Keithley 2602 Demo Program: Diode Component Test Example

This example program demonstrates the Model 2602 using Keithley's embedded Test Script Processor™ technology to perform a high speed functional test on a diode.

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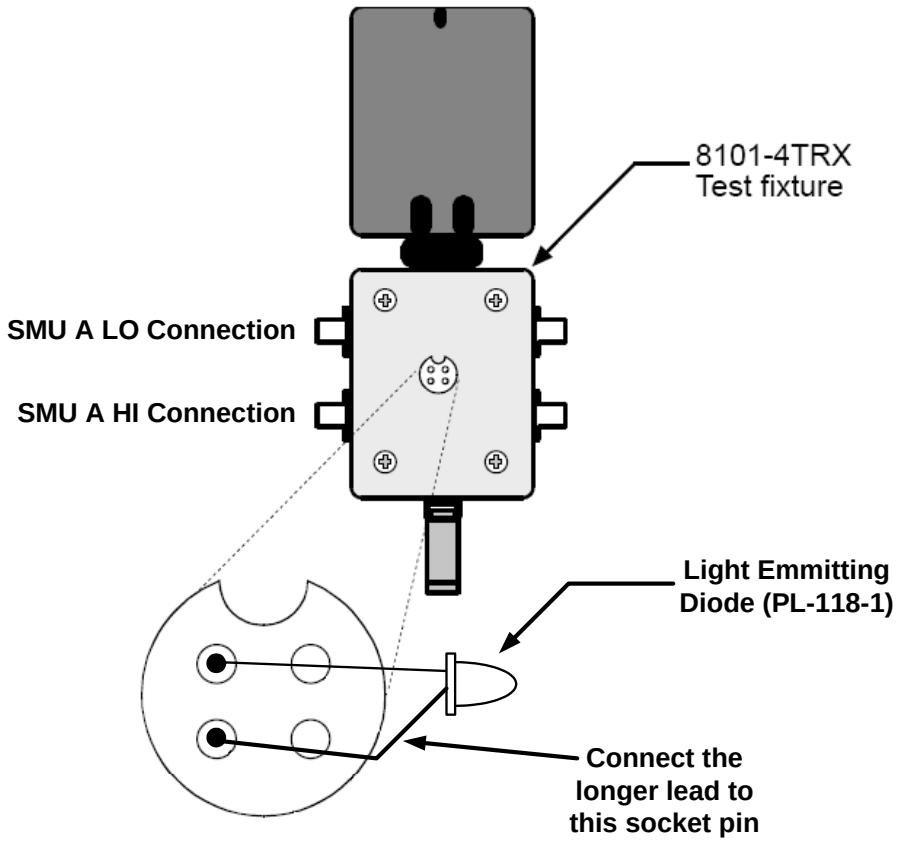
Physical Connections

Parts needed:

- 1 Model 8101- 4TRX Test Fixture
- 2 Model 2600-Demo-TRX Cables
- 1 Blue Light Emitting Diode (PL-118-1)

Connections:



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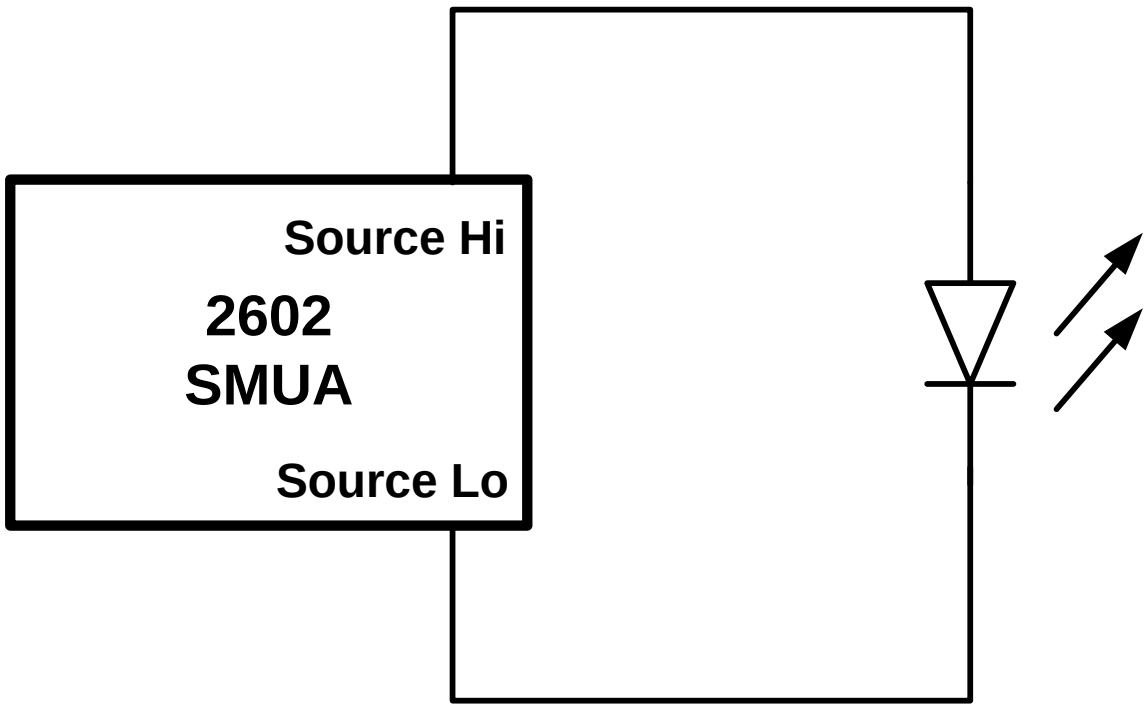
Test Schematic



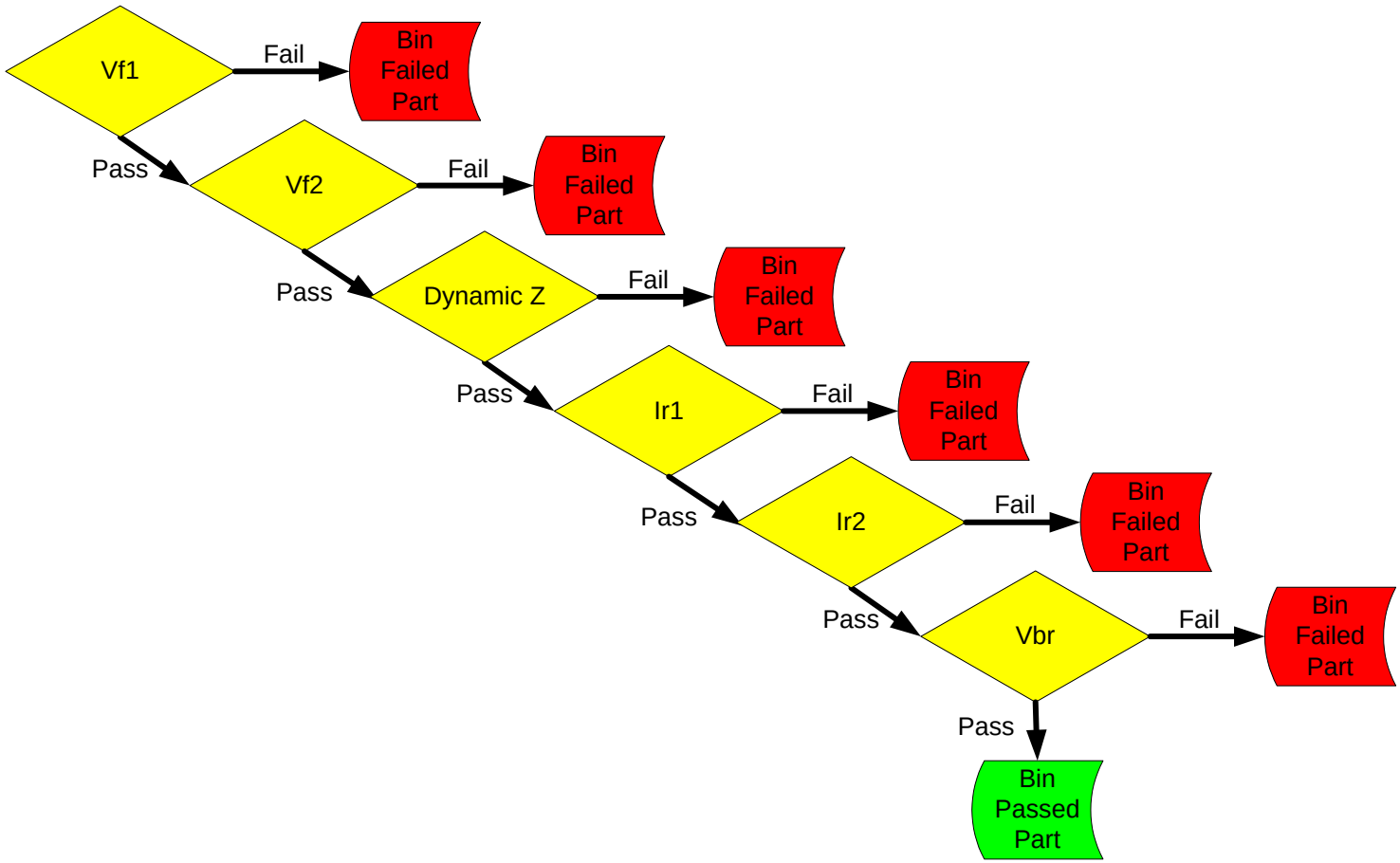
Diode Test Overview

- **Vf1:**
  - Diode forward voltage at 5mA test current
  - Procedure
    - Source If1 at 5mA into the diode, measure voltage, evaluate pass / fail
- **Vf2:**
  - Diode forward voltage at 20mA test current
  - Procedure
    - Source If2 at 20mA into the diode, measure voltage, evaluate pass / fail
- **Dynamic Z:**
  - Diode dynamic impedance (Dyn Z = (Vf2 – Vf1) / (If2 – If1))
  - Procedure
    - Calculate dynamic impedance using sourced and measured values from Vf1 and Vf2 tests, evaluate pass / fail.

Diode Test Overview (cont.)

- **Ir1:**
  - Diode reverse leakage current at –20V
  - Procedure
    - Source reverse voltage of –20V into the diode, measure current, evaluate pass / fail
- **Ir2:**
  - Diode reverse leakage current at –25V
  - Procedure
    - Source reverse voltage of –25V into the diode, measure current, evaluate pass / fail
- **Vbr:**
  - Diode reverse breakdown voltage
  - Procedure
    - Source reverse current of –100uA into the diode, measure voltage, evaluate pass / fail

Diode Test Sequence



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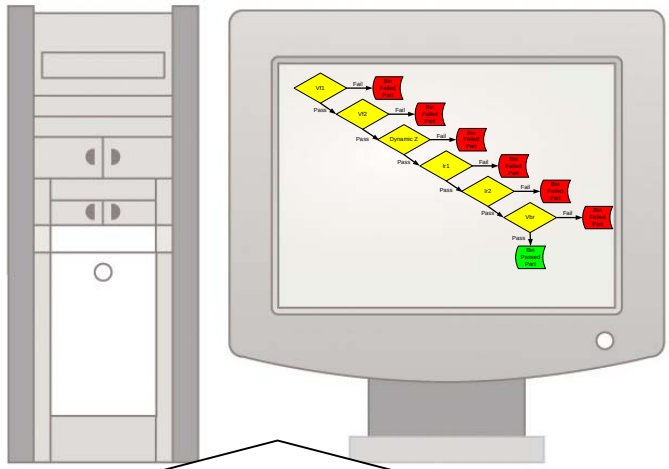
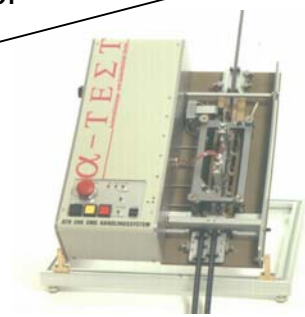
The Traditional Test System

- Full test sequence is controlled in the PC
- PC sends many low level source and measure commands to control SMU instruments
- Data must be sent to the PC to perform pass / fail decisions
- Excessive communications between the PC and instruments result in poor test speed
- The 2600 Series SourceMeters are compatible with traditional test systems using basic instrument control commands
- BUT…For dramatically faster test times, use Keithley's Test Script Processor (TSP)





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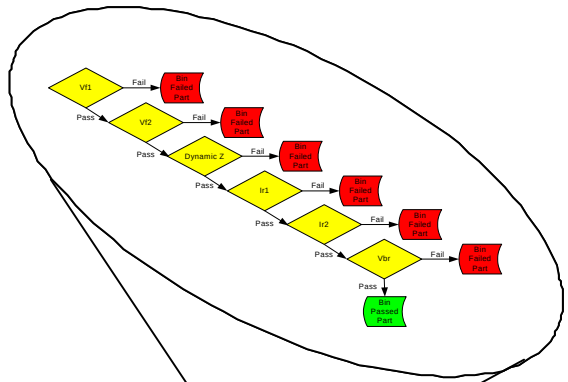
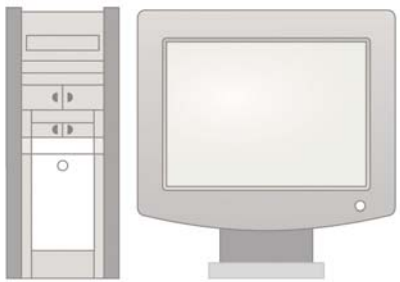
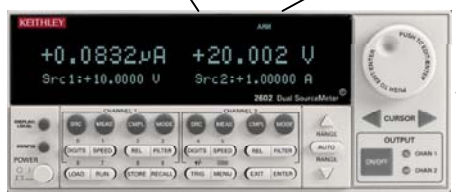
Faster Test Times With Embedded Test Script Processor!

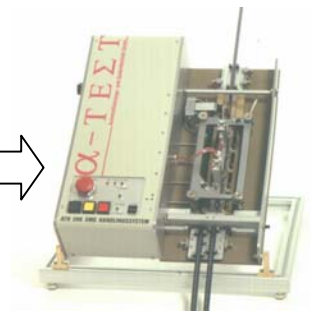
- With Keithley's Test Script Processor:
  - The full diode test sequence runs inside Model 2602 System SourceMeter instead of on the PC
  - PC initiates all testing with a single instrument command
  - Pass / fail decisions are performed by the instrument and data is stored
  - Component handler or prober can also be controlled by the 2602
  - Data is retrieved during dead times while the handler/prober is incrementing or at the end of testing

- Elimination of excessive communication and PC delays results in up to 10X faster test times









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A GREATER MEASURE OF CONFIDENCE