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

- ► CSP CHIP LED
- ► 2020 0.94t Series
- ► Cool White (5700K)

Release Date: 30 November 2021 Version: A1.1

N0W53S57

2020 0.94t Series

2020 0.94t Series

RoHS Compliant

AUTOMOTIVE

FEATURES:

- **Package:** Ceramic High Power CSP Package
- **Forward Current:** 350~500mA
- **Forward Voltage (typ.):** 9.0V
- **Luminous Flux (typ.):** 290lm@350mA
- **Colour:** Cool White
- **CCT/Colour Temperature (typ.):** 5400~6000K
- **Viewing angle:** 115°
- **Materials:**
  - Die: Flip-Chip InGaN
  - Resin: Silicon (Yellow Diffused)
  - L/T Finish: Ag plated
- **Operating Temperature:** -40~+125°C
- **Storage Temperature:** -40~+125°C
- **Grouping parameters:**
  - Forward Voltage
  - Luminous Flux
  - CIE Chromaticity
- **Soldering methods:** IR Reflow
- **Preconditioning:** MSL2 according to J-STD020
- **Packing:** 8mm tape with max.1000pcs /reel, ø180mm (7'')

APPLICATIONS:

- Automotive Lightning
- Decorative Lighting
- Portable Lighting
- Outdoor Lighting
- Commercial Lighting
- Indoor Lighting
- Industrial Lighting

CHARACTERISTICS:

Absolute Maximum Characteristics (Ta=25°C)

Parameter	Symbol	Ratings	Unit
DC Forward Current	I_F	500	mA
Reverse Voltage	V_R	12	V
Junction Temperature	T_j	150	°C
Thermal Resistance Junction to Solder Point	$R_{th(J-S)}$	4	°C/W
Temperature Coefficient of Voltage	---	-2.5	mV/°C
Operating Temperature	T_{OPR}	-40~+125	°C
Storage Temperature	T_{STG}	-40~+125	°C
Colour Rendering Index / Ra	CRI	90	---

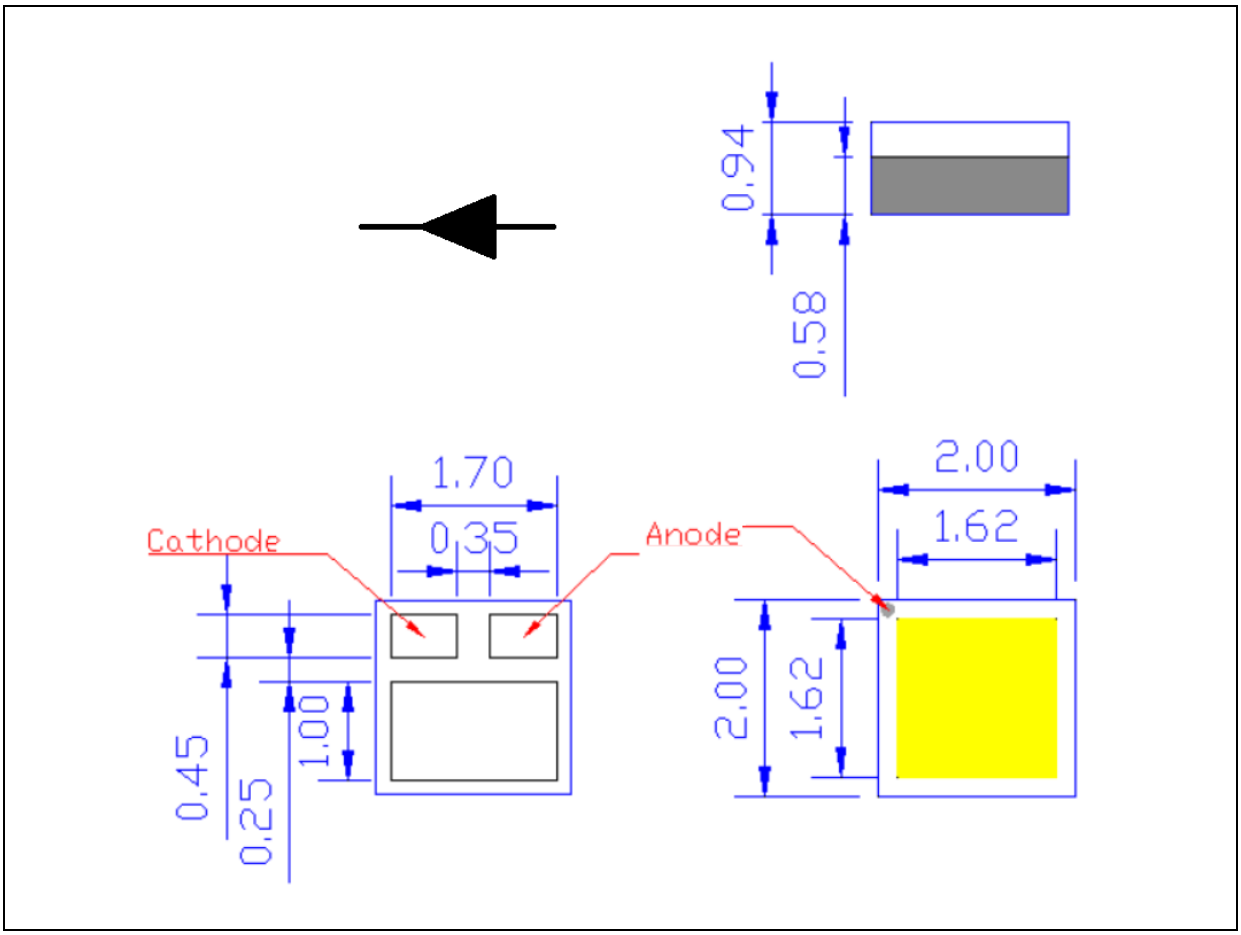
Electrical & Optical Characteristics (Ta=25°C)

Parameter	Symbol	Values			Unit	Test Condition
		Min.	Typ.	Max.		
Forward Voltage	V_F	8.5	9.0	10.0	V	I_F=350mA
Luminous Flux	Φ_V	260	290	320	lm	I_F=350mA
Chromaticity Coordinates	X	---	0.3287	---	---	I_F=350mA
	Y	---	0.3417	---		
CCT	---	5400	---	6000	K	I_F=350mA
Viewing Angle	$2\theta_{1/2}$	---	115	---	deg	I_F=350mA

1. Luminous flux (Φ_V) ±7%, Forward Voltage (V_F) ±0.05V, Viewing angle($2\theta_{1/2}$) ±10°, CRI ±2

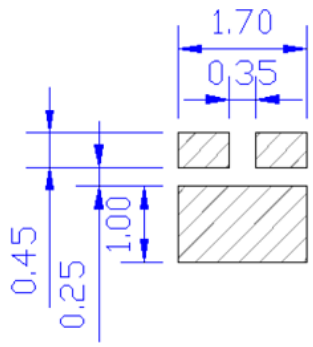
OUTLINE DIMENSION:

Package Dimension:

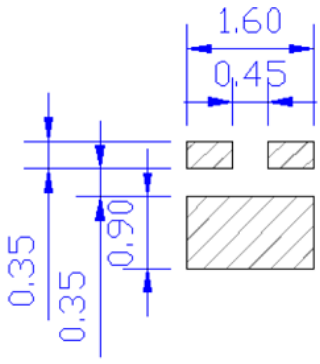


1. All dimensions are in millimetre (mm).
2. Tolerance ±0.13mm, unless otherwise noted.

Recommended Soldering Pad Dimension:



Recommended PCB Solder Pad



Recommended Stencil Pattern

1. Dimensions are in millimetre (mm).
2. Tolerance ±0.12mm with angle tolerance ±0.5°.

BINNING GROUPS:

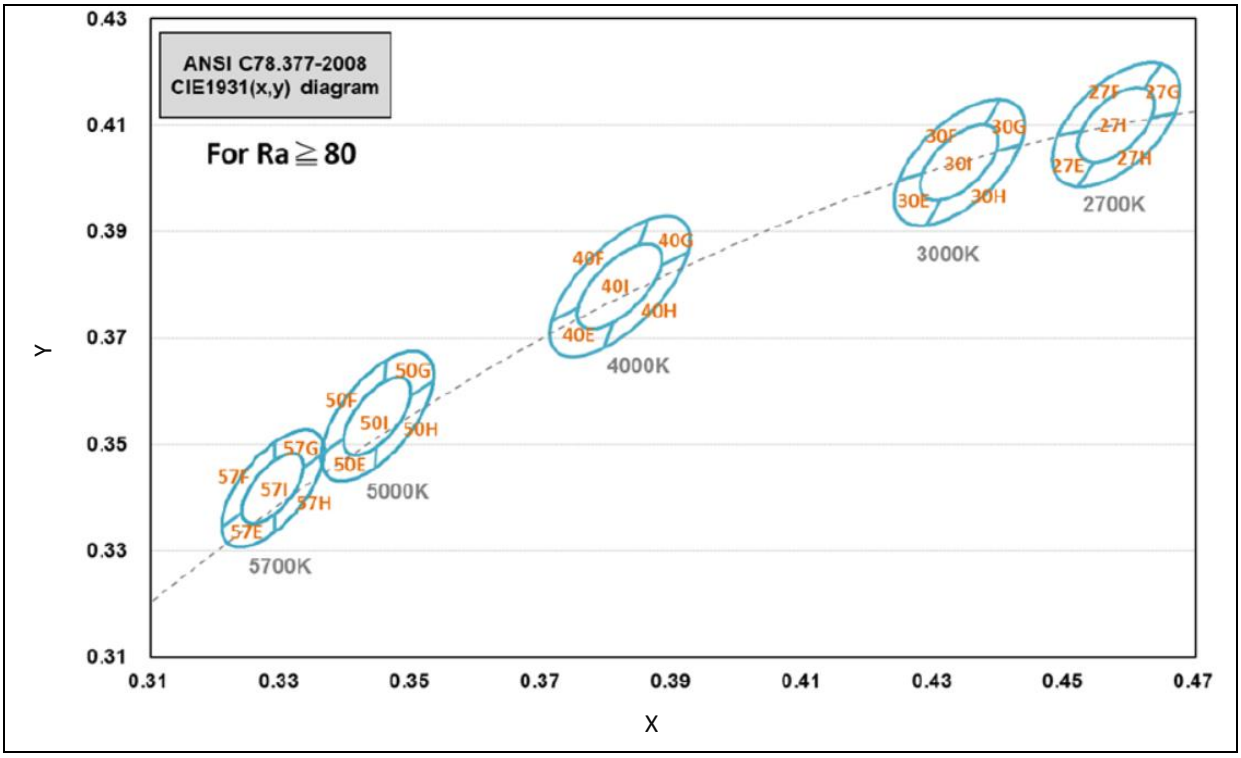
Forward Voltage Classifications (I_F = 350mA):

Code	Min.	Max.	Unit
BP	8.5	8.8	V
BQ	8.8	9.1	
BR	9.1	9.4	
BS	9.4	9.7	

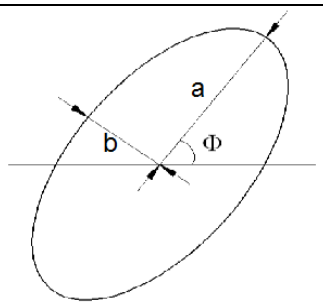
Luminous Flux Classifications (I_F = 350mA):

Code	Min.	Max.	Unit
U13	260	280	lm
U14	280	300	
U15	300	320	

CIE CHROMATICITY DIAGRAM:



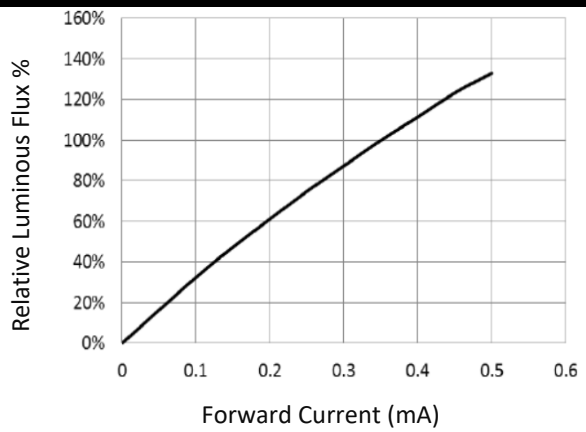
Chromaticity Coordinates Classifications (I_F = 350mA):



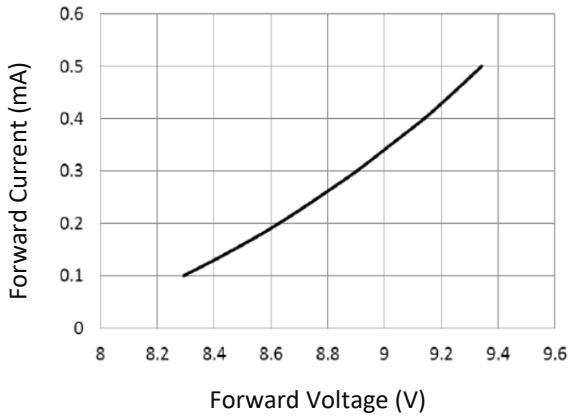
Code	Centre		Radius		Angle
	X	Y	a	b	Φ
3-STEP (57I)	0.3287	0.3417	0.00746	0.00320	59.09
5-STEP	0.3287	0.3417	0.01243	0.00533	59.09

ELECTRO-OPTICAL CHARACTERISTICS:

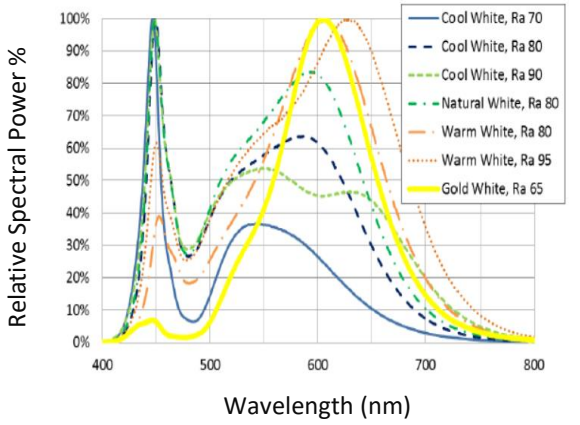
Relative Luminous Flux v.s. Forward Current



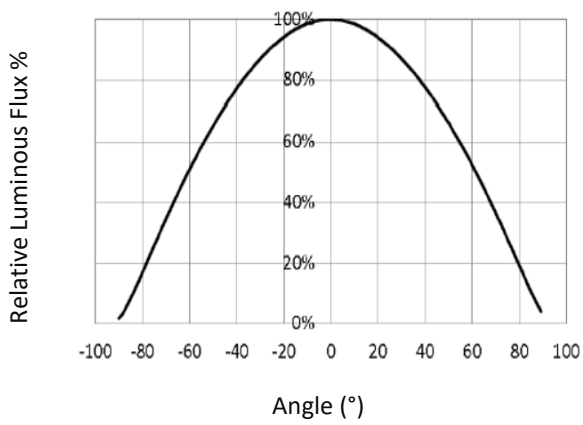
Forward Current v.s. Forward Voltage



Relative Spectral Power v.s. Wavelength

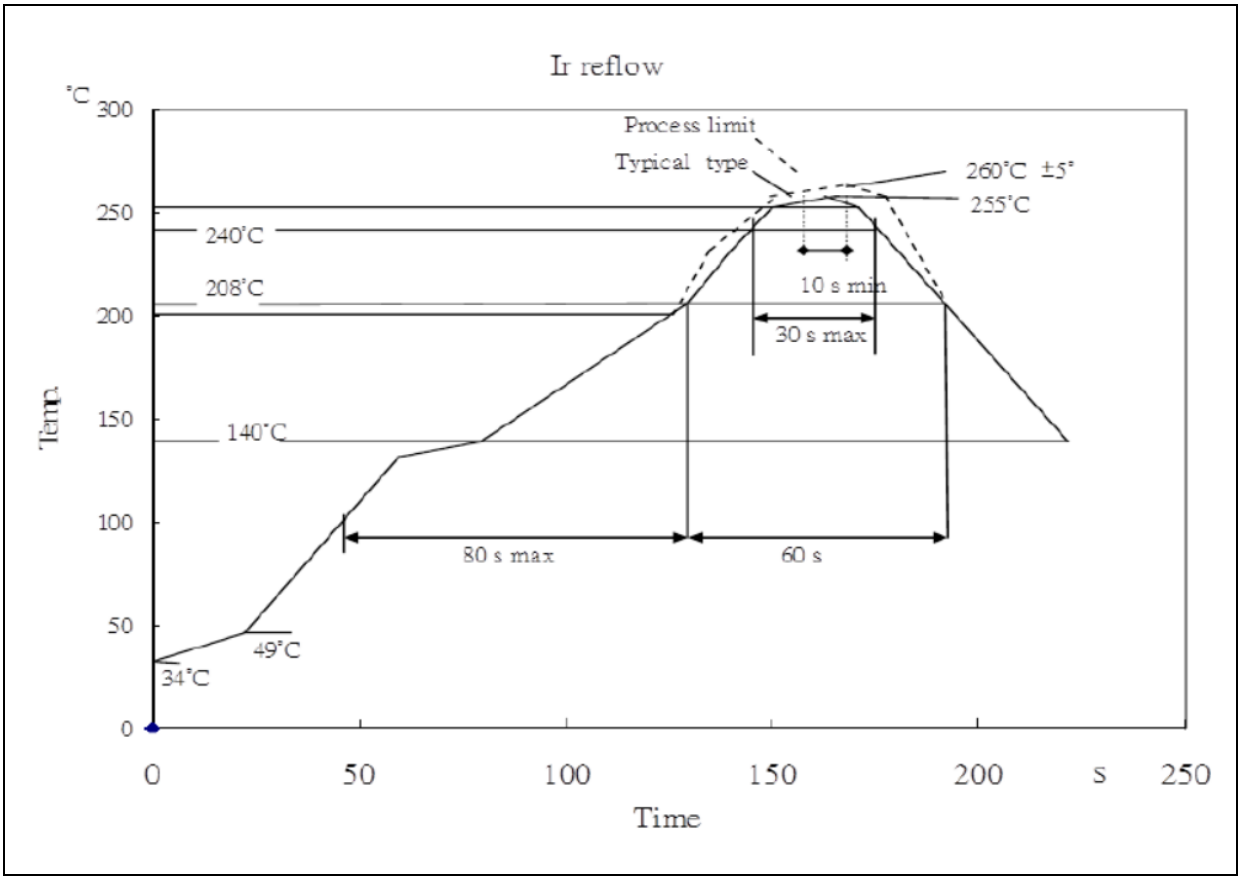


Directive Radiation



RECOMMENDED SOLDERING PROFILE:

Reflow Lead-free Solder:



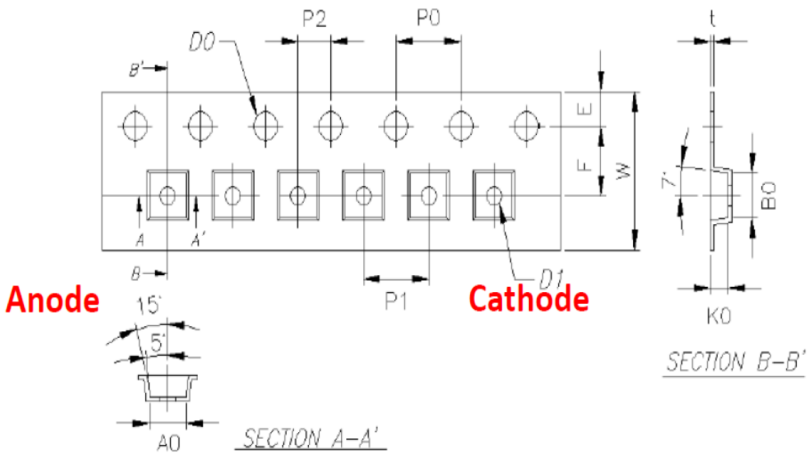
Note:

1. Maxima reflow soldering: 1 time.
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.

PACKING SPECIFICATION:

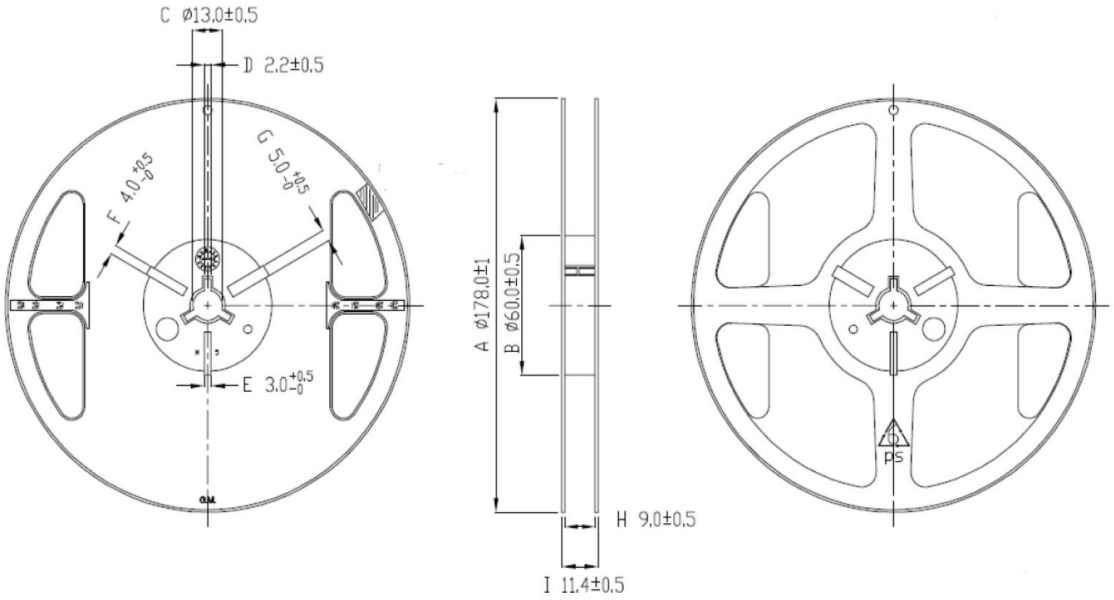
Reel Dimension:

Max.1000pcs/reel



Item	Specification	Tol. (+/-)
W	**8.00**	± 0.20
E	**1.75**	± 0.10
F	**3.50**	± 0.05
D0	**1.50**	+0.10, -0
D1	**1.00**	± 0.10
P0	**4.00**	± 0.10
P1	**4.00**	± 0.10
P2	**2.00**	± 0.05
P0 x 10	**40.00**	± 0.20

t	**0.23**	± 0.05
A0	**2.25**	± 0.10
B0	**2.25**	± 0.10
K0	**1.10**	± 0.10



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.

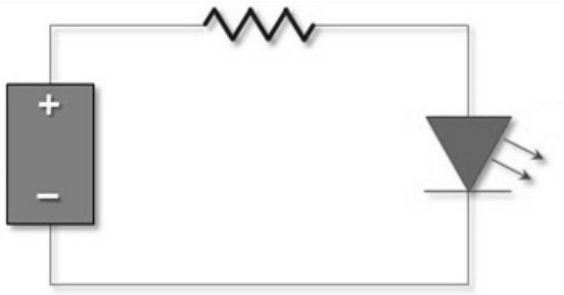
Baking:

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:

- 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-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	06/11/2020	Datasheet set-up.
A1.1	30/11/2021	New datasheet format.