Recommended assemble method for MITSUBISHI's 4-pin flat lead packaged device

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1. Outline Drawing

4pin flat lead packaged device : GD-30
(MGF3022AM, MGF4921AM, MGF493xxM series, MGF4965BM)

Unit: mm
2. Recommended Metal mask pattern

Foot pattern

Metal mask pattern

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

Unit: mm
Tolerance: \(\pm 0.05\)
3-1. Recommended conditions of IR reflow

(1) Solder type
- Alloy: Sn-3Ag-0.5Cu
- Particle Size: 25~35µm
- Content of Halide: under 0.1wt%

(2) Reflow Profile

Caution!
* Do not heat the device over 260degC, otherwise the device could be degraded.
* Please proceed as quickly as possible while high temperature is added to the device, otherwise it could be likely to have an adverse impact on the reliability of the device.
3 Recommended soldering methods

3-2 Recommended conditions using a soldering iron

Condition

- Temperature at a lead terminal: under 380degC / lead
- Heating time period: 3sec max / lead
- Content of Halide in solder flux: under 0.1wt%

How to use a soldering iron

- Please solder in the shortest possible time.
- Please connect the front edge of soldering iron to the ground.
- Please make sure that operators put earth bands on.

<table>
<thead>
<tr>
<th>Please solder with front edge of iron without any contacts to the package</th>
<th>Don't push a lead terminal without back supports</th>
<th>Don't push the head of package</th>
<th>Don't touch the head of package when soldering</th>
</tr>
</thead>
</table>

Caution!

- Please connect the front edge of soldering iron to the ground and make sure that operators are connected to the ground to protect the devices from ESD.
- Do not push or touch the head of package with front edge of soldering iron, otherwise the package outline could be deformed.
4. **Recommended storage condition**

It is very important for maintaining quality and performances of a devise to manage safekeeping condition and to meet storage limitation.

Plastic package may absorb moisture depending on storage conditions. In the case of applying reflow soldering to the package with absorption, moisture would expand and might cause breaking up adhesions between lead frame and mold resin or might cause a package crack.

Please keep the recommended storage condition shown as below, after opening moisture-proof container.

<table>
<thead>
<tr>
<th>Item</th>
<th>Recommended condition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Before opened storage bag</strong></td>
<td></td>
</tr>
<tr>
<td>Storage temperature</td>
<td>&lt; 40 deg.C</td>
</tr>
<tr>
<td>Storage humidity</td>
<td>&lt; 80%RH</td>
</tr>
<tr>
<td>Storage limitation</td>
<td>&lt; 12 months</td>
</tr>
<tr>
<td><strong>After opened storage bag</strong></td>
<td></td>
</tr>
<tr>
<td>Storage temperature</td>
<td>&lt; 30 deg.C</td>
</tr>
<tr>
<td>Storage humidity</td>
<td>&lt; 60%RH</td>
</tr>
<tr>
<td>Storage limitation</td>
<td>&lt; 7 days</td>
</tr>
</tbody>
</table>
5. Recommended Rework Process

Recommended condition using a Hot gun

Rework method using a Hot Gun (Spot Heater) is shown in following figure. Please control the temperature, position and airflow of Hot Gun to keep the package surface temperature.

Recommended hot gun nozzle
(diameter of front edge : about 3mm)

Recommended temperature and time

- Temperature at package surface: \(380^\circ C\) max.
- Time: 5sec. max.

Attention

1. Please be careful so that other adjacent components does not receive any thermal or mechanical influences. Especially in the case of using hot gun with strong air blow, the adjacent component might be flied apart.
2. Please put on a wrist wrap in order to protect the other devices from ESD.
3. Mitsubishi does NOT recommended, also NOT guarantee to use the removed device.
6. Notice

These conditions which is shown on this technical note is not guaranteed condition, but our recommended conditions.

Please confirm the assembly conditions at customer side before using our device.