

Test Report V1
Pulsed Laser Single Event Transient (SET) Testing of the HS9-1840ARH
16-Channel Analog Multiplexer

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Today's Date: August 30, 2010

I. Introduction

The HS9-1840ARH is a 16-channel analog multiplexer designed in the Linear Dielectric Isolation CMOS process. The HS9-1840ARH uses 4 binary addresses and 1 enable input, which are all CMOS and TTL compatible, to control the multiplexing. On-chip latches facilitate microprocessor interfacing; the part also features fast switching time, low leakage, and a low on resistance. The multiplexer has been tested at the Naval Research Laboratory (NRL). Two devices were tested for SET.

II. Devices to Be Tested

The HS9-1840ARH devices were designed and fabricated by Intersil, Inc. They are fabricated in the CMOS process. All devices were characterized prior to exposure. The two devices tested are from the 0902 Lot Date Code (LDC). Complete package markings for the devices are:

Q 5962F95
63002VYC
X0902A888

Table 1: Packaging information

These are all 28 pin devices in a CerDIP package. The actual devices are shown in the Figure 1.

Product Datasheet: [HS9-1840ARH.pdf](#)

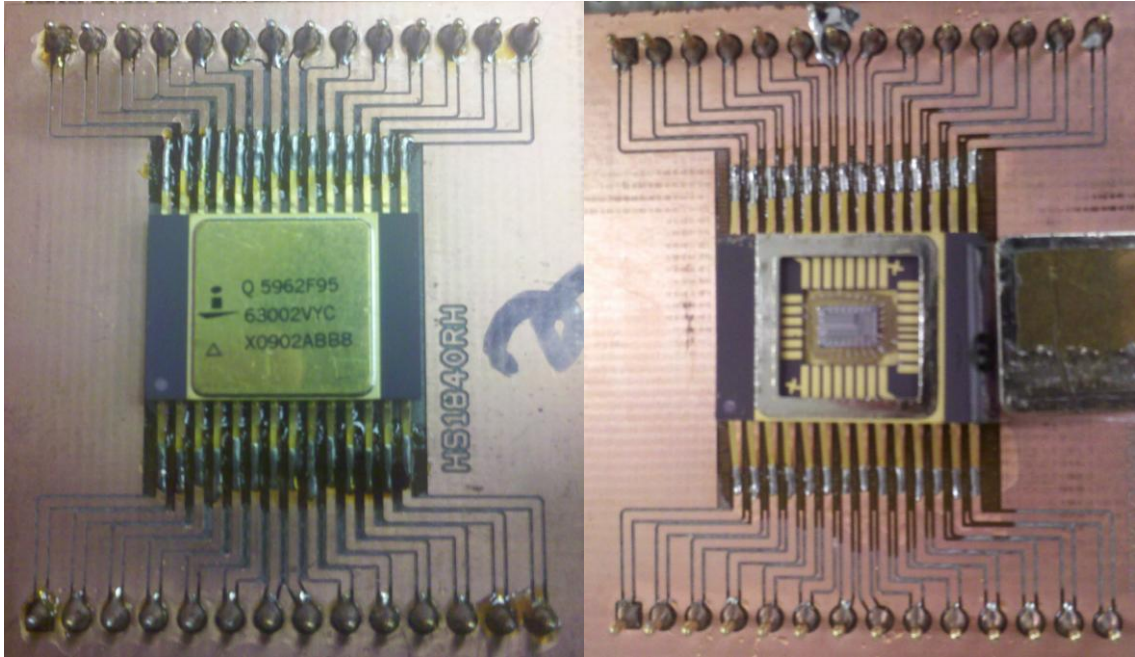


Figure 1: Picture of the MUX before (left) and after (right) being de-lidded.

III. Test Facility

Facility:

Naval Research Lab (NRL)

Total Testing Time:

4 hours

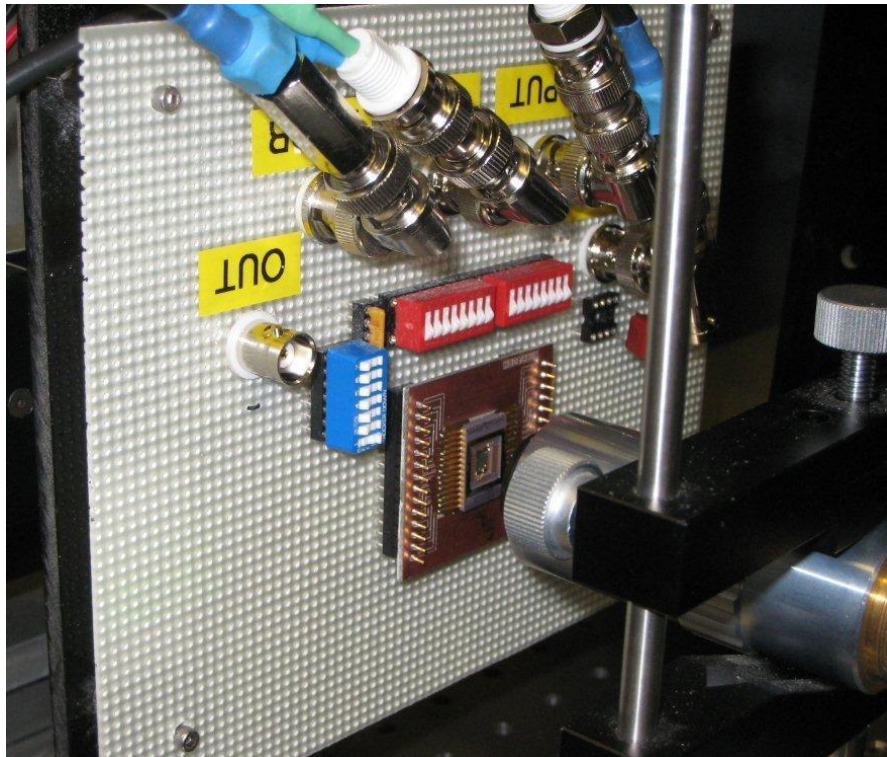


Figure 2: Tester Board and device in the Laser beam at NRL

IV. Test Methods

Temperature:

Room temperature

Test Voltages:

Nominal (15 Volts) supply, 5V digital inputs and 0-5V analog feed through

Test Hardware:

The block diagram shown in Figure 2 shows the test setup that was used to test this part for SET Testing. The Tester Board is used to verify the functionality of each address and the digital controls while the output is captured on an oscilloscope.

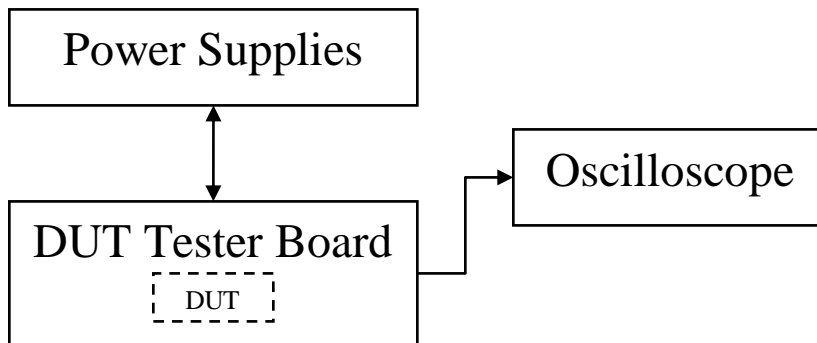
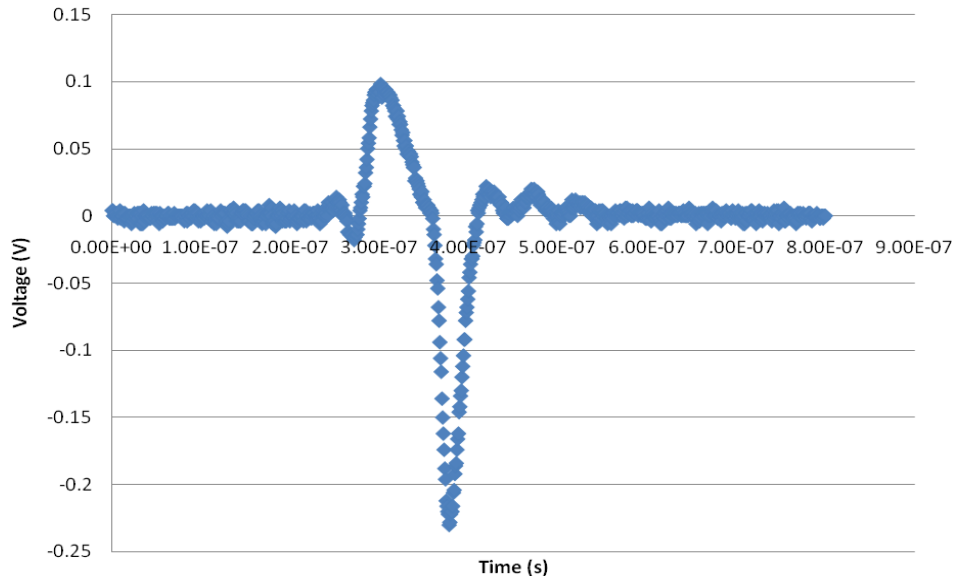


Figure 3: Block diagram of test setup where the dashed line represents the components exposed to the heavy-ion beam.

V. Test Results

Single Event Transient – Input signal is clipped, amplified, or diminishes when passed through the analog MUX.

HS9-1840ARH Typical Transient



HS9-1840ARH Typical Transient

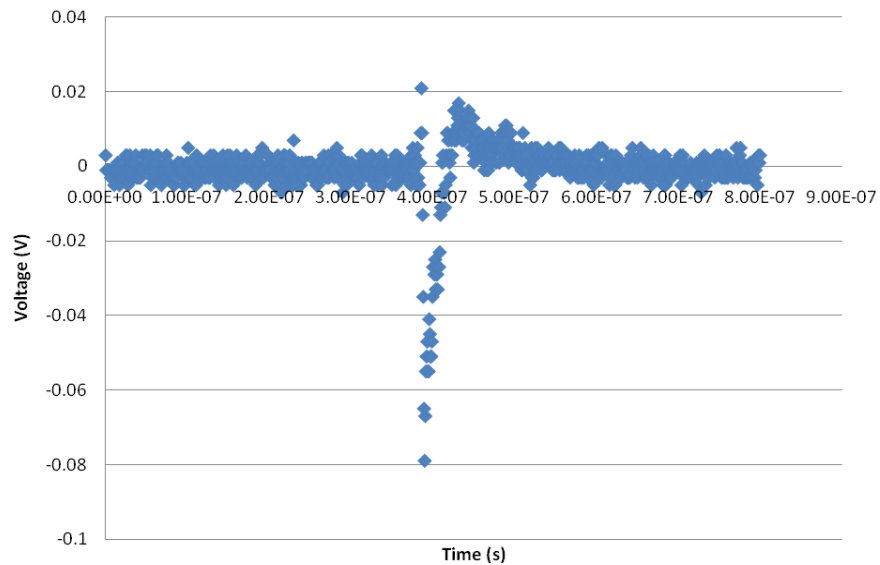


Figure 4 and 5: Typical SET response recorded while performing SET testing; worst case (top), typical negative going (bottom).

Result Synopsis:

The analog multiplexer experienced transients typically under ~100mV, worst case was ~250mV which can easily be filtered and or negligible in some applications. The worst case is considered a bipolar transistor response as it goes positive and negative, most likely on a channel's input or output.