



**Opto Plus LED Corp.**  
**1.00" Case Mold Type LED Display**  
**OPD-S10020UPG-BW**  
**OPD-S10021UPG-BW**

● **EDIT HISTORY**

Version A: Jun. 06, 2016

Preliminary Spec.

Manufacture	Examination	Approving



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**OPD-S10021UPG-BW**

● **FEATURES**

- 1.00 inch (25.40 mm) Digit Height.
- Low current operation..
- Case mold type.
- Black face, White segment.
- RoHS compliant, Pb Free.

● **DESCRIPTION**

The OPD-S10020UPG-BW & OPD-S10021UPG-BW a 1.00 inch (25.40 mm) height single 7-segment display.

This device utilizes Pure Green LED chip which are made from InGaN on a transparent GaN substrate. The display has Black face, White segment.

● **DEVICE**

<b>PART NO Pure Green</b>	<b>DESCRIPTION</b>
OPD-S10020UPG-BW	Common Anode
OPD-S10021UPG-BW	Common Cathode

**RoHS Compliance**



**Pb free.**





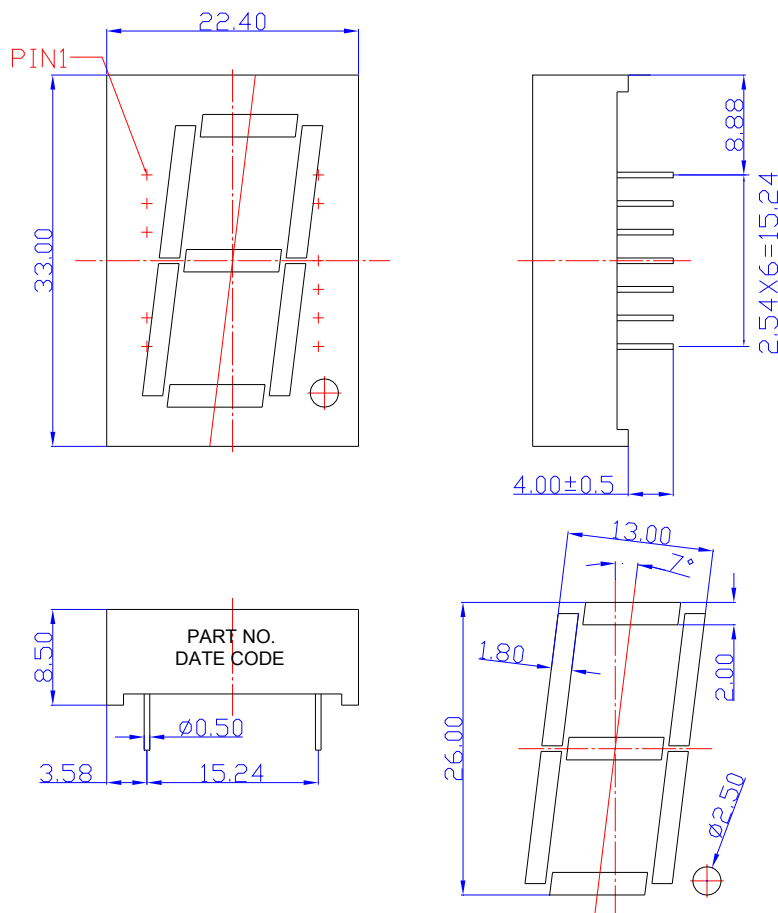
# Opto Plus LED Corp.

## 1.00" Case Mold Type LED Display

### OPD-S10020UPG-BW

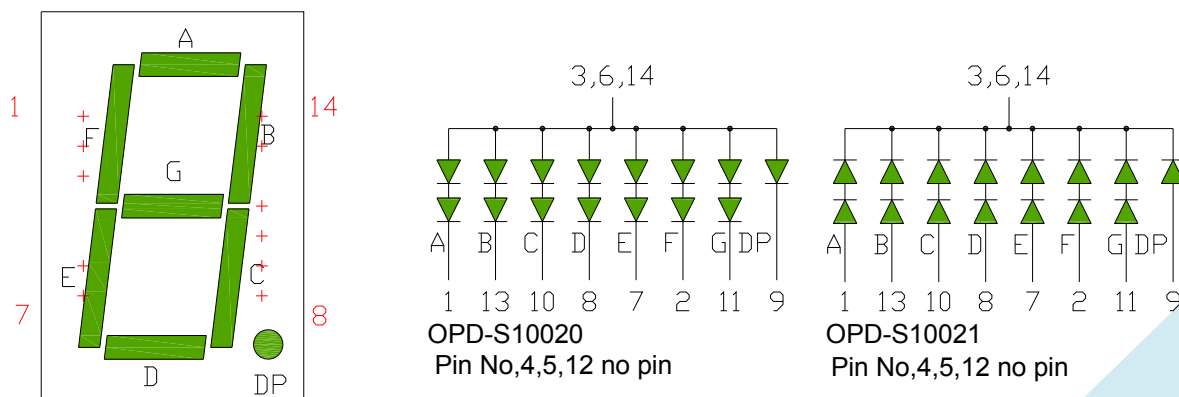
### OPD-S10021UPG-BW

### ● MECHANICAL DIMENSIONS



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

### ● TYPICAL INTERNAL EQUIVALENT CIRCUIT





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● **PG: PURE GREEN (InGaN/GaN)**

ABSOLUTE MAXIMUM RATING AT Ta=25°C

Parameter	Symbol	Pure Green	Unit
Power dissipation per dice	P <sub>AD</sub>	120	mW
Derating liner from 25°C per dice	-	0.4	mA / °C
Continuous forward current per dice	I <sub>AF</sub>	30	mA
Peak current per dice (duty cycle 1/10, 1kHz)	I <sub>PF</sub>	120	mA
Reverse voltage per dice	V <sub>R</sub>	8	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.	Type.	Max.	Unit
Forward Voltage per segment (per DP)	V <sub>F</sub>	I <sub>F</sub> =20mA	(2.8) 5.6	(3.2) 6.4	(3.6) 7.2	V
Reverse Current per segment (per DP)	I <sub>R</sub>	V <sub>R</sub> =8V	-	-	10	μA
Dominant wavelength	λ <sub>D</sub>	I <sub>F</sub> =20mA	500	525	535	nm
Luminous intensity	I <sub>V</sub>	I <sub>F</sub> =20mA	-	200	-	mcd
Spectral radiation bandwidth	Δλ	I <sub>F</sub> =20mA	-	30	-	nm



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### OPD-S10020UPG-BW

### OPD-S10021UPG-BW

#### ● PG: PURE GREEN (InGaN/GaN) CURVE

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

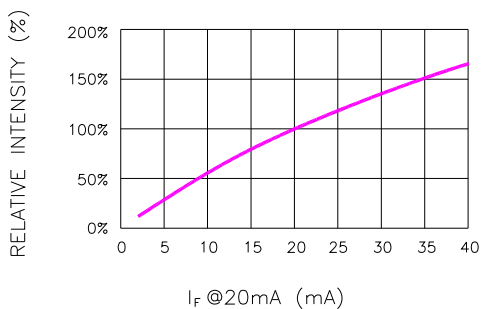


Fig.1 RELATIVE INTENSITY VS. FORWARD CURRENT

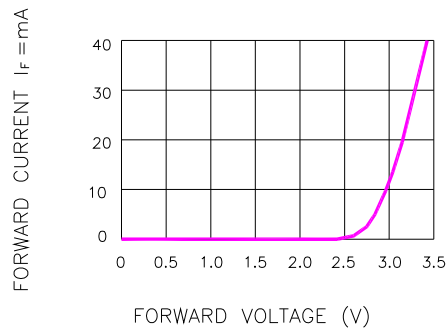


Fig.2 FORWARD CURRENT VS. FORWARD VOLTAGE

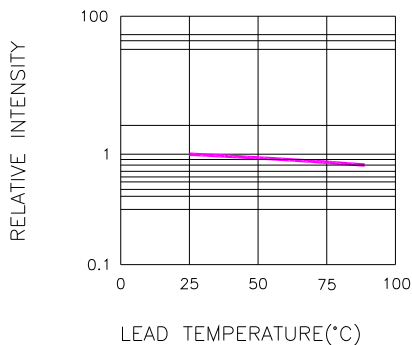


Fig.3 RELATIVE INTENSITY VS. LEAD TEMPERATURE  
(PULSED 20 mA; 300us PULSE, 10ms PERIOD)

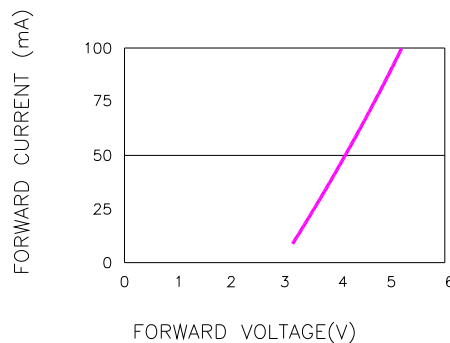


Fig.4 PEAK FORWARD VOLTAGE VS. FORWARD (100us TEST PULSE, 1% DUTY CYCLE)

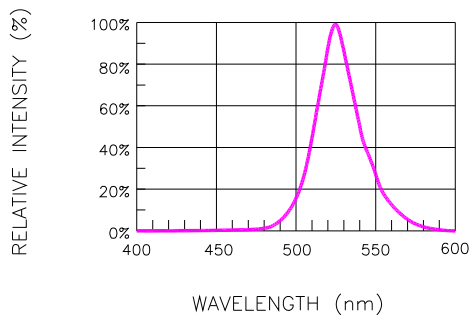


Fig.5 RELATIVE INTENSITY VS. WAVELENGTH

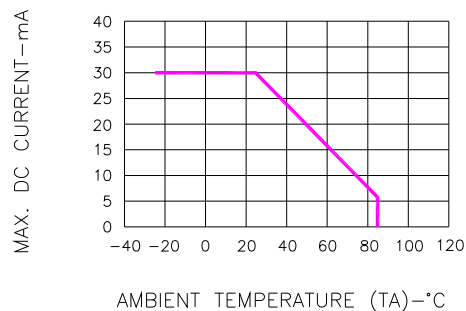
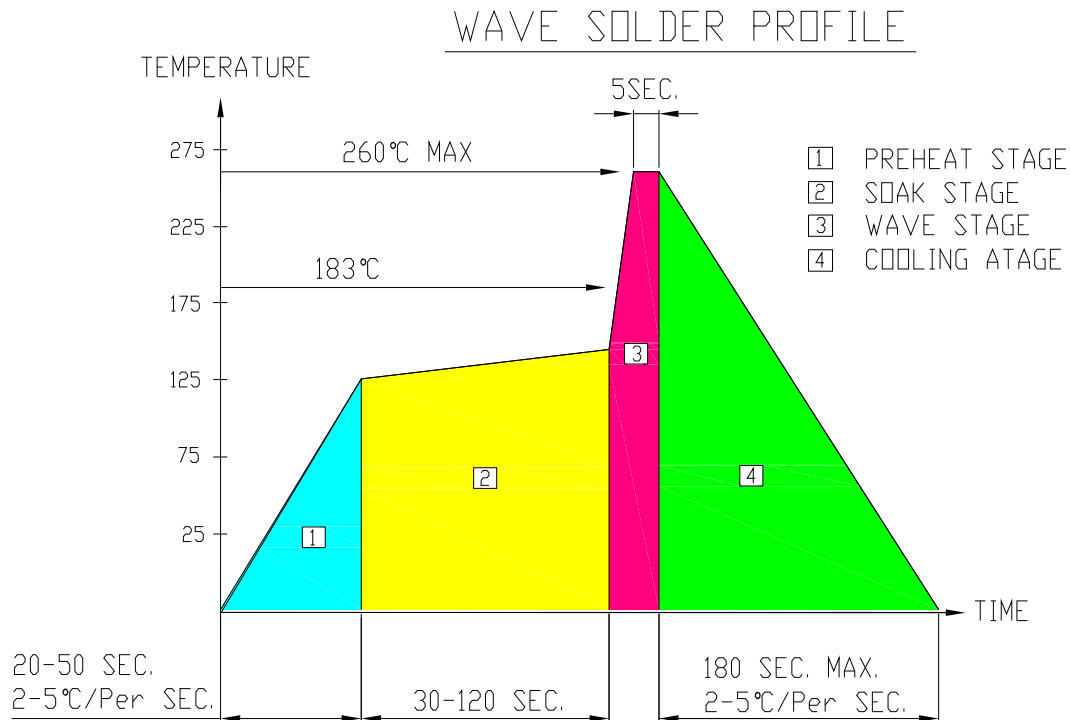


Fig.6 MAX. ALLOWABLE DC CURRENT VS. AMBIENT TEMPERATURE



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● **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.

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