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 soldering process.

If below flux is used, some problems might be caused in the product characteristics and reliability.

Please do not use below 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 and Drying

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.

(1) Cleaning Conditions

Solvent	Dipping Cleaning	Ultrasonic Cleaning
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.

A sufficient cleaning should be applied to remove flux completely.

(2) Drying

After cleaning, promptly dry this product.

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.

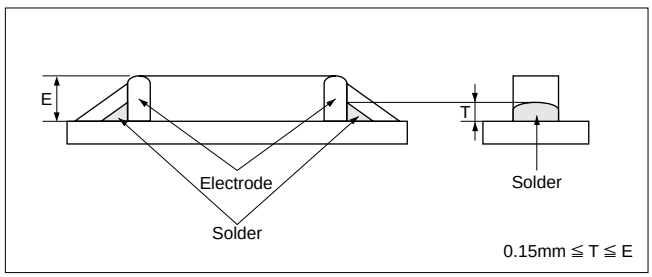
This product is for reflow soldering only. Flow soldering should not be allowed.

(1) Printing Conditions of Solder Paste

(a) Standard thickness of solder paste printing should be from 0.10 to 0.15 mm.

(b) After soldering, the solder fillet should be a height from 0.15 mm to the thickness of this product (see the figure at right).

(c) Too much solder gives too strong 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) Reflow soldering conditions

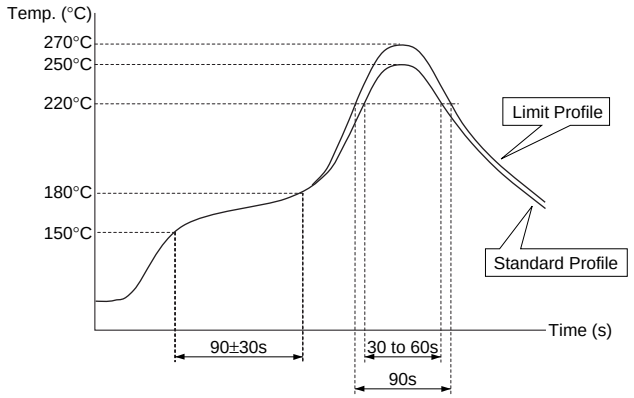
The following figure and table show our recommended reflow profile.

(a) Insufficient preheating may cause a crack on ceramic body. The temperature difference between preheat and peak should be control within 100°C to prevent this.

(b) The excessive soldering conditions may cause dissolution of metallization or deterioration of solder-wetting on the external electrode.

(c) Rapid cooling by dipping in solvent or by other means is not recommended.

(d) Please evaluate it on your condition if you will do mounting using not applying condition to the above-mentioned.



	Standard Profile	Limit Profile
Preheat	150 to 180°C, 90±30s	
Soldering Time (≧220°C)	30 to 60s	90s
Peak Temp.	250°C	270°C
Reflow Cycle	Max. 2 times	Max. 2 times

(3) 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 specified mounting conditions.