



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



- ▶ High Power
- ▶ K1 5.3t Hump Series
- ▶ Infrared 850nm

NOF23S31



Release Date: 11 September 2020 Version: A1.0



K1 Hump Series



FEATURES:

- **Package:** K1 SMT Package with Hump Shape Silicon Lens
- **Forward Current:** 200mA
- **Forward Voltage (typ.):** 1.8V
- **Radiant Power (typ.):** 130mW@200mA
- **Colour:** Infrared (IR)
- **Wavelength:** 840-860nm
- **Viewing angle:** 160°
- **Materials:**
 - Die: AlGaAs
 - Resin: Silicon (Water Clear)
 - L/T Finish: Ag plated
- **Operating Temperature:** -40~+80°C
- **Storage Temperature:** -40~+100°C
- **Grouping parameters:**
 - Forward Voltage
 - Radiant Power
 - Peak Wavelength
- **Soldering methods:** IR Reflow
- **Preconditioning:** MSL 3 according to J-STD020
- **Packing:** 26mm tape with max.500pcs/reel, ø330mm (13'')

APPLICATIONS:

- Security Camera
- Motion Detection
- Night Viewer
- Surveillance

CHARACTERISTICS:

Absolute Maximum Characteristics (Ta=25°C)

Parameter	Symbol	Ratings	Unit
DC Forward Current	I _F	250	mA
Reverse Voltage	V _R	5	V
Reverse Current @5V	I _R	10	μA
Temperature Coefficient of Voltage	K	-1.2	mV/°C
Thermal Resistance Junction to Solder Point	R _{th}	11	°C/W
Electrostatic Discharge	ESD	2000	V
Operating Temperature	T _{OPR}	-40~+80	°C
Storage Temperature	T _{STG}	-40~+100	°C
Soldering Temperature	T _{SOL}	260	°C

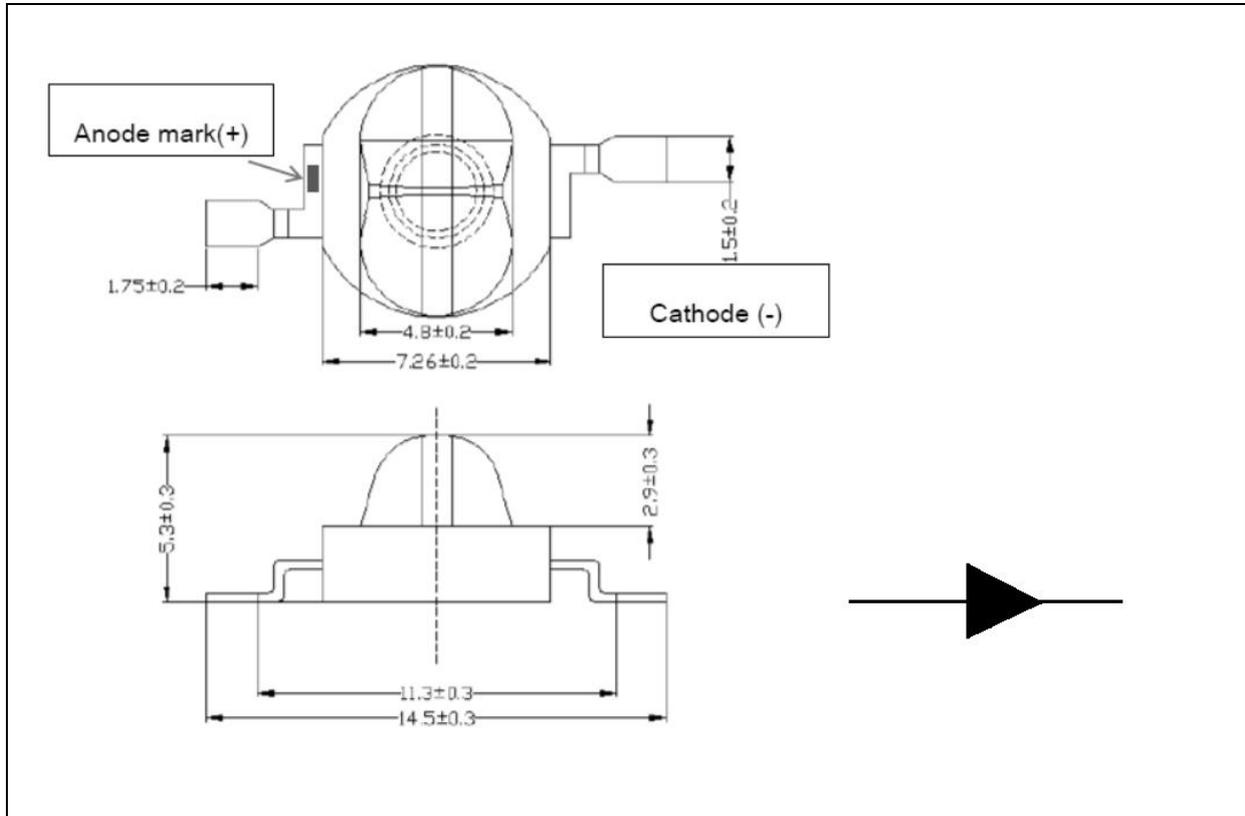
Electrical & Optical Characteristics (Ta=25°C)

Parameter	Symbol	Values			Unit	Test Condition
		Min.	Typ.	Max.		
Forward Voltage	V _F	1.4	---	2.4	V	I _F =200mA
Radiant Power	P _O	100	130	190	mW	I _F =200mA
Dominant Wavelength	λ _D	840	850	860	nm	I _F =200mA
Viewing Angle	2θ _{1/2}	---	160	---	deg	I _F =200mA

1. Radiant Power (P_O) ±7%, Forward Voltage (V_F) ±0.05V, Viewing angle(2θ_{1/2}) ±10°

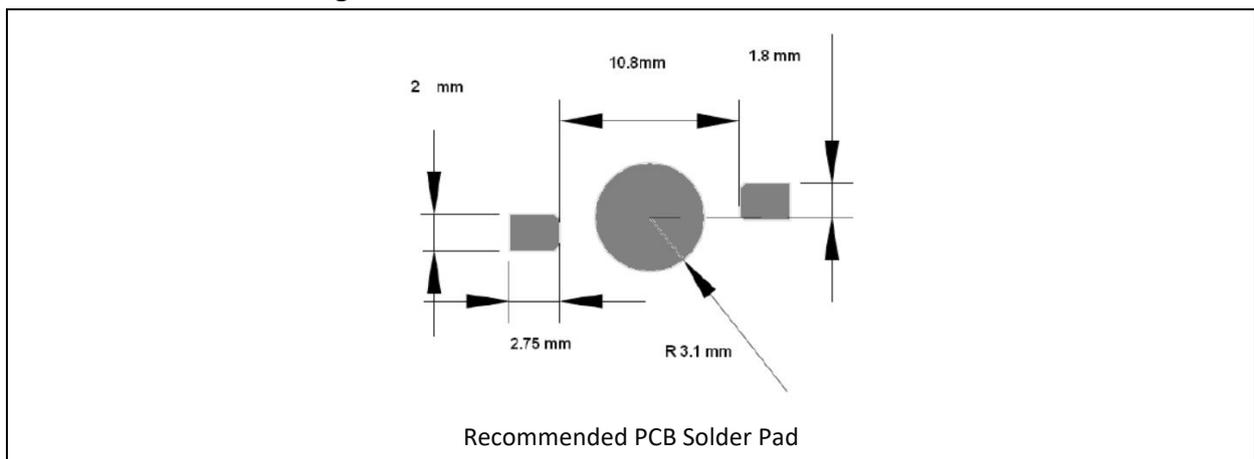
OUTLINE DIMENSION:

Package Dimension:



1. All dimensions are in millimetre (mm).
2. Tolerance ± 0.13 mm, unless otherwise noted.

Recommended Soldering Pad Dimension:



1. Dimensions are in millimetre (mm).
2. Tolerance ± 0.12 mm with angle tolerance $\pm 0.5^\circ$.

BINNING GROUPS:

 Forward Voltage Classifications ($I_F = 200\text{mA}$):

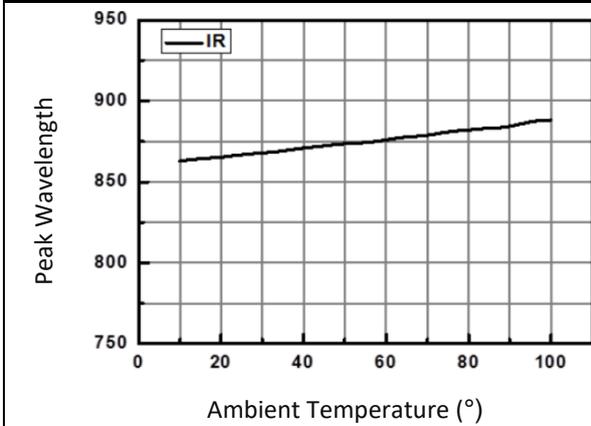
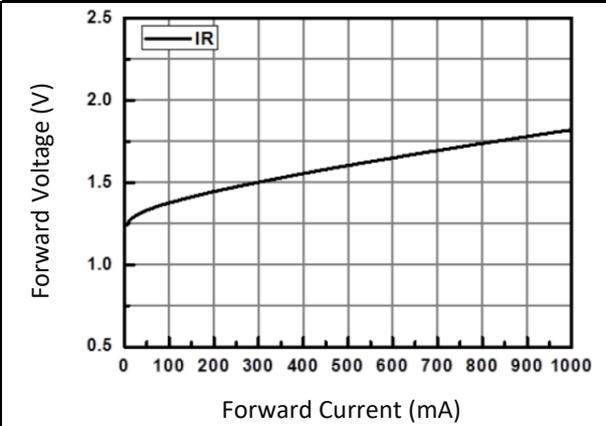
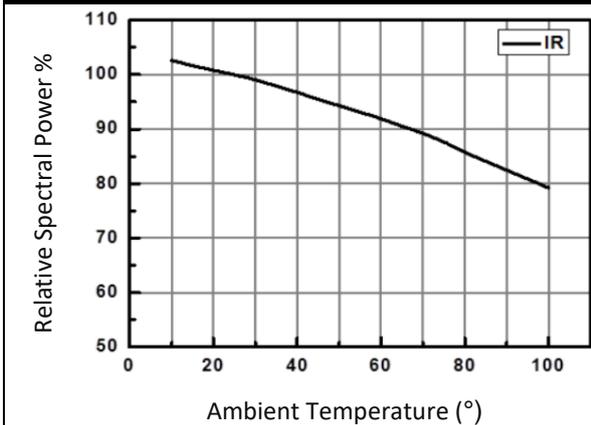
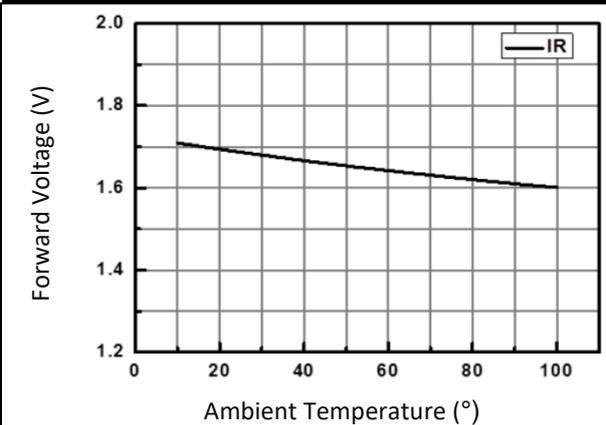
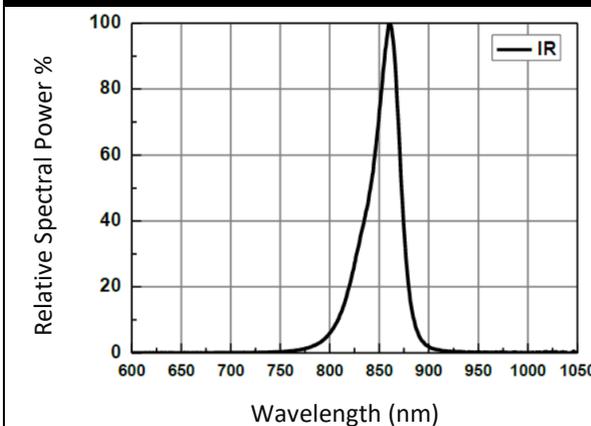
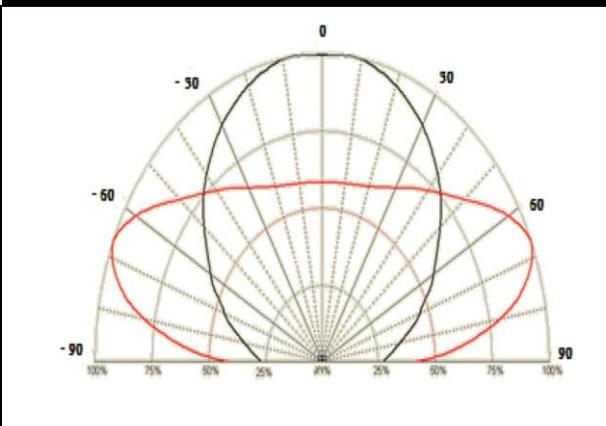
Code	Min.	Max.	Unit
A	1.6	1.8	V
B	1.8	2.0	
C	2.0	2.2	
D	2.2	2.4	

 Radiant Power Classifications ($I_F = 200\text{mA}$):

Code	Min.	Max.	Unit
PO1	100	130	mW
PO2	130	160	
PO3	160	190	

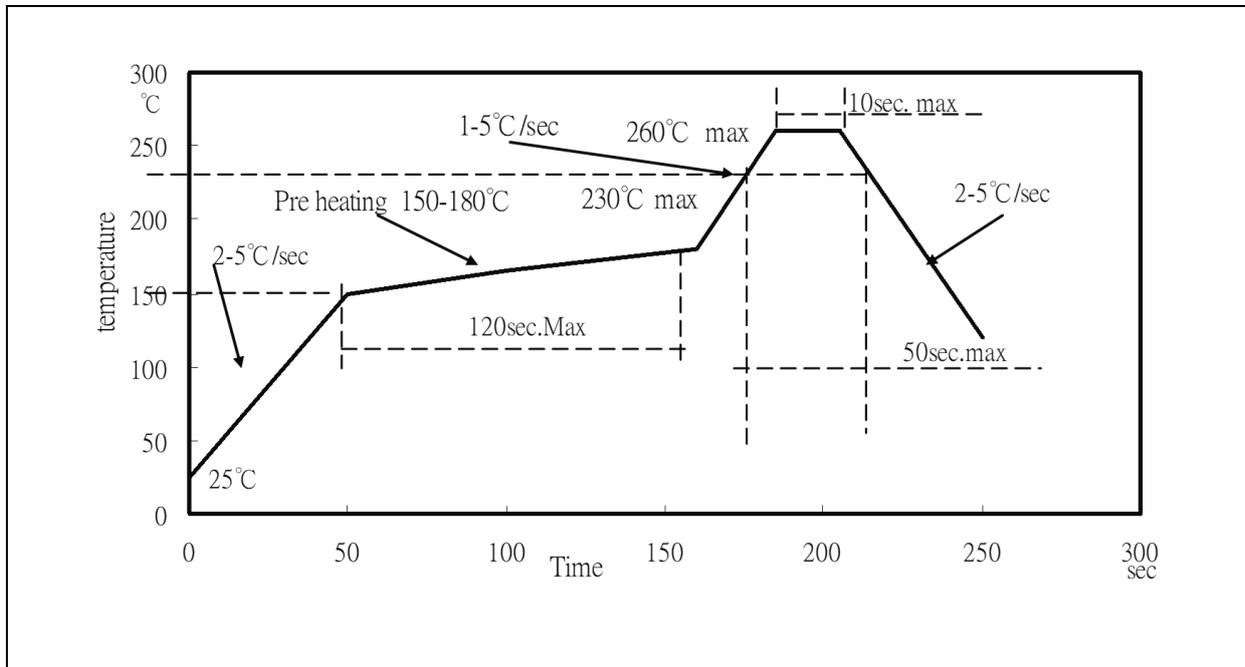
 Peak Wavelength Classifications ($I_F = 200\text{mA}$):

Code	Min.	Max.	Unit
WP1	840	850	nm
WP2	850	860	

ELECTRO-OPTICAL CHARACTERISTICS:
Peak Wavelength v.s. Temperature

Forward Current v.s. Forward Voltage

Relative Spectral Power v.s. Temperature

Forward Voltage v.s. Temperature

Relative Spectral Power v.s. Wavelength

Directive Radiation


RECOMMENDED SOLDERING PROFILE:

Reflow Lead-free Solder:

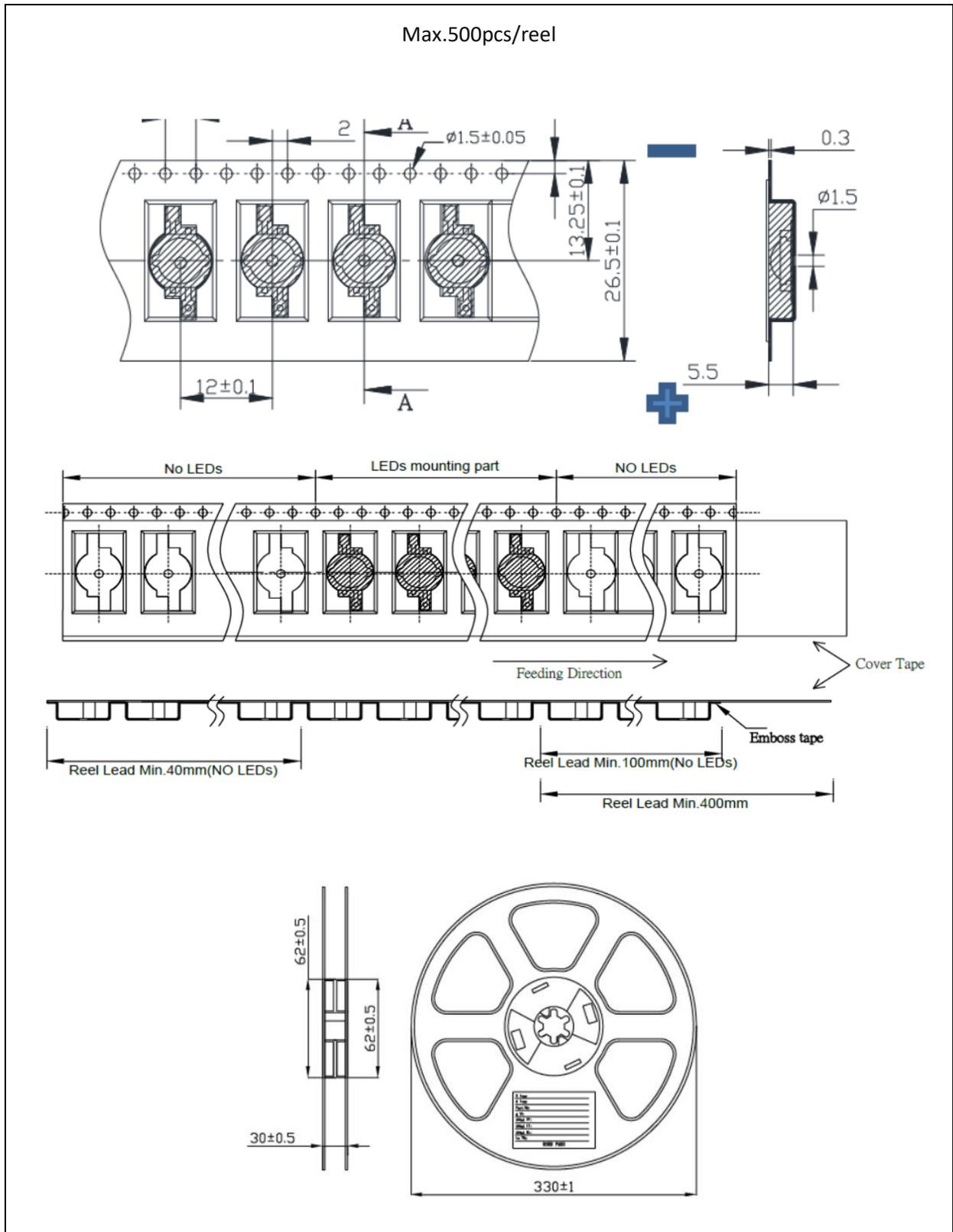


Note:

1. Maximum reflow soldering: 2 times.
2. Recommended soldering temperature is 245°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.

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.

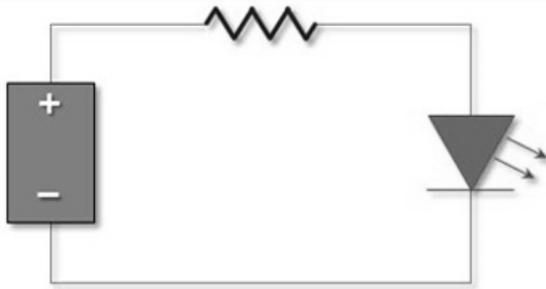
Baking:

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±3°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	11/09/2020	Datasheet set-up.