

Electrolytic Capacitors under Electrical Overstress Data Sets

Author: Chetan S. Kulkarni (April 2016)

Point of Contact: chetan.s.kulkarni@nasa.gov and jose.celaya@gmail.com

Experimental Description:

Set of Eight electrolytic capacitors (identified as **ES10**) were continuously charged and discharged at a frequency of 100 mHz (50% duty cycle). The set was charged to 10 Volts respectively and discharged at the given frequency cycle. Electrochemical Impedance Spectroscopy (EIS) measurements were performed using an SP-150 Biologic Potentiostat instrument. The measured impedance values of each capacitor was used to calculate the capacitance (C) and equivalent series resistance (ESR) at regular intervals.

Files:

EOS_DataSet.mat- Matlab data structure for all capacitors under electrical stress.

e.g.

```
>> EOS_DataSet
```

```
EOS_DataSet =
```

```
aging_time: [1x1 struct]
```

```
C: [1x6 struct]
```

```
ESR: [1x6 struct]
```

Data Structure:

The EOS_DataSet.mat data structure contains three-sub structures **aging_time**, (time at which aging measurements are taken), **C** (measured capacitance) and **ESR** (measured equivalent series resistance).

DataSet Citation:

J. Celaya, C. Kulkarni, G. Biswas, and K. Goebel, "Towards A Model-based Prognostics Methodology for Electrolytic Capacitors: A Case Study Based on Electrical Overstress

Accelerated Aging", International Journal of Prognostics and Health Management 2012, Vol 3 (2) 004.