DIODE ZZK AND ZZT

Using the FTI-1000 in conjunction with the Diode Test Station, the ZZk and ZZt tests apply a modulated current through the zener diode device under test (DUT) for a given pulse width. Simultaneously the voltage is measured across the DUT from which the impedance can be calculated. To differentiate between the ZZk “knee impedance” test, and ZZt “zener breakdown impedance” test, each have an independent, and fully programmable Ir current bias setting.

PARAMETERS

Delta

Used in conjunction with the ‘Set Old Datalog’ selection under the ‘Lot’ menu of FTI Studio, this feature is used to test a device against a previous data log.
1.EnableData: Set to true, this will enable delta testing capability.

Limits
These are the programmable limits for the ZZk and ZZt tests, allowing the user to test the DUT under various conditions.

1. DeltaZzk_Max or DeltaZzt_Max : The maximum limit for running delta testing on previously measured device or data log.

2. DeltaZzk_Min or DeltaZzt_Min: The minimum limit for running delta testing on previously measured device or data log.

3. Zzk_Max or Zzt_Max : The max limit for this test, measured in ohms.

4. Zzk_Min or Zzt_Min : The min limit for this test, measured in ohms.

Misc
1. EngMode : When set true will show the pre and post heat forward diode measurements which are used in the test for making the Theta measurement. Default is False.

2. Ir : The programmed current required for the test. Default is 250uA for the ZZk test, and 20mA is default for the ZZt test.

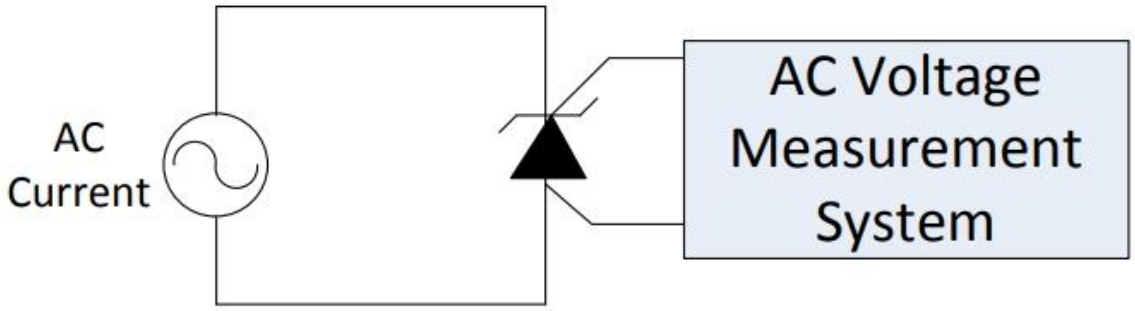
3. Isig : The modulation percentage of Ir at which the test will run. Default is 10%.

Signal
1. Amplitude : Used to define how the Ir is used. The default value is ‘Peak’.

2. Cycles : This is the number of cycles to average the result over. An increase of cycles can increase the repeatability of the measurement. Default is 5 cycles.

TEST CONFIGURATION AND PROFILE

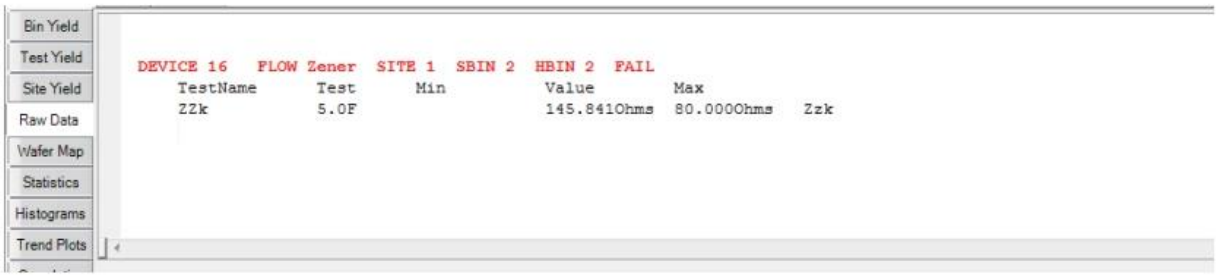
The ZZk and ZZt test is configured per the below diagram:



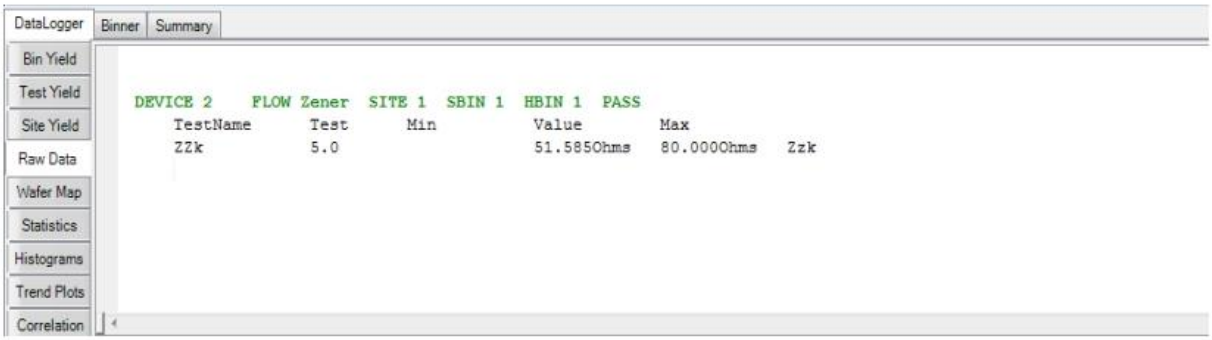
ZZk and ZZt Test Profile

Data Logging

After each test, FTI Studio will display device and test information. Should a DUT fail the test, the measured value will be accompanied by a flag. All results, pass or fail, are stored in the FTI Studio data log. A sample passing and failing data log are shown below.



Sample Device failure log.



Sample device passing log.