XJTLU Auto-testing System User Guide

First Edition

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PREFACE

XJTLU Auto-testing System (XJTLU ATS) is a testing package that is designed for MOSFET characteristics automatic testing. A conjugate of this package with Keysight B1500A Semiconductor Device Analyzer providing you the best testing experience is able to conduct the testing of MOSFET ID-VD, ID-VG, and Capacitance biasing testing. XJTLU ATS is also capable for low cost MOSFET characteristics testing by using Keysight 34401A and Keysight E364xA. XJTLU ATS Version 0.1 is a beta version designed for Suzhou Key Lab for New Energy Techniques.

This 1st Edition User Guide will provide you with the deepest understandings of how to use XJTLU ATS Version 0.1 from the underlying operation system environment configuration to the software level functions.

BRIEF CONTENTS

Instrument Connections
Keysight B1500A

Slot 1 – Drain
Slot 2 – Gate
Ground – Source
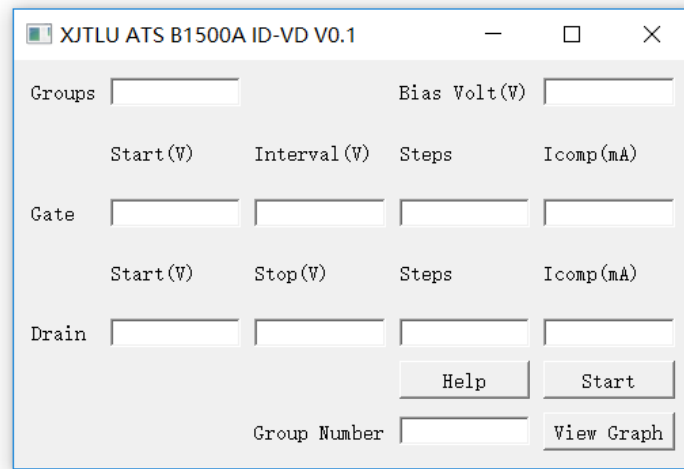
Keysight B1500A ID-VD Testing

Figure 2-1 Keysight B1500A ID-VD Testing User Interface

Settings:

Groups: Applied for ID-VD biasing testing, enter an integer number of that how many groups of testing you want to conduct. The biasing time after each group is shown in Table 2-1, i.e. entering 16 indicates that you will have 16 groups of data and the biasing time between the 16th group and 15th group is 100,000 seconds (refer to 15th group). If you are not looking for biasing testing, enter 1.

Groups	Waiting Time After Testing (s)	Accumulated Biasing Time (s)
1	1.1	2.1
2	2.5	4.6
3	5.3	10
4	11.5	21.5
5	24.8	46.4
6	53.5	100
7	115.4	215.4
8	248.7	464.1
9	535.8	1000
10	1154.4	2154.4
11	2487.1	4641.5
12	5358.4	10000
13	11544.3	21544.3
14	24871.5	46415.8
15	53584.1	100000
16	115443.5	215443.5

Table 2-1 Waiting time after each group of testing

Bias Volt: Applied for ID-VD biasing testing, enter the value of biasing voltage in volts to set the biasing voltage. Enter 0 is you are not looking for biasing testing. Numerical number is accepted.

Gate:

    Start is the value of voltage (in volts) that you want the gate voltage to start with, numerical numbers are accepted.

    Interval is the value of voltage change (in volts) for each step, numerical numbers are accepted. If you want to have a constant gate voltage, enter 0.

    Steps is the number of gate voltages in the testing, enter 1 if you want to have a constant gate voltage. Only positive integers are accepted.

    Icomp is the compliance of gate current (in mA) which will protect the system from damage. Numerical numbers are accepted.

Drain:

    Start is the value of voltage (in volts) that you want the drain voltage to start with, numerical numbers are accepted.

    Stop is the value of voltage (in volts) that you want the drain voltage to stop with, numerical numbers are accepted.

    Steps is the number of drain voltages in the testing. Only positive integers are accepted.

    Icomp is the compliance of drain current (in mA) which will protect the system from damage. Numerical numbers are accepted.

Start: After finish setting of the testing, press ***Start*** to start the testing.

Help: Press ***Help*** to get access to the user guide for help.

Group Number: Enter a integer number (in the range between 1 and the ***Groups*** that you set) after testing to view graph for the testing results of the specific number of biasing group.

View Graph: Press ***View Graph*** after you entering the specific group number to view the graph.

Results:

Apart from the results graph viewing, your testing results are stored in an excel file in the same folder of your testing file, while provides you an easy access to your results.