AN-9076
New SPM® 2 Package Mounting Guidance

Mounting Guidance
This application note shows the electric spacing and mounting guidance of new SPM® 2 package.

Electric Spacing
The electric spacing specification of new SPM 2 package is shown Table 1.

Table 1. SPM 2 Package Typical Electric Spacing

<table>
<thead>
<tr>
<th>Location</th>
<th>Clearance [mm]</th>
<th>Creepage Distance [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Power Terminals</td>
<td>7.80</td>
<td>8.00</td>
</tr>
<tr>
<td>Between Control Terminals</td>
<td>3.05</td>
<td>6.85</td>
</tr>
<tr>
<td>Between Terminals &amp; H/S</td>
<td>3.8</td>
<td>6.06</td>
</tr>
</tbody>
</table>

Mounting Method and Precautions
When installing a module to a heat sink, excessive uneven fastening force might apply stress to the inside of chips, which leads to damage or degradation of the device. Figure 1 shows recommended fastening order.

Table 2. Mounting Torque and Heat Sink Flatness Specifications

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Conditions</th>
<th>Limits</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Min.</td>
<td>Typ.</td>
</tr>
<tr>
<td>Device Flatness</td>
<td>See Figure 2</td>
<td>0</td>
<td>+200</td>
</tr>
<tr>
<td>Heat Sink Flatness</td>
<td>See Figure 3</td>
<td>-50</td>
<td>+100</td>
</tr>
<tr>
<td>Mounting Torque</td>
<td>Screw: M4</td>
<td>0.9</td>
<td>1.0</td>
</tr>
<tr>
<td></td>
<td>Recommended 0.9 N m</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Recommended 9.1 kgf-cm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td></td>
<td>9.1</td>
<td>10.1</td>
</tr>
</tbody>
</table>

Note:
3. SEMS screws (include spring/plain washer, M4) are recommended.
To get the most effective heat dissipation, it is necessary to enlarge the contact area as much as possible to minimize the contact thermal resistance. Properly apply thermal-conductive grease over the contact surface between the module and the heat sink. It is also useful for preventing contact surface corrosion. Furthermore, ensure the grease has stable quality and long endurance within the wide operation temperature range. Use a torque wrench to fasten screws to the specified torque rating. Exceeding the maximum torque limitation can cause damaged or degradation. Use care not to allow any dust or debris on the contact surface.

**Thermal Compound**
- Use a minimum, 150μm layer of thermal grease to the module base plate or to the heat sink.
- While fastening the module, a rim of thermal compound must be observed around the mounted module.

**Fixing Sequence**
- Fix all screws with torque below 1.0 N·m (by hand or driver)
- Apply impact torque 1.5 ~ 2.5 N·m crosswise
- Use recommended screws SEMS screw (included spring/plain washer M4)

**Related Resources**

_FNA41012A, FNA42512A(5), FNA42512A(5) – 1200-V Motion SPM® 2 Series_
_AN-9075 – 1200-V Motion SPM® 2 Series User’s Guide_
_AN-9079 – 1200-V Motion SPM® 2 Series Thermal Performance by Mounting Torque_

**Note:**
5. These products are not fully released to production. Contact Fairchild Semiconductor for more information.

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