

## ICE 1002 (2.23V) Testing Information

### **Situation:**

The ICE 1002 (2.23V) device needs testing as per prospective client's wish. The test involves the device out of regulation and the desired results are the surface temperature, and serviceability of the device after long periods of high temperature use at room temperature and at an elevated ambient temperature of at least 38.3 degrees Celsius.

**NOTE:** This document only covers the operation of 2.23V ICE-1002 device at room temperature of 25 degrees Celsius; the elevated ambient temperature test will have to be performed with more specialized equipment than we have on site, and will take 2 additional days to complete after this report has been submitted.

### **Configuration:**

The ICE device was connected to a power supply with a voltmeter in parallel, an amperage meter in series and a thermal couple attached to the surface of the device. The ambient room temperature was recorded at 25 degrees Celsius.

### **Procedure:**

The power supply was turned up to provide a 2.8V drop between the two leads of the ICE 1002. At time = 0mins, voltage, current and external device surface temperature readings were taken. This continued every minute for 30 minutes.

After the 30 minute testing phase, the power supply was turned down to provide 200mA through the device and the voltage was measured to ensure the device was not damaged and that it was still within specification.

## Results:

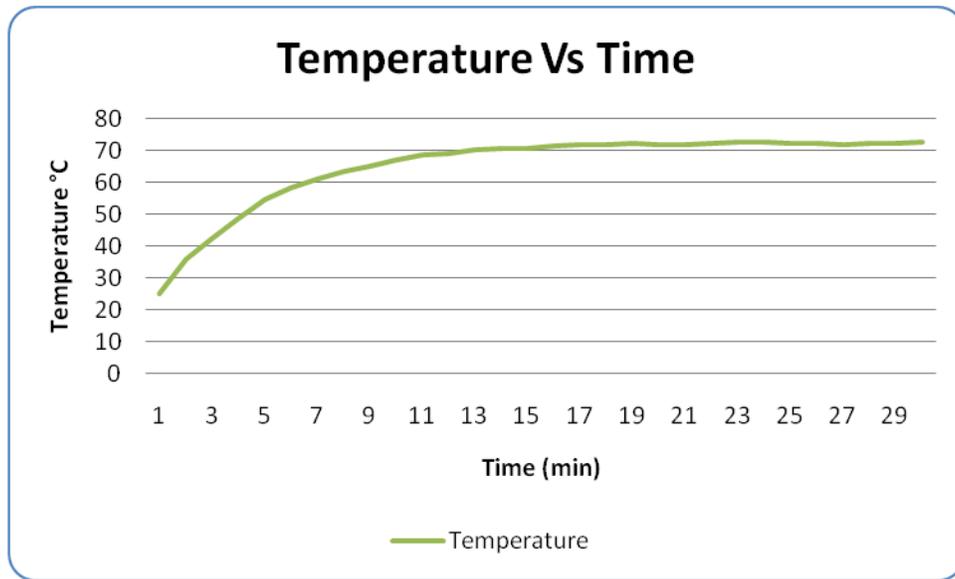


Figure 1 – Temperature Graph

The current averaged 510mA over the 30mins with a maximum value of 519mA and a minimum of 498mA.

The device is out of regulation; therefore the voltage is not being clamped and is free to move. At times the power supply changed between constant voltage and constant current mode depending on the attempted regulation of the ICE 1002.

The voltage averaged 2.83V over the 30mins with a maximum value of 2.88V and a minimum of 2.80V.

As shown in Figure 1, the temperature stabilized at around 19 minutes. Once stabilized, the surface temperature was 72.25°C.

At the end of the temperature testing phase, the device was brought back down into regulation, and while the surface temperature was still at 72°C, the device went back into regulation at 200mA with a voltage across the ICE 1002 of 2.23V.

## Conclusion:

Due to the above test, the ICE 1002 is capable of use after being exposed to high voltage or high temperature at an ambient room temperature. As long as the ICE 1002 is kept below 2.8V and under 500mA, the device is capable of remaining at that level without destruction, but not operating in regulation mode. After returning the device to proper working specifications (as shown in product brief/spec), the ICE 1002 will be capable of regulating the cell voltage it is rated for (2.23V).