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IN REPLY REFER TO DSCC-VQH-04-6430 (Mr. Buben/614-692-0592/jb)

JUN 0 2 2004

SUBJECT: Use of Pure Tin In Hybrid Microcircuits, MIL-PRF-38534, FSC 5962

TO: MIL-PRF-38534 Hybrid Manufacturers Distribution List

Dear Sir/Madam:

DSCC has received reports from several users and manufacturers that components, particularly capacitors, with pure tin have been received and detected at incoming inspection or subsequent processing. Pure tin may exhibit a phenomenon known as "whiskering" where the tin extrudes from the elements in long whisker-like formations, or other shapes. These are conductive and can be substantial in length. They pose a serious reliability threat as they may break off and cause short circuits. Numerous factors may contribute to this phenomenon, and work is currently being done to understand and reduce this effect, however there is currently no proven method to assure that pure tin will not whisker. MIL-PRF-38534 disallows the use of pure tin on internal as well as external components. Some manufacturers have taken steps to prevent the use of pure tin on hybrid components by:

1. Verifying that element procurement documents specifically prohibit the use of pure tin. Alloy content shall be a minimum of three percent as required by MIL-PRF-38534.
2. Testing lots at incoming inspection to verify that pure tin is not being received.

It has been reported that pure tin terminated components cannot be verified visually, and that in many cases such components are compatible with processes used for tin-lead components. Therefore, unless testing is performed, manufacturers may be unknowingly receiving components with pure tin, even though prohibited by their procurement documents.

Companies are advised to take necessary steps to ensure that pure tin components are not used.

The following web site provides further information on the tin whiskering phenomenon: http://nepp.nasa.gov/whisker/

If you have any questions or comments, please contact Joe Buben at (614) 692-0592 or joseph.buben@dla.mil.

Sincerely,

JOSEPH GEMPERLINE
Chief,
Hybrid Devices Team