

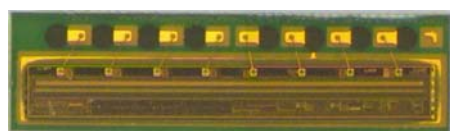
Resin-sealed CMOS linear image sensors

Before using resin-sealed CMOS linear image sensors on a board, be sure to read this information. Precautions differ depending on the sealing resin material. Check the delivery specification sheet or data sheet for the sealing resin material (epoxy resin or silicone resin) for the product you are going to use, and then read this document.

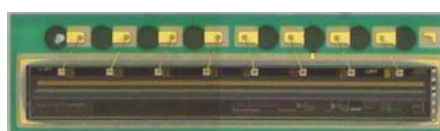
If the product comes with special usage precautions on the delivery specification sheets, then be sure to strictly comply with those instructions.

1. Handling

- The photosensitive area of resin-sealed CMOS linear image sensors is sealed and protected by transparent resin. When compared to a glass faceplate, the surface of transparent resin may be less uniform and is more likely to be scratched. Be very careful when handling these image sensors and also when designing the optical systems.
- Be careful not to apply the following external force to a silicone resin product as it will cause the package to crack, characteristics to fluctuate, and wires to break from wire deformation.
[Uniform external force applied over the entire package] 200 N or more
[External force applied to a section of the package] 2 N/φ 100 μm or more
- At the time of shipment, yellow-brown color heat-resistant tape is affixed to the surface of this product to protect the photosensitive area. After assembling the product, remove this tape before use. When removing this tape, grip the tape edge with tweezers or a similar tool and carefully peel it off.



Heat-resistant tape affixed



Heat-resistant tape removed

- Never use solvent (except ethyl alcohol) to clean the product.
- To remove dust or grime on the product surface, blow it off with compressed air. If the dust or grime cannot be removed by air blow, then lightly wipe it away with a cotton-tipped swab, etc. slightly moistened with ethyl alcohol. Tiny scratches made on the surface of silicone resin sealed products can be repaired by heating the surface at 40 °C for about one minute.
- This product is designed against static electricity but excessive electrostatic charges or voltage surges might destroy this product or impair its performance. Take countermeasures to prevent

damage from static electricity such as grounding yourself, workbench, and tools. Also protect this product from surge voltages which might be caused by peripheral equipment.

- When doing reflow soldering, follow the conditions listed in Table 1.

A sudden rise or drop (cooling) in temperature might cause trouble. Refer to the "Temperature rising/cooling conditions" in Table 1.

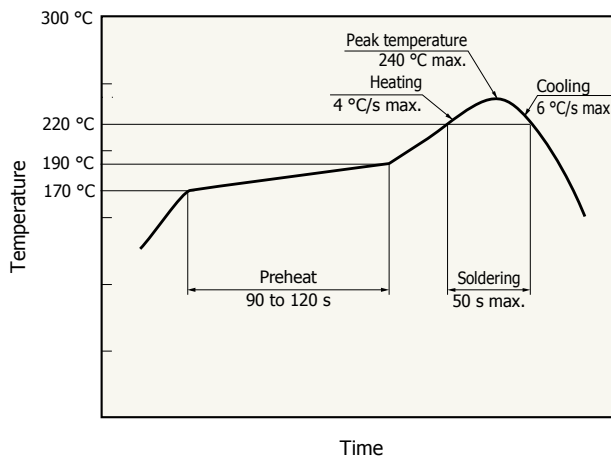
The extent of thermal stress applied to the sensor during reflow soldering differs depending on the circuit board and reflow furnace to be used. When setting the reflow conditions, make sure that the conditions will not apply excessive thermal stress to the product. Figure 1 shows a recommended temperature profile for reflow soldering.

[Table 1] Reflow soldering conditions

Parameter	Epoxy resin sealed product	Silicone resin sealed product
Reflow soldering temperature (Package surface temperature)	240 °C or less	260 °C or less
Number of reflow cycles allowed	One cycle	Up to 3 cycles
Temperature rising/cooling conditions	Rising rate: less than 4 °C/s Cooling rate: less than 4 °C/s	Rising rate: less than 3 °C/s Cooling rate: less than 6 °C/s

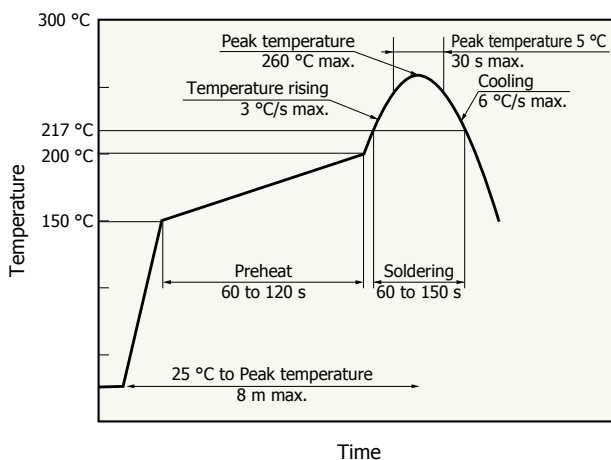
[Figure 1] Recommended temperature profile for reflow soldering (typical example)

(a) Epoxy resin sealed product



KMPDB0348ED

(b) Silicone resin sealed product



KMPDB0405EA

2. Storage

If this product undergoes reflow soldering while the sealing resin has absorbed moisture, the internal stress caused by moisture expansion may affect optical characteristics or cause operation problems, so use caution.

- To prevent the sealing resin from absorbing moisture, the product is packed in a conductive moisture-proof bag containing silica gel. Do not open this bag until just before product use.
- Silica gel changes its color from blue to red as it absorbs moisture. When opening the bag, check to see if the silica gel color has changed and also if the packing bag is broken.
- As long as the packing bag is not opened and kept at normal temperature (5 to 35 °C) and humidity (45 to 85%), the product can be stored for an extended period of time (about 3 months). However, even if the packing bag is not opened, avoid storing it in locations subject to sharp or sudden fluctuations in temperature.
- After opening the conductive moisture-proof bag, store the product or install it on the circuit board in accordance with the specified moisture resistance level. See Table 2 for moisture resistance level.
- When three or more months have passed even if the packing bag is not opened or the storage period, temperature or humidity defined by the moisture sensitivity level is exceeded, baking should be done in a clean drying machine. When placing the product in a tray to perform baking, do not use plastic trays since they are vulnerable to heat but use metal trays, etc. See Table 3 for the "Recommended baking conditions".

[Table 2] Moisture resistance level and storage conditions

Moisture resistance level	Storage period	Storage temperature/humidity	Applicable product
1	Indefinite period	30 °C or less / 85% or less	
2	1 year	30 °C or less / 60% or less	
2a	4 weeks	30 °C or less / 60% or less	Silicone resin sealed product
3	168 hours	30 °C or less / 60% or less	
4	72 hours	30 °C or less / 60% or less	
5	48 hours	30 °C or less / 60% or less	
5a	24 hours	30 °C or less / 60% or less	Epoxy resin sealed product

[Table 3] Recommended baking conditions

Parameter	When packed in tape or placed in metal tray, etc.
Baking temperature and time	120 °C, 3 hours
Number of baking times	Up to two times

HAMAMATSU

www.hamamatsu.com

HAMAMATSU PHOTONICS K.K., Solid State Division

1126-1 Ichino-cho, Higashi-ku, Hamamatsu City, 435-8558 Japan, Telephone: (81) 53-434-3311, Fax: (81) 53-434-5184

U.S.A.: Hamamatsu Corporation: 360 Foothill Road, Bridgewater, N.J. 08807, U.S.A., Telephone: (1) 908-231-0960, Fax: (1) 908-231-1218, E-mail: usa@hamamatsu.com

Germany: Hamamatsu Photonics Deutschland GmbH: Arzbergerstr. 10, D-82211 Herrsching am Ammersee, Germany, Telephone: (49) 8152-375-0, Fax: (49) 8152-265-8, E-mail: info@hamamatsu.de

France: Hamamatsu Photonics France S.A.R.L.: 19, Rue du Saule Trapu, Parc du Moulin de Massy, 91882 Massy Cedex, France, Telephone: 33-(1) 69 53 71 00, Fax: 33-(1) 69 53 71 10, E-mail: info@hamamatsu.fr

United Kingdom: Hamamatsu Photonics UK Limited: 2 Howard Court, 10 Tewin Road, Welwyn Garden City, Hertfordshire AL7 1BW, United Kingdom, Telephone: (44) 1707-294886, Fax: (44) 1707-325777, E-mail: info@hamamatsu.co.uk

North Europe: Hamamatsu Photonics Norden AB: Torshamnsgatan 35 16440 Kista, Sweden, Telephone: (46)8-509 031 00, Fax: (46)8-509 031 01, E-mail: info@hamamatsu.se

Italy: Hamamatsu Photonics Italia S.r.l.: Strada della Moia, 1 int. 6, 20020 Arese (Milano), Italy, Telephone: (39)02-93 58 17 33, Fax: (39)02-93 58 17 41, E-mail: info@hamamatsu.it

China: Hamamatsu Photonics (China) Co., Ltd.: B1201, Jiaming Center, No.27 Dongshanhuan Beilu, Chaoyang District, Beijing 100020, China, Telephone: (86) 10-6586-6006, Fax: (86) 10-6586-2866, E-mail: hpc@hamamatsu.com.cn

Taiwan: Hamamatsu Photonics Taiwan Co., Ltd.: 8F-3, No. 158, Section2, Gongdao 5th Road, East District, Hsinchu, 300, Taiwan R.O.C. Telephone: (886)03-659-0080, Fax: (886)03-659-0081, E-mail: info@hamamatsu.com.tw

Cat. No. KMPD9007E05 Apr. 2018