



# Backward Compatibility of RoHS Compliant Components

Since 2002, Actel has been supplying RoHS compliant devices, which is four years ahead of the required compliance date of July 1, 2006. It is important for Actel customers to become familiar with the backward compatibility of RoHS compliant components with standard components. This document contains information on backward compatibility of RoHS compliant components offered by Actel.

## Backward Compatibility

RoHS leaded packages such as PQFP, TQFP, VQFP, and PLCC components are backward compatible with the standard packages that contain Sn-Pb lead finishes as long as the Sn-Pb eutectic solders and standard board finishes are used.

RoHS compliant array packages such as BGA, FPGA, and CS components are not compatible with the standard packages that contain Sn-Pb solder balls.

## Details

### Compatibility of Package Dimensions and Tolerances

Package form factors and critical dimensions and tolerances are identical for both RoHS components and those with standard lead finishes. Thus, the board land patterns are also identical.

### Compatibility of Reflow Processes

#### Leaded Packages: PQFP, TQFP, VQFP, and PLCC

Standard reflow processes can be used for Actel RoHS compliant leaded devices and in mixed-mode mounting (both RoHS and standard components on the same board) as long as standard Sn-Pb eutectic solder pastes and board finishes are used. The peak temperature of the reflow profile is between 210°C and 225°C for Sn-Pb eutectic solders and standard board finishes. Thus, RoHS compliant leaded packages can be surface mounted using Sn-Pb eutectic solder pastes on boards with standard finishes. Hence, they are backward compatible.

When Pb-free solders are used for mounting the RoHS compliant devices, higher temperatures are needed and standard packages cannot be used.

## Array Packages: BGA, FBGA, and CS

The solder balls of RoHS compliant array packages are made with SnAgCu compositions. These solder balls would not melt at temperatures from 210°C – 225°C. Thus, the RoHS array packages are not backward compatible with the array packages made of Sn-Pb eutectic composition under standard reflow conditions for surface mounting.

For more information, visit our website at [www.actel.com](http://www.actel.com)



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