

## Technical Data Sheet

### 1.9mm Round Subminiature Lead LEDs

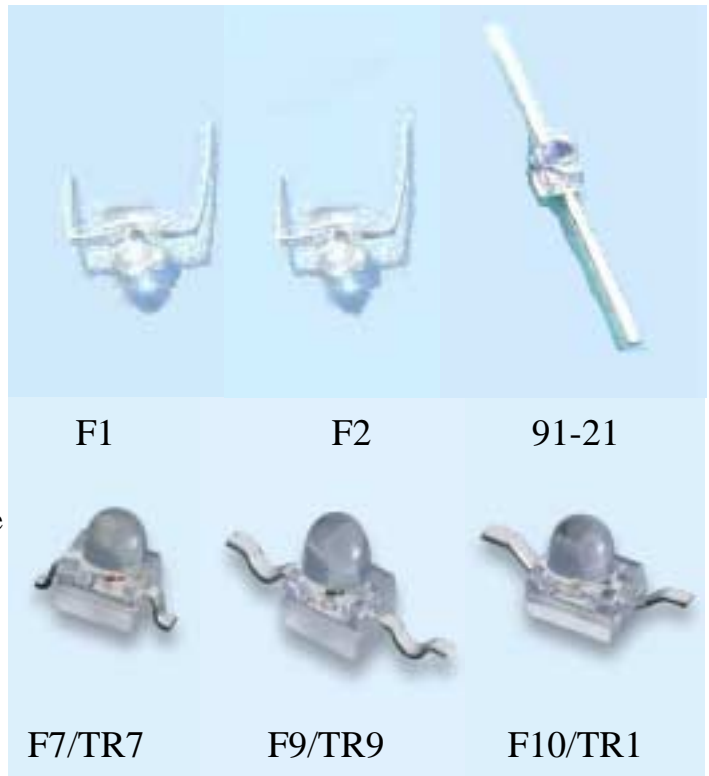
#### 91-21SYGC/S530-XX/XXX

#### Features

- Package in 12mm tape on 7" diameter reels.
- Compatible with automatic placement equipment.
- EIA Std. package.
- Mono-color type.

#### Descriptions

- The 91-21 SMD taping is much smaller than leaded components .Thus enable smaller board size. Higher packing density. Reduced storage space and finally smaller equipment to be obtained.
- Besides , light weight makes them ideal for miniature applications.
- Further more by automation assembly machines the accuracy is anticipated.



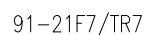
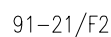
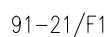
#### Applications

- Small indicator for indoor applications.
- Flat backlight for LCD, switches and symbols.
- Indicator and backlight in office equipment.
- Indicator and backlight for battery driven equipment.
- Indicator and backlight for audio and video equipment.
- Automotive : backlighting in dashboards and switches.
- Telecommunication : indicator and backlighting in telephone and fax.

#### Device Selection Guide

Chip		Lens Color
Material	Emitted Color	
AlGaInP	Super Yellow Green	Water Clear

## Package Outline Dimensions



Note:Unit=mm

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

Parameter	Symbol	Rating	Unit
Reverse Voltage	V <sub>R</sub>	5	V
Forward Current	I <sub>F</sub>	25	mA
Operating Temperature	T <sub>opr</sub>	-40 ~ +85	°C
Storage Temperature	T <sub>stg</sub>	-40 ~ +100	°C
Soldering Temperature	T <sub>sol</sub>	260 for 5 seconds	°C
Electrostatic Discharge	ESD	2000	V
Power Dissipation	P <sub>d</sub>	60	mW
Peak Forward Current(Duty 1/10 @ 1KHz)	I <sub>F</sub>	160	mA

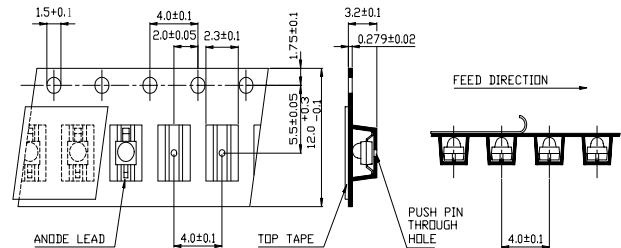
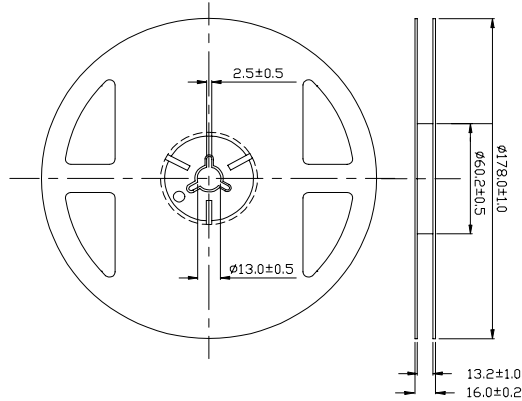
**Electro-Optical Characteristics (Ta=25°C)**

Parameter	Symbol	Rank	Min.	Typ.	Max.	Unit	Condition
Luminous Intensity	I <sub>v</sub>	E1	----	12	----	mcd	I <sub>F</sub> =2mA
			132	198	----		I <sub>F</sub> =20mA
		E2	----	20	----		I <sub>F</sub> =2mA
			264	330	----		I <sub>F</sub> =20mA
Viewing Angle	2θ 1/2	----	----	25	----	deg	I <sub>F</sub> =20mA
Peak Wavelength	λ <sub>p</sub>	----	----	575	----	nm	
Dominant Wavelength	λ <sub>d</sub>	----	----	573	----	nm	
Spectrum Radiation Bandwidth	△λ	----	----	20	----	nm	
Forward Voltage	V <sub>F</sub>	----	----	2.0	2.4	V	
Reverse Current	I <sub>R</sub>	----	----	----	10	μA	V <sub>R</sub> =5V

**91-21SYGC/S530-XX/XXX**

**Reel & Carrier Tape Dimensions**

**Loaded quantity per reel 1000 PCS/reel**



**TR7**

**Material Descriptions**

**91-21 SYGC /S530-XX / XXX**

1 2 3 4

1. production part no.: 91-21

2. chip part no. & epoxy color

AlGaInP = SYG...

C = water clear

3. chip size & rank

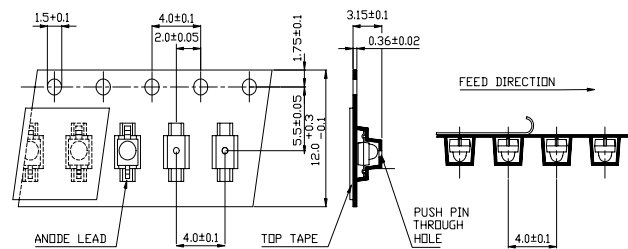
chip size : S530 (9mil)

chip rank: E1~E2

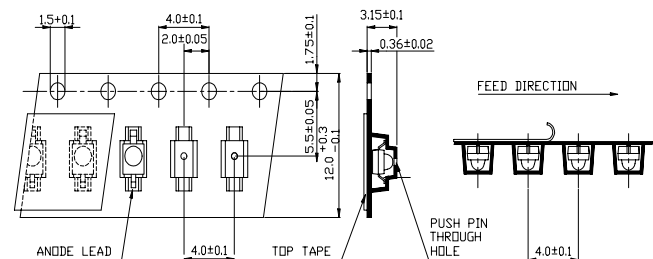
4. packing method:

(1) NONE, F1, F2, F7, F9, F10 : Bulk

(2) TR7, TR9, TR10 : Taping



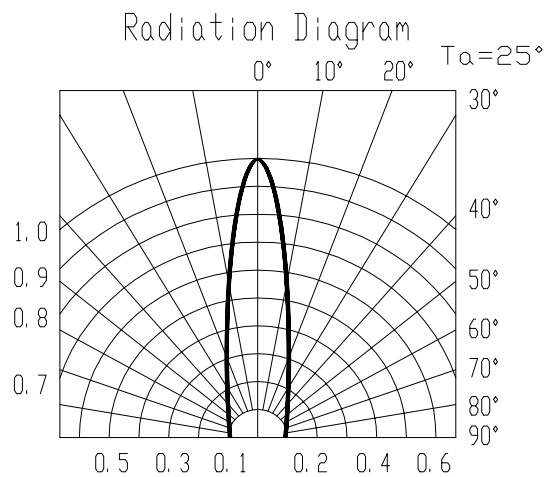
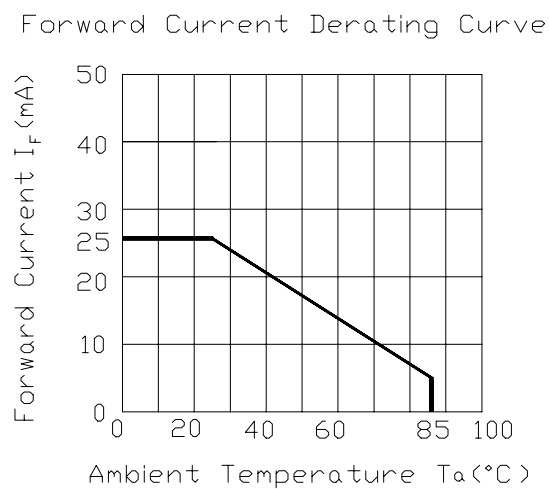
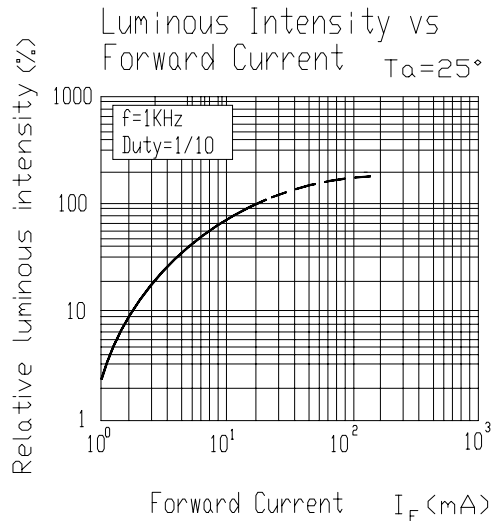
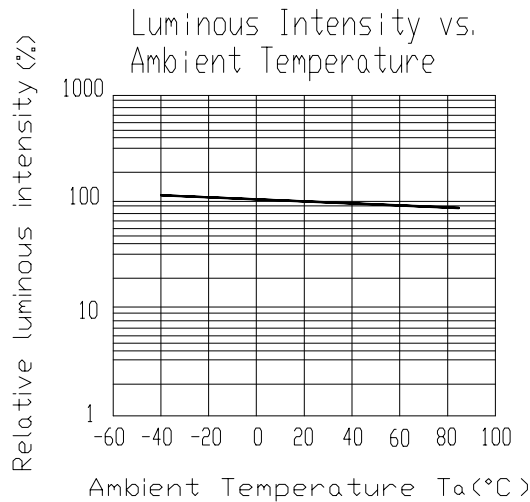
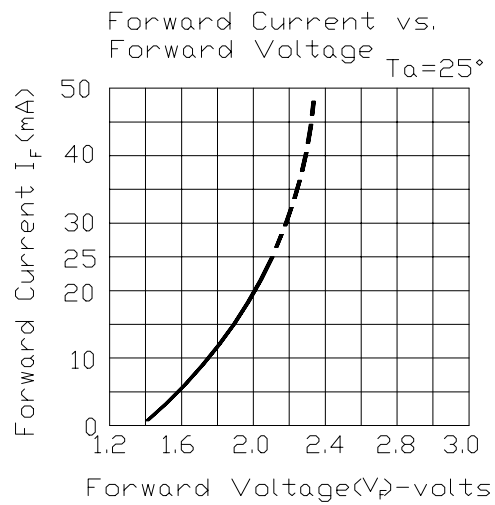
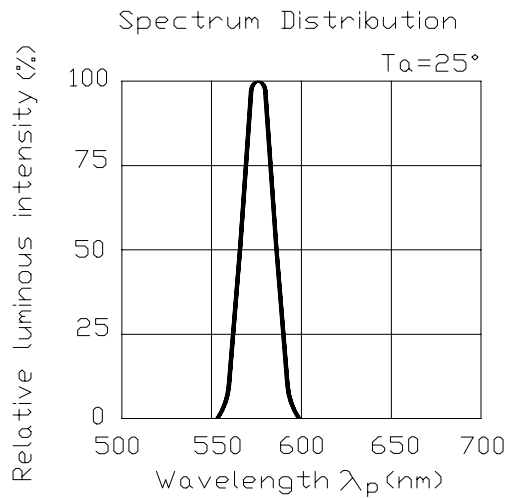
**TR9**



**TR10**

**91-21SYGC/S530-XX/XXX**

**Typical Electro-Optical Characteristics Curves**



**91-21SYGC/S530-XX/XXX****Reliability Test Items And Conditions**

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

Confidence level : 90 %

LTPD : 10 %

No.	Items	Test Condition	Test Hours/Cycles	Sample Size	Ac/Rc
1	Reflow	Temp. : 240°C ± 5°C Min. 5 sec.	5 Sec.	22 Pcs.	0/1
2	Temperature Cycle	H : +100°C 15 min. ∫ 5 min. L : -40°C 15 min.	300 Cycles	22 Pcs.	0/1
3	Thermal Shock	H : +100°C 5 min. ∫ 10 sec. L : -10°C 5 min.	300 Cycles	22 Pcs.	0/1
4	High Temperature Storage	Temp. : 100°C	1000 Hrs.	22 Pcs.	0/1
5	Low Temperature Storage	Temp. : -55°C	1000 Hrs.	22 Pcs.	0/1
6	DC Operating Life	IF = 20 mA	1000 Hrs.	22 Pcs.	0/1
7	High Temperature / High Humidity	85°C/RH 85%	1000 Hrs.	22 Pcs.	0/1

**Precautions For Use****1. Over-current-proof**

Customer must apply resistors for protection , otherwise slight voltage shift will cause big current change ( Burn out will happen ).

**2. Storage time**

2.1 The operation of Temperature and RH are :  $5^{\circ}\text{C} \sim 35^{\circ}\text{C}$  , RH60%.

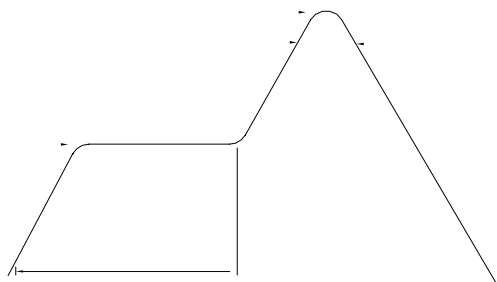
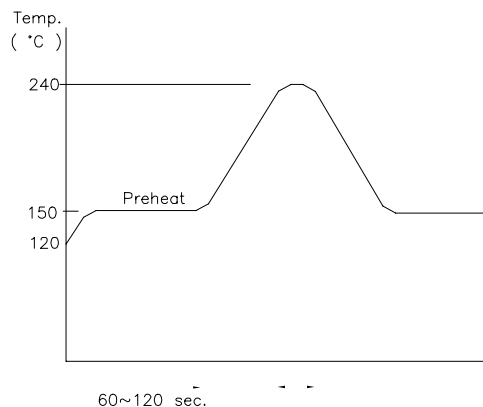
2.2 Once the package is opened, the products should be used within a week.

Otherwise, they should be kept in a damp proof box with descanting agent.

Considering the tape life , we suggest our customers to use our products within a year(from production date).

2.3 If opened more than one week in an atmosphere  $5^{\circ}\text{C} \sim 35^{\circ}\text{C}$  , RH 60%, they should be treated at  $60^{\circ}\text{C} \pm 5^{\circ}\text{C}$  for 15hrs.

2.4 When you discover that the desiccant in the package has a pink color (Normal = blue) , you should treat them in the same conditions as 2.3.

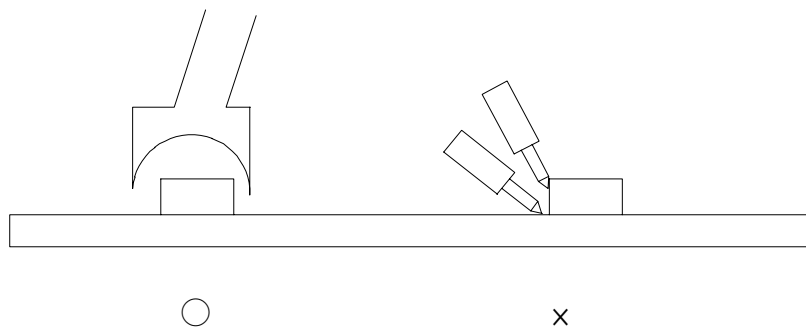
**Soldering heat****Reflow Temp / Time**

**91-21SYGC/S530-XX/XXX****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  $245^{\circ}\text{C}$ .
2. The head of iron can not touch copper foil.
3. Twin-head type is preferred.

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