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Opto Plus LED Corp.
0.39" SMD Type LED Display
OPS-S391-2W-STT(R)-1.5-G(B)W
OPS-S391-3W-STT(R)-1.5-G(B)W

● **EDIT HISTORY**

Version A: Mar. 24, 2025

Preliminary Spec.

Confidential Document



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● FEATURES

- 0.39 inch (10.0 mm) Digit Height.
- Low current operation.
- Excellent character appearance.
- Super thin SMD type.
- RoHS compliant, Pb Free.

● DESCRIPTION

The device are 0.39 inch (10.00 mm) height single digit 7-segment displays.

The device is Opto Plus LED Corp standard LED Display.

This device utilizes Super Bright White 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-S391-2W-STT-1.5-GW	Common Anode Gray face White segment Top mount
OPS-S391-3W-STT-1.5-GW	Common Cathode Gray face White segment Top mount
OPS-S391-2W-STT-1.5-BW	Common Anode Black face White segment Top mount
OPS-S391-3W-STT-1.5-BW	Common Cathode Black face White segment Top mount
OPS-S391-2W-STR-1.5-GW	Common Anode Gray face White segment Reverse mount
OPS-S391-3W-STR-1.5-GW	Common Cathode Gray face White segment Reverse mount
OPS-S391-2W-STR-1.5-BW	Common Anode Black face White segment Reverse mount
OPS-S391-3W-STR-1.5-BW	Common Cathode Black face White segment Reverse mount

RoHS Compliance



Pb Free.



Opto Plus LED Corp. 7F-3, No.496, Bannan Road, Zhonghe Dist., New Taipei City 235, Taiwan (R.O.C)
Website: www.opledtw.com E-mail: sales@opledtw.com Tel: 886-2-2222-5698 Fax: 886-2-2222-2566

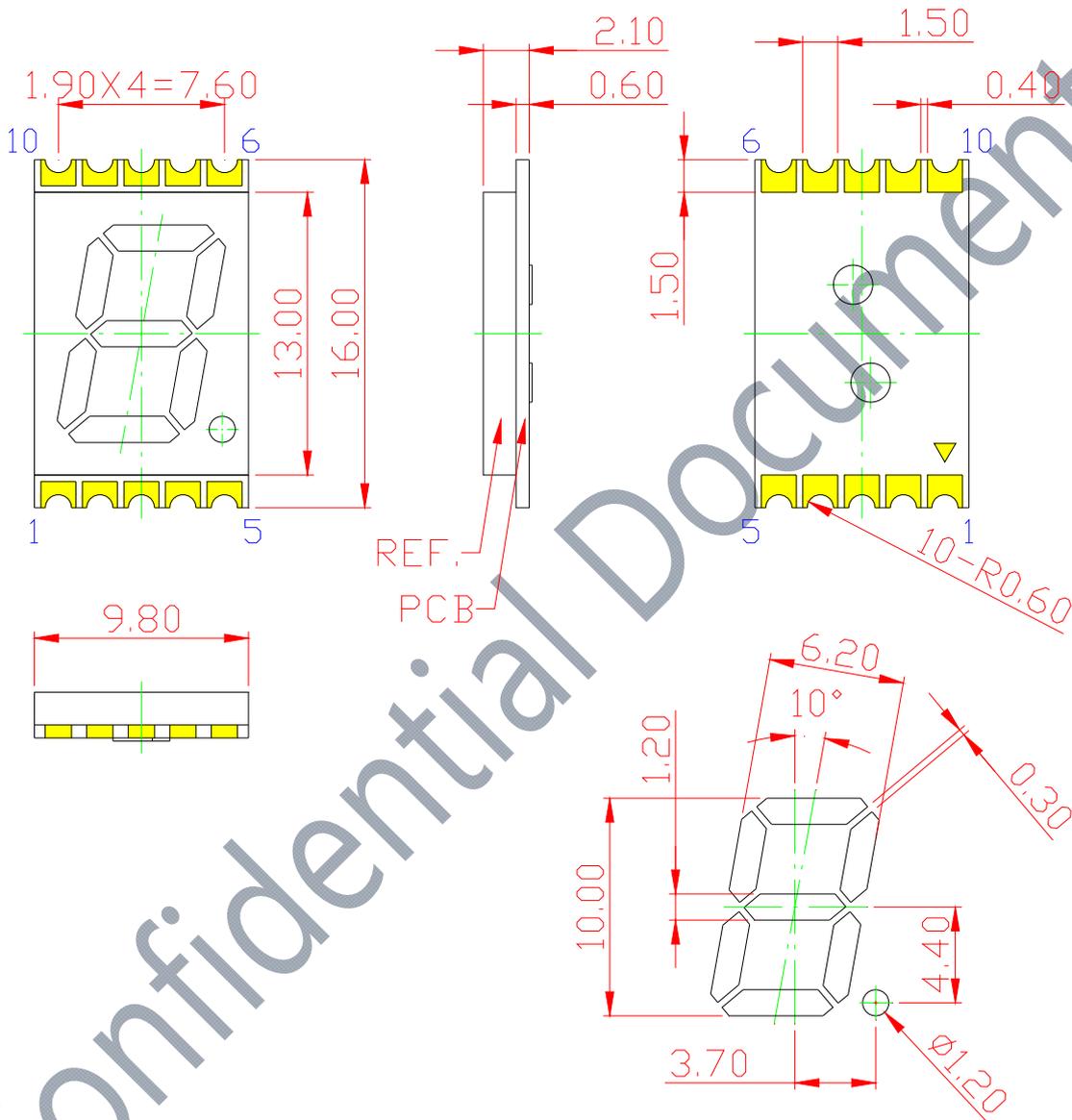
Disclaimer:
Subject to change without notice



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● **MECHANICAL DIMENSIONS**



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



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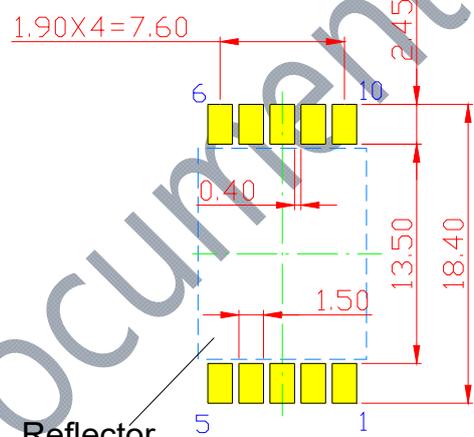
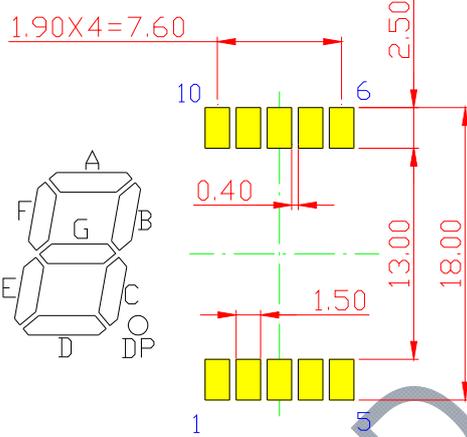
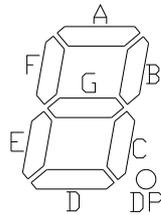
OPS-S391-3W-STT(R)-1.5-G(B)W

● TYPICAL INTERNAL EQUIVALENT CIRCUIT

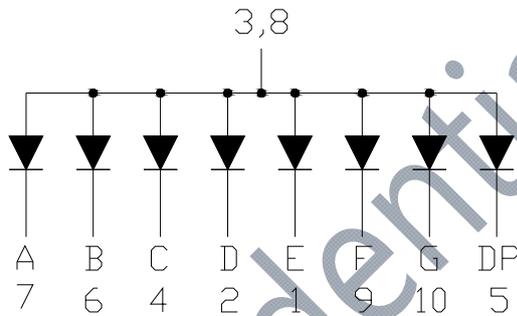
Recommended
Top Mount
Soldering Pattern

Recommended
Reverse Mount
Soldering Pattern

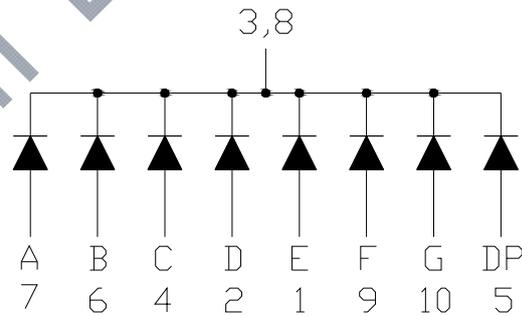
Turn On Color



Reflector
(Mounting Hole)

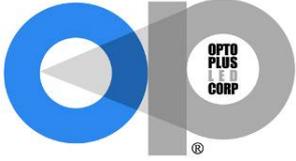


OPS-S391-2W-STT(R)-1.5-G(B)W
(Common Anode)



OPS-S391-3W-STT(R)-1.5-G(B)W
(Common Cathode)

※EMITTED COLOR : SUPER BRIGHT WHITE



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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-S391-2W-STT-1.5-GW	Common Anode Gray face White segment Top mount
OPS-S391-3W-STT-1.5-GW	Common Cathode Gray face White segment Top mount
OPS-S391-2W-STT-1.5-BW	Common Anode Black face White segment Top mount
OPS-S391-3W-STT-1.5-BW	Common Cathode Black face White segment Top mount
OPS-S391-2W-STR-1.5-GW	Common Anode Gray face White segment Reverse mount
OPS-S391-3W-STR-1.5-GW	Common Cathode Gray face White segment Reverse mount
OPS-S391-2W-STR-1.5-BW	Common Anode Black face White segment Reverse mount
OPS-S391-3W-STR-1.5-BW	Common Cathode Black face White segment Reverse mount



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● **W: SUPER BRIGHT WHITE (InGaN/GaN)**

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

Parameter	Symbol	Maximum Rating	Unit
Power Dissipation	P _D	33	mW
Forward Current	I _F	10	mA
Pulse Forward Current	I _{FP}	60	mA
Operating temperature	T _{OP}	-40 to + 85	°C
Storage temperature	T _{ST}	-40 to + 100	°C

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

Characteristic	Symbol	Condition	Min.	Type	Max.	Unit
Forward Voltage	V _F	I _F =5mA	-	2.9	3.2	V
Reverse Current	I _R	V _R =5V	-	-	10	μA
Luminous Intensity	I _v	I _F =5mA	112.5	200	285	mcd
Chromaticity Coordinate		X	-	0.285	-	
		Y	-	0.275		



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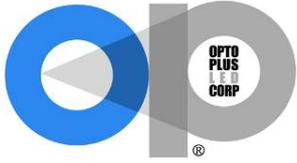
● **LUMINOUS INTENSITY (IV) BIN:**

Super Bright White	1	2	3
Reference BIN (Chip)	(R11) 112.5-126.0	(R12) 126.0-140.0	(R21) 140.0-160.0

Super Bright White	4	5	6
Reference BIN (Chip)	(R22) 160.0-180.0	(S11) 180.0-202.0	(S12) 202.0-226.0

Super Bright White	7	8
Reference BIN (Chip)	(S21) 226.0-255.5	(S22) 255.5-285.0

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



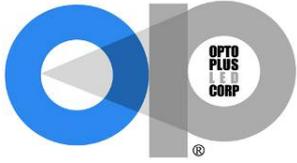
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● **COLOR BIN:**

Color	AA2		BB1		BB2	
TW	0.2700	0.2400	0.2800	0.2500	0.2900	0.2600
	0.2700	0.2500	0.2800	0.2600	0.2900	0.2700
	0.2800	0.2600	0.2900	0.2700	0.3000	0.2800
	0.2800	0.2500	0.2900	0.2600	0.3000	0.2700
	CC2		DD1		DD2	
	0.2700	0.2500	0.2800	0.2600	0.2900	0.2700
	0.2700	0.2600	0.2800	0.2700	0.2900	0.2800
	0.2800	0.2700	0.2900	0.2800	0.3000	0.2900
	0.2800	0.2600	0.2900	0.2700	0.3000	0.2800
	EE2		FF1		FF2	
	0.2700	0.2600	0.2800	0.2700	0.2900	0.2800
	0.2700	0.2700	0.2800	0.2800	0.2900	0.2900
	0.2800	0.2800	0.2900	0.2900	0.3000	0.3000
	0.2800	0.2700	0.2900	0.2800	0.3000	0.2900
	GG2		HH1		HH2	
	0.2700	0.2700	0.2800	0.2800	0.2900	0.2900
	0.2700	0.2800	0.2800	0.2900	0.2900	0.3000
	0.2800	0.2900	0.2900	0.3000	0.3000	0.3100
	0.2800	0.2800	0.2900	0.2900	0.3000	0.3000

Note: It maintains a tolerance of X,Y ±0.007.



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● **AVAILABLE BIN / HUE TABLE**

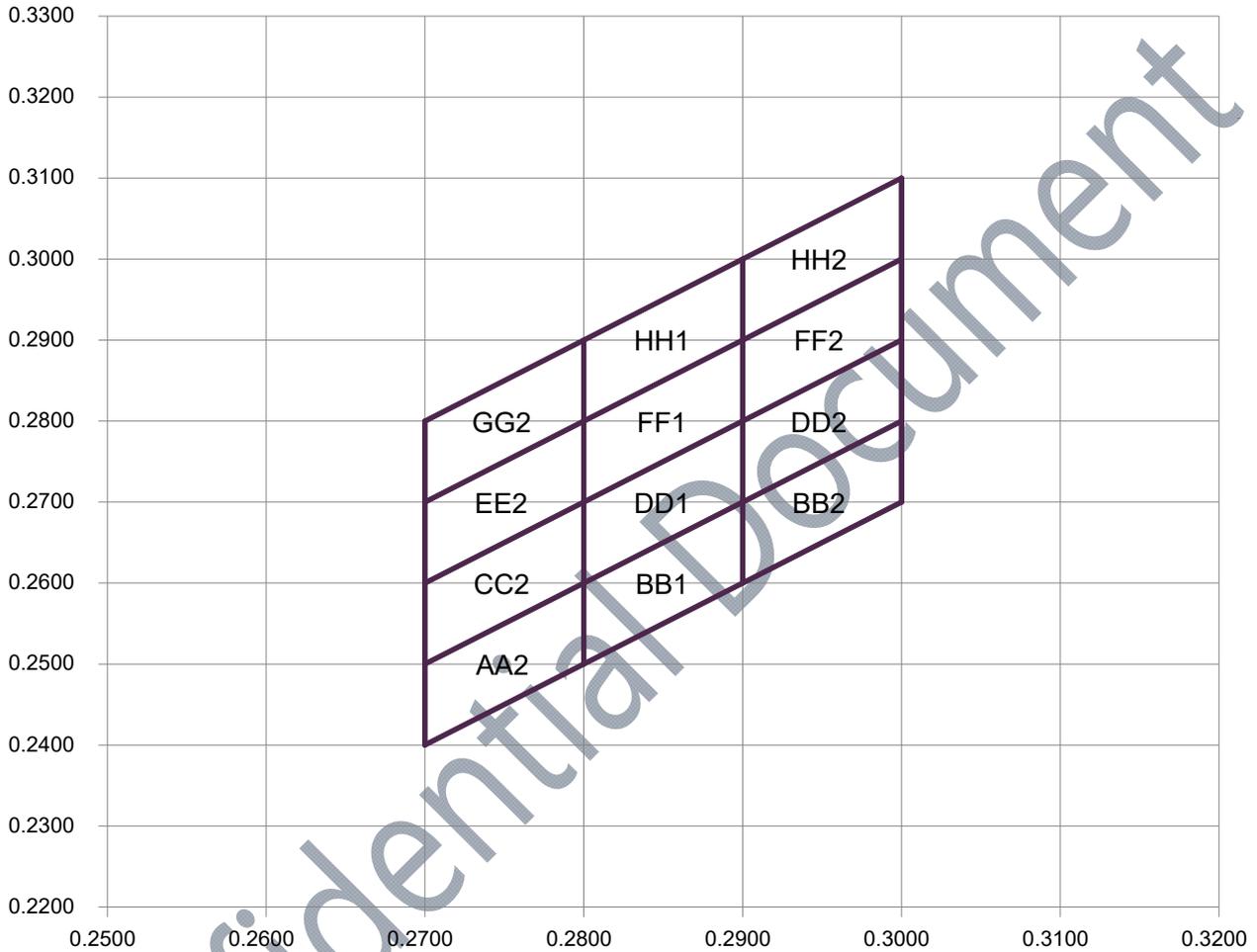
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2EE2	2FF1	2FF2	2GG2	2HH1	2HH2
3AA2	3BB1	3BB2	3CC2	3DD1	3DD2
3EE2	3FF1	3FF2	3GG2	3HH1	3HH2
4AA2	4BB1	4BB2	4CC2	4DD1	4DD2
4EE2	4FF1	4FF2	4GG2	4HH1	4HH2
5AA2	5BB1	5BB2	5CC2	5DD1	5DD2
5EE2	5FF1	5FF2	5GG2	5HH1	5HH2
6AA2	6BB1	6BB2	6CC2	6DD1	6DD2
6EE2	6FF1	6FF2	6GG2	6HH1	6HH2
7AA2	7BB1	7BB2	7CC2	7DD1	7DD2
7EE2	7FF1	7FF2	7GG2	7HH1	7HH2
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8EE2	8FF1	8FF2	8GG2	8HH1	8HH2

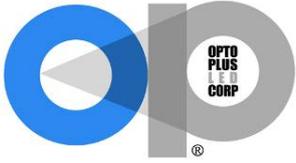


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● **CHROMATICITY COORDINATE:**





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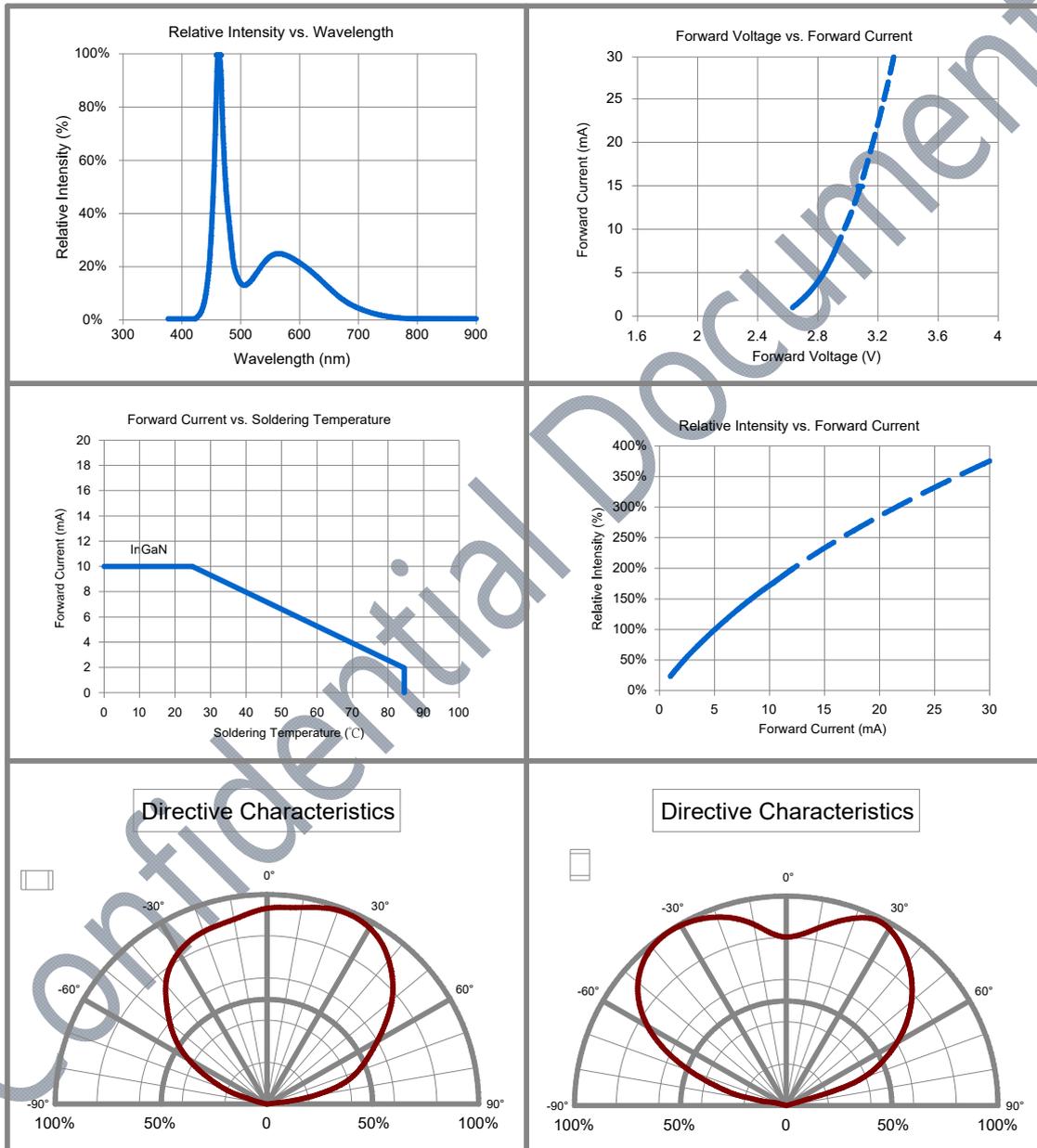
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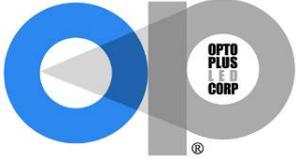
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OPS-S391-3W-STT(R)-1.5-G(B)W

● W: SUPER BRIGHT WHITE (InGaN/GaN) CURVE

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





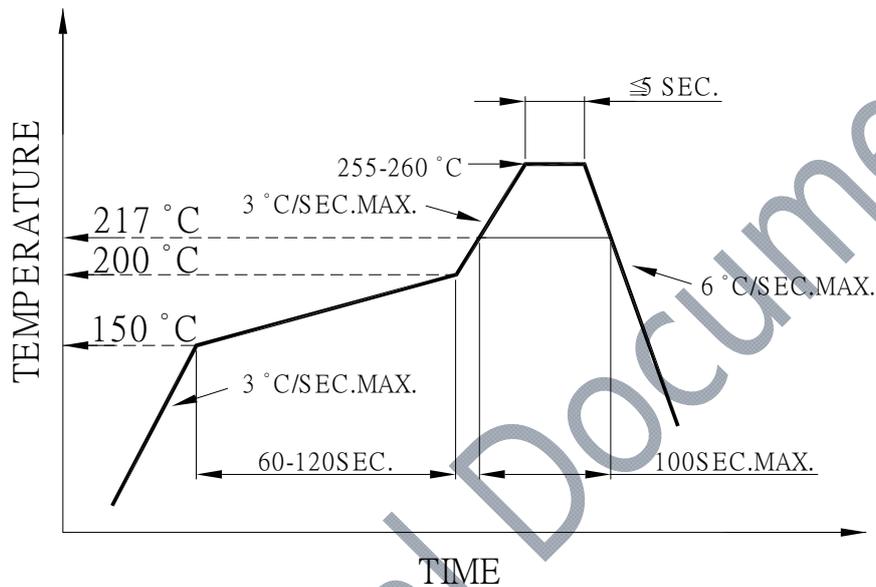
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● **SMT REFLOW SOLDERING INSTRUCTIONS**

SMT Soldering Profile

Pb free reflow soldering Profile



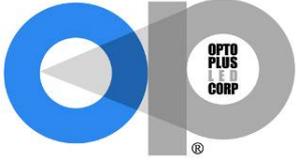
- We recommend the reflow temperature 245°C (+/- 5°C).
The maximum soldering temperature should be limited to 260°C.
- Number of reflow process shall be 2 times or less.

● **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.



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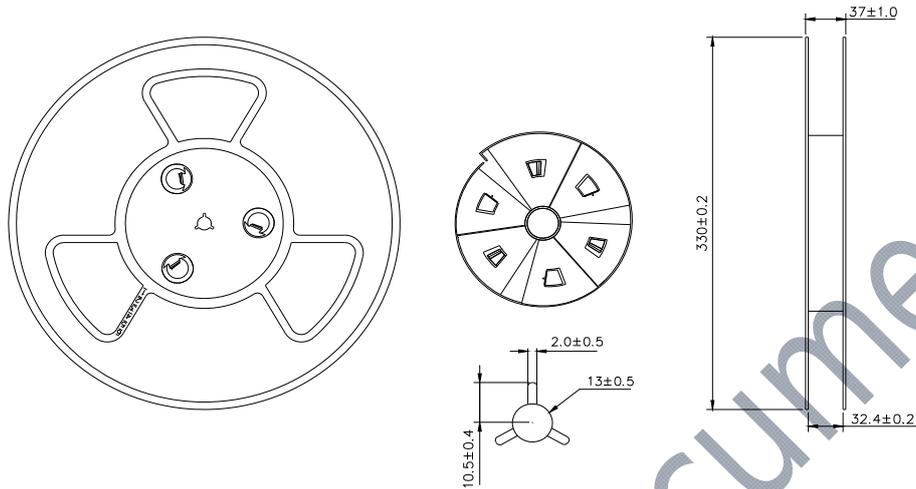
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● REEL DIMENSIONS



● PACKING & LABEL SPECIFICATIONS

OPS-S391-2(3)XX-STT-1.5-BW Top Mount	OPS-S391-2(3)XX-STR-1.5-BW Reverse Mount	OPS-S391-2(3)XX-STT-1.5-BW OPS-S391-2(3)XX-STR-1.5-BW
<p>Circle</p> <p>Ellipse</p> <p>1200PCS / 1REEL</p>	<p>Circle</p> <p>Ellipse</p> <p>1200PCS / 1REEL</p>	<p>LABEL HOT SEAL</p> <p>1 REEL / 1 SILVER ESD BAG 450X430 mm</p> <p>OUTSIDE LABEL</p> <p>7 REEL / 1 BOX 8400PCS / 1 BOX BOX SIZE: 430X390X300 mm</p>

● 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)