

MITSUBISHI ELECTRIC CORPORATION

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	DATE	'08-4/28			'08-11/5		<i>'11 - 5/12</i>		

Recommended assemble method for MITSUBISHI's leadless packaged device

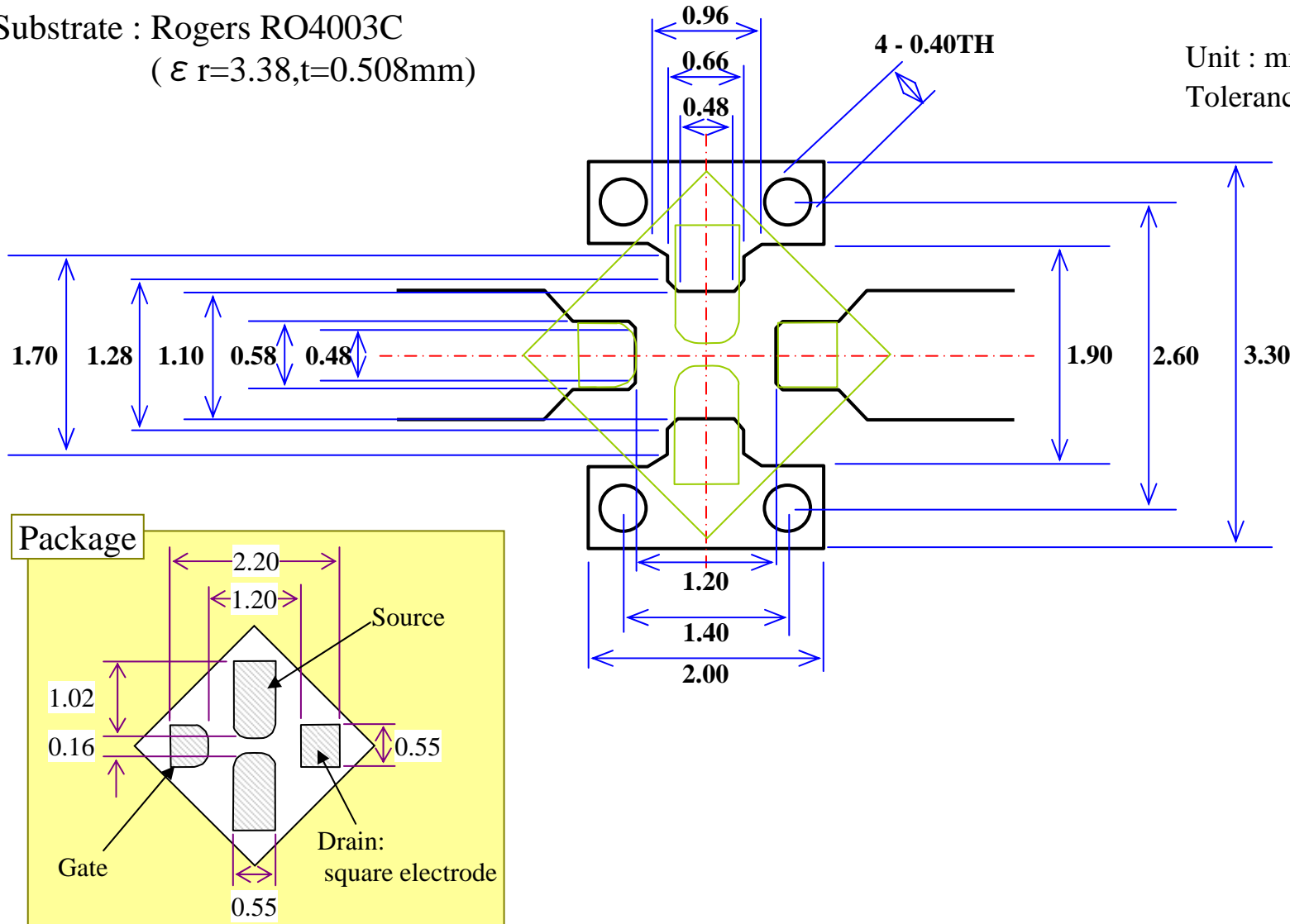
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1-a Recommended Foot pattern for MGF495** and MGF485**

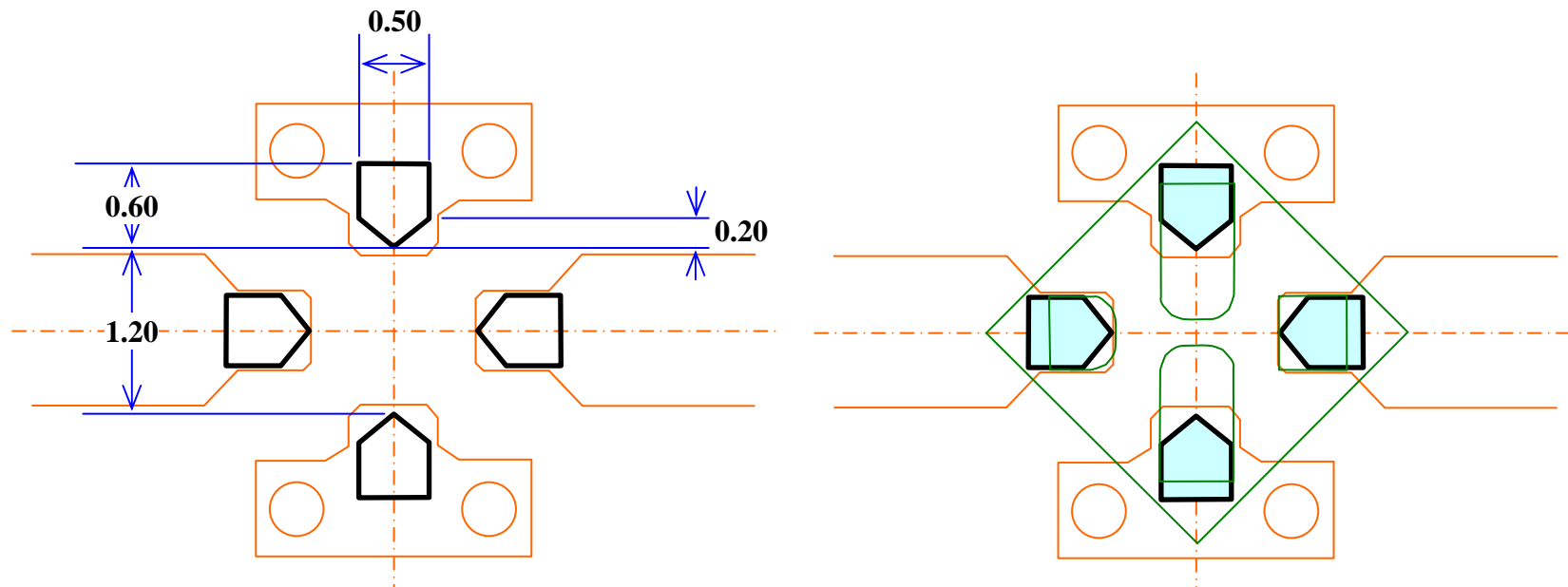
Substrate : Rogers RO4003C
($\epsilon r=3.38, t=0.508\text{mm}$)

Unit : mm
Tolerance : ± 0.05



1-b Recommended Metal Mask pattern for MGF495** and MGF485**

Unit : mm
Tolerance : ± 0.05



Metal Mask Thickness = 0.15mm

Point : Each quantity of solder have to be same
quantity for all terminals.
(\rightarrow Prevent inclination of package.)

2 Recommended reflow soldering (Lead free Solder)

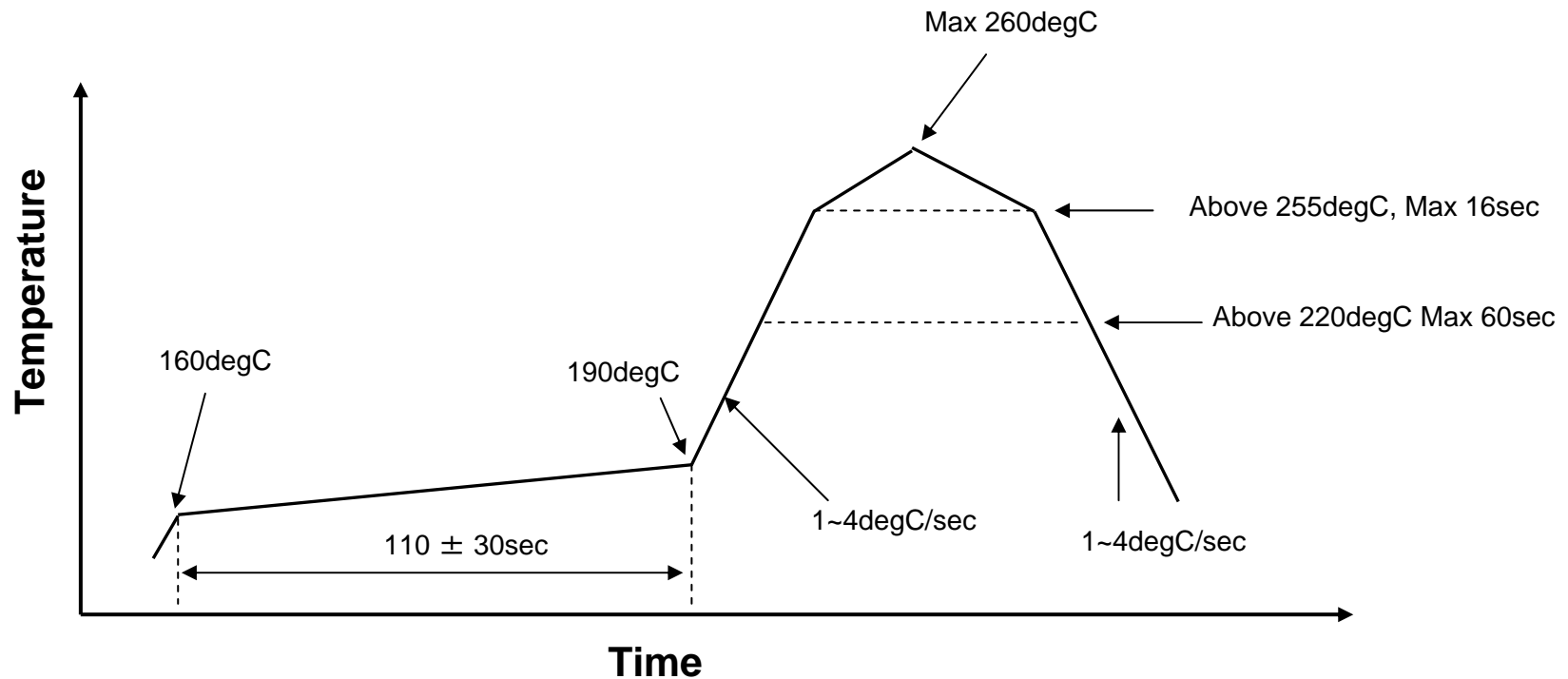
2-1. Solder type

- Alloy : Sn-3Ag-0.5Cu
- Particle Size : 25~35 μ m
- Content of Halide : under 0.1wt%

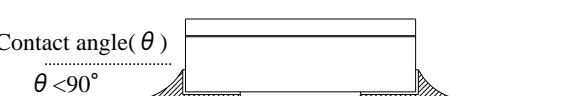
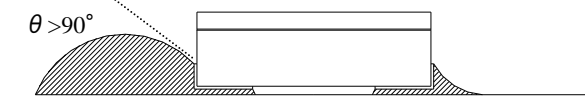
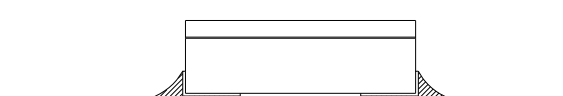
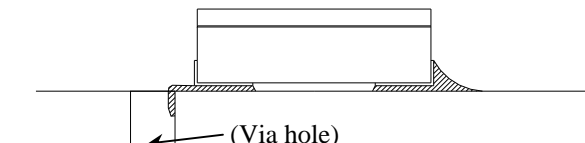
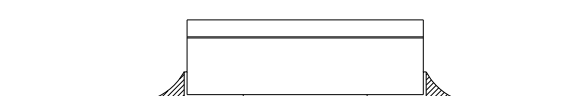

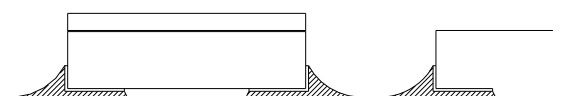
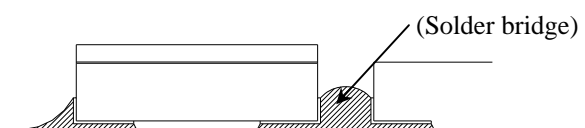
Point:

- Number of reflow : 3 times max
- Indicated temperature means the temperature on the surface of package.
- Keep under 260degC

2-2.Reflow Profile

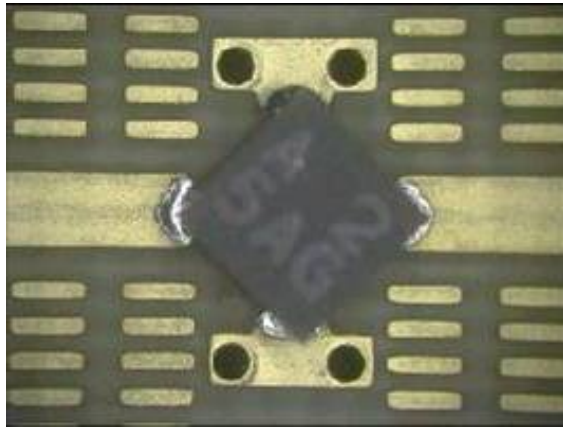


3-a Visual inspection criteria for MGF495** and MGF485**

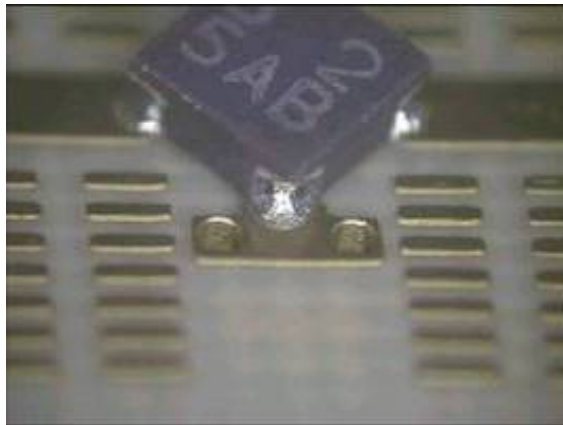
	accept	failure
<p>Shape of solder fillet -.Excess solder</p>	<p>Solder fillet contact angle is less than 90° . Solder is wetting to more than $\frac{1}{2}$ height of a side terminals.</p> <p>Contact angle(θ) $\theta < 90^\circ$</p> 	<p>Solder fillet contact angle is more than 90° .</p> <p>Contact angle(θ) $\theta > 90^\circ$</p> 
<p>Shape of solder fillet -.Poor solder</p>	<p>Solder fillet contact angle is less than 90° . Solder is wetting to more than $\frac{1}{2}$ height of a side terminals.</p> 	<p>There is no fillet. (Solder flow into Via hole.)</p> 
<p>Tile of device</p>	<p>The device does not tile.</p> 	<p>Tile of device is more than $100 \mu\text{m}$.</p> <p>$H > 100 \mu\text{m}$ H</p> 
<p>Solder bridge</p>	<p>There is no solder bride.</p> 	<p>Solder bridge between devices on the same pattern.</p> <p>(Solder bridge)</p> 

3-b Visual inspection

(a) Ideal mounting

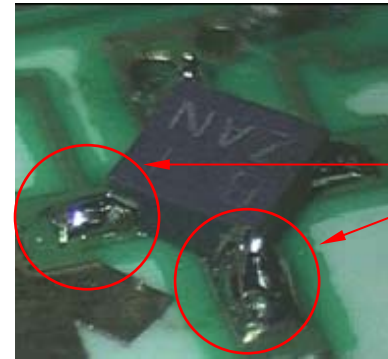


Top view

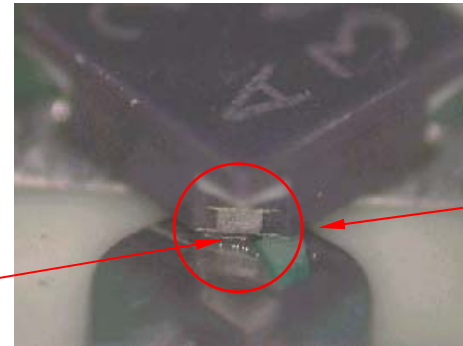


Side view

(b) failure mounting



Excess solder
(Fillet angle $> 90^\circ$)



Poor solder
(There is no fillet)

Floating

If quantity of solder increases (excess solder), Package may float and the RF characteristic may degrade.

To rework MGF495*A on application board, We recommend the following soldering rework Method.

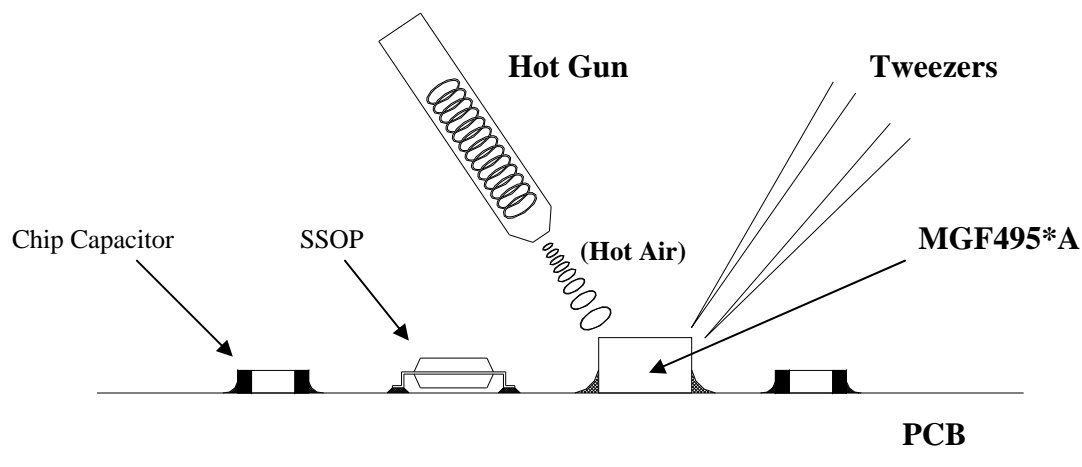


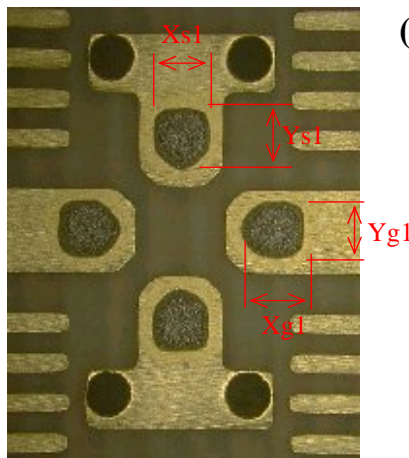
Fig. Soldering Rework Method for MGF495*A

Soldering rework method

1. Please adjust the temperature and position of hot gun so that the surface temperature of Package which needs rework becomes about 240 ~ 260deg.C.
2. After the solder melts, please take rework Package using tweezers.

Attention

1. Please be careful so that the solder of the other adjacent components does not melt by thermal influence
2. Mitsubishi does not recommended, and also not guarantee to use the removed Package.
3. Please put on a wrist wrap in order to protect the other devices from ESD.



(1) Solder shape for MGF495 and MGF485****

Metal Mask Size & Solder shape after printing

	Xs1	Ys1	Xg1	Yg1
Mask Size	0.5	0.6	0.6	0.5
Solder Size	0.539	0.599	0.589	0.549



Printability is no problem.

<u>Equipment</u> NM-PC10 (Panaset)
<u>Solder</u> PS31BR-600A-C1 (Harima-Chemicals)
<u>Printing Condition</u> 1. Rubber Plate Speed : 2. 3.

6 Notice

These conditions which is shown on this technical note is not only guaranteed condition but also MITSUBISHI's recommended conditions.
Please confirm the assembly conditions at customer side before using our device.