

OptiXtal Technical Report No. 2011-1
**Mini Supercapacitor Can Handle Up to 3.3V
or Higher in Pulse Application**

Yoshihiko Ariizumi
04/21/2011

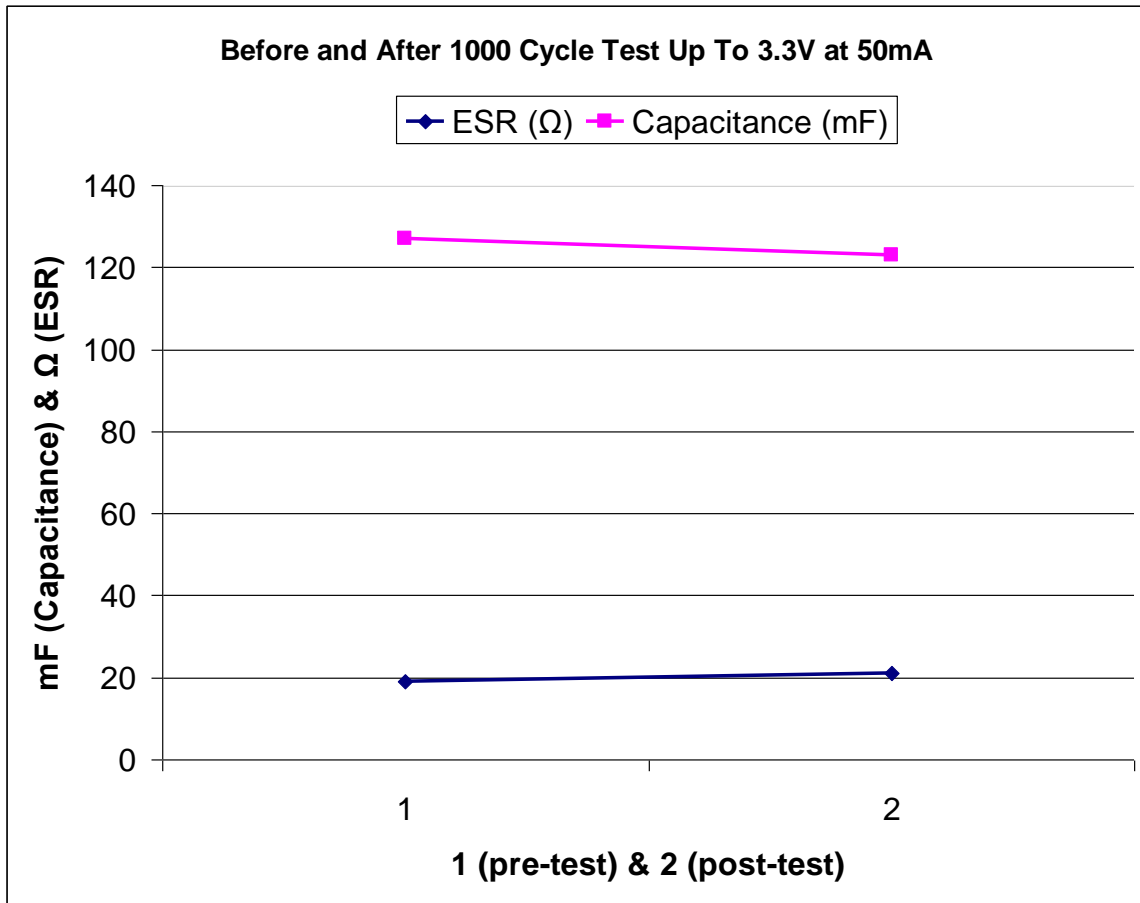
Introduction

In a particular application, our mini supercapacitor can survive beyond the nominal voltage, at least up to 3.3V without getting a serious damage for 1000 cycles.

Testing Procedure

At the constant current of 50mA the cap was charged up to 3.3V and clamped for 0.1 second at 3.3V; then at 50mA it was discharged down to 1.0V. As you know, it is not a battery; so it can be discharged to zero volt without causing degradation, but we stopped at 1.0V to expedite the testing. At 1.0V it rested for 20 seconds which ended the first cycle. We repeated the same procedure for 1000 times. Please note that this is a very unusual condition; yet this result shows the resilience of our mini supercapacitor for pulse application.

After 38 hours rest, the cap was tested again using the regular testing procedure for a mini cap, which is the three cycle test between 2.5V and 1.25V at 15mA. The pre-test and the post-tested are compared in the following graph. The changes were insignificant.



Implications

This mini supercapacitor can survive the higher-than-normal voltage condition quite well as long as the high voltage stage does not last for long. Probably it can last tens of thousands cycles or much more.