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Opto Plus LED Corp.
0.56" SMD Type LED Display
OPS-S5110F2C | OPS-S5111F2A

● **EDIT HISTORY**

Version A: Apr. 03, 2024

Preliminary Spec.

Confidential Document



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● FEATURES

- 0.51 inch (13.00 mm) digit height.
- SMD type.
- Low current operation.
- RoHS Compliant, Pb Free.

● DESCRIPTION

The device are 0.51 inch (13.00 mm) height single digit 7-segment displays.

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, Pure Green & Super Bright Blue 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
	OPS-S5110F2C -GW	Common Anode Gray face White segment
	OPS-S5111F2A -GW	Common Cathode Gray face White segment
	OPS-S5110F2C -BW	Common Anode Black face White segment
	OPS-S5111F2A -BW	Common Cathode Black face White segment

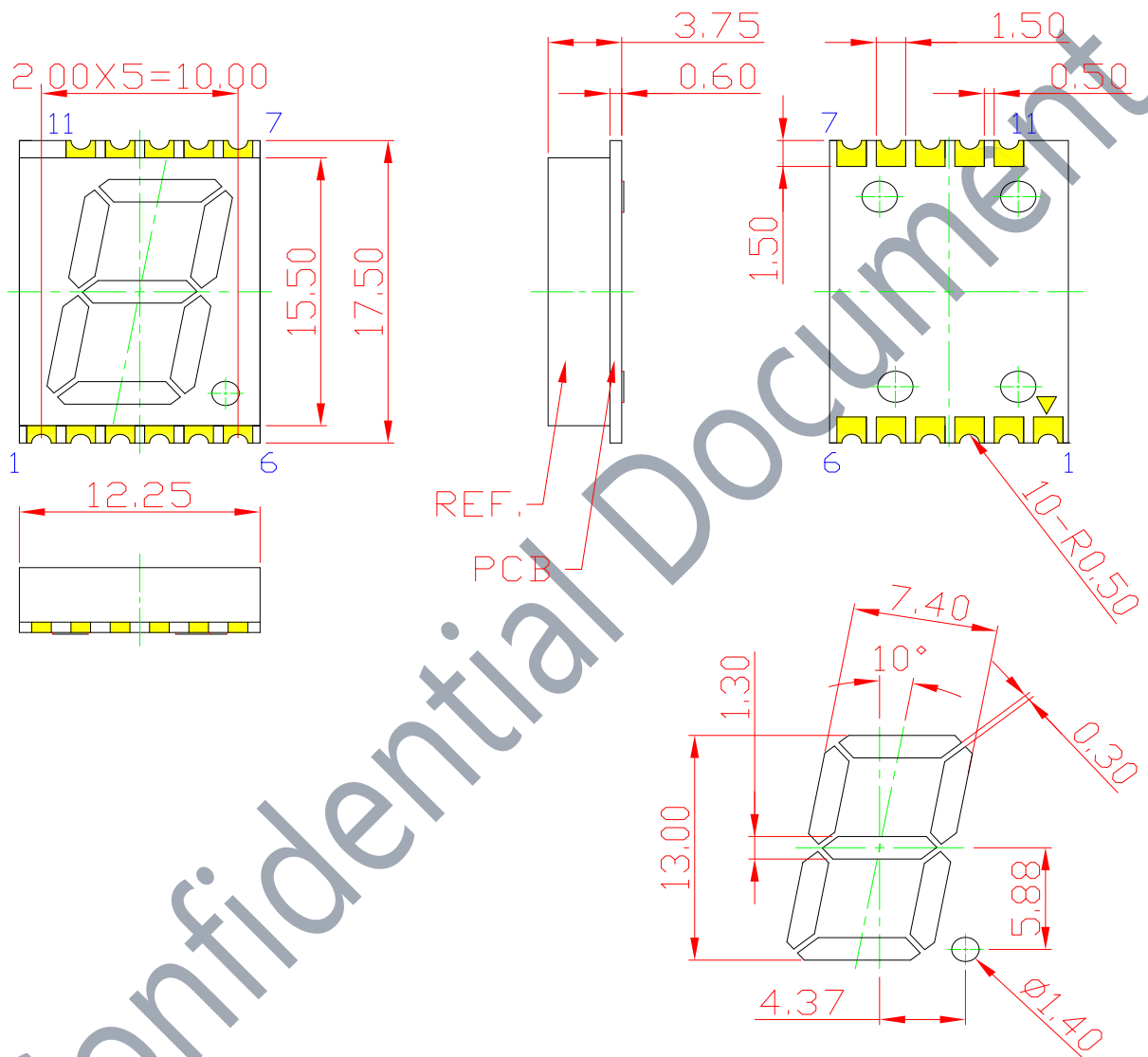
RoHS Compliance



Pb Free.



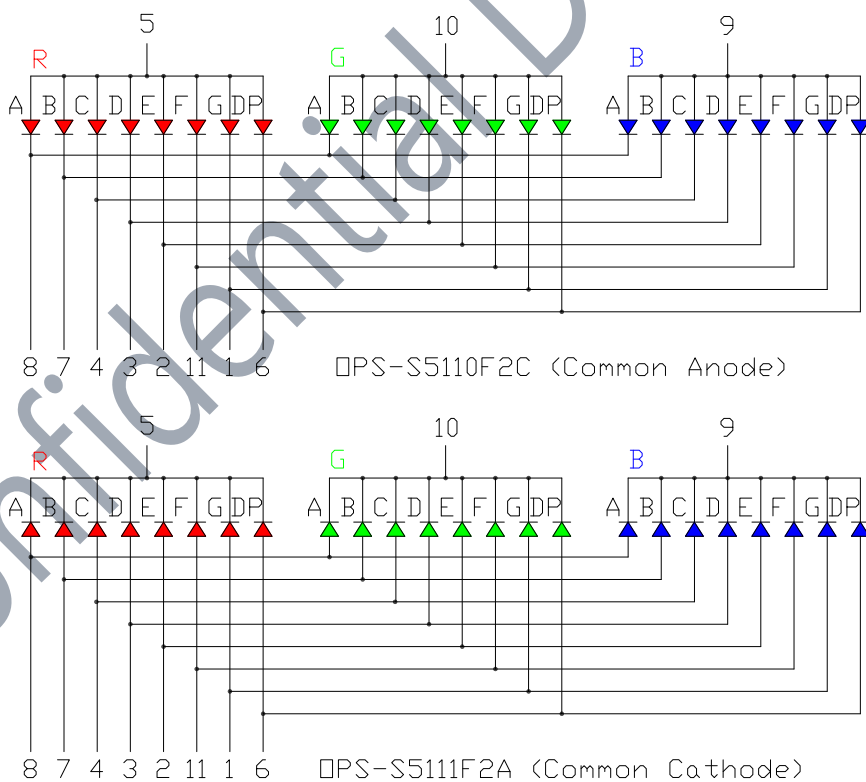
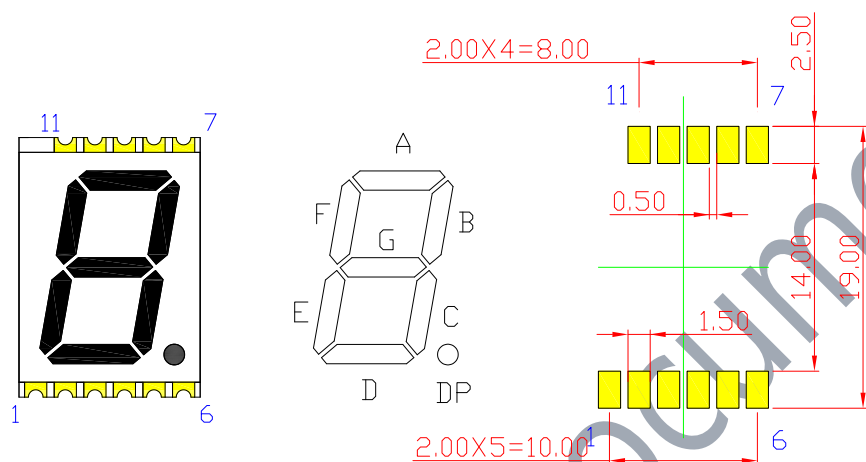
● MECHANICAL DIMENSIONS



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

● TYPICAL INTERNAL EQUIVALENT CIRCUIT

Recommended Soldering Pattern



※EMITTED COLOR : RED, GREEN & BLUE



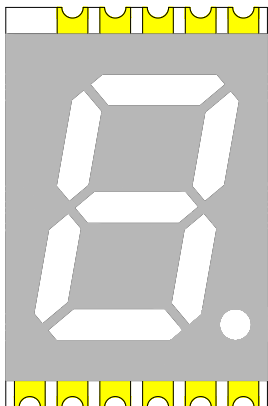
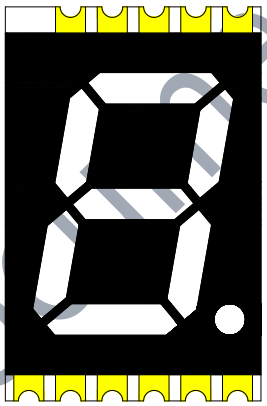
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● PRODUCT APPEARANCE

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
OPS-S5620F2C -GW	Common Anode Gray face White segment
OPS-S5621F2A -GW	Common Cathode Gray face White segment
OPS-S5620F2C -BW	Common Anode Black face White segment
OPS-S5621F2A -BW	Common Cathode Black face White segment



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● RED (AlGaInP) / GREEN & BLUE (InGaN)

ABSOLUTE MAXIMUM RATING AT Ta=25° (Per SMD Chip)

Series (系列)	P _D (mW) (消耗功率)	I _F (mA) (順向電流)	I _{FP} (mA) (脈衝順向電流)	VR (反向電壓)	T _{OP} (°C) (操作溫度)	T _{ST} (°C) (儲存溫度)
Color	Power Dissipation	Forward Current	Pulse Forward Current	Reverse Voltage	Operating temperature	Storage temperature
Red	24.4	5	20	5	-30 ~ +80	-40 ~ +85
Green		2				
Blue		2				

**Condition for I_{FP} is pulse of 1/10 duty and 0.1msec width

Remarks: This product should be operated forward bias. If a reverse voltage is continuously applied to the product, Such operation can cause migration resulting in LED damage.

ELECTRICAL - OPTICAL CHARACTERISTICS AT Ta=25°C (Per SMD Chip)

Lighting Color	Forward Voltage (V)		Dominant Wavelength (Chromaticity Coordinate)	I _v (mcd)	I _F (mA)
	Typ.	Max	Typ. (nm) / CIE (X,Y)	Typ.	
Red	1.9	2.4	621	32	5
Green	2.5	3.1	530	46	2
Blue	2.5	3.1	469	8	2



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● LUMINOUS INTENSITY (I_v) BIN: R @5 mA; G / B @2 mA

IV								
Red			Green			Blue		
HF3	21.3	26.7	HG3	30.0	37.5	HB3	5.4	6.8
HG1	24.0	30.0	HH1	33.5	42.0	HC1	6.0	7.5
HG2	26.7	33.5	HH2	37.5	47.0	HC2	6.8	8.5
HG3	30.0	37.5	HH3	42.0	52.5	HC3	7.5	9.4
HH1	33.5	42.0	HJ1	47.0	60.0	HD1	8.5	10.7
HH2	37.5	47.0	HJ2	52.5	65.7	HD2	9.4	12.0
HH3	42.0	52.5	HJ3	60.0	75.0	HD3	10.7	13.4

Note: It maintains a tolerance of $\pm 10\%$ on Luminous Intensity.

● DOMINANT WAVELENGTH (λ_d) BIN: R @5 mA; G / B @2 mA

WD								
Red			Green			Blue		
RH2	618	623	GH1	526	530	BH1	464	468
RH3	623	628	GH2	528	532	BH2	466	470
RH4	628	633	GH3	530	534	BH3	468	472
-	-	-	GH4	532	536	BH4	470	474
-	-	-	GH5	534	538			

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



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● **FORWARD VOLTAGE (V_F) BIN: R @5 mA; G / B @2 mA**

V_F								
Red			Green			Blue		
E18	1.6	2.4	F2A	2.1	3.1	F2A	2.1	3.1

Note: It maintains a tolerance $\pm 0.05V$ on forward voltage measurements



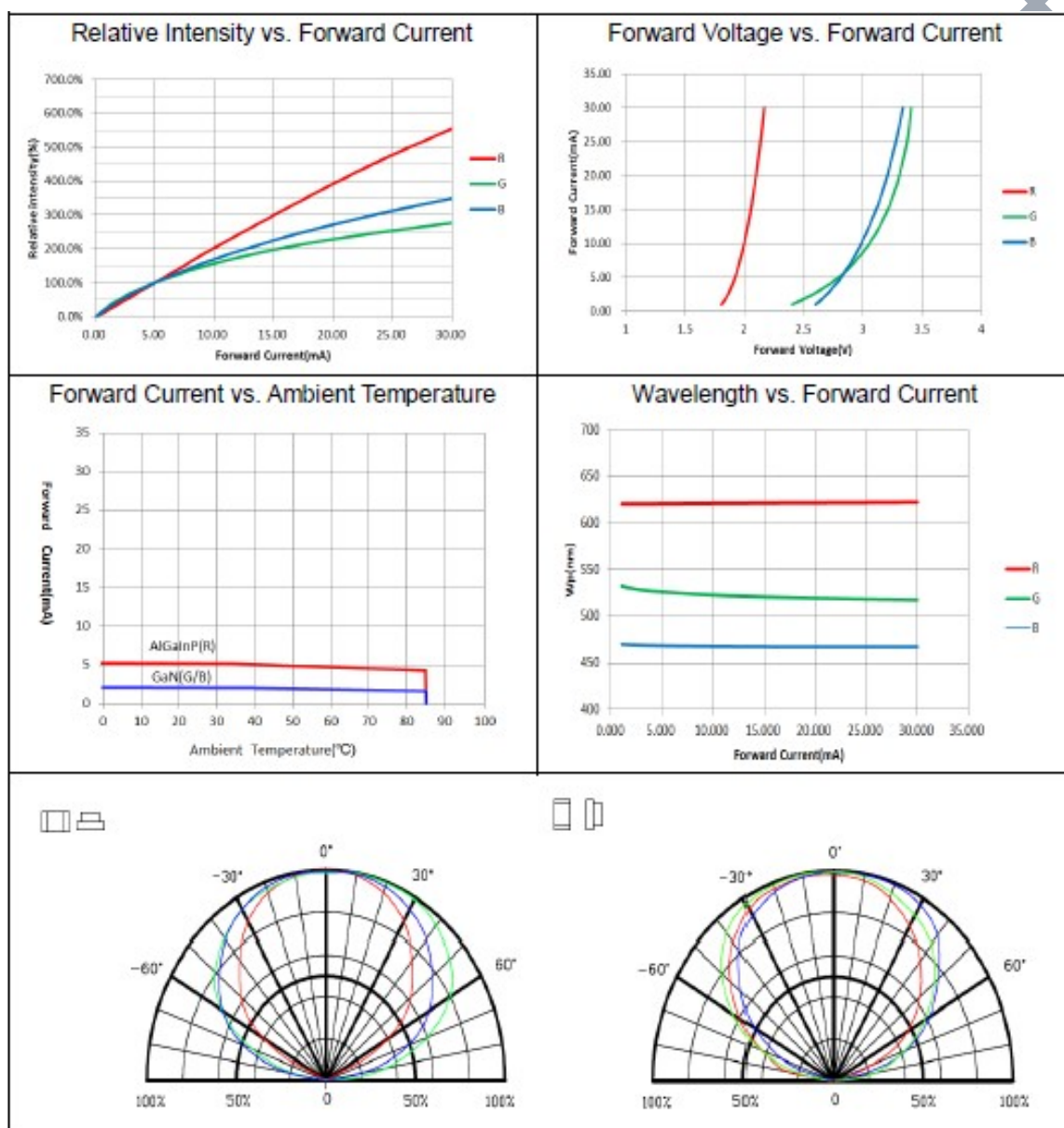
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● RED (AlGaInP) / GREEN & BLUE (InGaN) CURVE

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





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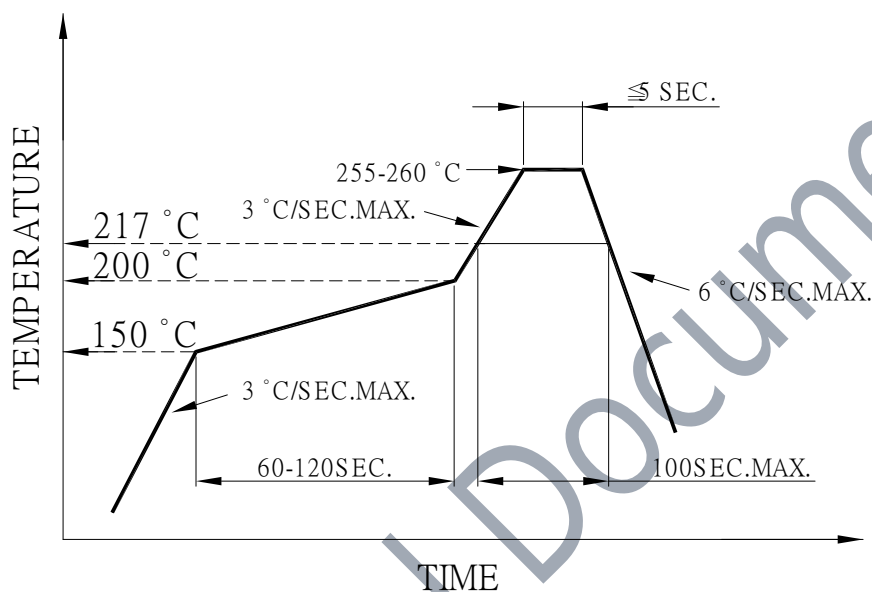
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● SMT REFLOW SOLDERING INSTRUCTIONS

SMT Soldering Profile

Pb free reflow soldering Profile



- We recommend the reflow temperature 245°C (+/- 5°C).
The maximum soldering temperature should be limited to 260°C.
- Number of reflow process shall be 2 times or less.

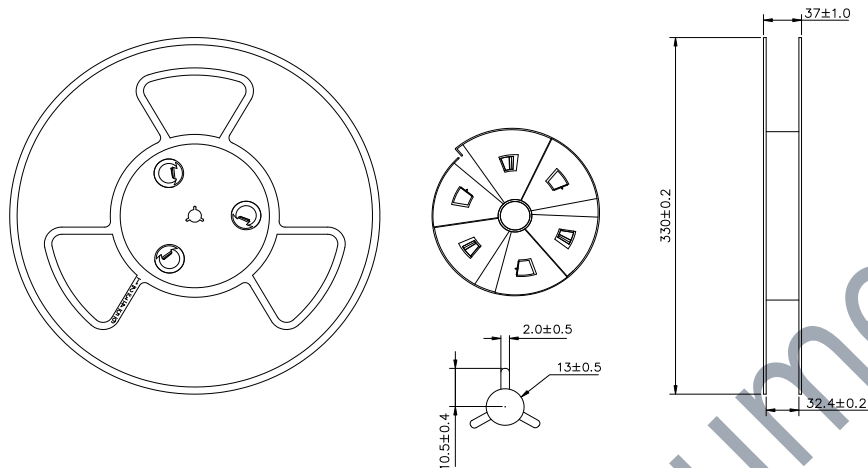
● SOLDERING IRON

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.

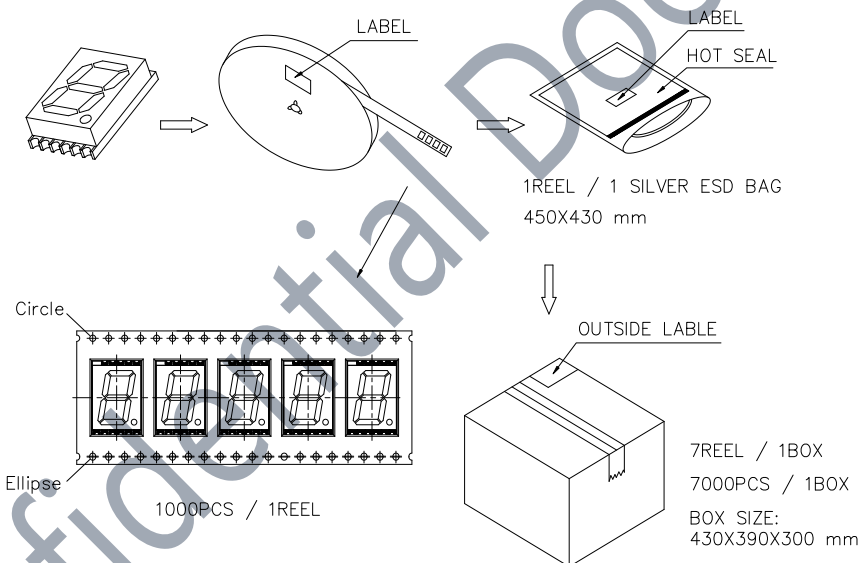
● REWORK

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

● REEL DIMENSIONS



● PACKING & LABEL SPECIFICATIONS



● STORAGE CONDITION

In factory original sealed bag package

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

After opened and not in factory original sealed bag package

TEMPERATURE CONDITION	HUMIDITY CONDITION	STORAGE TIME
5°C ~ 30°C	Below 60%RH	Within 4 weeks (MSL as level 2a)