Recommendation for Soldering

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1. Scope

Soldering processes are a likely source for potential stress of a semiconductor device and if misapplied can induce latent reliability issues. This has been reconfirmed with the latest technological and environmental developments. Those challenges, taken into account during Melexis' normal and customary package qualification tests, require utmost care and attention during the soldering process applied by our customers and their contract manufacturers. This document describes some soldering recommendations applicable to Melexis products. For any soldering techniques deviating from the ones described below, please contact Melexis to verify compatibility between our products and intended soldering methods.

1. Moisture and reflow peak temperature

For components normally soldered using Surface Mounted Device techniques (eg: reflow process), a significant concern is related to the moisture absorption by the package body; which due to increased water vapor pressure when exposed to soldering temperatures, could lead to reliability issues such as delamination, package crack and bond wire fractures. For that purpose, moisture sensitivity levels (MSL) are determined for the relevant Melexis components, using the Jedec-020 standard. Qualified moisture sensitivity level and peak temperature are indicated on product labels, whenever applicable. Such components must be handled in accordance with Jedec-020 and Jedec-033 at all stages of the supply chain prior to the soldering process.

2. Lead Finish

Melexis Pb free lead finish plating is either pure tin or NiPdAu , which allows for backward compatibility with standard SnPb based solders. Prior to using a Pb free process, please make sure that all intended components have suitable plating. Melexis pure tin plated devices are processed using state-of-the-art international recommendations to minimize "tin whisker" growth. This includes minimum plating thickness (prior to trim and form) and a post plating bake step. Whisker growth is validated using Jedec-201 standard on a package family basis.

3. Solderability

Plating solderability of Melexis devices is verified during package qualification through application of Jedec-022-B102. Wetting and De-Wetting evaluations are conducted on specific request. As a general recommendation, the customer should

prevent any mechanical stress on device's leads; this is particularly true during the soldering process.

4. Manual Iron Soldering and Automatic Point-to-Point Iron Soldering

Manual Iron Soldering and Automatic Point-to-Point Iron Soldering methods are allowed for Through Hole applications
For products in Single In-Line package, typically Hall sensors, consult Melexis for detailed guidelines on soldering Hall sensor in SIP packages.

5. Reflow

Reflow techniques can be used to solder Melexis SnPb and Pb free devices. Temperature profile should conform to those described in Jedec-020 standard.
Reflow soldering of through-hole parts, especially in SIP packages, is possible using Pin-in-Paste technology or after SIP lead forming into a shape appropriate for SMD placement. Please contact Melexis in case you intend to use a reflow soldering process for through hole devices (Single In-line Packages) to verify your soldering process design.

6. Wave Soldering

Wave soldering is not recommended for Surface Mounted Device packages. Please contact Melexis in such cases to verify intended soldering process. Wave soldering is allowed for through hole application. A preheating step is required and should be performed in accordance with international standard recommendations (eg: EN60068-2-20). If a body holder of any type is used to keep package body in position, not more than 3N/sq.mm pressure shall be used for this purpose.

7. Welding

Electrical (resistant) welding and laser welding are applicable methods for Melexis SIP and DMP Hall sensor packages for PCB-less applications.
Please, consult Melexis for details of intended process.

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8. Disclaimer

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