

DOIM FAILURE MODE

This failure mode is consistent with losing continuity on one of the power lines for one of the 5 DOIM packages in the PORTCARD.

The schematic of a single DOIM channel is shown in Figure 1.

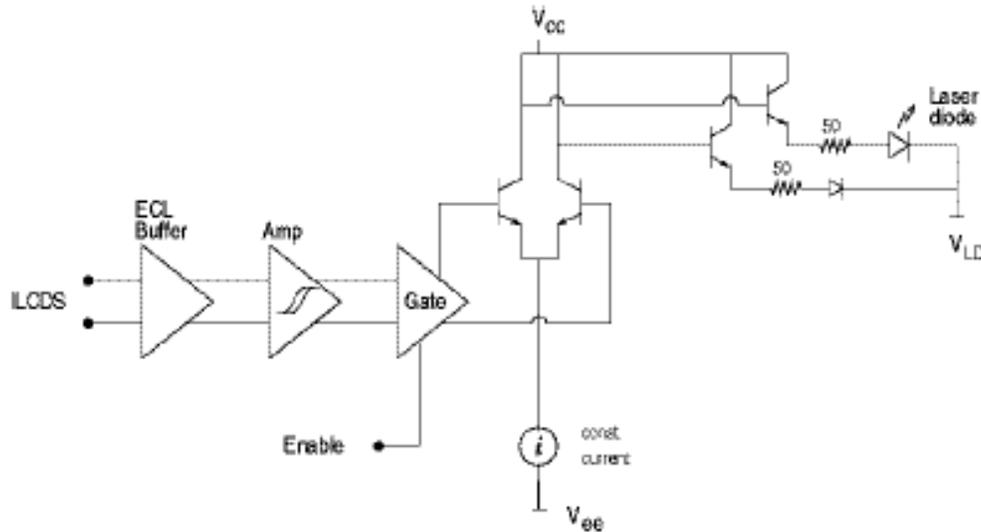


Figure 1 DOIM TX Schematic.

In Figure 2, 3 and 4 the current drawn by the DOIM packages that failed so far is shown versus time.

The first two cases are very consistent with each other and with the loss of continuity on the 5VDOIM line for 1 out of the 5 DOIM packages.

The 3rd case instead is different. On both power lines the current drops by 150 mA and furthermore the last reading on the 5VDOIM power supply is as high as 500 mA above the expected value.

After the damage occurs no more light is available at the output of the optical fibers coming out of the detector and the ladder becomes completely USELESS.

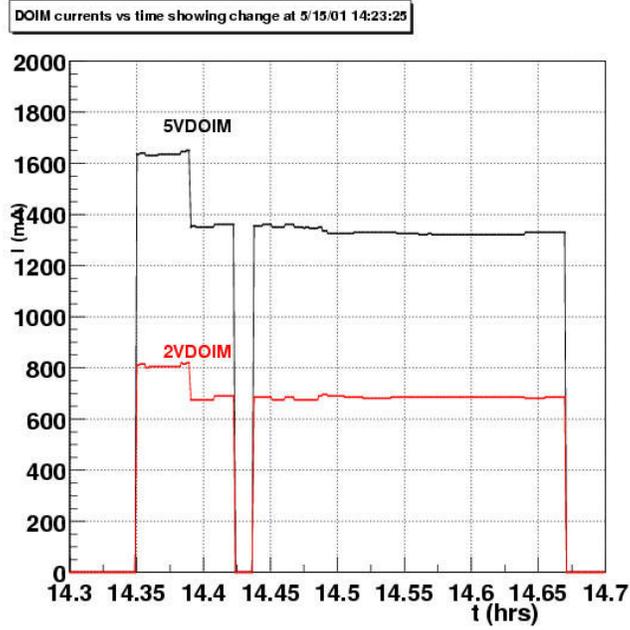


Figure 2 IB5W1L0 5VDOIM Current (BLACK) and 2VDOIM Current (RED) in mA versus time for 30 minutes around the failure. 2VDOIM current drops by ~150mA that is 1/5 of the 2VDOIM total current. 5VDOIM current drops by ~300mA that is 1/5 of the 5VDOIM total current.

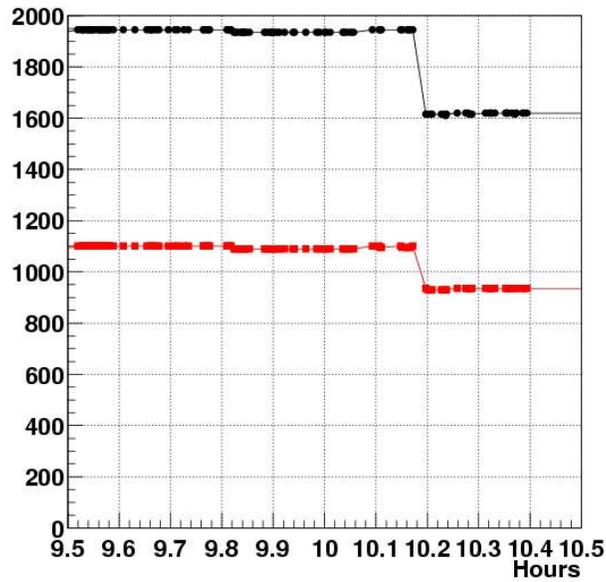


Figure 3 SB5W4L2 5VDOIM Current (BLACK) and 2VDOIM Current (RED) in mA versus time for 1 hour around the failure. 2VDOIM current drops by ~150mA that is 1/5 of the 2VDOIM total current. 5VDOIM current drops by ~300mA that is 1/5 of the 5VDOIM total current.

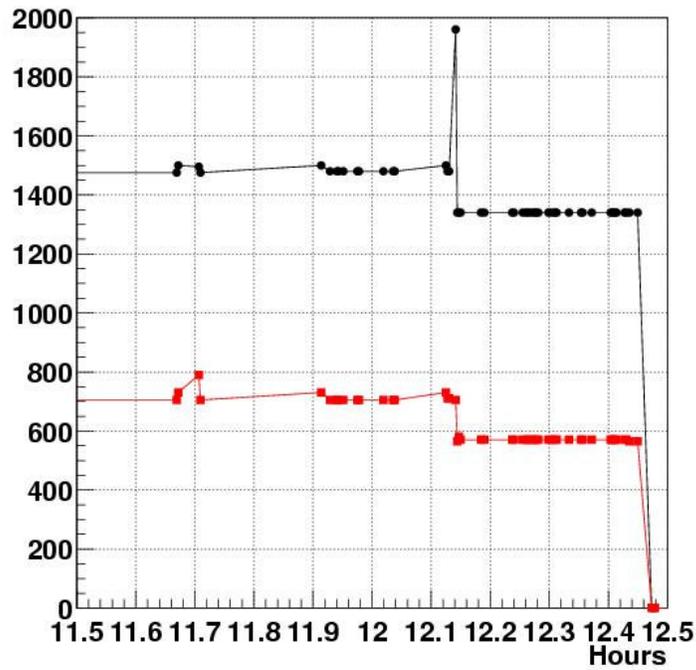


Figure 4 IB1W1L4 5VDOIM Current (BLACK) and 2VDOIM Current (RED) in mA versus time for 1 hour around the failure. Both currents drop by ~150mA that is 1/5 of the 2VDOIM total current.

Three ladders are affected by this failure mode. The first one (Figure 1) broke during the first test after installation of the Silicon detector in CDF (this could be associated with a weak part). The other two; one SVXII and the other an ISL broke during a “torture test” runs with L1A trigger rate above 12 KHz.