



**Opto Plus LED Corp.**  
**Case Mold Type LED Display**  
**OPD-DR54PGL-E-Z-W**

● **EDIT HISTORY**

Version A: May. 23, 2023  
Preliminary Spec.

Prepared by	Checked by	Approved by



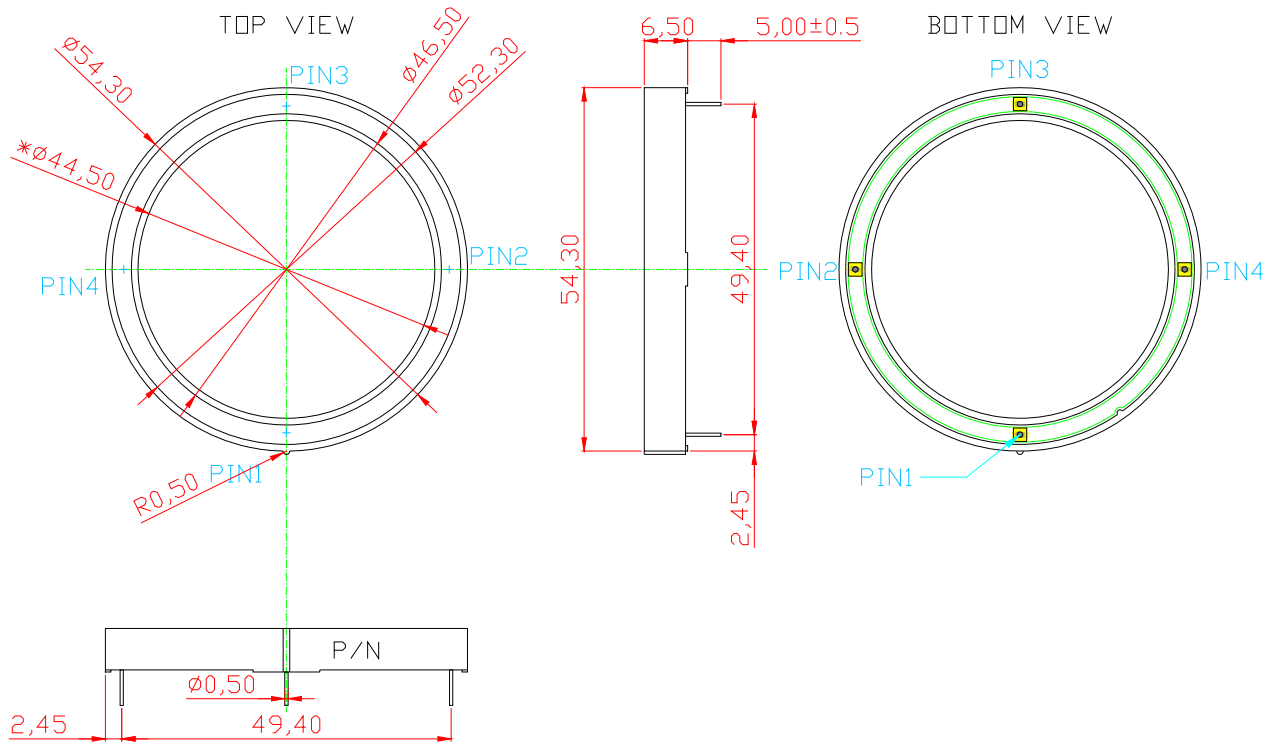
## Opto Plus LED Corp. Case Mold Type LED Display OPD-DR54PGLE-Z-W

### ● INTERNAL FEATURES

1. One Circle Two Color.
2. Ø 54.3mm Case Mold Type LED Display
3. Ø 44.5mm Hollow Circle.
4. PIN 1 & PIN 3 Description : Supply voltage terminal.
5. PIN 2 & PIN 4 Description : Ground terminal.
6. Operating Voltage Range : 2.7 ~ 5V. (Pure Green Color)
7. Operating Voltage Range : 1.6 ~ 5V. (Red Color)
8. Operating Current Range : 112 ~ 150mA. (Pure Green Color)
9. Operating Current Range : 125 ~ 142mA. (Red Color)
10. Operating temperature: -25°C to +85°C

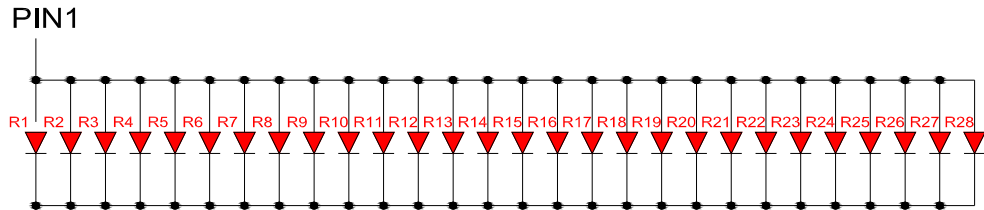
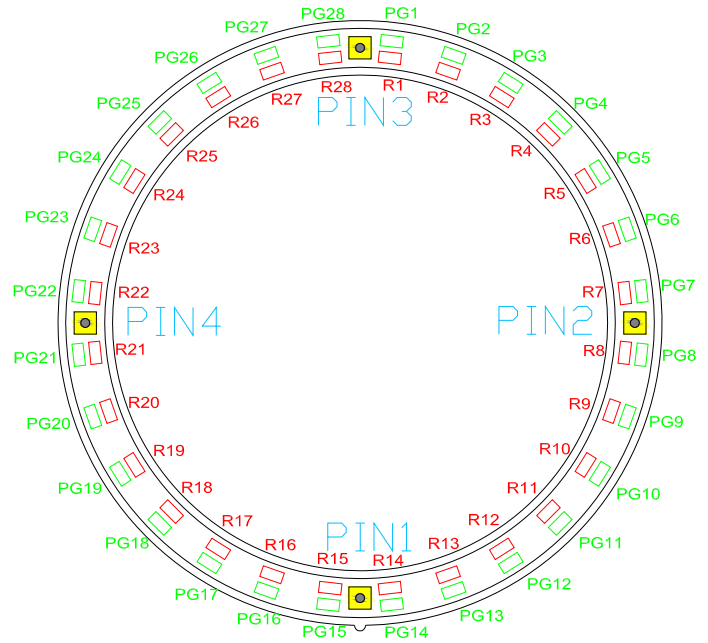
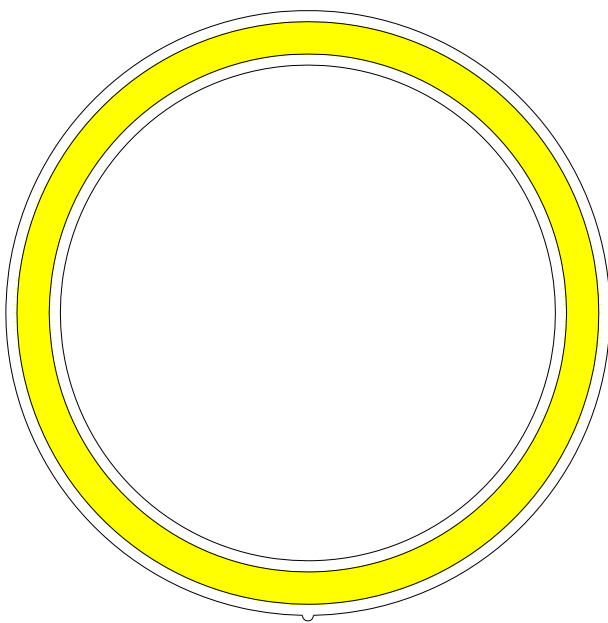
Note: These are stress ratings only. Stresses exceeding the range specified under "Absolute Maximum Ratings" may cause substantial damage to the device. Functional operation of the devices at other conditions beyond those listed in the specification is not implied and prolonged exposure to extreme conditions may affect device reliability.

## MECHANICAL DIMENSIONS

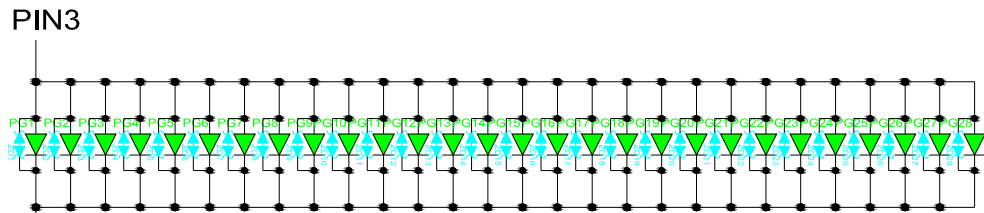


NOTES: All dimensions are in millimeters. Tolerances are  $\pm 0.25$  mm unless otherwise noted.

## ● TYPICAL INTERNAL EQUIVALENT CIRCUIT



PIN2 Super Bright Red SMD LED



PIN4 Pure Green SMD LED With Zener Diode



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● Zener

ELECTRICAL CHARACTERISTICS (Ta=25°C) – ONE ZENER

Two Way Zener Diode

(Ta = +25 °C)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit.
Forward Voltage	V <sub>F</sub>	Rank A: I <sub>F</sub> = 10mA	3		5	V
		Rank B: I <sub>F</sub> = 10mA	5		7	V
		Rank C: I <sub>F</sub> = 10mA	6		8	V
Forward Leakage current	I <sub>F</sub>	Rank A: V <sub>F</sub> = 2.5V			500	nA
		Rank B: V <sub>F</sub> = 4V			500	nA
		Rank C: V <sub>F</sub> = 5V			500	nA
Reverse Voltage	V <sub>Z</sub>	Rank A: I <sub>R</sub> = 10mA	3.5		6	V
		Rank B: I <sub>R</sub> = 10mA	8		13	V
		Rank C: I <sub>R</sub> = 10mA	8		13	V
Reverse Leakage current	I <sub>R</sub>	Rank A: V <sub>R</sub> = 3V			500	nA
		Rank B: V <sub>R</sub> = 4V			500	nA
		Rank C: V <sub>R</sub> = 5V			500	nA

Machine Model (MM) 8000 V



## Opto Plus LED Corp. Case Mold Type LED Display OPD-DR54PGLE-Z-W

### ● PG: PURE GREEN (PG1-PG28)

ABSOLUTE MAXIMUM RATING AT Ta=25°C

Parameter	Symbol	Pure Green	Unit
Power dissipation	P <sub>AD</sub>	468	mW
Continuous forward current	I <sub>AF</sub>	120	mA
Reverse voltage	V <sub>R</sub>	5	V
Operating temperature	T <sub>OPR</sub>	-25 to +85	°C
Storage temperature	T <sub>STG</sub>	-25 to +85	°C

ELECTRICAL - OPTICAL CHARACTERISTICS AT Ta=25°C

Characteristic	Symbol	Condition	Min.	Typ.	Max.	Unit
Forward voltage	V <sub>F</sub>	I <sub>F</sub> = 120mA	2.7	3.3	3.9	V
Reverse current	I <sub>R</sub>	V <sub>R</sub> = 5V	-	-	10	μA
Peak wavelength	λ <sub>P</sub>	I <sub>F</sub> = 120mA	-	522	-	nm
Dominant Wavelength (per SMD)	λ <sub>D</sub>	I <sub>F</sub> = 120mA	-	529	-	nm
Luminous intensity (per SMD)	I <sub>v</sub>	I <sub>F</sub> = 120mA	-	250	-	mcd
Spectrum Radiation Bandwidth	Δλ	I <sub>F</sub> = 120mA	-	40	-	nm

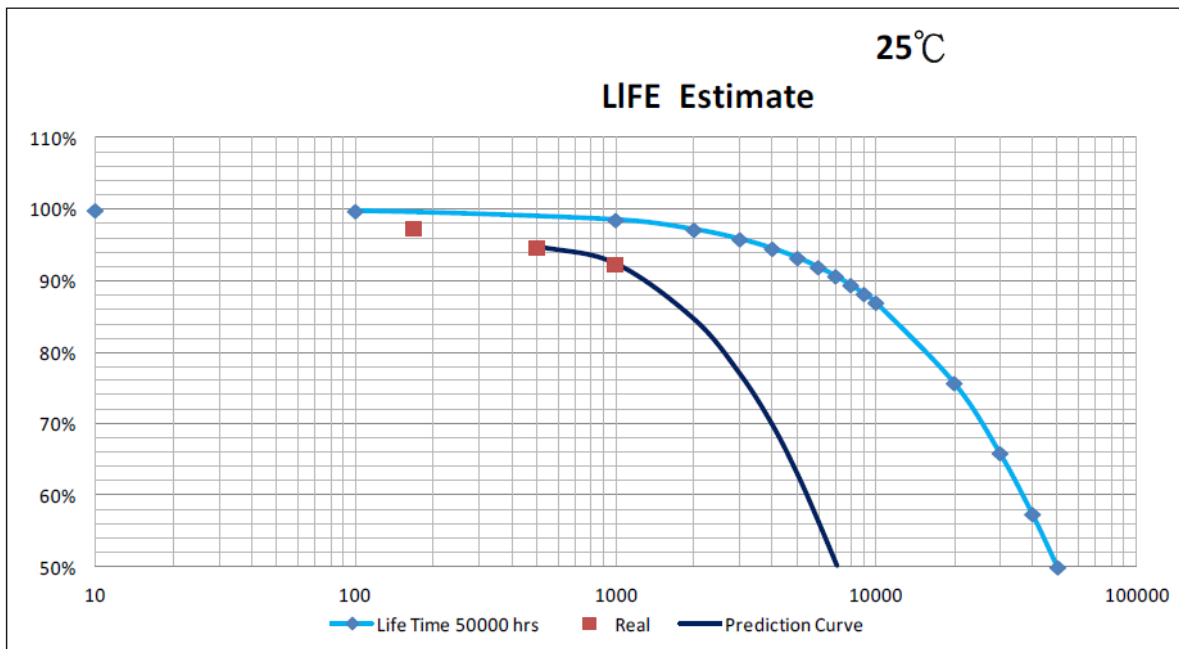
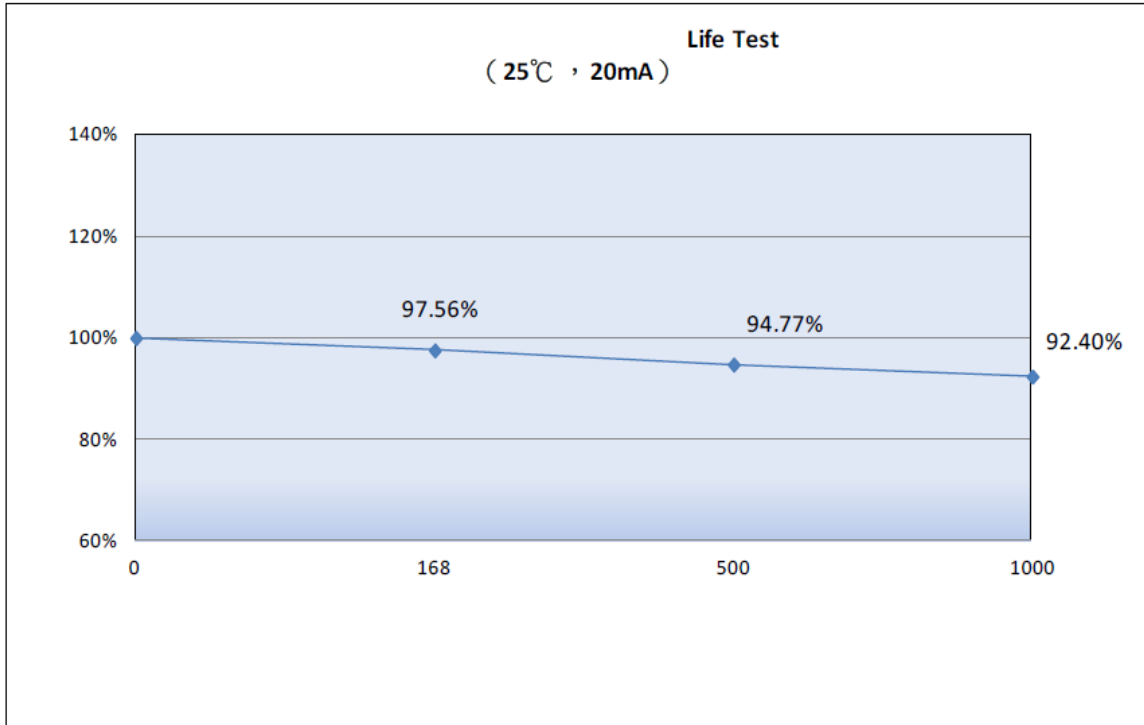
Note: It maintains a tolerance of ±10% on VF Bin



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Temperature and Humidity Bias 60°C 90%R.H 20mA Operation Test Time 1000hrs (Per Pure Green SMD LED)  
LIFE TIME

25°C 20mA





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● **AVAILABLE BIN / HUE TABLE**

<b>2R1U</b>	<b>2S1U</b>	<b>3R1U</b>	<b>3S1U</b>
<b>2R2U</b>	<b>2S2U</b>	<b>3R2U</b>	<b>3S2U</b>
<b>2R1V</b>	<b>2S1V</b>	<b>3R1V</b>	<b>3S1V</b>
<b>2R2V</b>	<b>2S2V</b>	<b>3R2V</b>	<b>3S2V</b>

● **PG: BIN GRADE (Unit : mcd)**

<b>R</b>	<b>S</b>
207.0 – 274.9	275.0 – 360.0

● **PG: HUE GRADE ( $\lambda_D$  : nm)**

<b>2</b>	<b>3</b>
520 - 527	528 - 535

Note: It maintains a tolerance of  $\pm 0.5\text{nm}$  on Color Bin.





## Opto Plus LED Corp. Case Mold Type LED Display OPD-DR54PGLE-Z-W

### ● LE: SUPER BRIGHT RED (R1-R28)

ABSOLUTE MAXIMUM RATING AT Ta=25°C

Parameter	Symbol	Super Bright Red	Unit
Power dissipation	P <sub>AD</sub>	240	mW
Continuous forward current	I <sub>AF</sub>	120	mA
Reverse voltage	V <sub>R</sub>	5	V
Operating temperature	T <sub>OPR</sub>	-25 to +85	°C
Storage temperature	T <sub>STG</sub>	-25 to +85	°C

ELECTRICAL - OPTICAL CHARACTERISTICS AT Ta=25°C

Characteristic	Symbol	Condition	Min.	Typ.	Max.	Unit
Forward voltage	V <sub>F</sub>	I <sub>F</sub> = 120mA	1.6	1.8	2.0	V
Reverse current	I <sub>R</sub>	V <sub>R</sub> = 5V	-	-	10	μA
Peak wavelength	λ <sub>P</sub>	I <sub>F</sub> = 120mA	-	632	-	nm
Dominant Wavelength (per SMD)	λ <sub>D</sub>	I <sub>F</sub> = 120mA	615	624	630	nm
Luminous intensity (per SMD)	I <sub>v</sub>	I <sub>F</sub> = 120mA	225	425	625	mcd
Spectrum Radiation Bandwidth	Δλ	I <sub>F</sub> = 120mA	-	15	-	nm

Note: It maintains a tolerance of ±10% on V<sub>F</sub> Bin



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● **LE: BIN GRADE (Unit : mcd)**

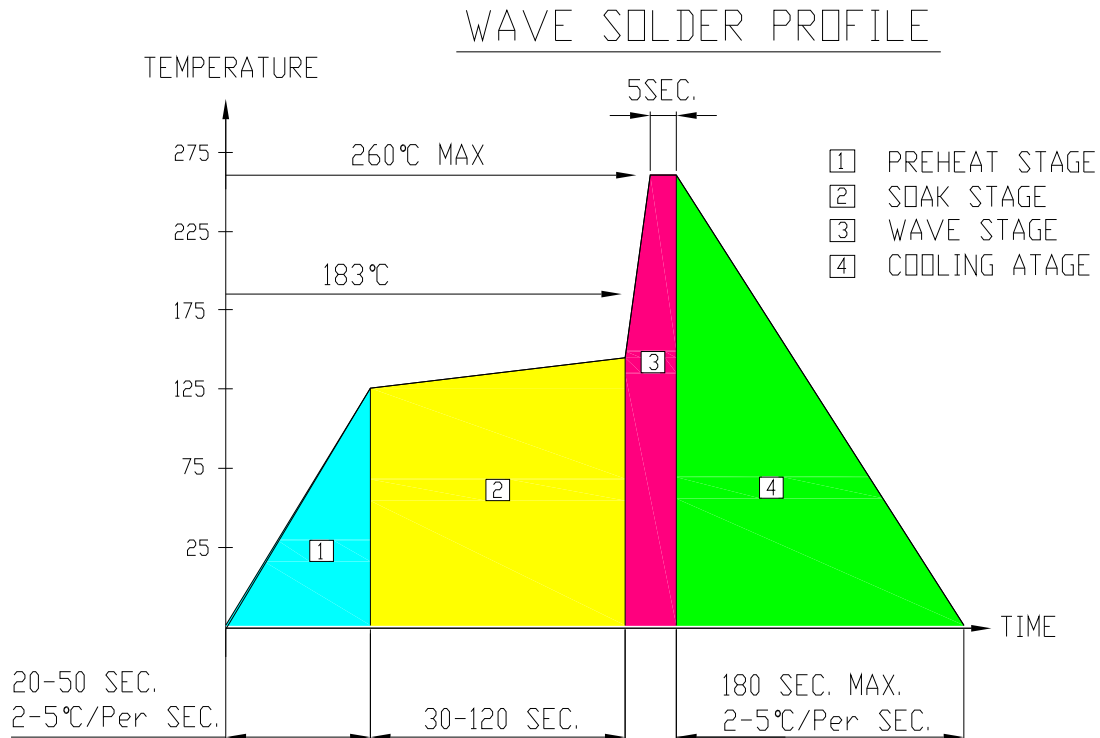
1	2
225.0 – 425.9	426.0 – 625.0

● **LE: HUE GRADE ( $\lambda D$  : nm)**

U	V
615 - 625	625 - 630

Note: It maintains a tolerance of  $\pm 0.5$ nm on Color Bin.

● **RECOMMEND SOLDERING PROFILE**



● **Note:**

- Recommend pre-heat temperature of 105°C or less (as measured with a thermocouple attached to the LED pins) prior to immersion in the solder wave with a maximum solder bath temperature of 260°C
- Peak wave soldering temperature between 245°C ~ 225°C for 3 sec (5 sec max)
- No more than one wave soldering pass

● **SOLDERING IRON**

Basic spec is  $\leq 4$  sec when 260°C. If temperature is higher, time should be shorter (+10°C → 1 sec). Power dissipation of Iron should be smaller than 15W, and temperature should be controllable. Surface temperature of the device should be under 230°C.

● **REWORK**

Customer must finish rework within  $\leq 3$  sec under 350°C.  
 The head of soldering iron cannot touch copper foil.

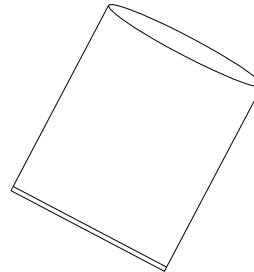


# Opto Plus LED Corp. Case Mold Type LED Display OPD-DR54PGLE-Z-W

## ● PACKAGE DIMENSIONS

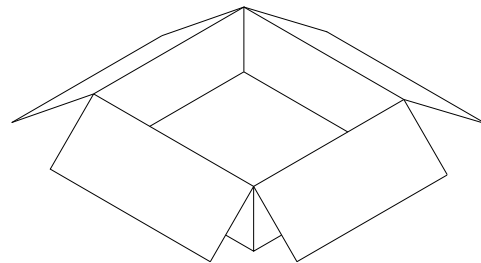
30 PCS / 1 ESD TRAY.

180 PCS / 6 ESD TRAY / TOP & BOTTOM 1 Corrugates Paper / 1 PINK ESD BAG.



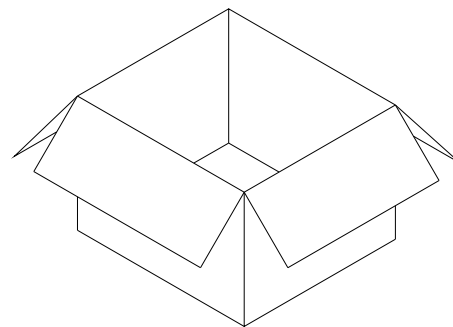
BAG SIZE : 450X410X560

180 PCS / 1 Inner Carton.



INNER BOX SIZE : 394 x 370 x 138 mm

360 PCS / 2 Inner Carton / 1 Outer Carton.



OUTER BOX SIZE : 430 x 390 x 300 mm

## ● Note:

LED DISPLAY STANDARD STORAGED CONDITION

Product in the original packaging material state is the recommended storage conditions.

TERATURE CONDITION	HUMIDITY CONDITION
5°C ~ 30°C	Below 60%RH

If the storage conditions do not meet specification standards, the component pins may become oxidized requiring re-plating and re-sorting before use. Suggest customers consume LEDs as soon as possible, and avoid long-term storage of large inventories.