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# AND9027

# Recommendations for Handling ON Semiconductor Hybrids

ON Semiconductor®

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APPLICATION NOTE

### Introduction

ON Semiconductor hybrids are classified as MSL3 (non−RoHS compliant) and MSL4 (RoHS compliant). This classification requires special handling practices in reflow and hand soldering applications. These hybrids are shipped in sealed, dry ESD bags and/or containers to prevent them from absorbing moisture from the air.

For information on how to handle the hybrids after opening of the package, refer to the How to Store, Reflow and Solder ON Semiconductor Hybrids information note (AND8493).

At ON Semiconductor, after opening the package, the hybrids are kept in a nitrogen cabinet or dry box. Dry boxes could be obtained from Fischer Scientific (http://www.fishersci.ca – search under desiccator cabinet).

### Soldering and Material

For information on how to solder ON Semiconductor hybrids, refer to the How to Store, Reflow and Solder ON Semiconductor Hybrids information note (AND8493).

For hand wired applications of *non−RoHS* compliant hybrids, ON Semiconductor used and qualified solder wire #66/44 from Kester. To enhance the reliability of our parts, they are cleaned after soldering in AK225 or isopropyl alcohol. After that, the parts are conformally coated to seal the assembly from the environment. The risk of dendrite growth is possible when the cleaning process is not followed. It is up to the customer to seek a *no clean* process that would not require any cleaning. We could suggest to try cored wire from AIM with flux NC254 (similar to what we qualified but in solder paste form and not cored wire) or Kester # 66/275, but we have not performed any reliability data using the Kester flux. More information on Kester and AIM products is available form their websites:

- Kester: http://www.kester.com/en−us/index.aspx
- AIM: http://www.aimsolder.com

For information on how to avoid an ESD damage to ON Semiconductor's ICs and hybrids, refer to Using ON Semiconductor Integrated Circuits information note.

### General Practice

- Never power up the hybrid, even for a short period of time, when wet or flux is present (to avoid dendrite growth), in case water−soluble flux or any other flux that require cleaning is used. This does not apply when *no clean* flux is used.
- Follow the flux manufacturing recommendation for any flux removal method if it is required.
- MSDS, provincial and federal regulation must be followed before introducing any new chemical to the manufacturing floor.
- It is strongly recommended that you perform reliability test whenever you change an existing material or introduce any new material; that would qualify and validate in an accelerated process the life of the end product.

### Recommendations for Programming of ON Semiconductor Hybrids

When programming an ON Semiconductor hybrid, ensure that you have the following:

- The latest version of ARK installed on your computer
- Good connection between the computer and the programming box (HiPro, ON Semiconductor DSP Programmer)
- Good connection between the programming box and the hybrid
- Programming cable with maximum length of 1.8 meters (6 feet)
- Good 1.3 Vdc supply to the hybrid during programming. It is recommended to supply the hybrid from the programming box rather than a hearing aid battery to avoid possible drop in the supply voltage during programming.

NOTE: Do not disconnect the power or the programming cable during programming.

Not following the above recommendations may result in programming illegal values into the hybrid's EEPROM, which may cause the hybrid not to operate properly or stop working altogether.

## PUBLICATION ORDERING INFORMATION

**LITERATURE FULFILLMENT**:
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