

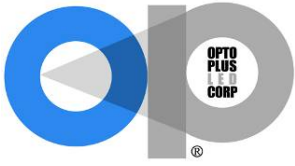
**Opto Plus LED Corp.**  
**0.51" SMD Type LED Display**  
**OPS-Q5110SB-GW**  
**OPS-Q5111SB-GW**

● **EDIT HISTORY**

Version A: Oct. 14, 2015

Preliminary spec.

Manufacture	Examination	Approving



**Opto Plus LED Corp.**  
**0.51" SMD Type LED Display**  
**OPS-Q5110SB-GW**  
**OPS-Q5111SB-GW**

● **FEATURES**

- 0.51 inch (13.0 mm) Digit Height.
- SMD type.
- Low current operation.
- Gray face, White segment.
- RoHS compliant, Pb Free.

● **DESCRIPTION**

The OPS-Q5110SB-GW & OPS-Q5111SB-GW are 0.51 inch (13.0mm) height Quadruple digit 7-segment display.

This device utilizes Super Bright Blue LED chip which are made from InGaN On a transparent GaN substrate.

The display has Gray face, White segment.

● **DEVICE**

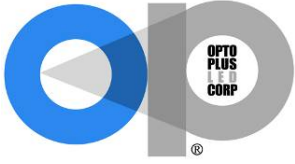
PART NO	DESCRIPTION
OPS-Q5110SB-GW	Common Anode
OPS-Q5111SB-GW	Common Cathode

**RoHS Compliance**



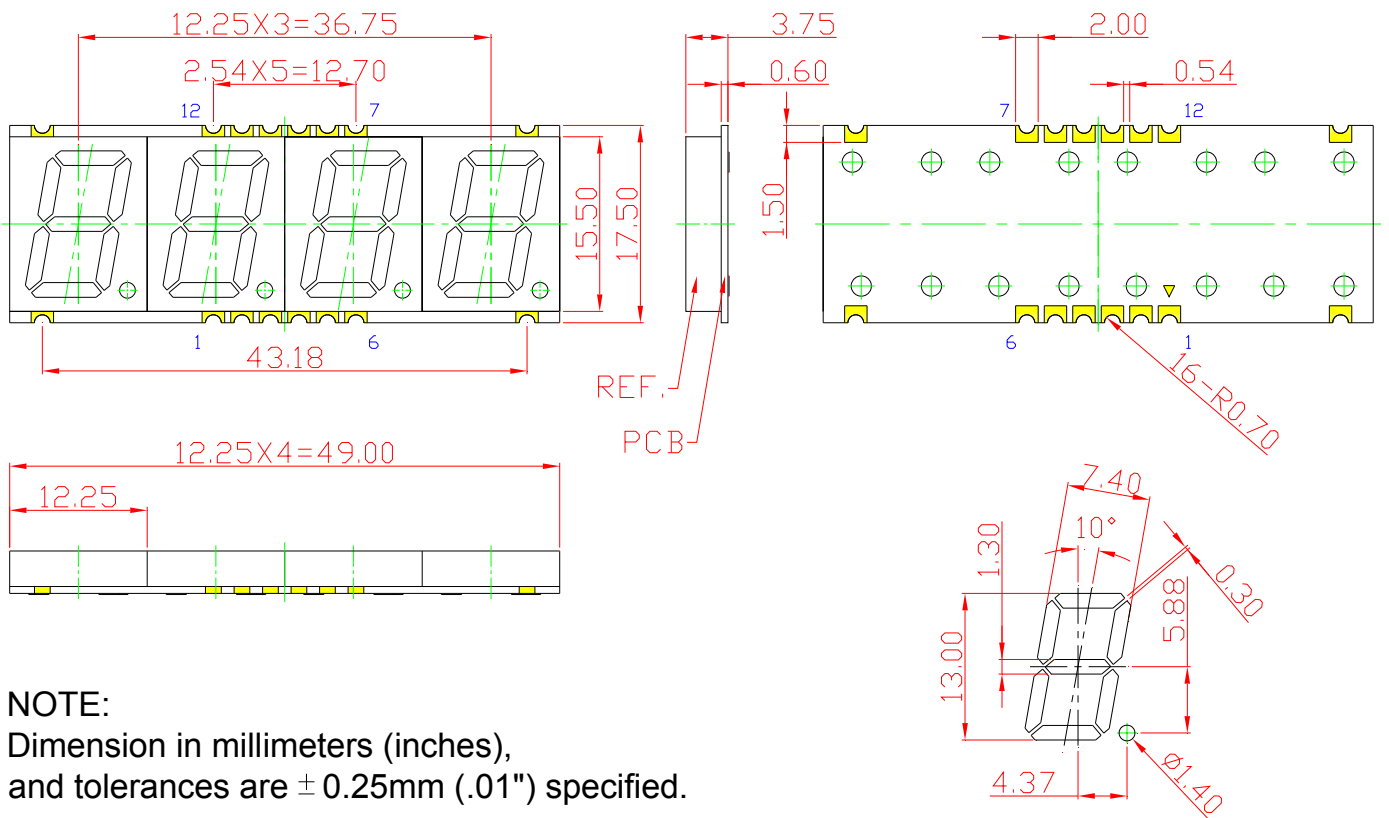
**Pb free.**



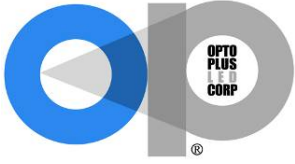


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● **MECHANICAL DIMENSIONS**



**NOTE:**  
 Dimension in millimeters (inches),  
 and tolerances are  $\pm 0.25$ mm (.01") specified.



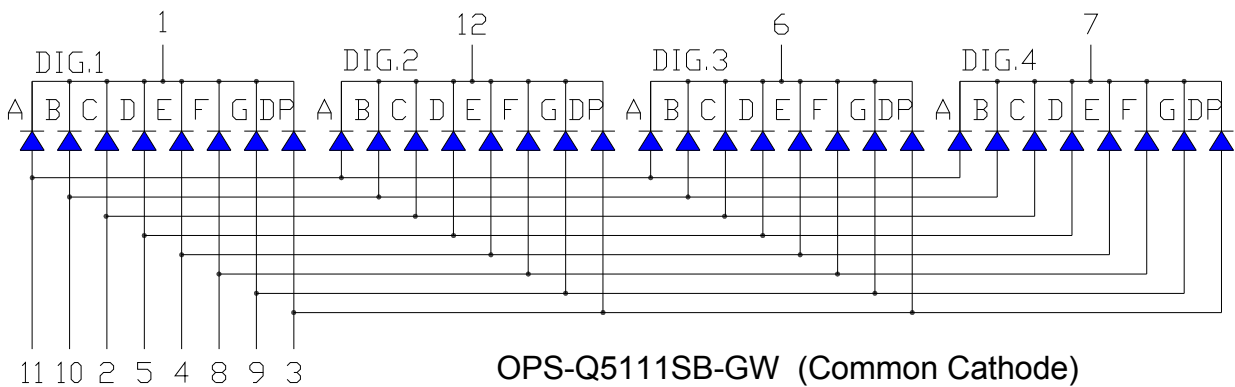
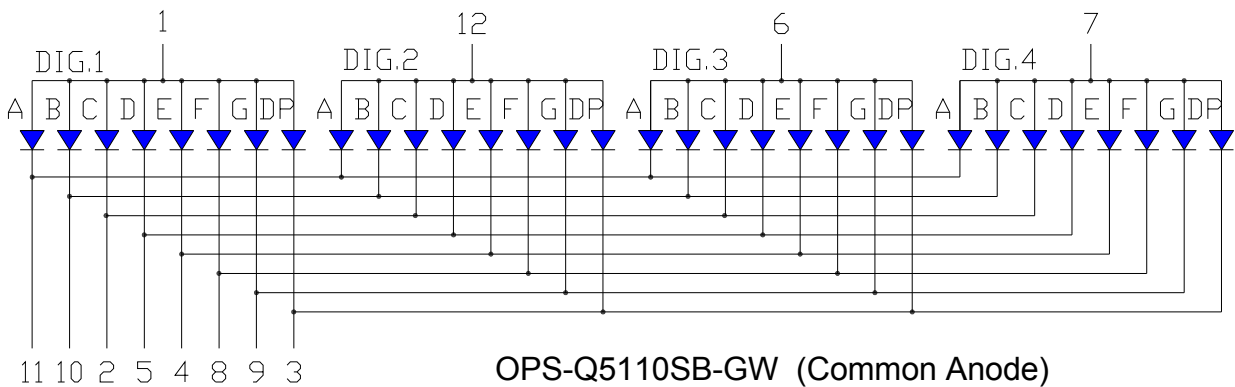
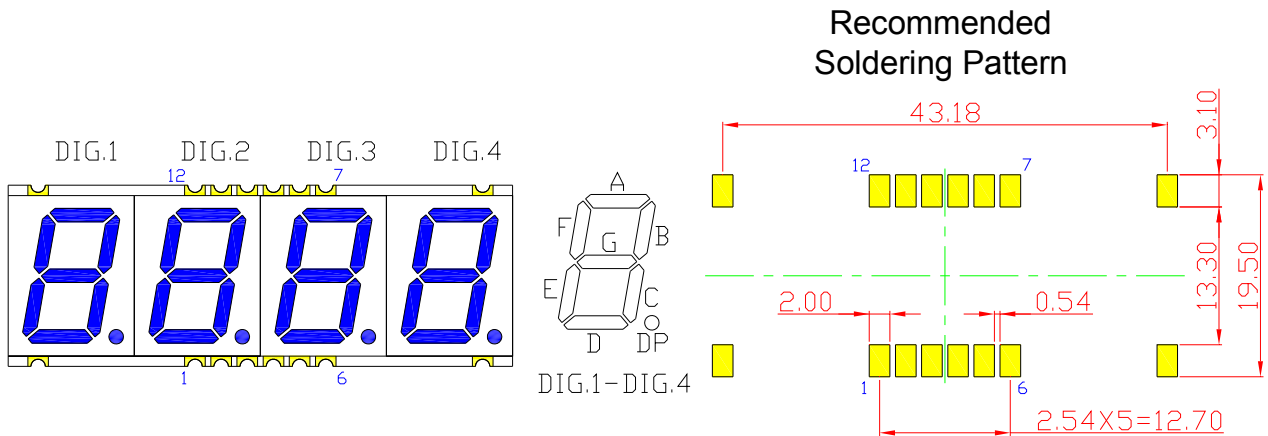
# Opto Plus LED Corp.

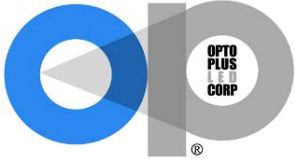
## 0.51" SMD Type LED Display

### OPS-Q5110SB-GW

### OPS-Q5111SB-GW

#### ● TYPICAL INTERNAL EQUIVALENT CIRCUIT





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**OPS-Q5111SB-GW**

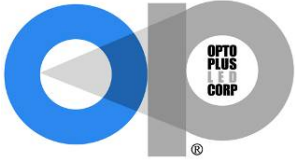
● **SB: SUPER BRIGHT BLUE (InGaN/GaN)**

ABSOLUTE MAXIMUM RATING AT Ta=25°C

Parameter	Symbol	Maximum Rating	Unit
Power dissipation	P <sub>AD</sub>	120	mW
Derating liner from 25°C	-	0.3	mA / °C
Continuous forward current	I <sub>AF</sub>	30	mA
Peak current (duty cycle 1/10, 1kHz)	I <sub>PF</sub>	100	mA
Reverse voltage	V <sub>R</sub>	5	V
Operating temperature	T <sub>OPR</sub>	-40 to +105	°C
Storage temperature	T <sub>STG</sub>	-40 to +105	°C

ELECTRICAL - OPTICAL CHARACTERISTICS AT Ta=25°C

Characteristic	Symbol	Condition	Min.	Type.	Max.	Unit
Forward Voltage, (Per Dice)	V <sub>F</sub>	I <sub>F</sub> =20mA	-	3.2	4.0	V
Reverse Current, (Per Dice)	I <sub>R</sub>	V <sub>R</sub> =8V	-	-	10	μA
Dominant Wavelength	λ <sub>D</sub>	I <sub>F</sub> =20mA	464	-	474	nm
Luminous Intensity	I <sub>V</sub>	I <sub>F</sub> =20mA	20	-	95	mcd
Spectral radiation bandwidth	Δλ	I <sub>F</sub> =20mA	-	30	-	nm



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● **SB: BIN GRADE (Unit : mcd ) 20mA**

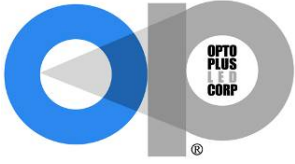
Super Bright Blue	L	M	N
	20.0 – 45.0	45.1 – 70.0	70.1 – 95.0

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

1	2	3
464.0 ~ 467.0	467.1 ~ 470.0	470.1~ 474.0

● **AVAILABLE BIN / HUE TABLE**

L1	L2	L3
M1	M2	M3
N1	N2	N3



# Opto Plus LED Corp.

## 0.51" SMD Type LED Display

### OPS-Q5110SB-GW

### OPS-Q5111SB-GW

#### ● SB: SUPER BRIGHT BLUE (InGaN/GaN) CURVE

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

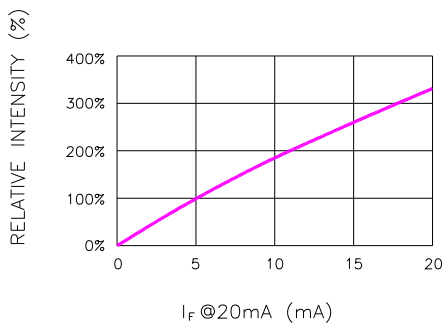


Fig.1 RELATIVE INTENSITY VS. FORWARD CURRENT

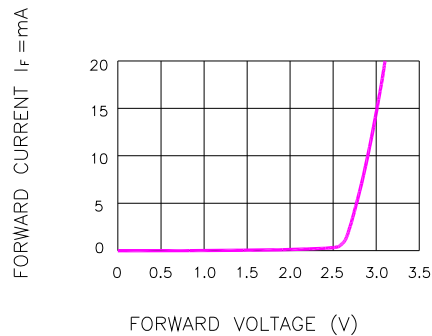


Fig.2 FORWARD CURRENT VS. FORWARD VOLTAGE

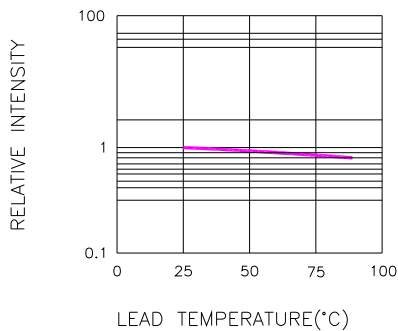


Fig.3 RELATIVE INTENSITY VS. LEAD TEMPERATURE  
(PULSED 20 mA; 300us PULSE, 10ms PERIOD)

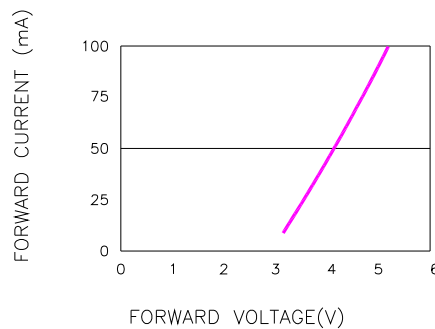


Fig.4 PEAK FORWARD VOLTAGE VS. FORWARD (100us TEST PULSE, 1% DUTY CYCLE)

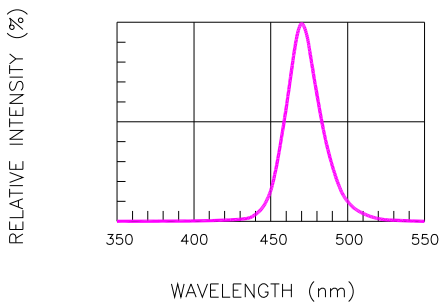


Fig.5 RELATIVE INTENSITY VS. WAVELENGTH

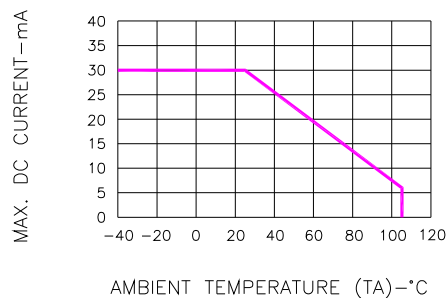
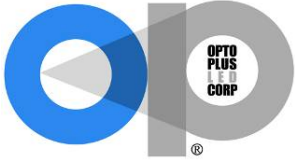


Fig.6 MAX. ALLOWABLE DC CURRENT VS. AMBIENT TEMPERATURE

Version: A Date: 10/14/2015

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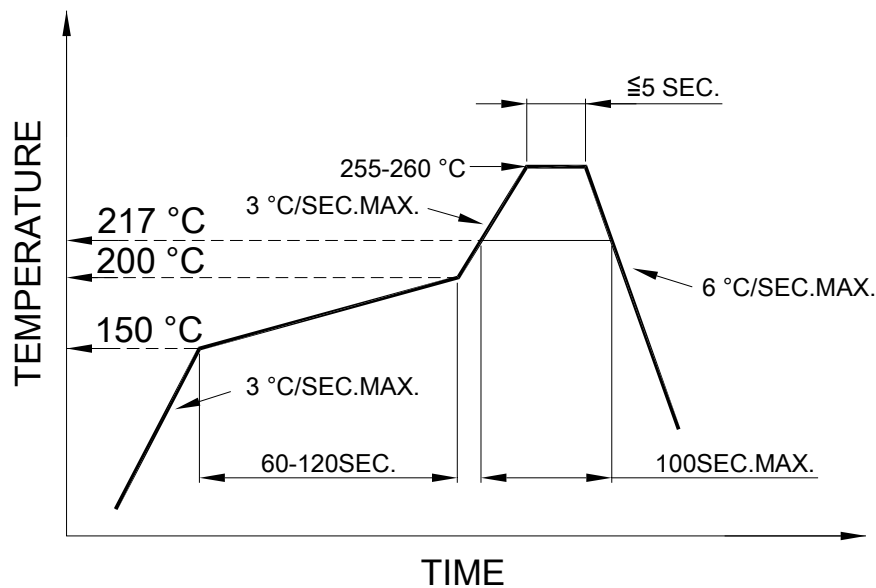


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● **SMT REFLOW SOLDERING INSTRUCTIONS**

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  $\leq 4$  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 3 sec. under 350°C.
- The head of soldering iron cannot touch copper foil.