



Opto Plus LED Corp.
4.0" 5 x 7 Dot Matrix LED Display
OPD-M105712UPGUE | OPD-M105712UPGUE

● **EDIT HISTORY**

Version A : Mar. 14, 2024

Preliminary Spec.



Opto Plus LED Corp.

4.0" 5 x 7 Dot Matrix LED Display

OPD-M105712UPGUE | OPD-M105713UPGUE

● FEATURES

- 4.0 inch (101.44 mm) Matrix Height.
- Stackable vertically and horizontally.
- 5x7 array with X-Y select.
- Wide viewing angle
- RoHS compliant, Pb Free.

● DESCRIPTION

The device are 4.0 inch (101.44 mm) 5x7 dot matrix display.

The device is Opto Plus LED Corp standard LED Display.

This device utilizes Super Bright Red LED chip which are made from AlGaInP on a transparent GaAs,substrate.and Pure Green LED chip which are made from InGaN on a transparent GaN substrate.

The device has face and segment option, please refer to **PRODUCT APPEARANCE**.

● DEVICE

PART NO.		DESCRIPTION
	OPD-M105712UPGUE-GW	Common Anode Gray face White segment
	OPD-M105713UPGUE-GW	Common Cathode Gray face White segment
	OPD-M1055712UPGUE-BW	Common Anode Black face White segment
	OPD-M105713UPGUE-BW	Common Cathode Black face White segment

RoHS Compliance



Pb Free.

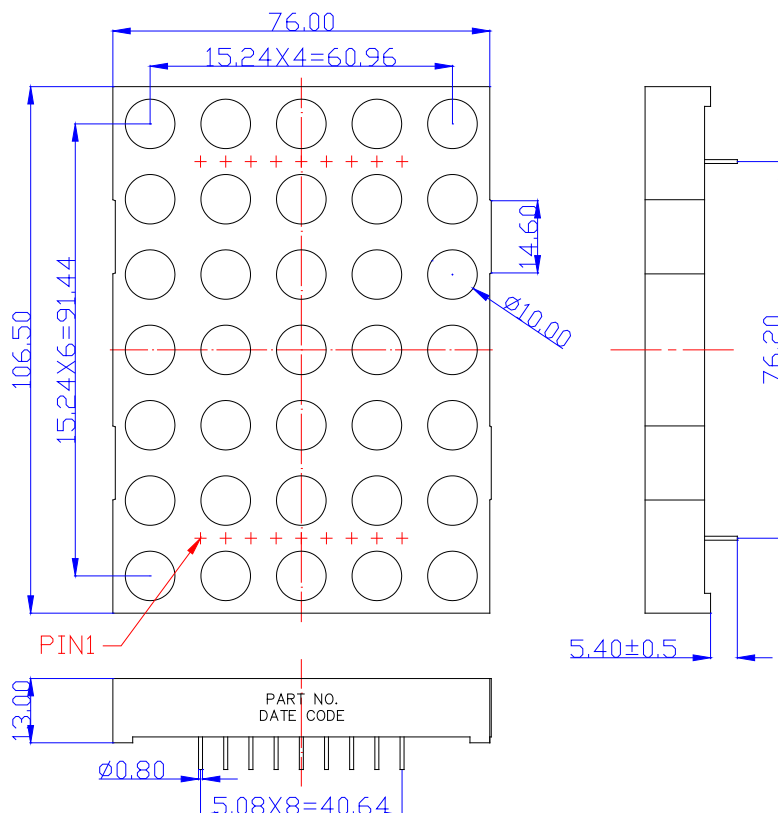


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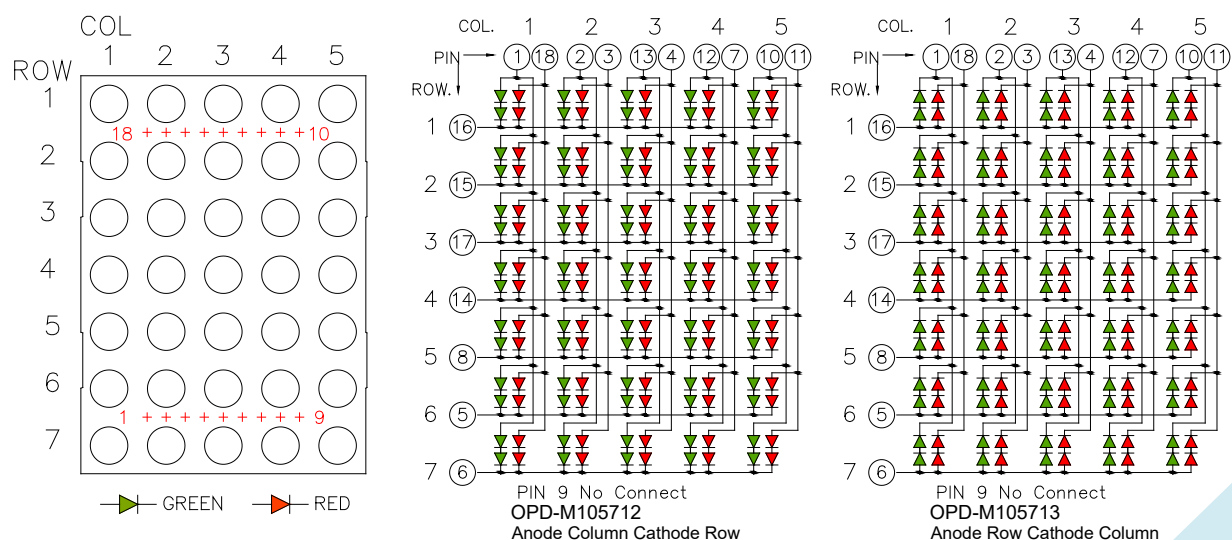
MECHANICAL DIMENSIONS



NOTES: Dimension is in millimeters. Tolerance is ± 0.25 mm unless otherwise noted.

TYPICAL INTERNAL EQUIVALENT CIRCUIT

Turn On Color



※EMITTED COLOR : PURE GREEN + SUPER BRIGHT RED



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● **UPG: PURE GREEN (InGaN/GaN)**

ABSOLUTE MAXIMUM RATING AT Ta=25°C

Parameter	Symbol	Maximum Rating	Unit
Power dissipation	P _{AD}	68	mW
Continuous forward current	I _{AF}	20	mA
Peak current (duty cycle 1/10, 1kHz)	I _{PF}	60	mA
Reverse voltage	V _R	5	V
Operating temperature	T _{OPR}	-40 to +85	°C
Storage temperature	T _{STG}	-40 to +85	°C

ELECTRICAL - OPTICAL CHARACTERISTICS AT Ta=25°C

Characteristic	Symbol	Condition	Min.	Type.	Max.	Unit
Forward Voltage	V _F	I _F =20mA	-	5.6	6.4	V
Reverse Current	I _R	V _R =5V	-	-	10	μA
Dominant Wavelength	λ _D	I _F =20mA	515	525	530	nm
Luminous Intensity	I _V	I _F =20mA	-	1400	-	mcd
Spectral Line Half-Bandwidth	Δλ	I _F =20mA	-	30	-	nm



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● UE: SUPER BRIGHT RED (AlGaInP/GaAs)

ABSOLUTE MAXIMUM RATING AT Ta=25°C

Parameter	Symbol	Maximum Rating	Unit
Power dissipation	P _{AD}	48	mW
Continuous forward current	I _{AF}	20	mA
Peak current (duty cycle 1/10, 1kHz)	I _{PF}	40	mA
Reverse voltage	V _R	5	V
Operating temperature	T _{OPR}	-40 to +85	°C
Storage temperature	T _{STG}	-40 to +85	°C

ELECTRICAL - OPTICAL CHARACTERISTICS AT Ta=25°C

Characteristic	Symbol	Condition	Min.	Type.	Max.	Unit
Forward Voltage	V _F	I _F =20mA	-	4.2	4.8	V
Reverse Current	I _R	V _R =5V	-	-	10	μA
Peak Wavelength	λ _P	I _F =20mA	-	632	-	nm
Dominant Wavelength	λ _D	I _F =20mA	618	-	628	nm
Luminous Intensity	I _V	I _F =20mA	-	1000	-	mcd
Spectral Line Half-Bandwidth	Δλ	I _F =20mA	-	20	-	nm



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● PRODUCT APPEARANCE

The most common reflector color and segment color are show in below diagram.

-GW	-BW
※ REFLECTOR COLOR: Gray ※ SEGMENT COLOR: White	※ REFLECTOR COLOR: Black ※ SEGMENT COLOR: White

Opto Plus can customize reflector and segment colors by customer's request. If you have these request please visit www.opledtw.com or contact sales@opledtw.com for more **Standard Product Customization** information.

Part NO. related to reflector and segment colors show as table below.

PART NO.	DESCRIPTION
OPD-M105712UPGUE-GW	Common Anode Gray face White segment
OPD-M105713UPGUE-GW	Common Cathode Gray face White segment
OPD-M105712UPGUE-BW	Common Anode Black face White segment
OPD-M105713UPGUE-BW	Common Cathode Black face White segment

● UPG: PURE GREEN (InGaN/GaN) CURVE

Typical Electro-optical Characteristic Curves
(25 °C Free Air Temperature Unless Otherwise Specified)

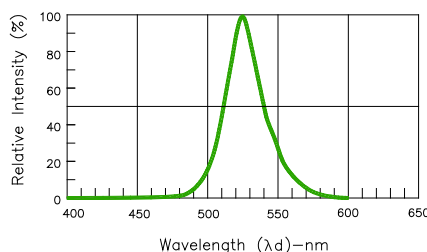


Fig.-1 Relative Intensity VS. Wavelength

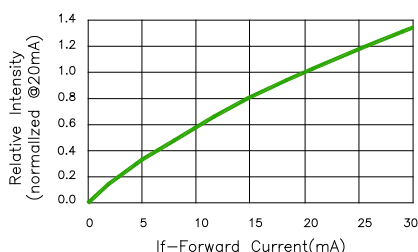


Fig.2-Relative Luminous Intensity vs. Forward Current

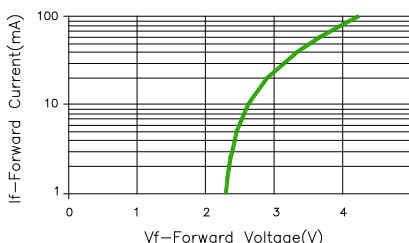


Fig.3-Forward Current vs. Forward Voltage

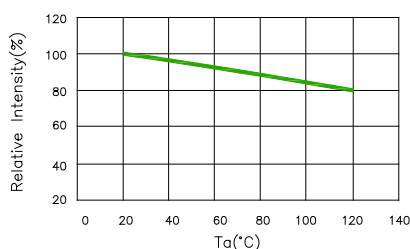


Fig.4-Relative Intensity(@20mA)VS. Ambient Temperature

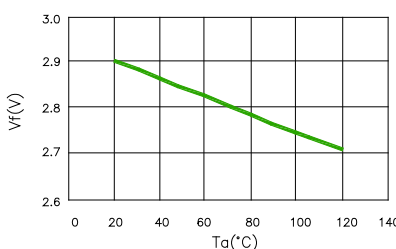


Fig.5-Forward Voltage(@20mA)VS. Ambient Temperature

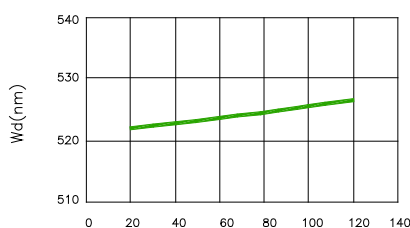


Fig.6-Dominant Wavelength(@20mA)
VS. Ambient Temperature

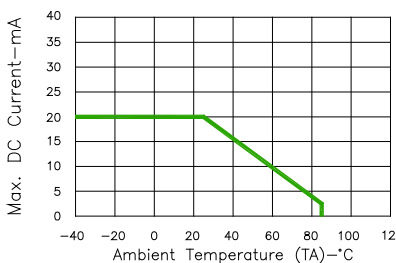


Fig.7-Max. Allowable DC Current
VS. Ambient Temperature

● UE: SUPER BRIGHT RED (AlGaInP/GaAs) CURVE

Typical Electro-optical Characteristic Curves
(25 °C Free Air Temperature Unless Otherwise Specified)

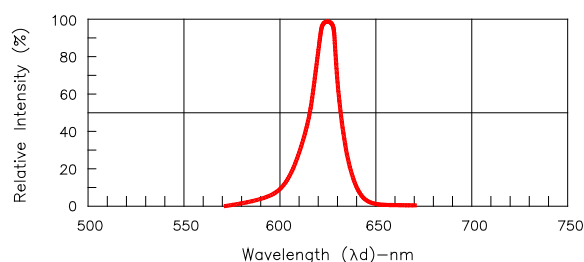


Fig.1—Relative Intensity VS. Wavelength

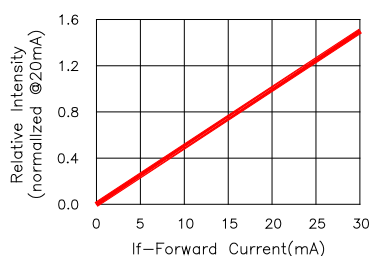


Fig.2—Relative Luminous Intensity vs. Forward Current

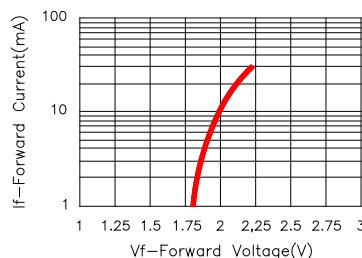


Fig.3—Forward Current vs. Forward Voltage

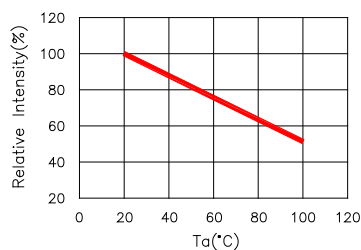


Fig.4—Relative Intensity(@20mA)VS. Ambient Temperature

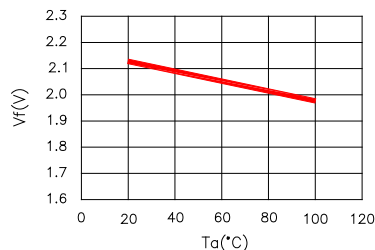


Fig.5—Forward Voltage(@20mA)VS. Ambient Temperature

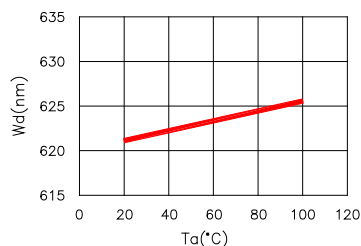


Fig.6—Dominant Wavelength(@20mA)
VS. Ambient Temperature

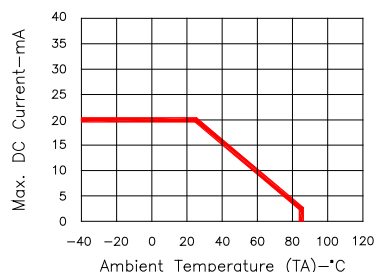
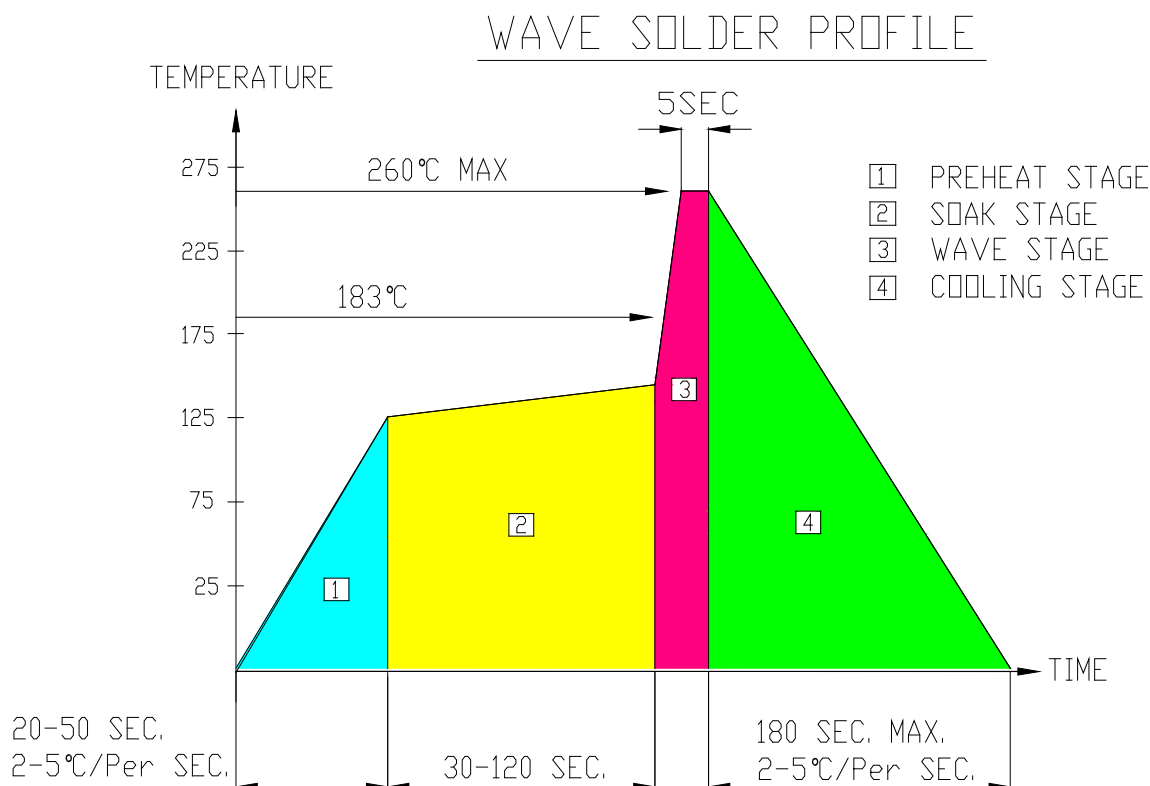


Fig.7—Max. Allowable DC Current
VS. Ambient Temperature

● 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.