EVERLIGHT ELECTRONICS CO.,LTD.

Technical Data Sheet

1.9mm Round Subminiature Lead LEDs

91-21SUGC/S400-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. Furthermore by automation assembly machines the accuracy is anticipated.

F1 F2 91-21

F7/TR7 F9/TR9 F10/TR10

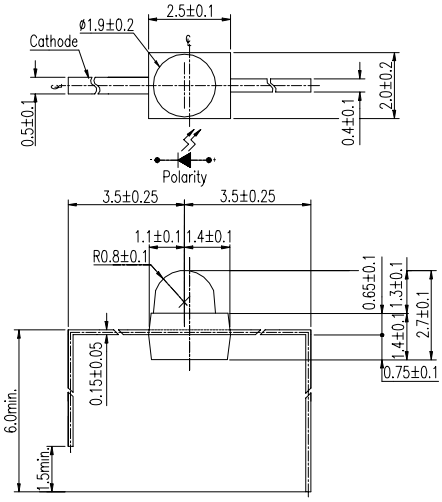
Applications

- 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.

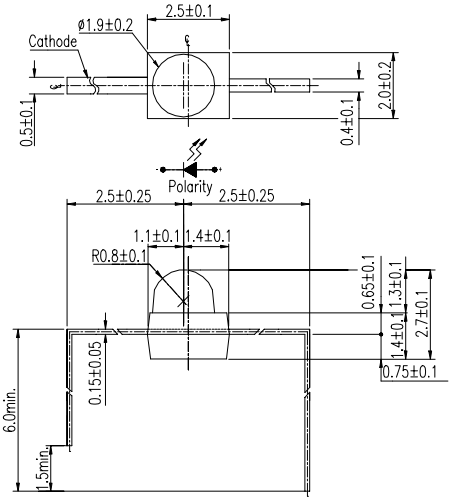
Device Selection Guide

Chip		Lens Color
Material	**Emitted Color**	
InGaN	Super Green	Water Clear

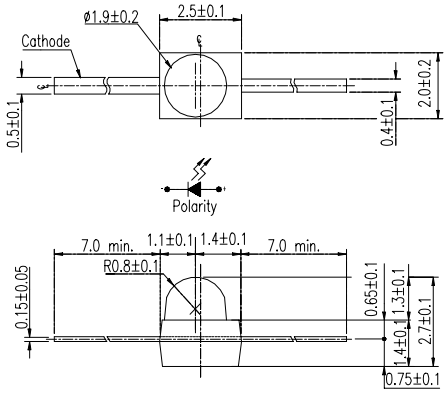
Package Outline Dimensions



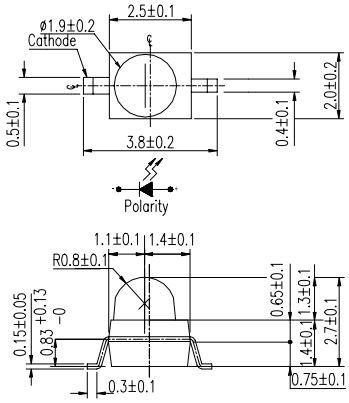
91-21/F1



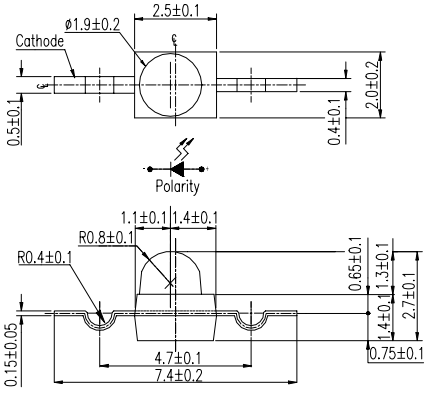
91-21/F2



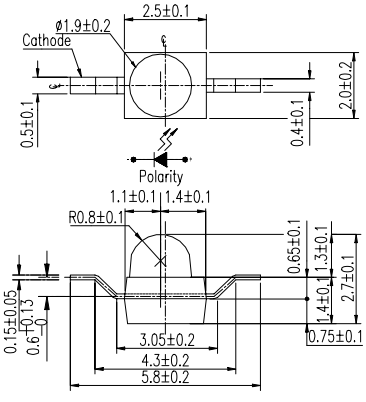
91-21



91-21F7/TR7



91-21F9/TR9



91-21F10/TR10

Unit:mm

91-21SUGC/S400-XX/XXX

Absolute Maximum Ratings (Ta=25℃)

Parameter	Symbol	Rating	Unit
Reverse Voltage	V_R	5	V
Forward Current	I_F	25	mA
Operating Temperature	Topr	-40 ~ +85	℃
Storage Temperature	Tstg	-40 ~ +100	℃
Soldering Temperature	Tsol	260 (for 5 seconds)	℃
Electrostatic Discharge	ESD	2000	V
Power Dissipation	Pd	60	mW
Peak Forward Current(Duty 1/10 @ 1KHz)	I_F	100	mA

Electro-Optical Characteristics (Ta=25℃)

Parameter	Symbol	Rank	Min.	Typ.	Max.	Unit	Condition
Luminous Intensity	I_V	A4	----	200	----	mcd	I_F=2mA
			2000	2300	----		I_F=20mA
		A5	----	235	----		I_F=2mA
			2400	2850	----		I_F=20mA
		A6	----	260	----		I_F=2mA
			2800	3150	----		I_F=20mA
viewing Angle	2θ 1/2	----	----	25	----	deg	I_F=20mA
Peak Wavelength	λ p	----	----	518	----	nm	
Dominant Wavelength	λ d	----	----	525	----	nm	
Spectrum Radiation Bandwidth	$\triangle\lambda$	----	----	35	---	nm	
Forward Voltage	V_F	----	----	3.5	4.3	V	
Reverse Current	I_R	----	----	----	50	μA	V_R=5V

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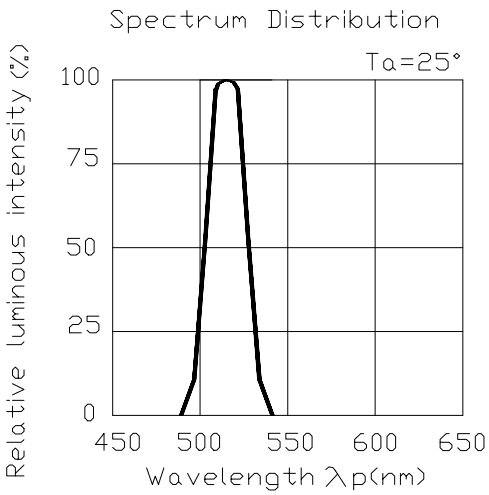
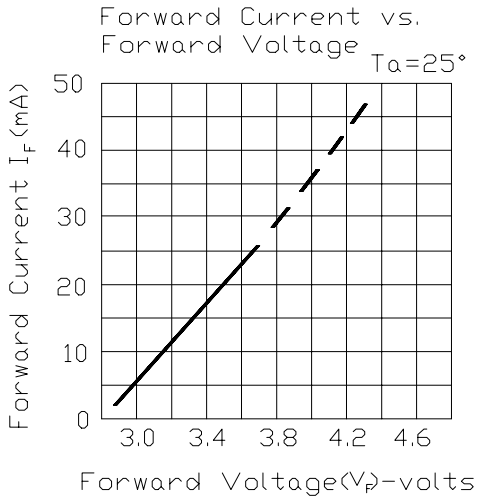
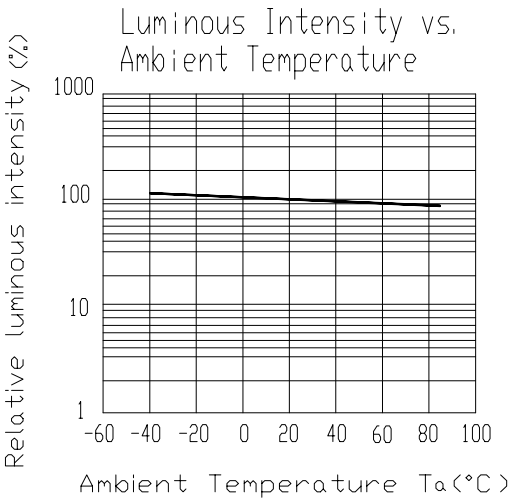
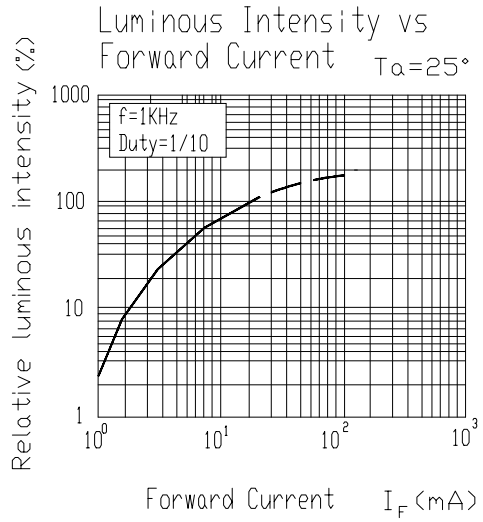
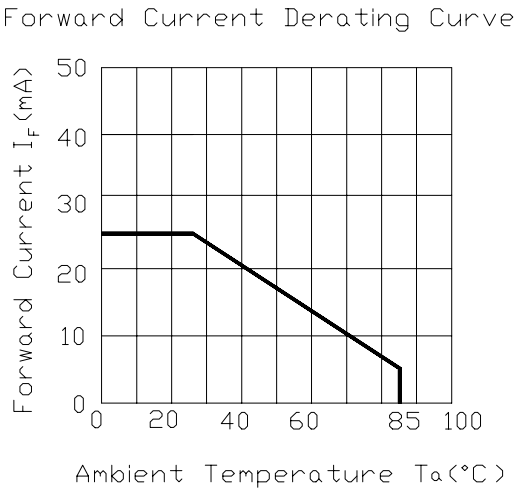
Typical Electro-Optical Characteristics Curves

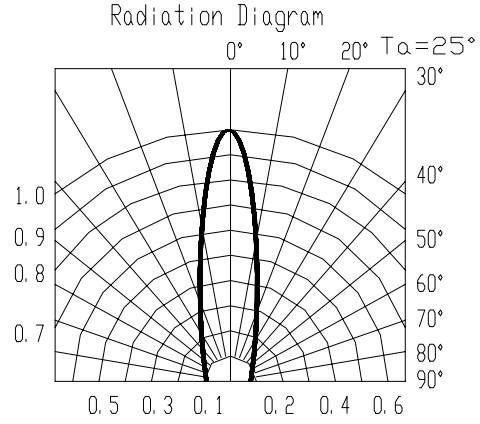












91-21SUGC/S400-XX/XXX

■Material Descriptions

91-21 SUGC /S400-XX/XXX

1 2 3 4

1.production part no.:91-21

2.chip part no.& epoxy color
InGaN =SUG.
C = water clear

3.chip size:S400(12mil)
chip rank:A4~A6

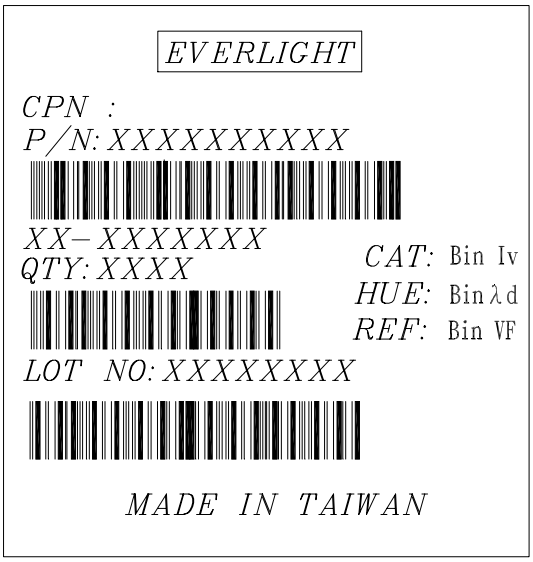
4.packing method:
(1)NONE,F1,F2, F7,F9,F10：Bulk
(2) TR7,TR9,TR10：Taping

■Label explanation

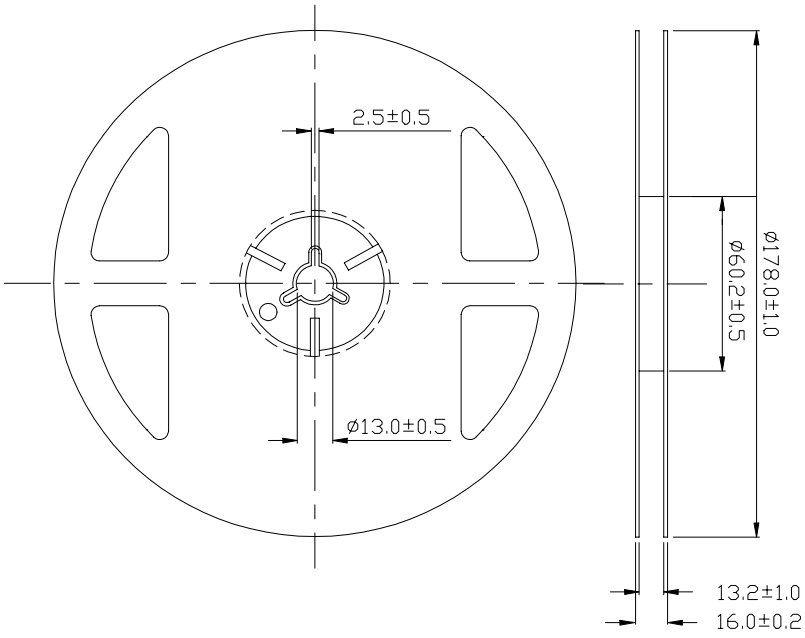
CAT: Luminous Intensity (mcd)

HUE: Dom. Wavelength (nm)

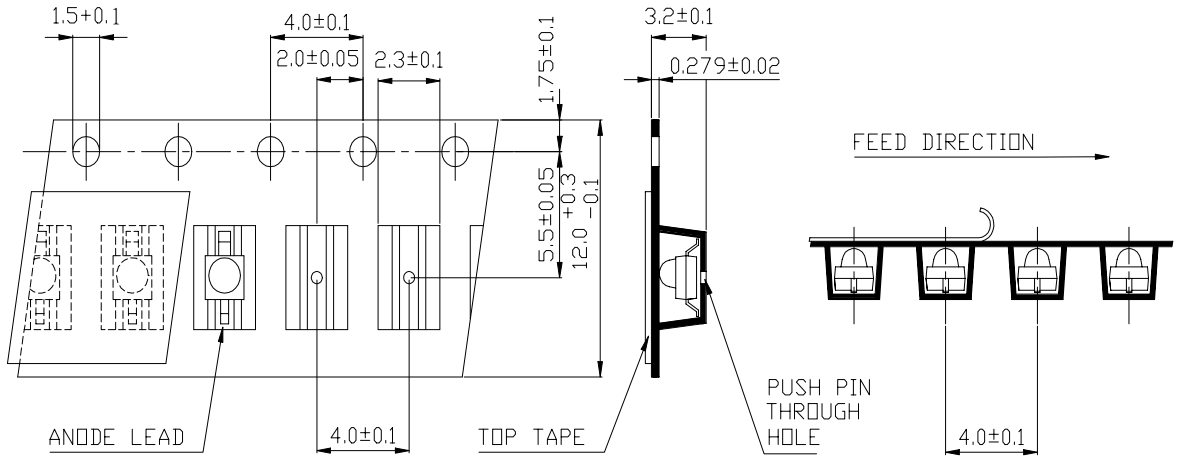
REF: Forward Voltage (V)



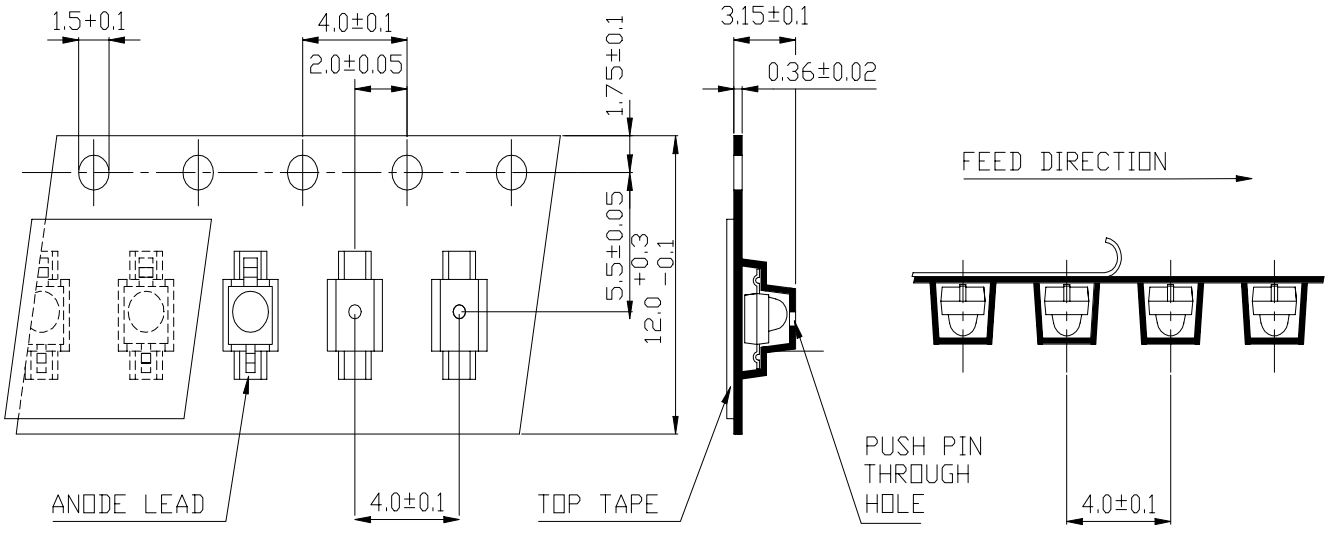
■Reel & Carrier Tape Dimensions



■Loaded quantity per reel 1000 PCS/reel



TR7



TR9

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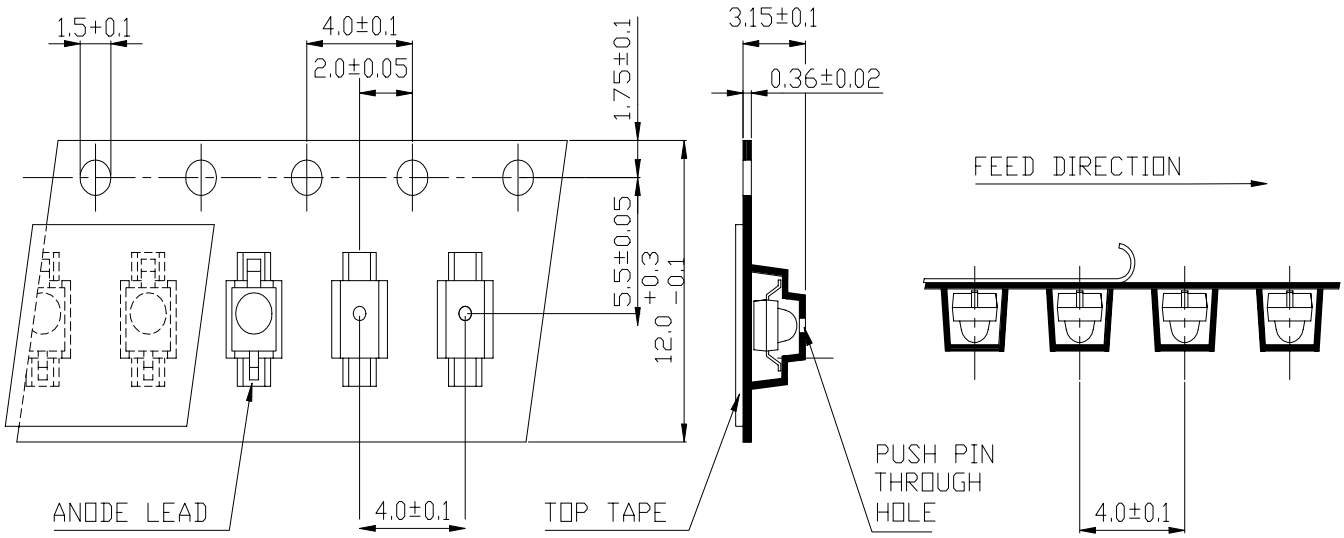
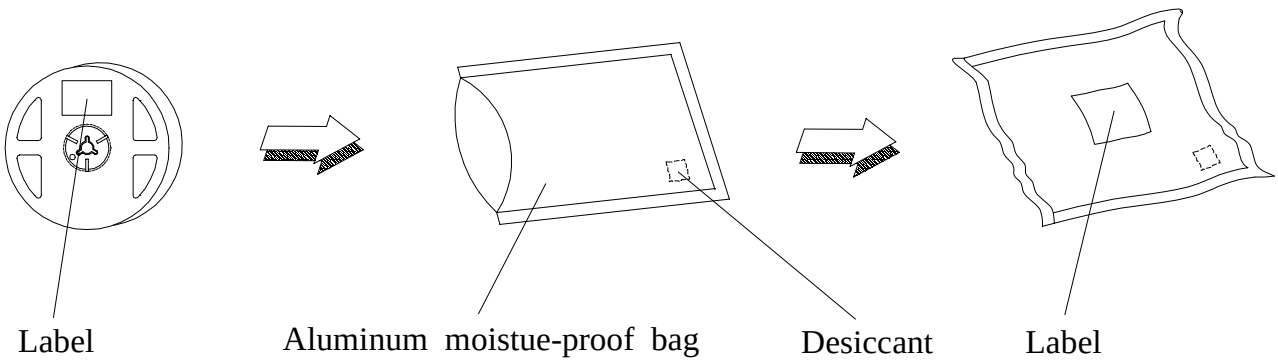
■Loaded quantity per reel 1000 PCS/reel



TR10

Unit :mm

■Moisture Resistant Packaging



91-21SUGC/S400-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℃± 5℃ Min. 5 sec.	5 Sec.	22 Pcs.	0/1
2	Temperature Cycle	H : +100℃ 15 min. ∫ 5 min. L : -40℃ 15 min.	300 Cycles	22 Pcs.	0/1
3	Thermal Shock	H : +100℃ 5 min. ∫ 10 sec. L : -10℃ 5 min.	300 Cycles	22 Pcs.	0/1
4	High Temperature Storage	Temp. : 100℃	1000 Hrs.	22 Pcs.	0/1
5	Low Temperature Storage	Temp. : -55℃	1000 Hrs.	22 Pcs.	0/1
6	DC Operating Life	I_F = 20 mA	1000 Hrs.	22 Pcs.	0/1
7	High Temperature / High Humidity	85℃/RH 85%	1000 Hrs.	22 Pcs.	0/1

91-21SUGC/S400-XX/XXX

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

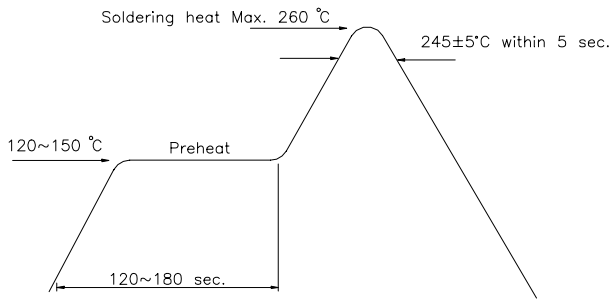
   2.1 The operation of Temperature and RH are : 5℃~35℃, RH60%.

   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).

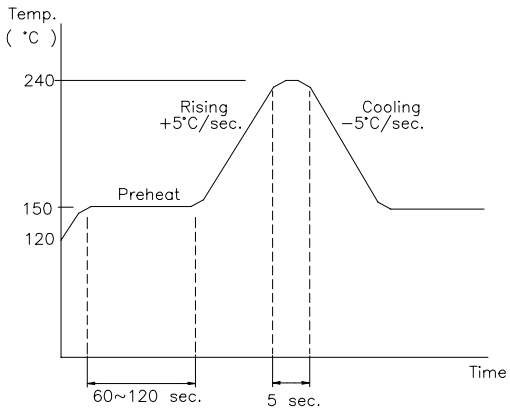
   2.3 If opened more than one week in an atmosphere 5℃~35℃, RH 60%, they should be treated at 60℃± 5℃for 15hrs.

   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

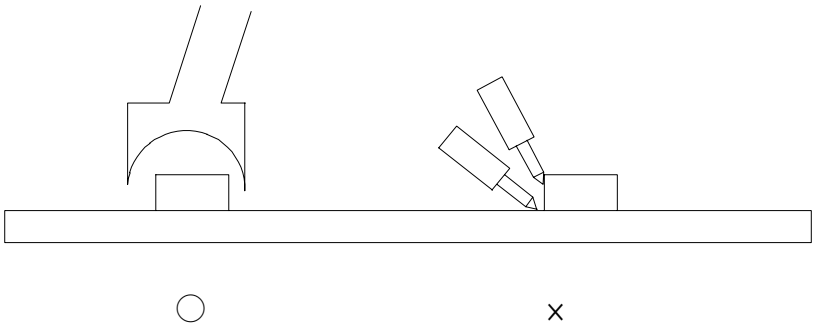


Soldering Iron

Basic spec is ≦ 5 sec when 260℃.If temperature is higher, time should be shorter (+10℃→ -1sec). Power dissipation of Iron should be smaller than 15 W , and temperature should be controllable. Surface temperature of the device should be under 230 ℃.

Rework

1. Customer must finish rework within 5 sec under 245℃.
2. The head of iron can not touch copper foil.
3. Twin-head type is preferred.



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