



Opto Plus LED Corp.
Case Mold Type LED Display
OPD-DR54LBLE-Z-W

● **EDIT HISTORY**

Version A: May. 23, 2023
Preliminary Spec.

Prepared by	Checked by	Approved by



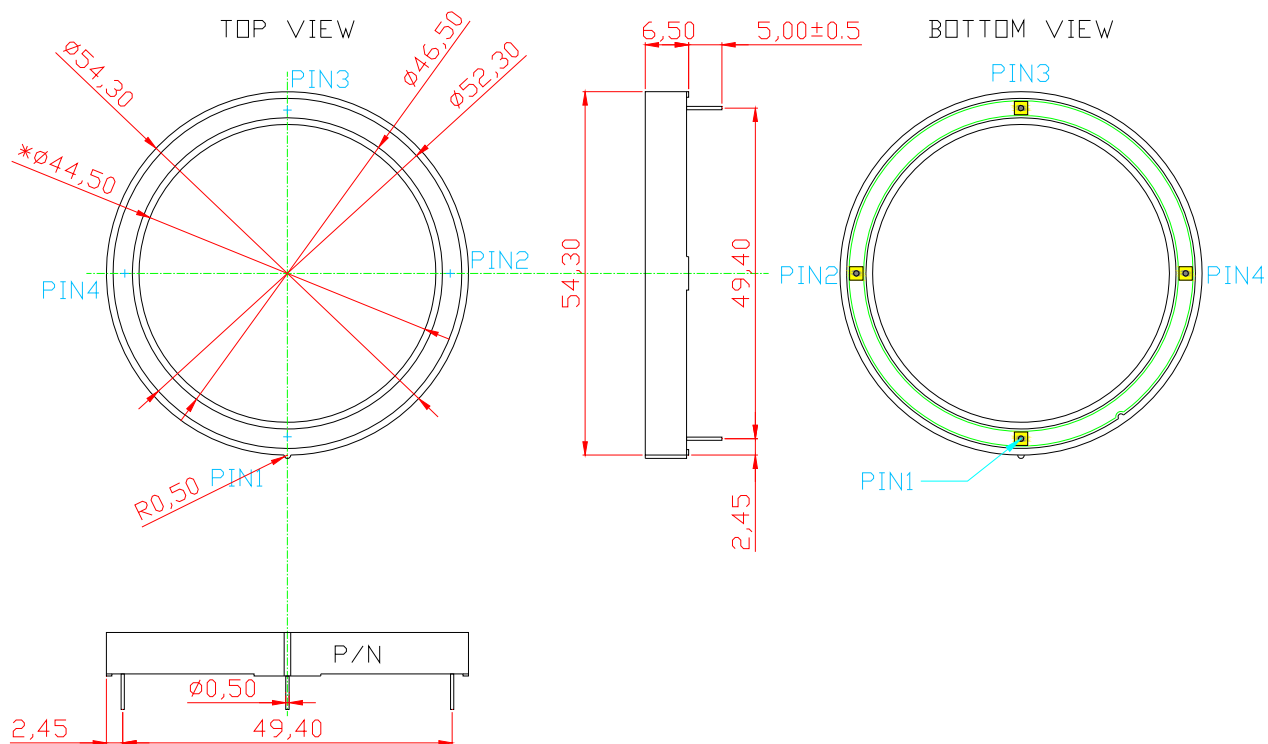
Opto Plus LED Corp. Case Mold Type LED Display OPD-DR54LBLE-Z-W

● 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. (Blue Color)
7. Operating Voltage Range : 1.6 ~ 5V. (Red Color)
8. Operating Current Range : 112 ~ 150mA. (Blue 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.

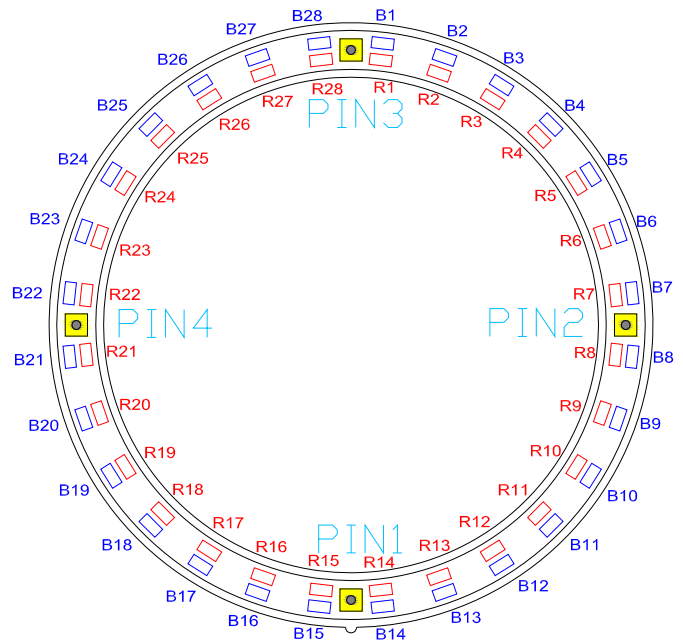
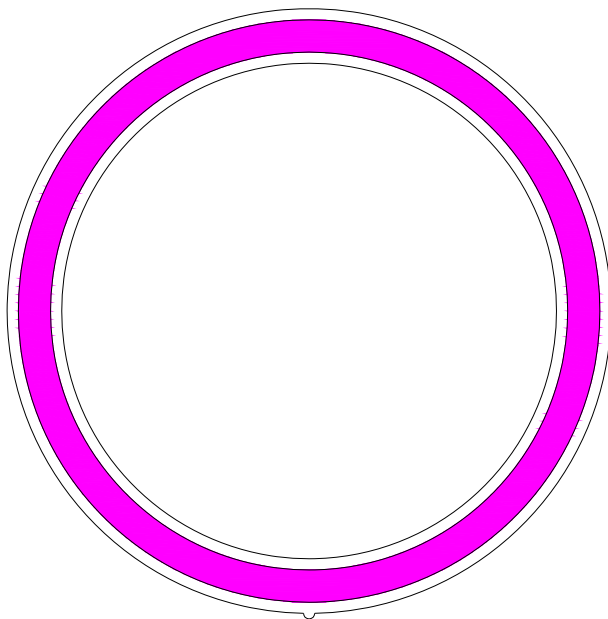
MECHANICAL DIMENSIONS



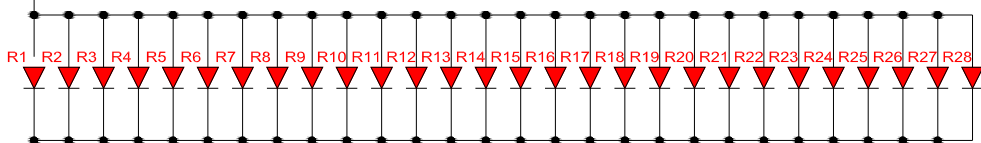
NOTES: All dimensions are in millimeters. Tolerances are ± 0.25 mm unless otherwise noted.

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● TYPICAL INTERNAL EQUIVALENT CIRCUIT



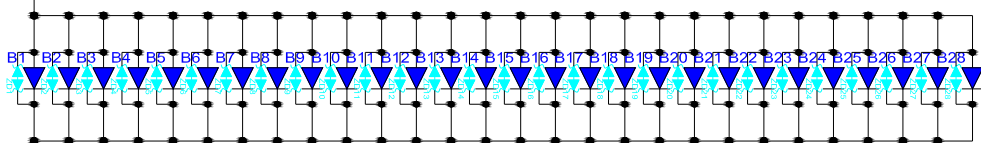
PIN1



PIN2

Super Bright Red SMD LED

PIN3



PIN4

Super Bright Blue 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_F	Rank A: $I_F = 10\text{mA}$	3		5	V
		Rank B: $I_F = 10\text{mA}$	5		7	V
		Rank C: $I_F = 10\text{mA}$	6		8	V
Forward Leakage current	I_F	Rank A: $V_F = 2.5\text{V}$			500	nA
		Rank B: $V_F = 4\text{V}$			500	nA
		Rank C: $V_F = 5\text{V}$			500	nA
Reverse Voltage	V_Z	Rank A: $I_R = 10\text{mA}$	3.5		6	V
		Rank B: $I_R = 10\text{mA}$	8		13	V
		Rank C: $I_R = 10\text{mA}$	8		13	V
Reverse Leakage current	I_R	Rank A: $V_R = 3\text{V}$			500	nA
		Rank B: $V_R = 4\text{V}$			500	nA
		Rank C: $V_R = 5\text{V}$			500	nA

Machine Model (MM) 8000 V

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● LB: SUPER BRIGHT BLUE (B1-B28)

ABSOLUTE MAXIMUM RATING AT Ta=25°C

Parameter	Symbol	Super Bright Blue	Unit
Power dissipation	P _{AD}	468	mW
Continuous forward current	I _{AF}	120	mA
Reverse voltage	V _R	5	V
Operating temperature	T _{OPR}	-25 to +85	°C
Storage temperature	T _{STG}	-25 to +85	°C

ELECTRICAL - OPTICAL CHARACTERISTICS AT Ta=25°C

Characteristic	Symbol	Condition	Min.	Typ.	Max.	Unit
Forward voltage	V _F	I _F = 120mA	2.7	3.3	3.9	V
Reverse current	I _R	V _R = 5V	-	-	10	μA
Peak wavelength	λ _P	I _F = 120mA	-	468	-	nm
Dominant Wavelength (per SMD)	λ _D	I _F = 120mA	-	470	-	nm
Luminous intensity (per SMD)	I _v	I _F = 120mA	-	192	-	mcd
Spectrum Radiation Bandwidth	Δλ	I _F = 120mA	-	40	-	nm

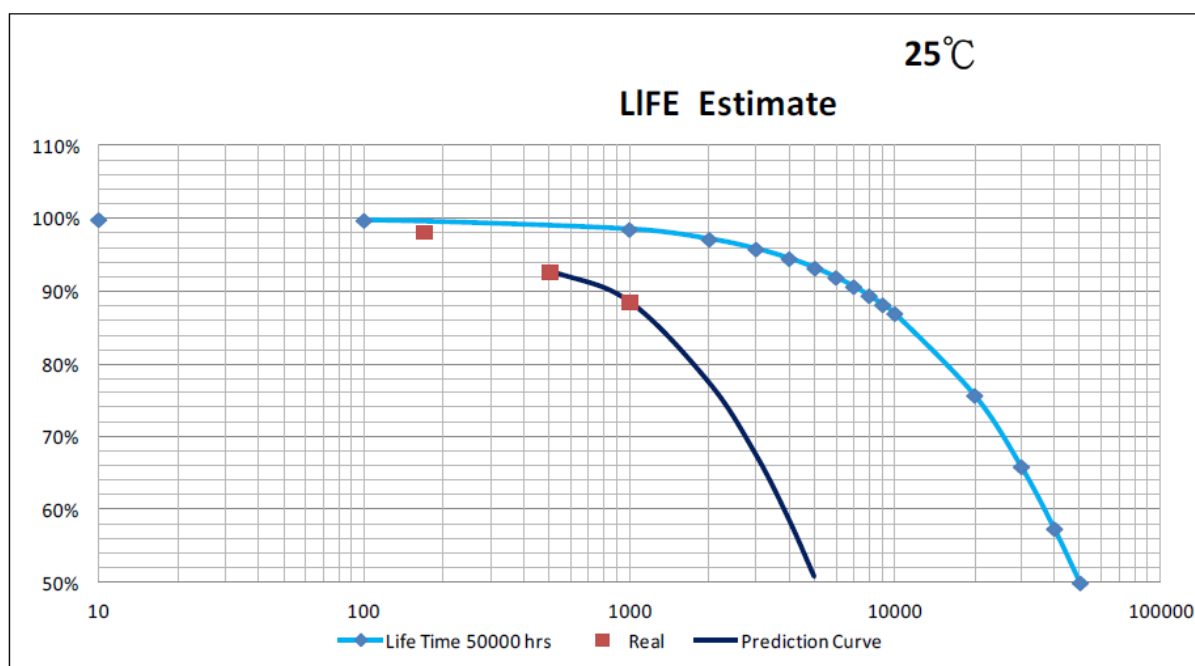
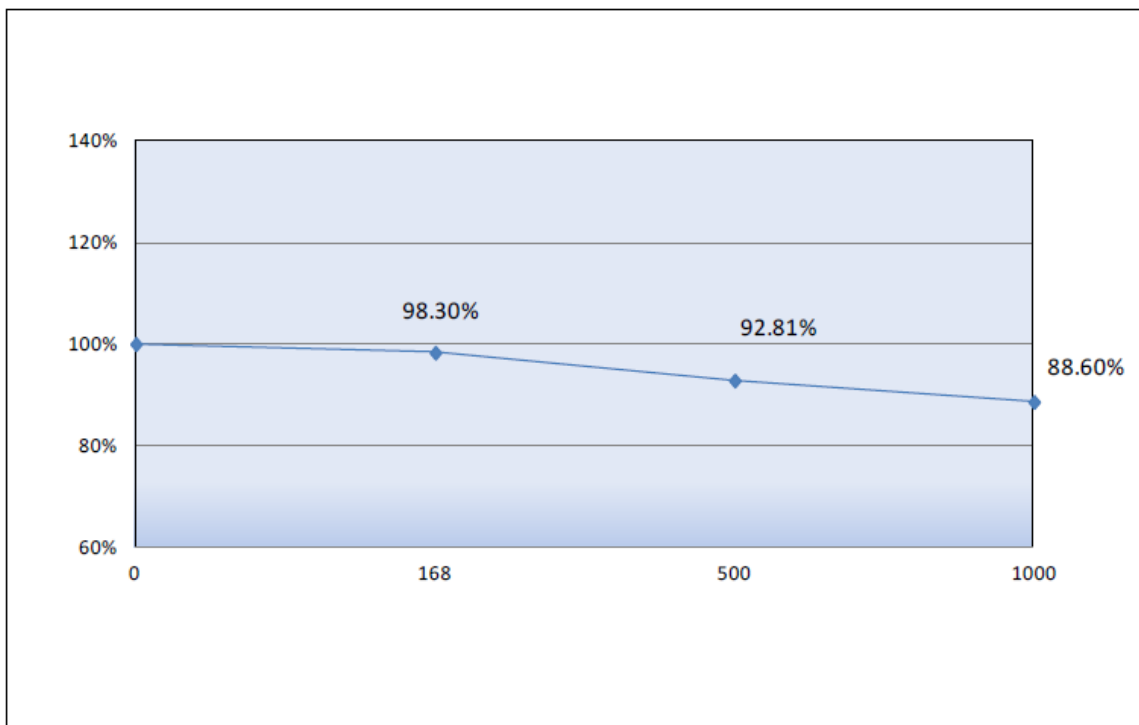
Note: It maintains a tolerance of ±10% on VF Bin



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

25°C 20mA





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● AVAILABLE BIN / HUE TABLE

2Q1U	2R1U	3Q1U	3R1U
2Q2U	2R2U	3Q2U	3R2U
2Q1V	2R1V	3Q1V	3R1V
2Q2V	2R2V	3Q2V	3R2V

● LB: BIN GRADE (Unit : mcd)

Q	R
159.0 – 191.9	192.0 – 232.0

● LB: HUE GRADE (λD : nm)

2	3
464 - 467	468 - 472

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



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● LE: SUPER BRIGHT RED (R1-R28)

ABSOLUTE MAXIMUM RATING AT Ta=25°C

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

ELECTRICAL - OPTICAL CHARACTERISTICS AT Ta=25°C

Characteristic	Symbol	Condition	Min.	Typ.	Max.	Unit
Forward voltage	V _F	I _F = 120mA	1.6	1.8	2.0	V
Reverse current	I _R	V _R = 5V	-	-	10	μA
Peak wavelength	λ _P	I _F = 120mA	-	632	-	nm
Dominant Wavelength (per SMD)	λ _D	I _F = 120mA	615	624	630	nm
Luminous intensity (per SMD)	I _V	I _F = 120mA	225	425	625	mcd
Spectrum Radiation Bandwidth	Δλ	I _F = 120mA	-	15	-	nm

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



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● **LE: BIN GRADE (Unit : mcd)**

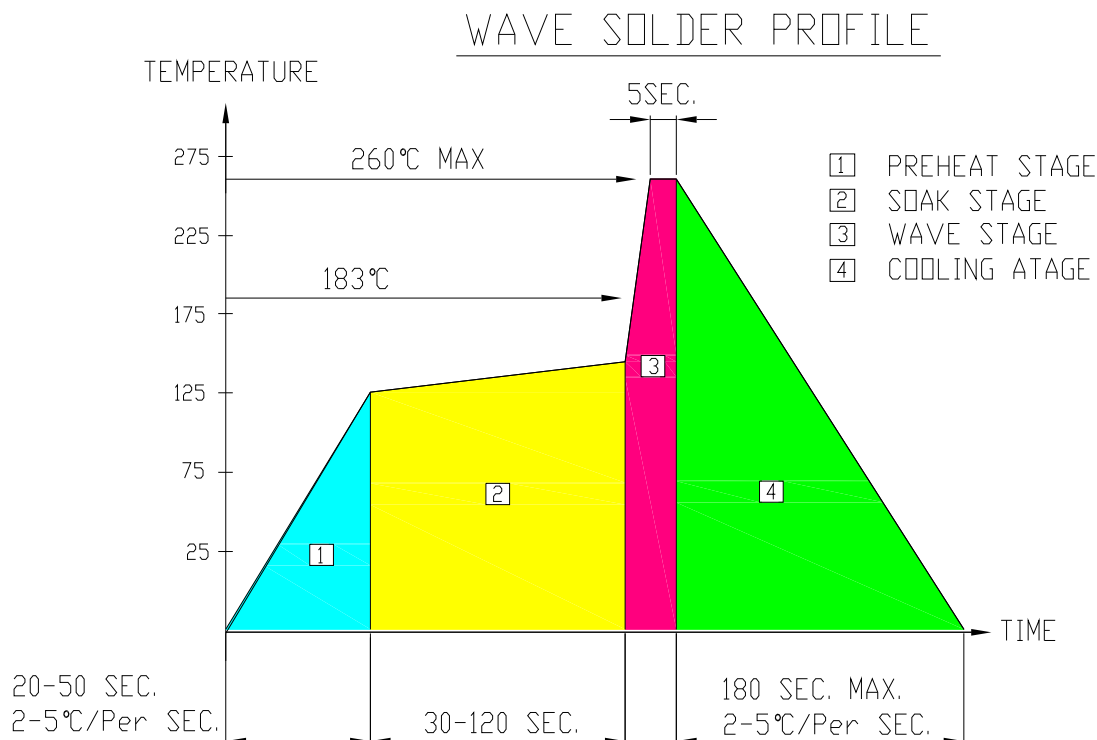
1	2
225.0 – 425.9	426.0 – 625.0

● **LE: HUE GRADE (λD : nm)**

U	V
615 - 625	625 - 630

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

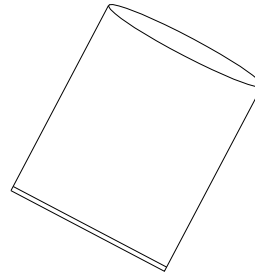
● REWORK

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

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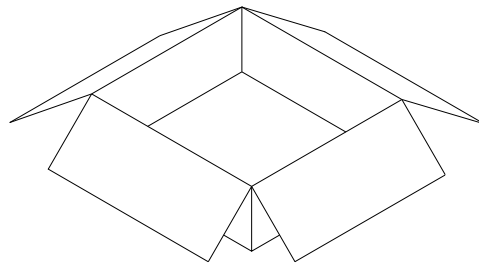
● PACKAGE DIMENSIONS

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



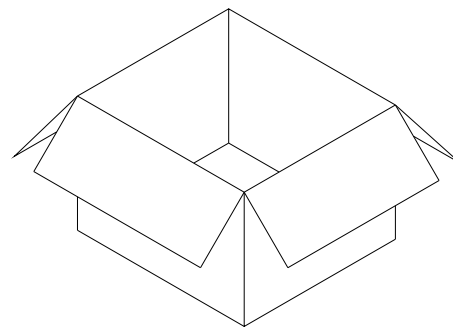
BAG SIZE :450X410X560

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.