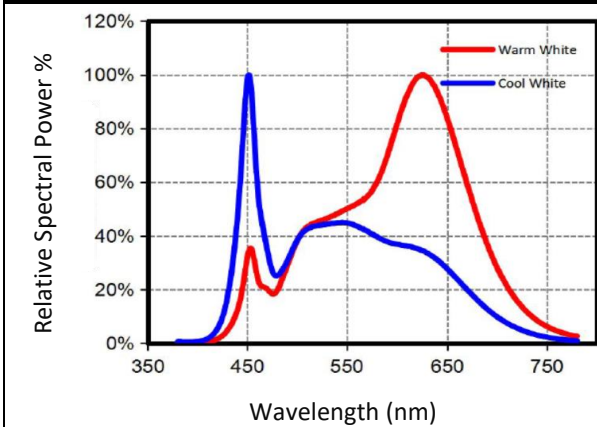
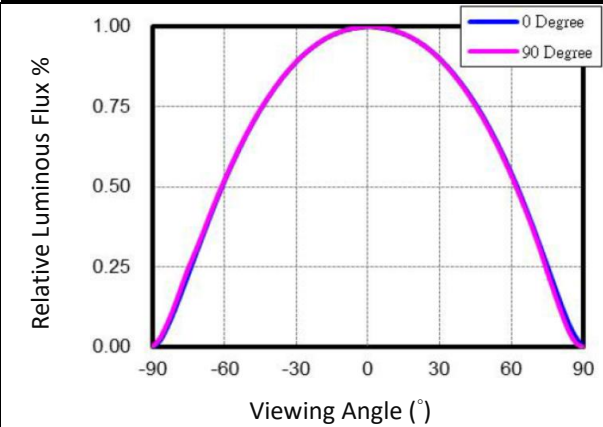


Chromaticity Coordinates Classifications ($I_F = 100\text{mA}$):

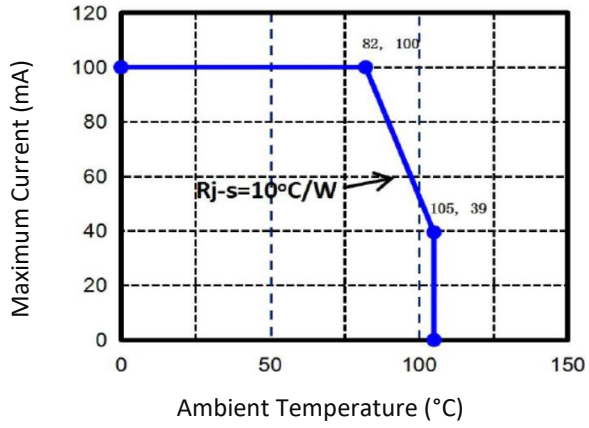
Code	Centre		Radius		Angle
	X	Y	a	b	Φ
8MM-3STEP	0.4582	0.4099	0.008100	0.004200	53.42
8MM-5STEP	0.4582	0.4099	0.013500	0.007000	53.42

Chromaticity Coordinates Classifications ($I_F = 100\text{mA}$):

	1		2		3		4	
	X	Y	X	Y	X	Y	X	Y
8MM-1256	0.4377	0.3891	0.4472	0.4075	0.4707	0.4130	0.4597	0.3942
8MM-2345	0.4472	0.4075	0.4566	0.4258	0.4817	0.4317	0.4707	0.4130

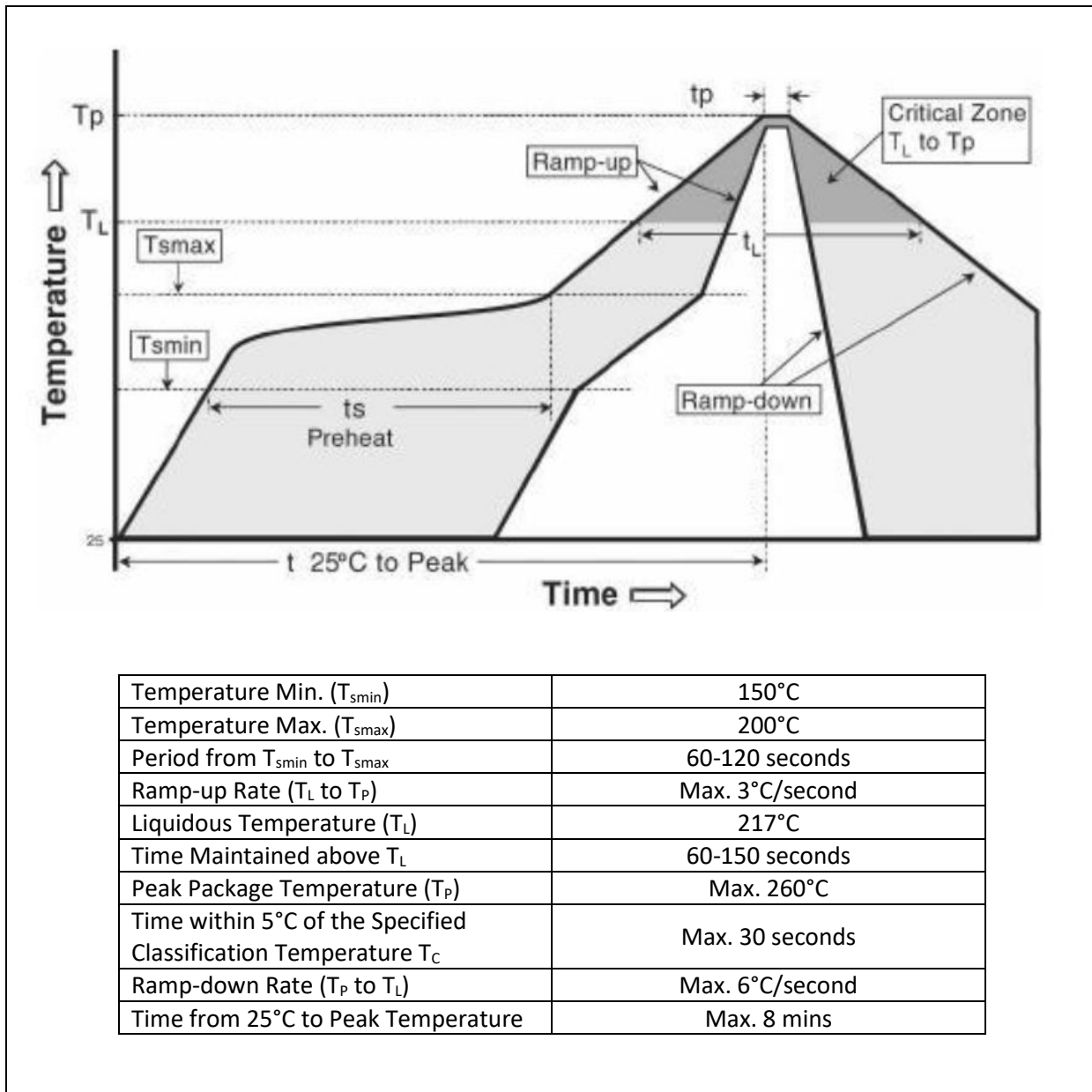
ELECTRO-OPTICAL CHARACTERISTICS:
Relative Luminous Flux v.s. Forward Current

Forward Current v.s. Forward Voltage

Relative Luminous Flux v.s. Solder Temperature

Forward Voltage v.s. Solder Temperature

Relative Spectral Power v.s. Wavelength

Directive Radiation


Forward Current Derating Curve



RECOMMENDED SOLDERING PROFILE:

Reflow Lead-free Solder:

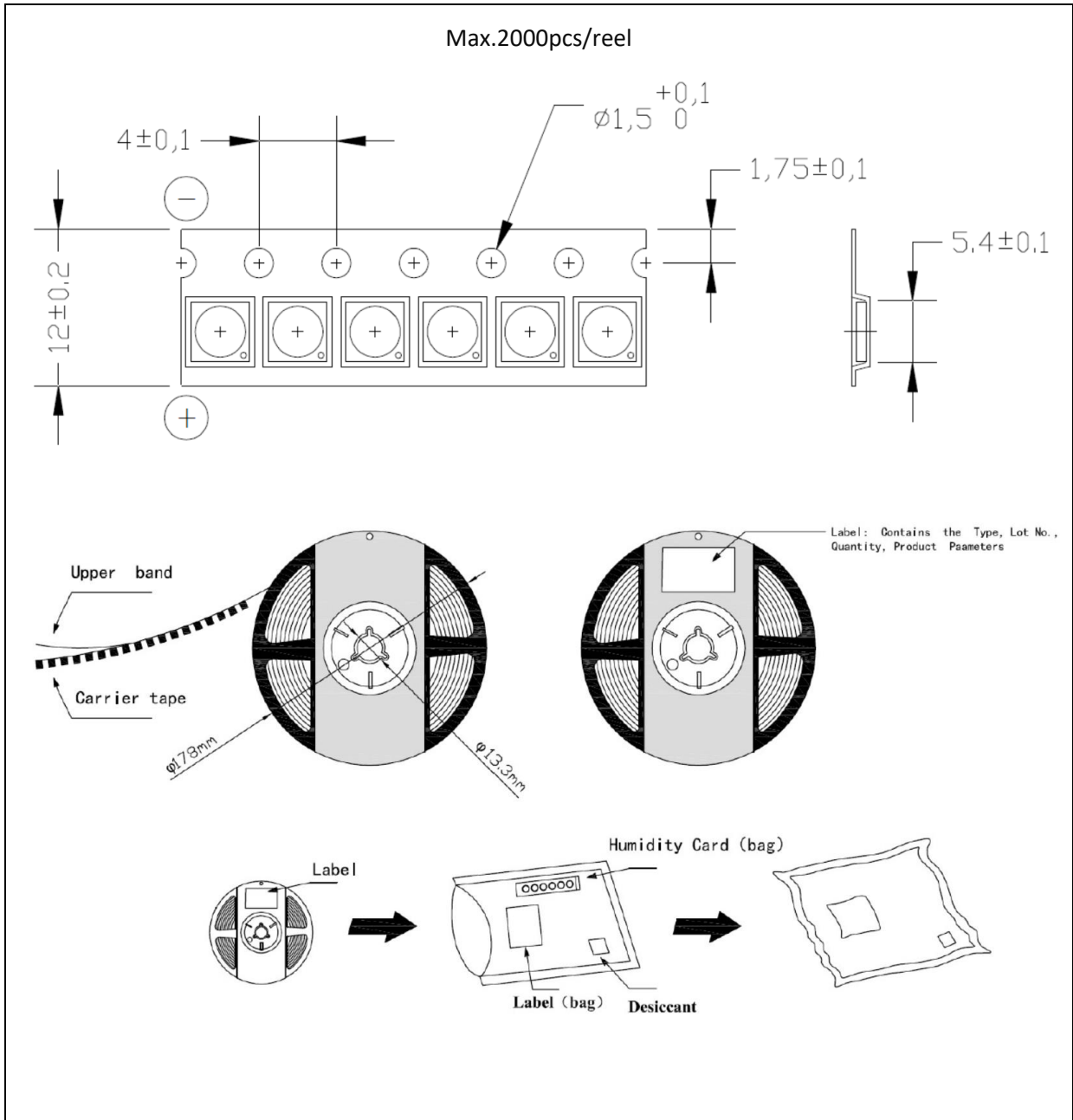


Note:

1. Maximum reflow soldering: 2 times.
2. Before, during, and after soldering, should not apply stress on the components and PCB board.
3. Recommended soldering temperature: 230°C. The maximum soldering temperature should be limited to 260°C for max. 10seconds.

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.

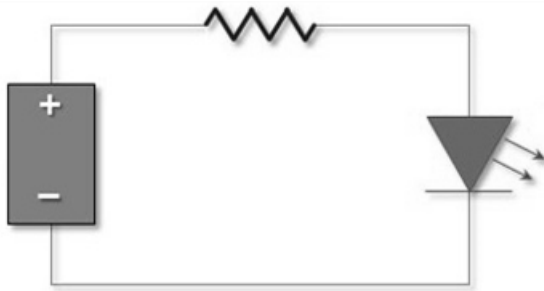
Baking:

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 24hrs 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	12/10/2022	Datasheet set-up.
A1.1	17/12/2024	New datasheet format.