

< Specifications (Precautions and Prohibitions) >

● **Precaution for circuit design**

- 1) The products are designed and produced for application in ordinary electronic equipment (AV equipment, OA equipment, telecommunication equipment, home appliances, amusement equipment, etc.).
If the products are to be used in devices requiring extremely high reliability (medical equipment, transport equipment, aircraft/spacecraft, nuclear power controllers, fuel controllers, car equipment including car accessories, safety devices, etc.) and whose malfunction or operational error may endanger human life and sufficient fail-safe measures, please consult with the ROHM sales staff in advance. If product malfunctions may result in serious damage, including that to human life, sufficient fail-safe measures must be taken, including the following:
 - [a] Installation of protection circuits or other protective devices to improve system safety
 - [b] Installation of redundant circuits in the case of single-circuit failure

- 2) The products are designed for use in a standard environment and not in any special environments. Application of the products in a special environment can deteriorate product performance. Accordingly, verification and confirmation of product performance, prior to use, is recommended if used under the following conditions:
 - [a] Use in various types of liquid, including water, oils, chemicals, and organic solvents
 - [b] Use outdoors where the products are exposed to direct sunlight, or in dusty places
 - [c] Use in places where the products are exposed to sea winds or corrosive gases, including Cl₂, H₂S, NH₃, SO₂, and NO₂
 - [d] Use in places where the products are exposed to static electricity or electromagnetic waves
 - [e] Use in proximity to heat-producing components, plastic cords, or other flammable items
 - [f] Use involving sealing or coating the products with resin or other coating materials
 - [g] Use involving unclean solder or use of water or water-soluble cleaning agents for cleaning after soldering
 - [h] Use of the products in places subject to dew condensation

- 3) The products are not radiation resistant.

- 4) The Company is not responsible for any problems resulting from use of the products under conditions not recommended herein.

- 5) The Company should be notified of any product safety issues. Moreover, product safety issues should be periodically monitored by the customer.

- 6) De-rate Power Dissipation (Pd) depending on Ambient temperature (Ta).
When used in sealed area, confirm the actual ambient temperature.

- 7) Confirm that operation temperature is within the specified range described in product specification.

- 8) Failure induced under deviant condition from what defined in the product specification can not be guaranteed.

- 9) When product safety related problems arises, please immediately inform to ROHM, and consider technical counter measure.

DESIGN	CHECK	APPROVAL	DATE:Dec./22/2009	SPECIFICATION No. : TENTATIVE (20091222)
<i>K.Mineshita</i>	<i>M.Kobayakawa</i>	<i>H.Toda</i>	REV. —	ROHM Co.,Ltd.

< Specifications (Precautions and Prohibitions) >

● **Precaution for Mounting / Circuit board design**

When a highly active halogenous (chlorine, bromine, etc.) flux is used, the remainder of flux may negatively affect product performance and reliability.

● **Precautions Regarding Application Examples and External Circuits**

- 1) If change is made to the constant of an external circuit, allow a sufficient margin due to variations of the characteristics of the products and external components, including transient characteristics, as well as static characteristics.
- 2) The application examples, their constants, and other types of information contained herein are applicable only when the products are used in accordance with standard methods. Therefore, if mass production is intended, sufficient consideration to external conditions must be made.

● **Precautions for Electrostatic**

This product is Electrostatic sensitive product, which may be damaged due to Electrostatic discharge. Please take proper caution during manufacturing and storing so that voltage exceeding product maximum rating won't be applied to products. Please take special care under dry condition (e.g. Grounding of human body / equipment / solder iron, isolation from charged objects, setting of Ionizer, friction prevention and temperature / humidity control).

● **Precautions for product label**

QR code printed on ROHM product label is only for internal use, and please do not use at customer site. It might contain an internal part number that is inconsistent with a product part number.

● **Precautions for disposition**

When disposing products please dispose them properly with an industry waste company.

● **Precautions for Foreign exchange control regulation**

ROHM has not determined whether or not the products are considered "a controlled product or labor" as specified in the Foreign Exchange and Foreign Trade Control Law. Accordingly, if exportation of the products, either separately or integrated in another company's products, is intended, or giving the products to persons who are not residents is planned, additional steps are required, based upon the appropriate regulations.

● **Prohibitions Regarding Industrial Property**

- 1) These Specifications contain information related to the ROHM industrial property. Any use of them other than pertaining to the usage of appropriate products is not permitted. Duplication of these specifications and its disclosure to a third party without the Company's permission are prohibited.
- 2) Information and data on products, including application examples, contained in these specifications are simply for reference; the company does not guarantee any industrial property rights, intellectual property rights, or any other rights of a third party regarding this information or data. Accordingly, the Company does not bear any responsibility for:
 - [a] infringement of the intellectual property rights of a third party
 - [b] any problems incurred by the use of the products listed herein
- 3) The Company prohibits the purchaser of its products to exercise or use the intellectual property rights, industrial property rights, or any other rights that either belong to or are controlled by the Company, other than the right to use, sell, or dispose of the products.

< Specifications (Precautions and Prohibitions) >

● **Precautions for Storage / Transportation**

- 1) Product performance and soldered connections may deteriorate if the products are stored in the following places:
 - [a] Where the products are exposed to sea winds or corrosive gases, including Cl₂, H₂S, NH₃, SO₂, and NO₂
 - [b] Where the temperature or humidity exceeds those recommended by the Company
 - [c] Storage in direct sunshine or condensation
 - [d] Storage in high Electrostatic
- 2) Storage temperature and humidity
 - [a] Package : Not to be opened before using
 - [b] After unpackaging : LEDs to be kept in our moisture proof package with some desiccant (SILICA GEL) LEDs to be baked in case the SILICAGEL indicator changed its color from either blue to clear or green to pink.
 - [c] Early use is recommended after unsealed.
Return the unused items into the moisture proof package and seal tightly.
Please refer to the individual specifications for the expiration terms of use.
 - [d] The baking condition may not be the same for very item.
Please refer the individual specifications for the detail.
- 3) Even under ROHM recommended storage condition, solderability of products over 1 year old may be degraded.
- 4) Store / transport cartons in the correct direction, which is indicated on a carton as a symbol.
Otherwise bent leads may occur due to excessive stress applied when dropping of a carton.

● **Other Matters**

- 1) Please sign these Specifications and return one copy to the Company.
If a copy is not returned within three months after the issued date specified on the front page of these Specifications, the Company will consider the Specifications accepted.
- 2) If any matter related to these Specifications needs to be clarified, discussions shall be held promptly between the two parties concerned to determine the issue.

- 1. CONSTRUCTION AlGaInP surface mount LED with lens package with colorless epoxy.
- 2. USAGE Source of light for auxiliary AF and other general usage.
- 3. DIMENSIONS See Figure.1
- 4. ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

Power Dissipation	P D	.....	175mW
Forward Current	I F	.....	70mA
Peak Forward Current	I F P	.....	200mA (Notes 1)
Reverse Voltage	V R	.....	10V
Operating Temperature	Topr	.....	-40°C ~ + 85°C
Storage Temperature	Tstg	.....	-40°C ~ +100°C
		(Notes1 Duty 1/10 1kHz)	

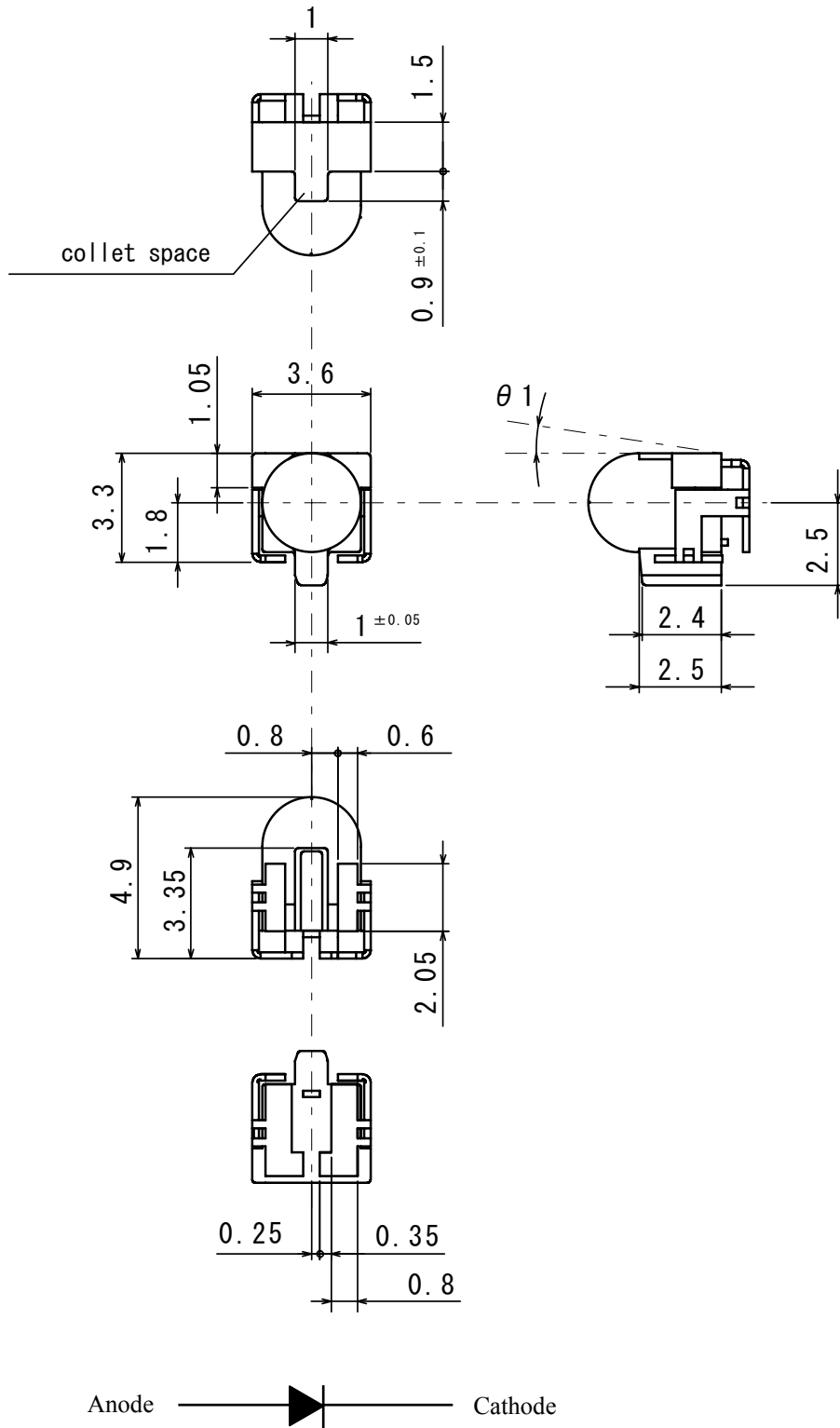
5. ELECTRO-CHARACTERISTICS (Ta=25°C)

DISCRIPTION	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNITS
Forward Voltage	VF	IF=20mA	(1.5)	2.0	(2.4)	V
Reverse Current	IR	VR=5V	—	—	100	μA
^{*1} Luminous Intensity	IV	IF=20mA	(10)	15	—	cd
Peak Wave Length	λP	IF=20mA	—	611	—	nm
Dominant Wave Length	λD	IF=20mA	(598)	605	(612)	nm
Products Inclination	θ ₁	—	—	±3	—	°

^{*1} Measurement tolerance : ±10% () : Reference

- 6. PRODUCT WEIGHT Product weight per piece, approx 0.069gm.

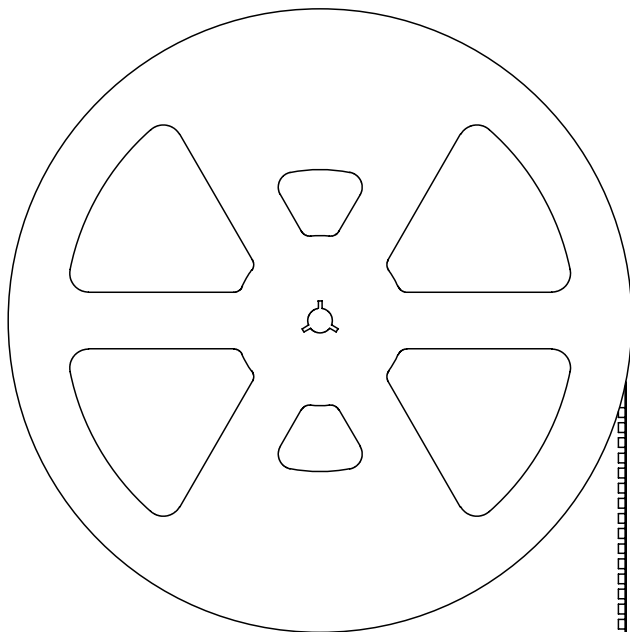
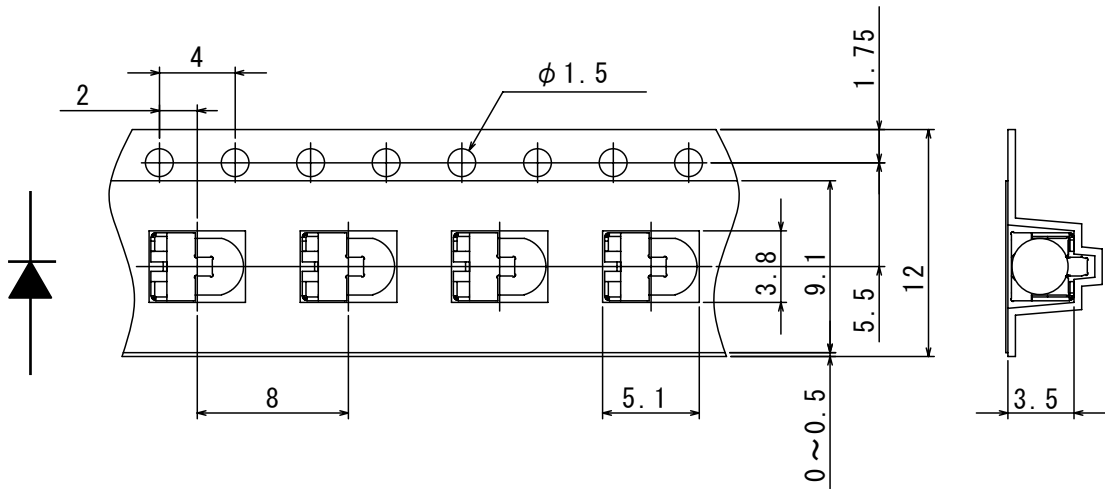
[Figure.1]



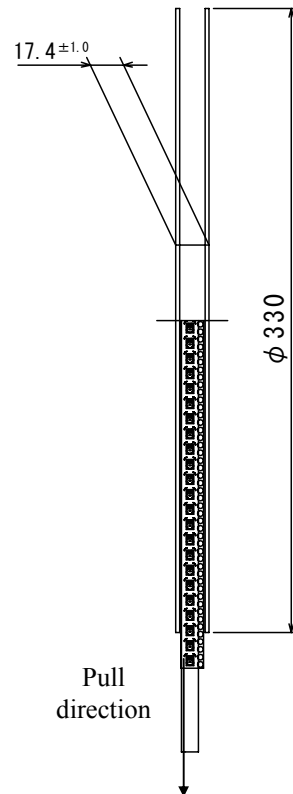
(unit : mm)

(note) Tolerance is within ± 0.2 mm unless otherwise specified.

【Taping】



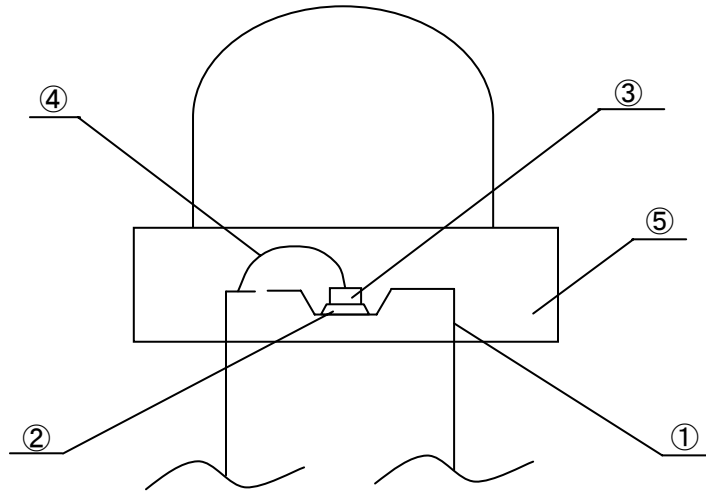
Packing quantity
1,500pcs/reel



(unit : mm)

(note) Tolerance is within ± 0.2 mm unless otherwise specified.

【STRUCTURE · MATERIAL】

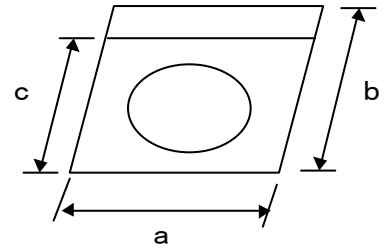


No.	APPELLATION	MATERIAL
1	Frame	Cu Silver Plating
2	Die Bond	Ag Paste
3	Chip	AlGaInP
4	Bonding Wire	Gold
5	Resin	Epoxy Resin

【PACKAGING REQUIREMENTS】

1. PACKING

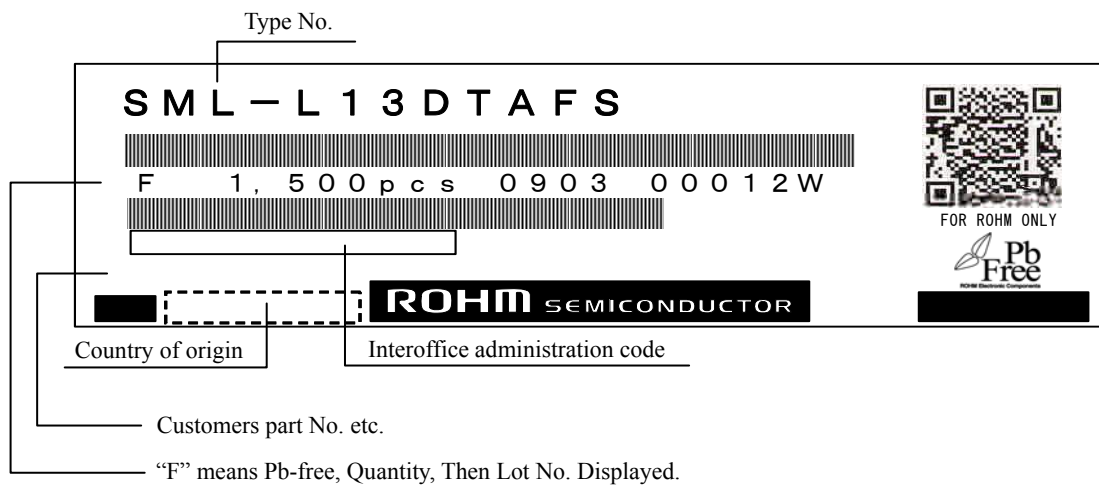
- (1) 1,500pcs are packed in one reel.
- (2) One reel is packed in aluminum bag.
The size of aluminum bag is 380(a)×400(b)mm.
The size up to 380(c)mm is to zipper.
- (3) Aluminum bag is sealed by pressured for all directions.




2. MARKING

The following information shall be described on a box label:
ROHM Type number, Packing quantity, Luminous intensity rank, Lot number etc.

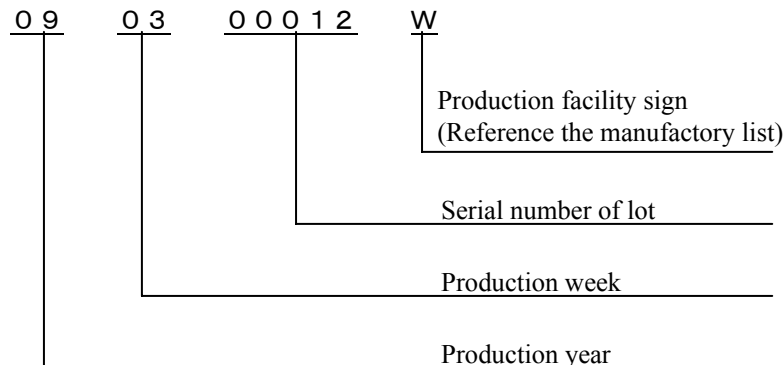
【FORMER LABEL SPECIFICATION】



Note)  Indicates bar code expressed by code 39.

 indicates Pb-free Products.

【EXAMPLE OF LOT NO. MARKING】

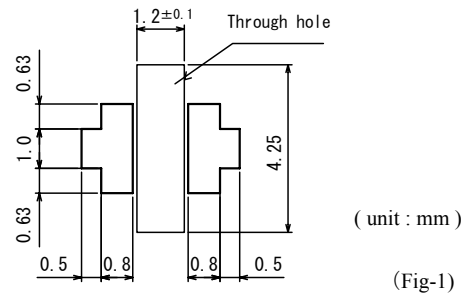


【ATTENTION POINT IN HANDLING】

This product was developed as a surface mount LED especially suitable for soldering.
Please take care of following points when using this device.

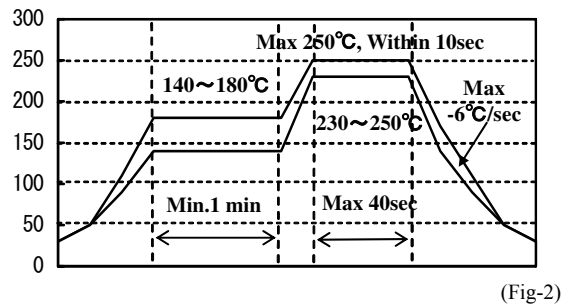
1. DESIGNING OF PCB

As for a recommendable solder pattern, Please refer to Fig-1.
The size and direction of the pad pattern depends on the condition of the PCB,
So, please investigate about the adjustment thoroughly before designing.



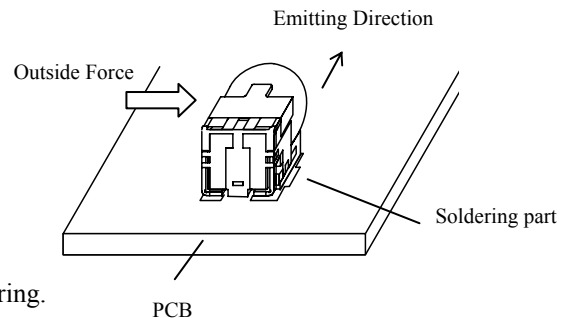
2. SOLDERING (Sn-Cu, Sn-Ag-Cu, Sn-Ag-Bi-Cu)

LED products do not contain reinforcement materials such as glass fillers.
Therefore, thermal stress by soldering greatly influence its reliability.
The temperature conditions for reflow soldering should therefore be set up according to the characteristic of this product. (See Fig-2)
Furthermore, a sudden heating or cooling of LED cause internal stress greatly and has a possibility to break the device. Therefore, thermal gradient shall be gradual as possible.
Number of reflow process shall be max 2 times and these processes shall be performed in a row.
Cooling process to normal temperature shall be required between first and second soldering process.



3. HANDLING AFTER MOUNTING

In case outside force is given to the device, stress is concentrated to the jointed part between mold resin and substrate.
Therefore please be careful when handling LED and PCB for there is a possibility to break the device or PCB.



4. WASHING

Please note the following points when washing is required after soldering.

- 4-1) WASHING SOLVENT
Isopropyl alcohol or other alcohol solvent is recommendable.
- 4-2) TEMPERATURE
Below 30°C, immersion time ; within 3 minutes.
- 4-3) ULTRA SONIC WASHING
Below 15 / 1 liter of solvent tub.
- 4-4) CULING
Below 100°C within 3 minutes.

5. STORAGE

At reflow soldering, the reliability of this product is often influenced by moisture absorption so we apply the packaging with moisture proof for better condition is use, please also note that

- 5-1) Not to be opened before using.
- 5-2) To be kept in our moisture proof packaging with some desiccant (SILICA GEL) after opening it.
To be baked in case the SILICAGEL indicator changed its color from either blue to clear or green to pink.
- 5-3) Please use within 72 hours after the package was opened. (Condition at 30°C, max.70%Rh.)
In case it is not used within 72 hours, please put it back into our packaging.
- 5-4) BAKING
Please bake under reel condition at 60°C, 12~24 hours (max.20%Rh) after un-sealing.
While baking is done, the reel and emboss tape may be easily deformed.
Please be careful not to give any stress.

【ATTENTION POINTS IN SOLDERING OPERATION】

This product was developed as a surface mount LED especially suitable for reflow soldering. So reflow soldering is recommended. In case of implementing manual soldering, please take care of following points.

1. SOLDERING OPERATION

1) SOLDER USED

Sn-Cu, Sn-Ag-Cu, Sn-Ag-Bi-Cu

2) SOLDERING CONDITION

LED products do not contain reinforcement material such as a glass fillers.

So thermal stress by soldering greatly influence its reliability.

Please keep following points for manual soldering.

	ITEM	RECOMMENDED CONDITION
a)	Soldering iron	Less than 30W, top of iron less than 3mm.
b)	Heating method	Condition) Temp. of iron top less than 350°C within 3 sec. Heating on PCB pattern, not direct to the LED.
c)	Handling after soldering	Please handle after the part temp. Goes down to room temp.

3) WASHING

Please note the following points when washing is required after soldering.

3-1) WASHING SOLVENT

Isopropyl alcohol or other alcohol solvent is recommendable.

3-2) TEMPERATURE

Below 30°C, immersion time : within 3 minutes.

3-3) ULTRA SONIC WASHING

Below 15W/1 liter of solvent tub.

3-4) CURING

Below 100°C within 3 minutes.

4) STORAGE

At manual soldering, the reliability of this product is often influenced by moisture absorption so we apply the packaging with moisture proof for better condition is use, please also note that

4-1) Not to be opened before using.

4-2) To be kept in our moisture proof packaging with some desiccant (SILICA GEL) after opening it.

To be baked in case the SILICA GEL indicator changed its color from either blue to clear or green to pink.

4-3) STORAGE CONDITION

Please use products in a short time after opening the package. In case all parts are not used at the sometime, put the remaining back into ROHM package.

Storage condition : (Lower than 30°C, 70% Humidity max. 72 hours.)

4-4) BAKING CONDITION

12~24 hours at 60°C, and humidity less than 20%