



## PFR-016 Title:

Assembly :	SubAssembly : DFB
Component :	
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### Failure Occurred During (Check one ☒)

☒ Functional test      ☐ Qualification test      ☐ S/C Integration      ☐ Launch operations

### Environment when failure occurred:

☐ Ambient      ☐ Vibration      ☐ Shock      ☐ Acoustic  
☒ Thermal      ☐ Vacuum      ☐ Thermal-Vacuum      ☐ EMI/EMC

### Problem Description

*(In this section it is important to document the specific symptoms which exhibited the problem. In the event we see it happen again, we would like to know as much as possible.)*

At cold temperature (around -30 degrees C) the FPGA was being PORed when commands were sent. The problem did not show at ambient temperature.

### Analyses Performed to Determine Cause

*(How do we know how the failure happened? Was it a bad part, bad handling, what? )*

The problem seemed to disappear when a scope was connected to the POR pin on the buffer (U49). The board functioned properly at cold and hot temperatures without a problem. The problem reappeared when scope probe was removed. Examining the board and schematic very carefully it became apparent that bypassing of the power on U49 was missed—there is no bypass capacitor in the schematic and therefore no capacitor on the board.

### Corrective Action/ Resolution

*(How do we fix the unit? And how do we make sure it doesn't happen again?)*

Bypassing was added (using non-flight component) and the test performed again. The board functioned properly at hot and cold temperatures. A bypass capacitor needs to be added to U49 between pins 14 and 7 and placed as close as possible to the chip. I suggest staking the capacitor on the chip itself and bending the leads (if a leaded capacitor is used) or wires (if surface mount cap is used) to the respective pins.

The bypass capacitor should be a ceramic .01uF (10,000pF) rated at 100V. There is no preference as to the type (leaded versus surface mount). The part number is:

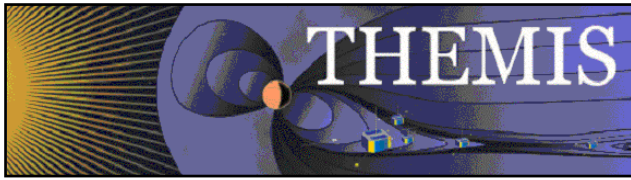
M39014/01-1575 (CK05 type capacitor)  
CDR32BX103BKUS (surface mount capacitor)

Acceptance:

MAM: Ron Jackson \_\_\_\_\_; MSE: Ellen Taylor \_\_\_\_\_

PM: Peter Harvey \_\_\_\_\_; Cognizant Engineer \_\_\_\_\_

Date of Closure \_\_\_\_\_



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Any pertinent drawings or pictures can be included on this page