

1. Solder and Flux

(1) Solder Paste

Use solder paste Sn:Pb=63:37wt%.
 For your reference, we are using
 63Sn/37Pb RMA9086 90-3-M18,
 manufactured by Alpha Metals Japan Ltd.
 96.5Sn/3.0Ag/0.5Cu M705-GRN360-K2-V,
 manufactured by Senju Metal Industry Co., LTD for any
 internal tests of this product.

(2) Flux

Use rosin type flux in the soldering process.
 If the flux below is used, some problems might be
 caused in the product characteristics and reliability.
 Please do not use these types of flux.
 • Strong acidic flux (with halide content exceeding
 0.2wt%).
 • Water-soluble flux
 (*Water-soluble flux can be defined as non-rosin type
 flux including wash-type flux and non-wash-type flux.)

2. Cleaning Conditions

To remove the flux after soldering, observe the following
 points in order to avoid deterioration of the characteristics
 or any change to the external electrodes' quality.

| Solvent | Dipping Cleaning | Ultrasonic Cleaning | Drying |
|------------|---|---|--|
| 2-propanol | Less than 5 minutes at room temp. or Less than 2 minutes at 40°C max. | Less than 1 minute 20W/L Frequency of several 10kHz to 100kHz. | After cleaning, promptly dry this product. |

A sufficient cleaning should be applied to remove flux completely.

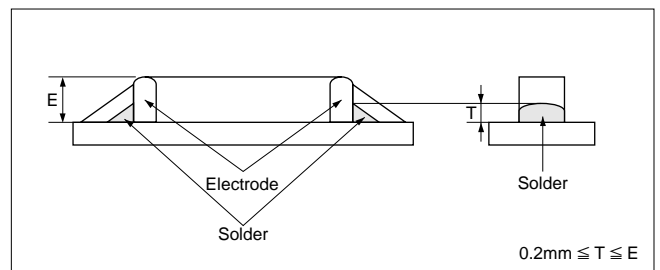
3. Soldering Conditions

In your mounting process, observe the following points in
 order to avoid deterioration of the characteristics or
 destruction of this product. The mounting quality of this
 product may also be affected by the mounting conditions,
 shown in the points below.

This product is for reflow soldering only. Flow soldering
 should not be allowed.

(1) Printing Conditions of Solder Paste

- (a) Standard thickness of solder paste printing should
 be from 0.15 to 0.20 mm.
- (b) After soldering, the solder fillet should be a height
 from 0.2 mm to the thickness of this product (see the
 figure at right).
- (c) Too much solder result in excessive mechanical
 stress to this product. Such stress may cause
 cracking or other mechanical damage. Also, it can
 destroy the electrical performance of this product.

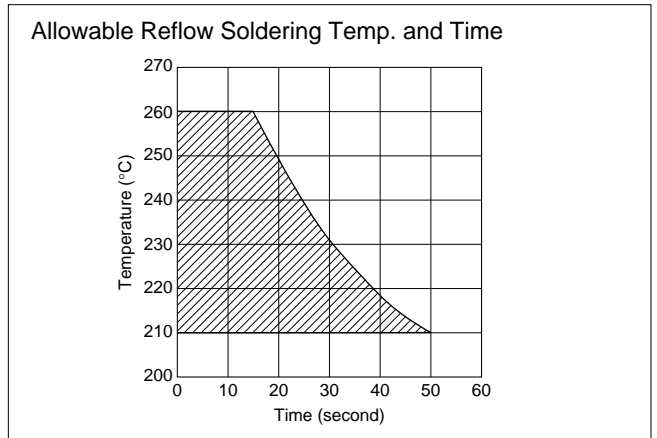


Continued on the following page. ↗

Continued from the preceding page.

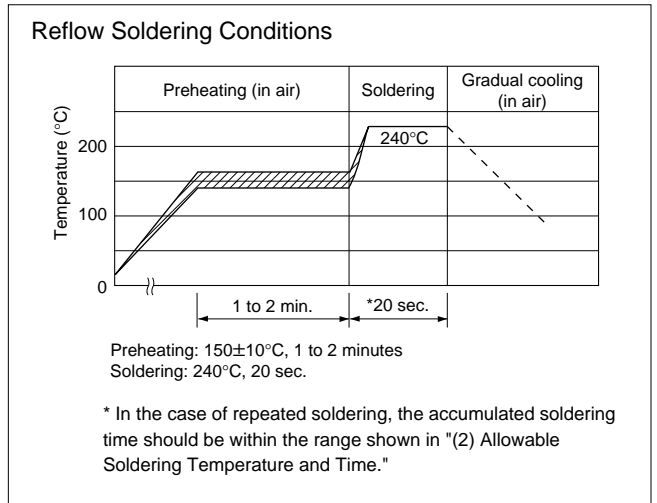
(2) Allowable Soldering Temperature and Time

- (a) Solder within the temperature and time combinations, indicated by the slanted lines in the graphs at right.
- (b) Excessive soldering conditions may cause dissolution of metallization or deterioration of solder-wetting on the external electrode.
- (c) In the case of repeated soldering, the accumulated soldering time should be within the range shown at right. (For example, Reflow peak temperature: 260°C, twice → The accumulated soldering time at 260°C is within 15sec.)



(3) Standard Temperature Profile for Soldering

- (a) Insufficient preheating may cause a crack on the ceramic body. The difference between preheating temperature and maximum temperature in the profile should be 100°C.
- (b) Rapid cooling by dipping in solvent or by other means is not recommended.



- (4) There may be a risk of unexpected failures (tombstone, insufficient solder-wetting, etc.) in the mounting process, caused by the mounting conditions. Please make sure that this product is correctly mounted under the specified mounting conditions.