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**American Opto Plus LED Corp.**  
**0.56" SMD Type LED Display**  
**SMA561W-ST-1.5 G/W**  
**SMC561W-ST-1.5 G/W**

● **EDIT HISTORY**

Version A: Jul. 15, 2015

Preliminary spec.

Version B: Jul. 22, 2015

1. Modify mechanical dimensions.
2. Modify typical internal equivalent circuit.

Version C: Aug. 31, 2015

Modify SMD chip data, & add bin / hue data.

Version D: Oct. 07, 2016

Add package spec.

Version E: Aug. 29, 2017

1. Modify bin & hue data.
2. Modify package spec.

Version F: Sep. 13, 2017

Modify SMD chip data & bin / hue data.

Version G: Sep. 14, 2017

Modify mechanical dimensions, add inch dimensions.

Version H: Apr. 25, 2019

1. Modify mechanical dimensions.
2. Modify packing & label specifications.



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# American Opto Plus LED Corp.

## 0.56" SMD Type LED Display

### SMA561W-ST-1.5 G/W

### SMC561W-ST-1.5 G/W

#### ● FEATURES

- 0.56 inch (14.22 mm) Digit Height.
- Low current operation.
- Super thin SMD type.
- Gray face, White segment.
- RoHS compliant, Pb Free.

#### ● DESCRIPTION

The SMA561W-ST-1.5 G/W & SMC561W-ST-1.5 G/W

Are 0.56 inch (14.22mm) height single digit 7-segment display.

This device utilizes Super Bright White SMD LED chip which are made from InGaN on a transparent GaN substrate.

The display has Gray face, White segment.

#### ● DEVICE

PART NO	DESCRIPTION
SMA561W-ST-1.5 G/W	Common Anode
SMC561W-ST-1.5 G/W	Common Cathode

**RoHS Compliance**



**Pb free.**





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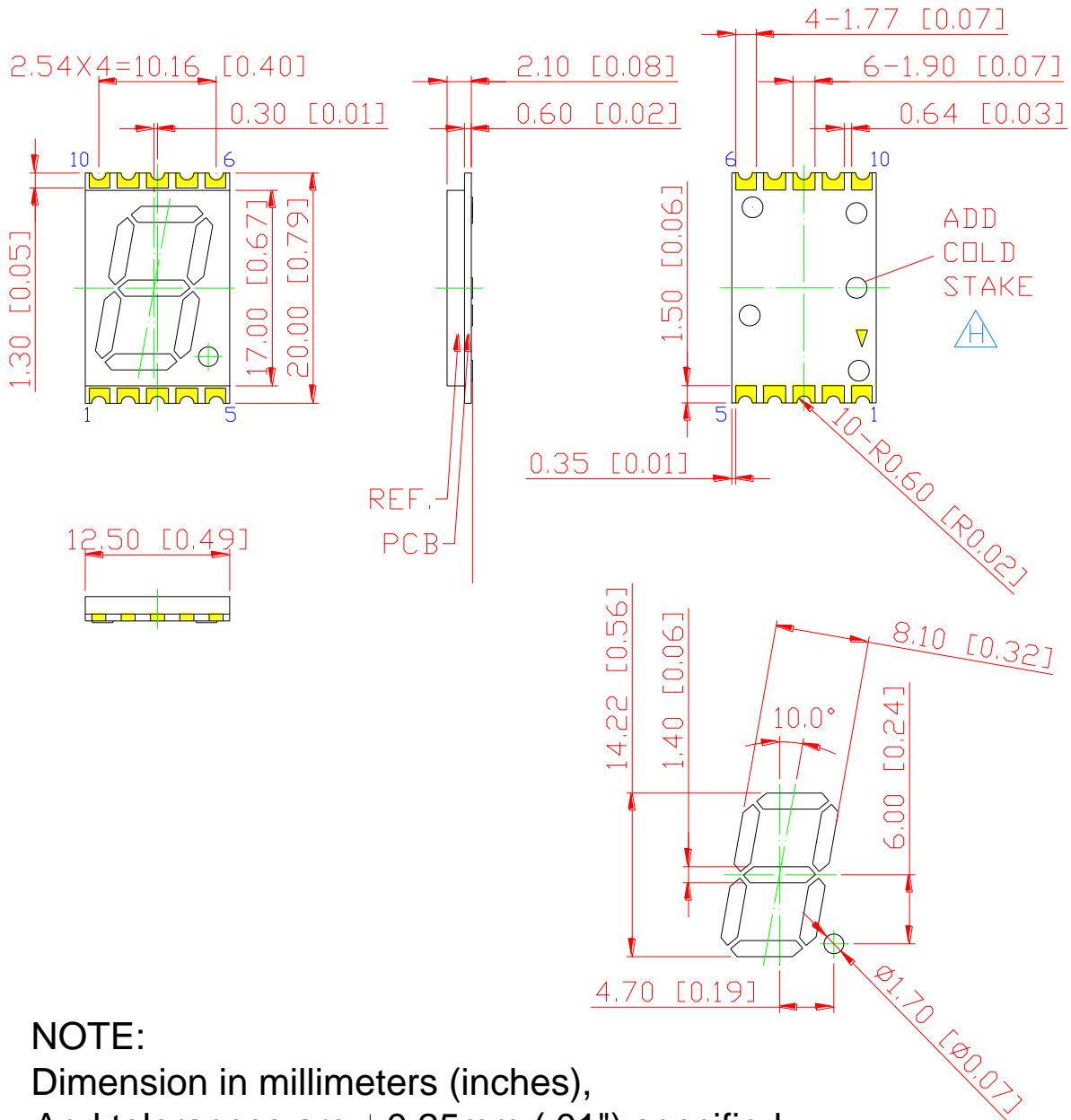
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## 0.56" SMD Type LED Display

### SMA561W-ST-1.5 G/W

### SMC561W-ST-1.5 G/W

#### ● MECHANICAL DIMENSIONS



#### NOTE:

Dimension in millimeters (inches),  
And tolerances are  $\pm 0.25\text{mm}$  (.01") specified.



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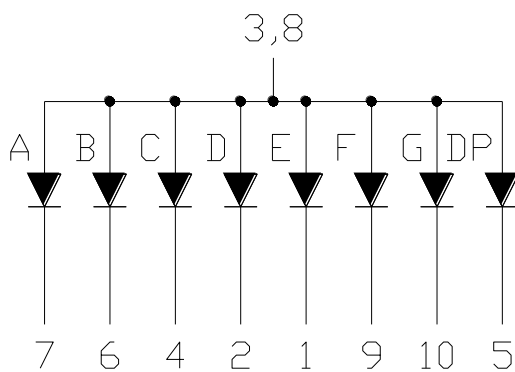
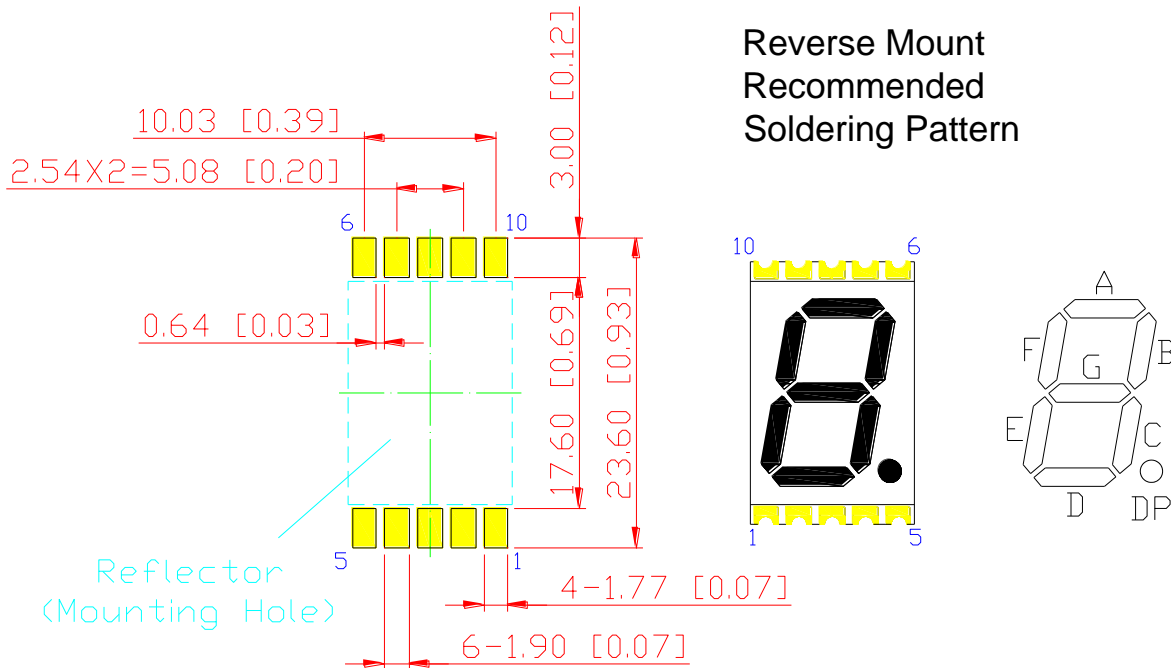
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## 0.56" SMD Type LED Display

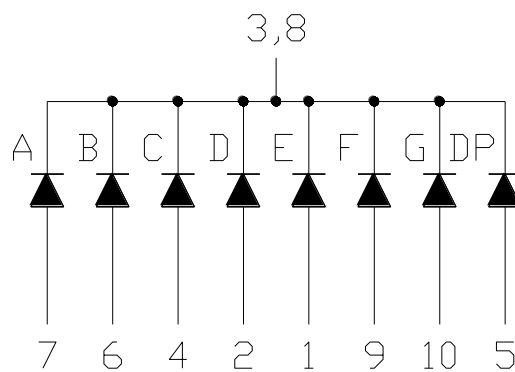
### SMA561W-ST-1.5 G/W

### SMC561W-ST-1.5 G/W

#### ● TYPICAL INTERNAL EQUIVALENT CIRCUIT



SMA561W-ST-1.5 G/W  
(Common Anode)



SMC561W-ST-1.5 G/W  
(Common Cathode)



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

ABSOLUTE MAXIMUM RATING AT Ta=25°C

Parameter	Symbol	Maximum Rating	Unit
Power dissipation	P <sub>AD</sub>	16.25	mW
Continuous forward current	I <sub>AF</sub>	5	mA
Peak current (duty cycle 1/10, 1kHz)	I <sub>PF</sub>	60	mA
Reverse voltage	V <sub>R</sub>	5	V
Operating temperature	T <sub>OPR</sub>	-40 to + 85	°C
Storage temperature	T <sub>STG</sub>	-40 to + 100	°C

ELECTRICAL - OPTICAL CHARACTERISTICS AT Ta=25°C

Characteristic	Symbol	Condition	Min.	Type	Max.	Unit	
Forward Voltage (Per Chip)	V <sub>F</sub>	I <sub>F</sub> =5mA	-	2.9	-	V	
Reverse Current (Per Chip)	I <sub>R</sub>	V <sub>R</sub> =5V	-	-	10	μA	
Dominant Wavelength	λ <sub>D</sub>	I <sub>F</sub> =5mA	X	-	0.29	-	nm
			Y	-	0.285	-	
Average Luminous Intensity (Per Chip)	I <sub>v</sub>	I <sub>F</sub> =5mA	192	-	405	mcd	



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● **WHITE: IV BIN (Unit : mcd) 5mA**

Super Bright White	1	2
	192.0 – 232.0	232.0 – 280.0
SMD BIN	FR1	FR3

Super Bright White	3	4
	280.0 – 336.0	336.0 – 405.0
SMD BIN	FS2	FT1

Note: It maintains a tolerance of  $\pm 10\%$  on IV



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## 0.56" SMD Type LED Display

### SMA561W-ST-1.5 G/W

### SMC561W-ST-1.5 G/W

#### ● WHITE: COLOR BIN

CIE	G1		G2		E1		E2	
	X	Y	X	Y	X	Y	X	Y
	0.26	0.26	0.27	0.27	0.26	0.25	0.27	0.26
	0.27	0.28	0.28	0.29	0.27	0.27	0.28	0.28
SMD BIN	GG1		GG2		EE1		EE2	

CIE	EK		EL		C1		C2	
	X	Y	X	Y	X	Y	X	Y
	0.24	0.23	0.25	0.24	0.26	0.24	0.27	0.25
	0.25	0.25	0.26	0.26	0.27	0.26	0.28	0.27
SMD BIN	EEK		EEL		CC1		CC2	

CIE	CK		CL		F1	
	X	Y	X	Y	X	Y
	0.24	0.22	0.25	0.23	0.28	0.27
	0.25	0.24	0.26	0.25	0.29	0.29
SMD BIN	CCK		CCL		FF1	

CIE	AK		A2		AL		A1	
	X	Y	X	Y	X	Y	X	Y
	0.24	0.21	0.27	0.24	0.25	0.22	0.26	0.23
	0.25	0.23	0.28	0.26	0.26	0.24	0.27	0.25
SMD BIN	AAK		AA2		AAL		AA1	

Note: It maintains a tolerance of x,y ±0.007



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● **FORWARD VOLTAGE (VF) BIN:**

BIN CODE	G4	H1	H2	H3	H4
SPEC. RANGE	2.7 - 2.8	2.8 - 2.9	2.9 - 3.0	3.0 - 3.1	3.1 - 3.2

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

● **AVAILABLE BIN / HUE TABLE**

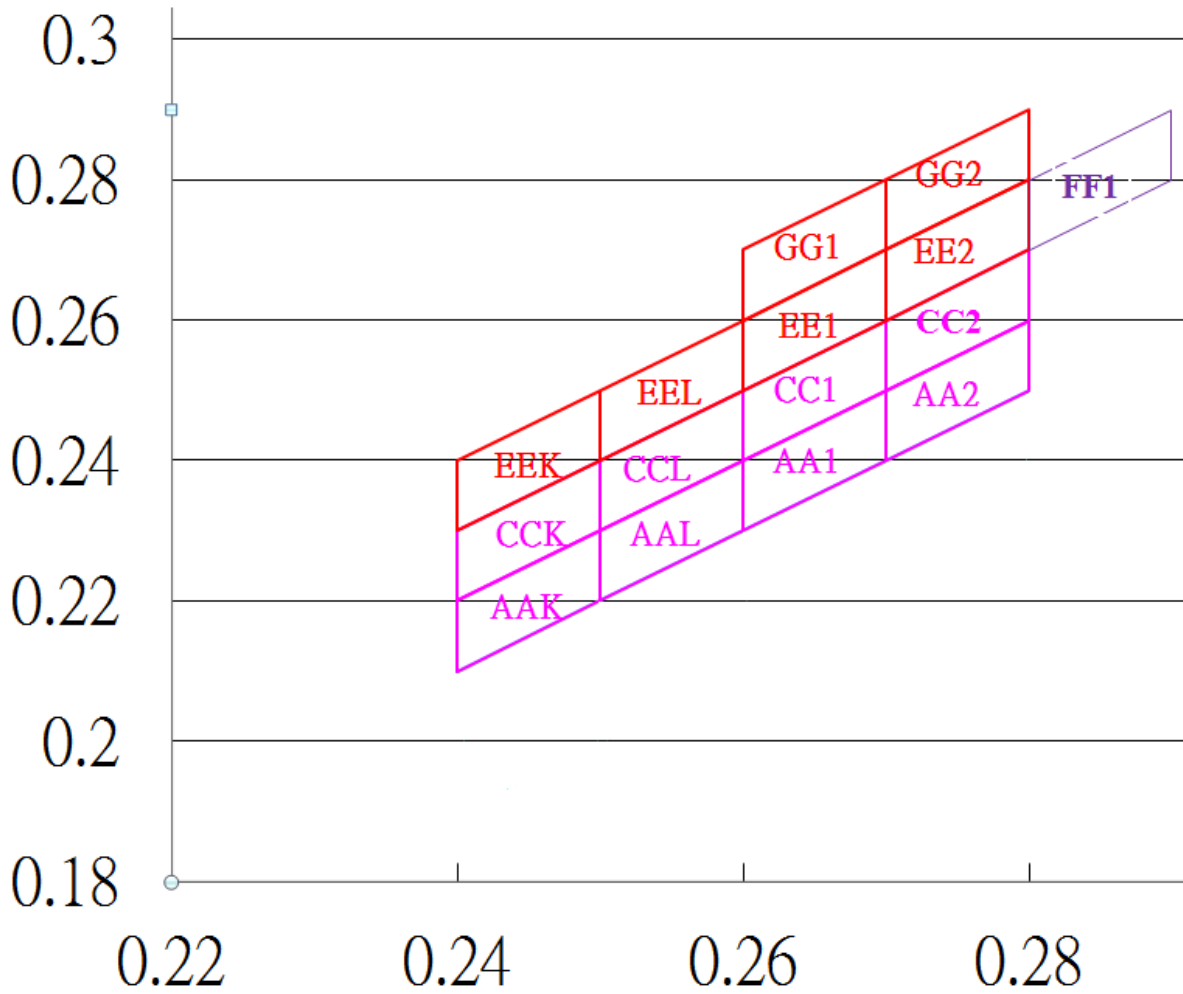
1G1	1G2	1E1	1E2	1EK
1EL	1C1	1C2	1CK	1CL
1F1	1AK	1A2	1AL	1A1
2G1	2G2	2E1	2E2	2EK
2EL	2C1	2C2	2CK	2CL
2F1	2AK	2A2	2AL	2A1
3G1	3G2	3E1	3E2	3EK
3EL	3C1	3C2	3CK	3CL
3F1	3AK	3A2	3AL	3A1
4G1	4G2	4E1	4E2	4EK
4EL	4C1	4C2	4CK	4CL
4F1	4AK	4A2	4AL	4A1





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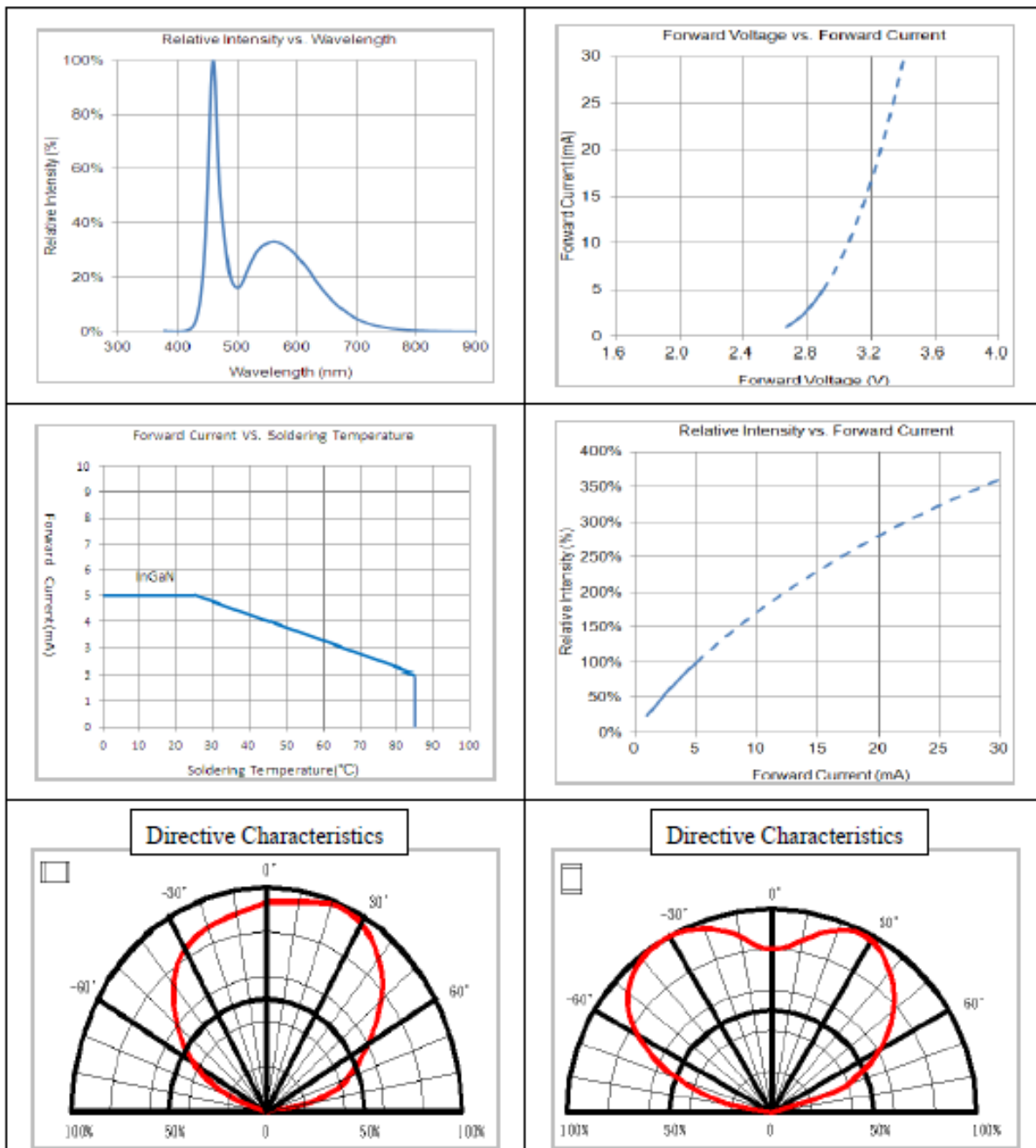
## 0.56" SMD Type LED Display

### SMA561W-ST-1.5 G/W

### SMC561W-ST-1.5 G/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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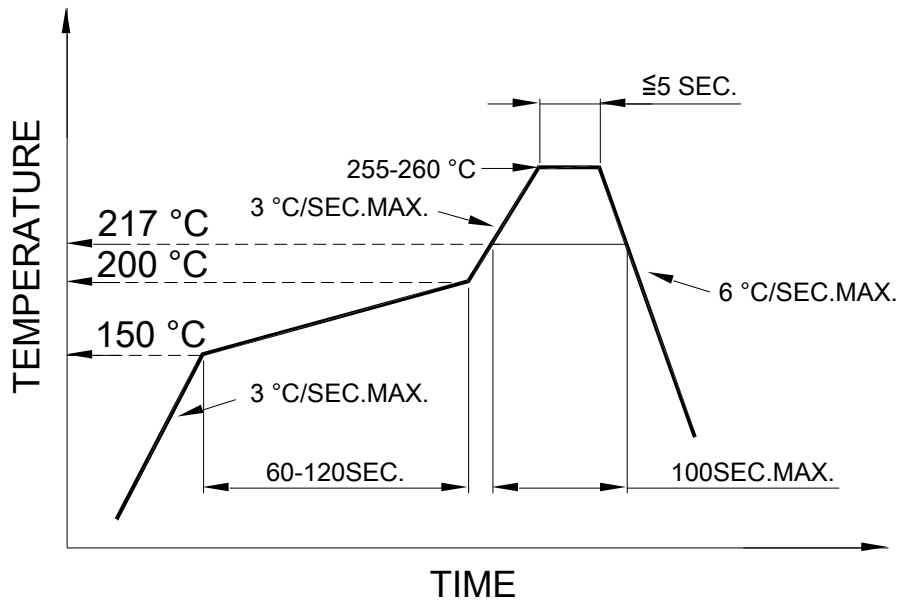
### SMA561W-ST-1.5 G/W

### SMC561W-ST-1.5 G/W

## ● 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.



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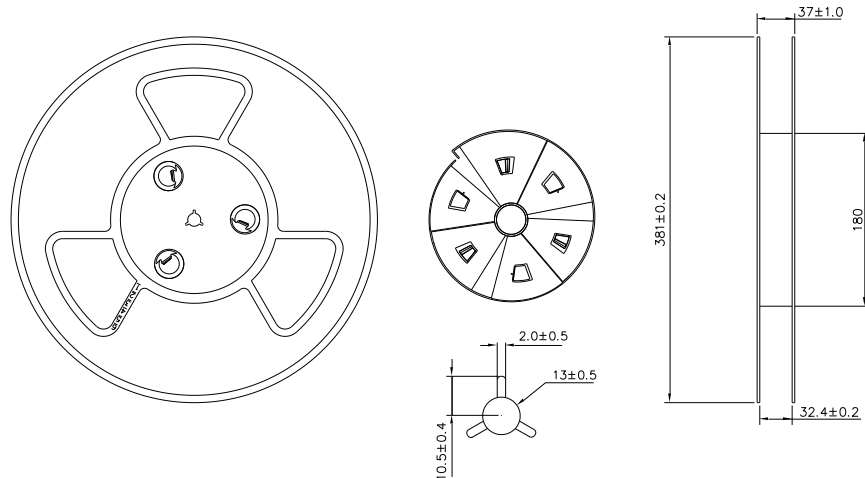
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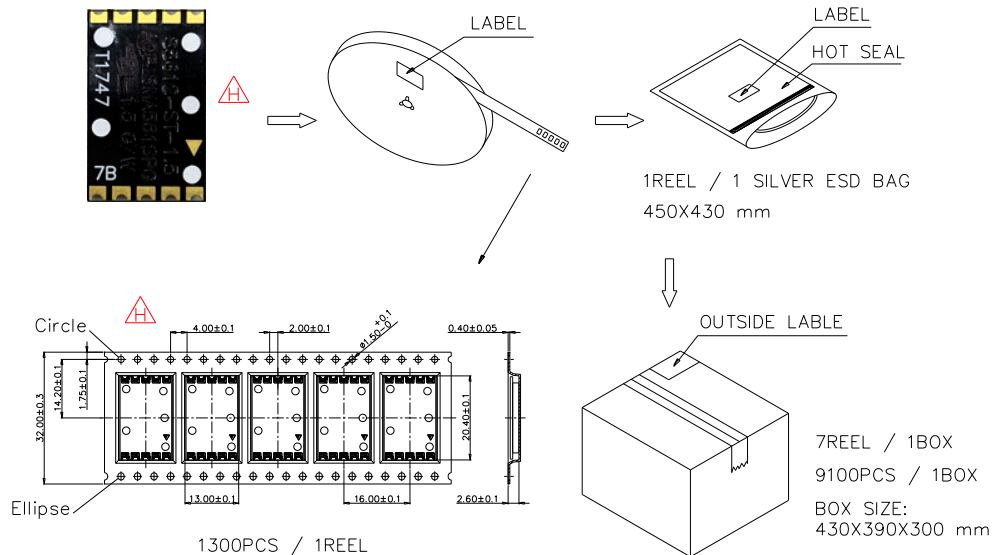
### SMA561W-ST-1.5 G/W

### SMC561W-ST-1.5 G/W

#### ● REEL DIMENSIONS



#### ● PACKING & LABEL SPECIFICATIONS



$\triangle$  The leader and trailer length of actual tape with no component in it are 400 mm each.

#### ● 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)