

## Technical Data Sheet

### 0.56" Triple Digit SMD Displays

#### ELST-511SYGWA/S530-E2/S290

#### Features

- Packaged in tape and reel for SMT manufacturing.
- Design flexibility (common cathode or anode).
- Categorized for luminous intensity.
- The thickness is thinner than tradition display.
- Pb free.
- The product itself will remain within RoHS compliant version.



#### Descriptions

- The SMD type is much smaller than tradition type components, thus enable smaller board size, higher packing density, reduced storage space and finally smaller equipment to be obtained.

#### Applications

- Suitable for indoor use.
- Audio system.
- Set top box.
- Game machine.
- Channel indicator of TV.

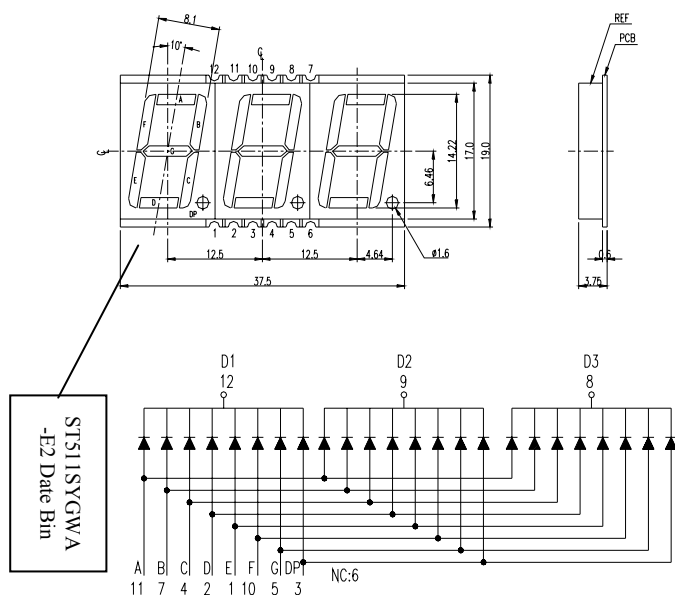
#### Device Selection Guide

| Chip     |                        | Face Color |
|----------|------------------------|------------|
| Material | Emitted Color          |            |
| AlGaInP  | Brilliant Yellow Green | Gray       |

# Technical Data Sheet

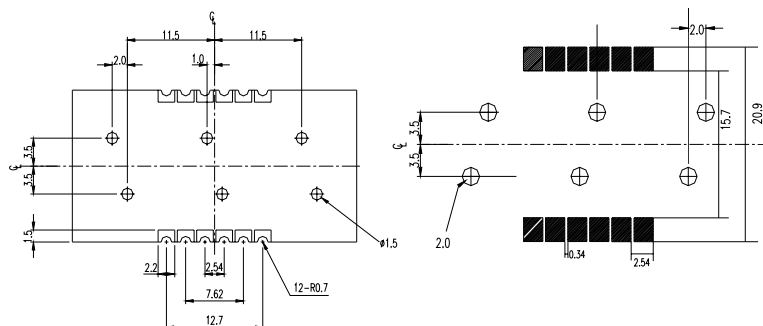
## 0.56" Triple Digit SMD Displays

### Package Dimensions



### ELST-511SYGWA/S530-E2/S290

### Land Pattern (Recommend)



#### INTERNAL CONNECTION DIAGRAM

- 1 ANODE E
- 2 ANODE D
- 3 ANODE DP
- 4 ANODE C
- 5 ANODE G
- 6 NO CONNECT
- 7 ANODE B
- 8 COMMON CATHODE D3
- 9 COMMON CATHODE D2
- 10 ANODE F
- 11 ANODE A
- 12 COMMON CATHODE D1

### Notes:

- All dimensions are in millimeters, tolerance is 0.25mm unless otherwise noted.
- Above specification may be changed without notice. Supplier will reserve authority on material change for above specification.

### Absolute Maximum Ratings (Ta=25°C)

| Parameter                           | Symbol    | Rating     | Units |
|-------------------------------------|-----------|------------|-------|
| Forward Current                     | $I_F$     | 25         | mA    |
| Pulse Forward Current <sup>*1</sup> | $I_{FP}$  | 60         | mA    |
| Operating Temperature               | $T_{opr}$ | -40 ~ +105 | °C    |
| Storage Temperature                 | $T_{stg}$ | -40 ~ +105 | °C    |
| Reflow Temperature <sup>*2</sup>    | $T_{ref}$ | 260        | °C    |
| Electrostatic Discharge             | ESD       | 2000       | V     |
| Power Dissipation                   | $P_d$     | 60         | mW    |
| Reverse Voltage                     | $V_R$     | 5          | V     |

**Notes:** \*1:  $I_{FP}$  Conditions--Pulse Width  $\leq 10$ msec and Duty  $\leq 1/10$ .

\*2: Reflow time  $\leq 5$  seconds.

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### ELST-511SYGWA/S530-E2/S290

#### Electro-Optical Characteristics (Ta=25°C)

| Parameter                    |                   | Symbol           | Min. | Typ. | Max. | Units   | Condition  |
|------------------------------|-------------------|------------------|------|------|------|---------|------------|
| Forward Voltage              |                   | $V_F$            | --   | 2.0  | 2.4  | V       | $I_F=20mA$ |
| Reverse Current              |                   | $I_R$            | --   | --   | 10   | $\mu A$ | $V_R=5V$   |
| Luminous Intensity           | Per segment       | $I_V$            | 4.0  | 9.6  | --   | mcd     | $I_F=10mA$ |
|                              | Per decimal point |                  | 2.8  | 4.0  | --   |         |            |
| Peak Wavelength              |                   | $\lambda_p$      | --   | 575  | --   | nm      | $I_F=20mA$ |
| Dominant Wavelength          |                   | $\lambda_d$      | --   | 573  | --   | nm      | $I_F=20mA$ |
| Spectrum Radiation Bandwidth |                   | $\Delta \lambda$ | --   | 20   | --   | nm      | $I_F=20mA$ |

#### Bin Range of Luminous Intensity (Unit: mcd)

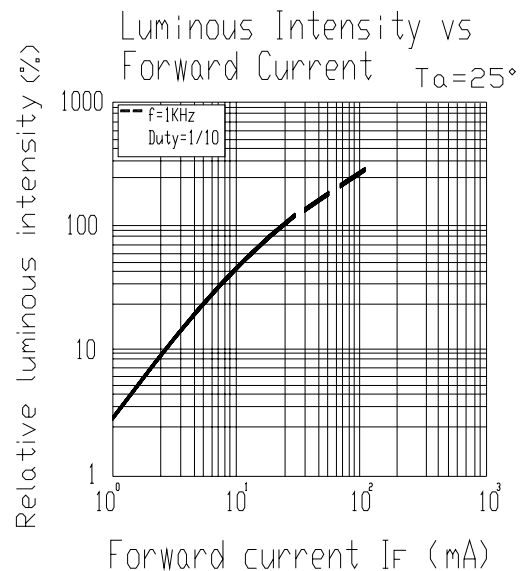
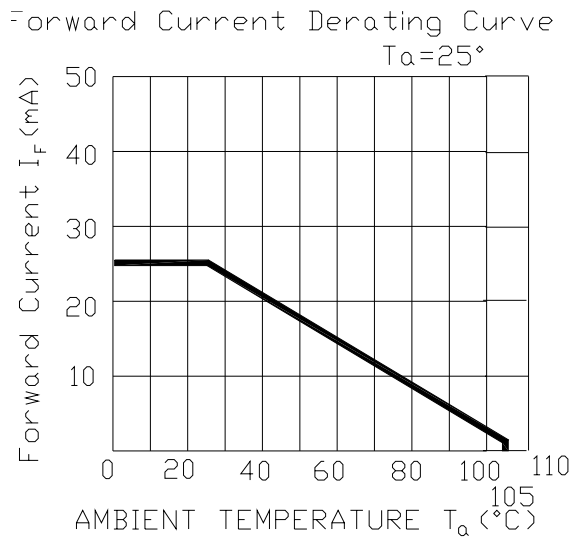
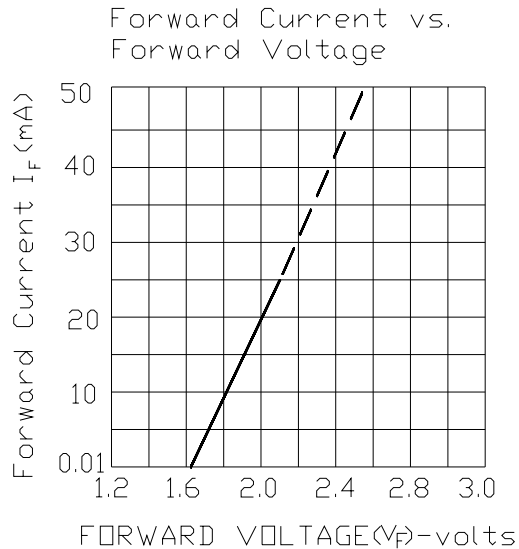
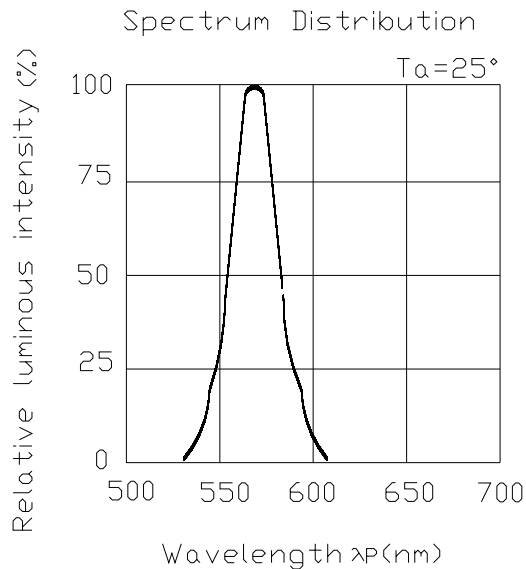
| Rank | Min. | Max. | Rank | Min. | Max. |
|------|------|------|------|------|------|
| N    | 4.0  | 6.4  | R    | 11.0 | 17.6 |
| P    | 5.6  | 8.9  | S    | 15.0 | 24.0 |
| Q    | 7.8  | 12.5 | T    | 24.0 | 34.0 |

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### 0.56" Triple Digit SMD Displays

#### ELST-511SYGWA/S530-E2/S290

#### Typical Electro-Optical Characteristics Curves

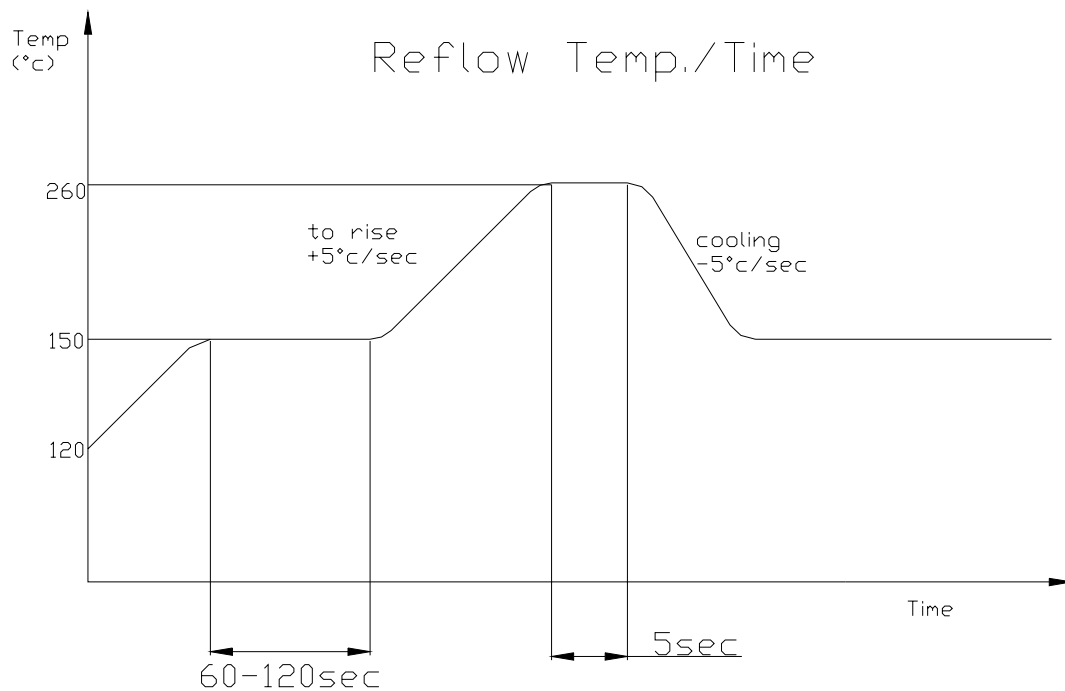


## Technical Data Sheet

### 0.56" Triple Digit SMD Displays

**ELST-511SYGWA/S530-E2/S290**

#### ■ Reflow Temp. / Time :



#### ■ Soldering Iron :

Basic spec is  $\leq 5$  sec when  $260^{\circ}\text{C}$ . If temperature is higher, time should be shorter ( $+10^{\circ}\text{C} \rightarrow -1\text{sec}$ ). Power dissipation of iron should be smaller than 15 W, and temperature should be controllable. Surface temperature of the device should be under  $230^{\circ}\text{C}$ .

#### ■ Rework :

1. Customer must finish rework within 5 sec under  $260^{\circ}\text{C}$ .
2. The head of iron can not touch copper foil.

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### 0.56" Triple Digit SMD Displays

#### ELST-511SYGWA/S530-E2/S290

#### ■ Reliability test items and conditions:

The reliability of products shall be satisfied with items listed below.

Confidence level : 90%

LTPD : 10%

| NO | Item                             | Test Conditions                               | Test Hours/Cycle | Sample Size | Failure Judgment Criteria                                           | Ac/Re |
|----|----------------------------------|-----------------------------------------------|------------------|-------------|---------------------------------------------------------------------|-------|
| 1  | Reflow Soldering                 | TEMP:260°C±5°C<br>Min. 5 SEC                  | 6 Min            | 22 PCS      | $I_v \leq I_{vt} * 0.5$<br>or<br>$V_F \geq U$<br>or<br>$V_F \leq L$ | 0/1   |
| 2  | Temperature Cycle                | H : +100°C 15min<br>§ 5min<br>L : -40°C 15min | 300 Cycles       | 22 PCS      |                                                                     | 0/1   |
| 3  | Thermal Shock                    | H : +100°C 5min<br>§ 10 sec<br>L : -10°C 5min | 300 Cycles       | 22 PCS      |                                                                     | 0/1   |
| 4  | High Temperature Storage         | TEMP:105°C                                    | 1000 HRS         | 22PCS       |                                                                     | 0/1   |
| 5  | Low Temperature Storage          | TEMP:-40°C                                    | 1000 HRS         | 22 PCS      |                                                                     | 0/1   |
| 6  | DC Operating Life                | TEMP:25°C<br>If = 10mA                        | 1000 HRS         | 22 PCS      |                                                                     | 0/1   |
| 7  | High Temperature / High Humidity | 85°C / 85% RH                                 | 1000 HRS         | 22 PCS      |                                                                     | 0/1   |

Note :  $I_{vt}$  : The test  $I_v$  value of the chip before the reliability test

$I_v$  : The test value of the chip that has completed the reliability test

U : Upper Specification Limit

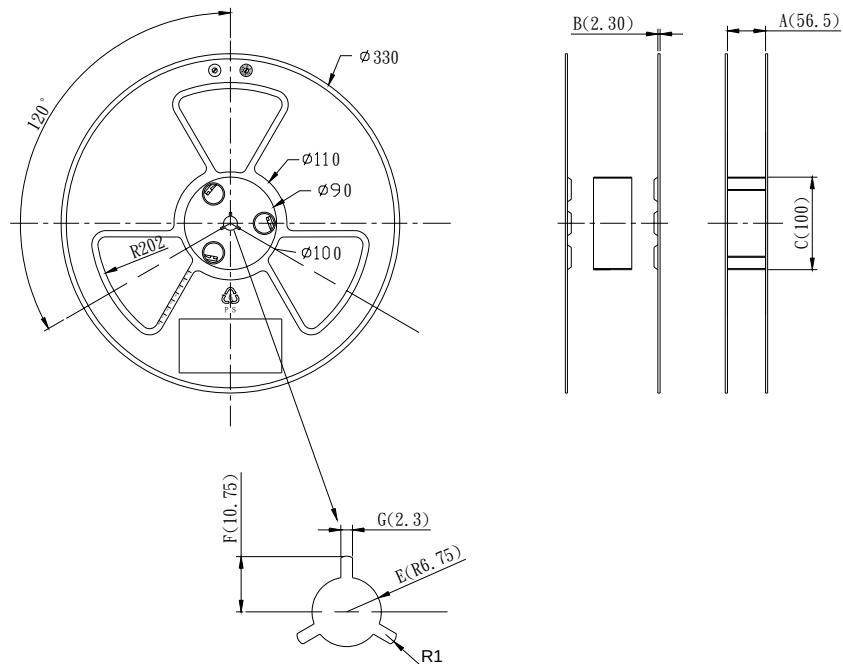
L : Lower Specification Limit

# Technical Data Sheet

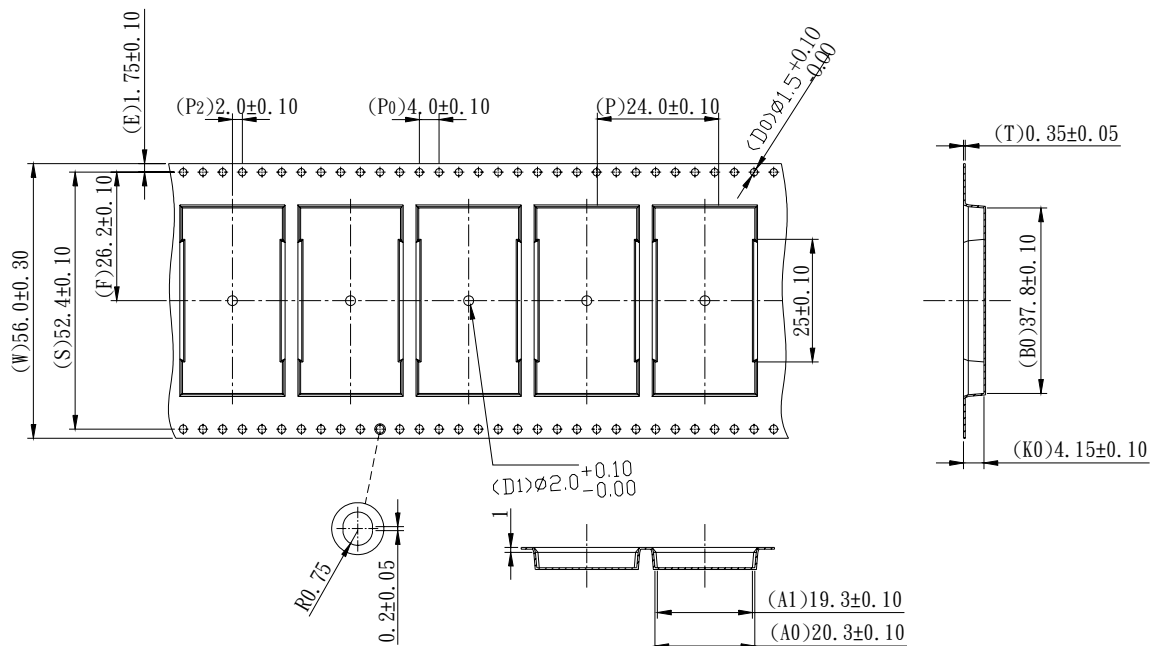
## 0.56" Triple Digit SMD Displays

**ELST-511SYGWA/S530-E2/S290**

### Package Dimensions



### Taping Dimensions



## Technical Data Sheet

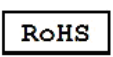
### 0.56" Triple Digit SMD Displays

#### ELST-511SYGWA/S530-E2/S290

#### Packing Quantity Specification

500PCS/Roll , 1Roll/Small box, 4Small boxes/Box

#### Label Form Specification

|                                                                                     |                                                                                   |           |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------|
|    | <b>EVERLIGHT</b>                                                                  | <b>11</b> |
| CPN:                                                                                |                                                                                   |           |
| P/N:                                                                                |                                                                                   |           |
|    |  |           |
| <b>ST511SYGWA/S530-E2/S290</b>                                                      |                                                                                   |           |
| QTY:                                                                                | CAT:                                                                              |           |
|    | HUE:                                                                              |           |
|                                                                                     | REF:                                                                              |           |
| LOT NO:                                                                             |                                                                                   |           |
|   |                                                                                   |           |
| REFERENCE:                                                                          |                                                                                   |           |
|  | DC:                                                                               |           |

CPN: Customer's Production Number

P/N : Production Number

QTY: Packing Quantity

CAT: Ranks

HUE: Peak Wavelength

REF: Reference

LOT No: Lot Number

DC: Year and weekly

REFERENCE: Label identify code

#### Notes :

1. Above specification may be changed without notice. EVERLIGHT will reserve authority on material change for above specification.
2. When using this product, please observe the absolute maximum ratings and the instructions for using outlined in these specification sheets. EVERLIGHT assumes no responsibility for any damage resulting from use of the product which does not comply with the absolute maximum ratings and the instructions included in these specification sheets.
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