Getting Started with TDSPWR3

You can use this side of the Quick Reference to start to take measurements with the Power Measurement and Analysis Software (TDSPWR3). The other side contains a complete menu tree for TDSPWR3 software.

NOTE. *For complete operating instructions and General Safety information, refer to the Online Help for the application.*

The TDSPWR3 Power Measurements and Analysis software transforms a digital oscilloscope into an analysis tool that measures and analyzes power dissipation in power supply switching devices and magnetic components. It then generates detailed test reports in customizable formats.

Performing a Switching Loss Measurement

To measure Switching Loss, follow these steps:

1. Select File> Run Application> TDSPWR3 in the oscilloscope menu bar.
2. Connect the probes to the device under test. For example, the test setup for Switching Loss is shown below.
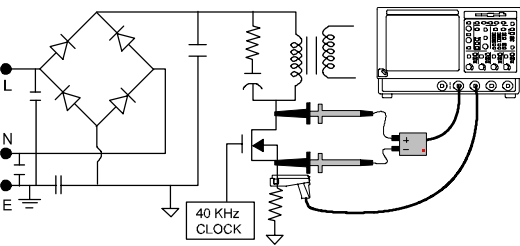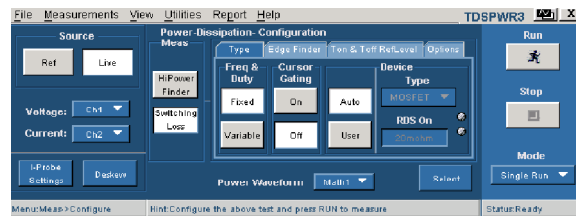

⚠ **WARNING.** *When connecting to a circuit with hazardous voltages, refer to the warnings for the individual products and verify that the probes and other components are used within their ratings.*
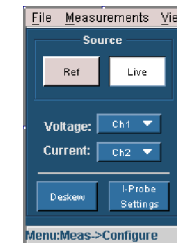
3. In the Power Device tab, select Power Dissipation. Press Configure.
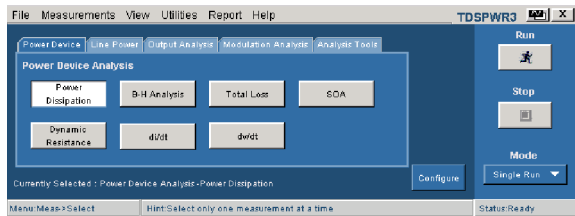
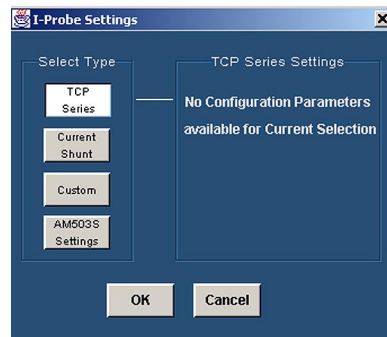4. Select the Switching Loss option.

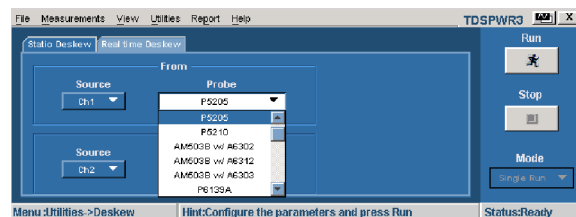5. Configure the options in the common configuration panel.

6. Select the Source and assign the Voltage and Current channels.
7. Set the appropriate I-Probe settings.

8. Select the Deskew option or select Utilities>Deskew to deskew.

9. Push the "Running Man" button to start taking measurements. If the measurement is successful, the application automatically displays the results. You can also view the results by selecting View> Results from the application menu bar.

10. The application displays results for the measurement.
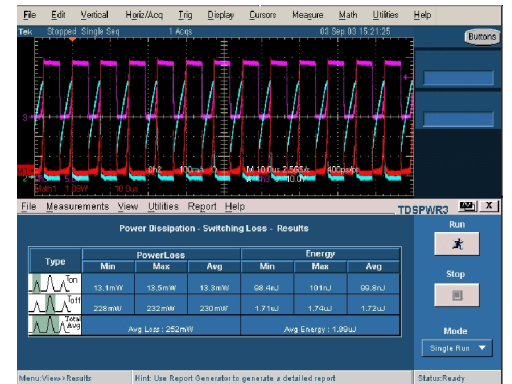
11. To generate a report, select Report> Report Generator.
12. Select the template in the Generate Report tab.
13. Select the Generate button to post the test data to the template.
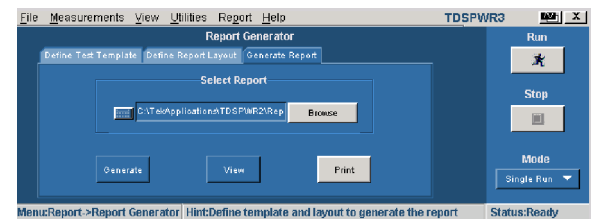
For up-to-date information on Tektronix oscilloscope solutions for Power Measurement, access the www.tektronix.com/Measurement/scopes/ web page.

TDSPWR3 Ordering Information

Supports the TDS5000, TDS6000[1], TDS7000B[1], and CSA7000B[1] series oscilloscopes; refer to the *Optional Applications Software on Windows-Based Oscilloscopes Installation Manual* for a complete list of supported models. The applications CD includes a PDF file of the installation manual.

If you order Option PW3 along with TDS5000/TDS7000B/TDS6000/CSA7000Bthe Power Analysis and Measurements Software will already be installed and enabled.

To order an upgrade for an existing oscilloscope:

- Order the TDS5UP Option PW3
- Order the TDS7UP/TDS7BUP Option PW3
- Order the TDS6UP Option PW3
- Order the CSA7UP/CSA7BUP Option PW3

Recommended Accessories

Opt. 2M, Opt. 17 for TDS5000

Opt 2M, 3M, 4M for TDS7000B and CSA7000B

Deskew Fixture–067-1478-00

Current Probe–Order TCP202, TCP300, TCP400 or AM503B with A63XX probes

Differential Probe–Order P5205, P5210, P5200 and ADA400A

[1]Probe adapter: – TCA–1MEG, while using 1 MΩ voltage probes with TDS6000/CSA7154/CSA7404B/TDS7154B/ TDS7254B/TDS7404B/TDS7704B

**TDSPWR3
Power Measurement and Analysis
Reference**

TDSPWR3 Menu Tree

Measurements configuration

File
- Recall Default
- Recall
- Save
- Recently Recalled
- Recently Saved
- Preferences
  - Acquisition Alert Message
  - Last Recalled Settings
  - SOA Plot in Full Screen Mode
- Minimize
- Exit

Common Configuration Options
- Source
  - Live*
  - Ref
    - I-Probe Settings
      - TCP Series
      - Current Shunt
      - Custom
      - AM503S Settings
- Voltage
- Current

Measurements
- Select
- Configure

Tab — Selection

Power Device

Power Dissipation
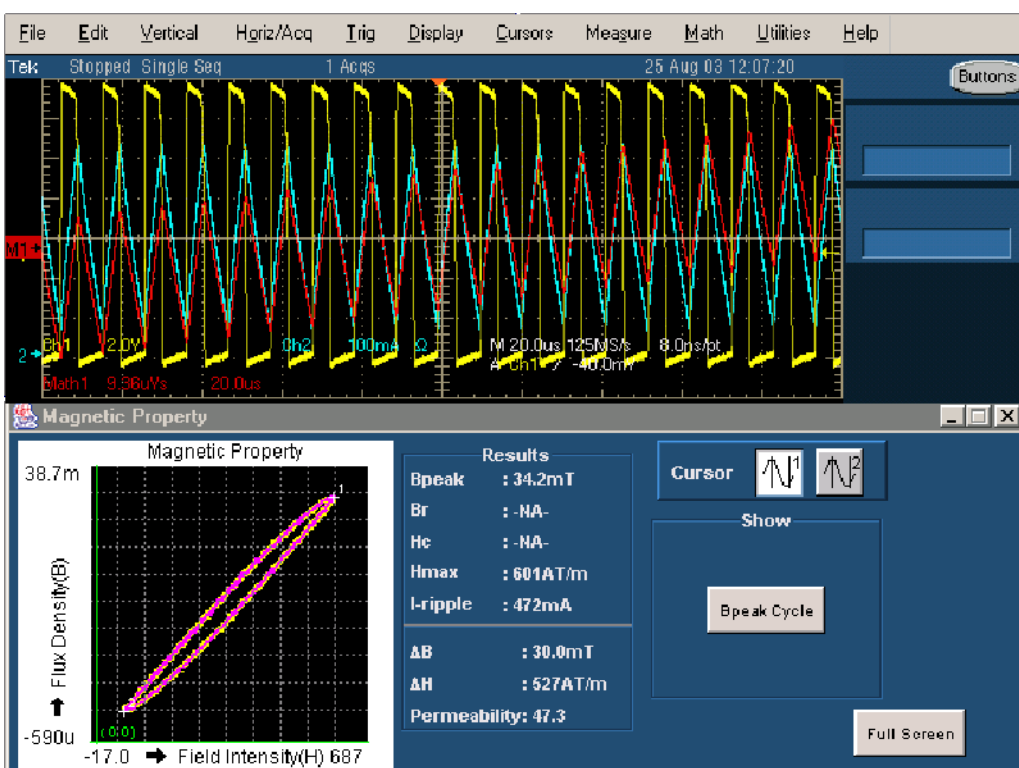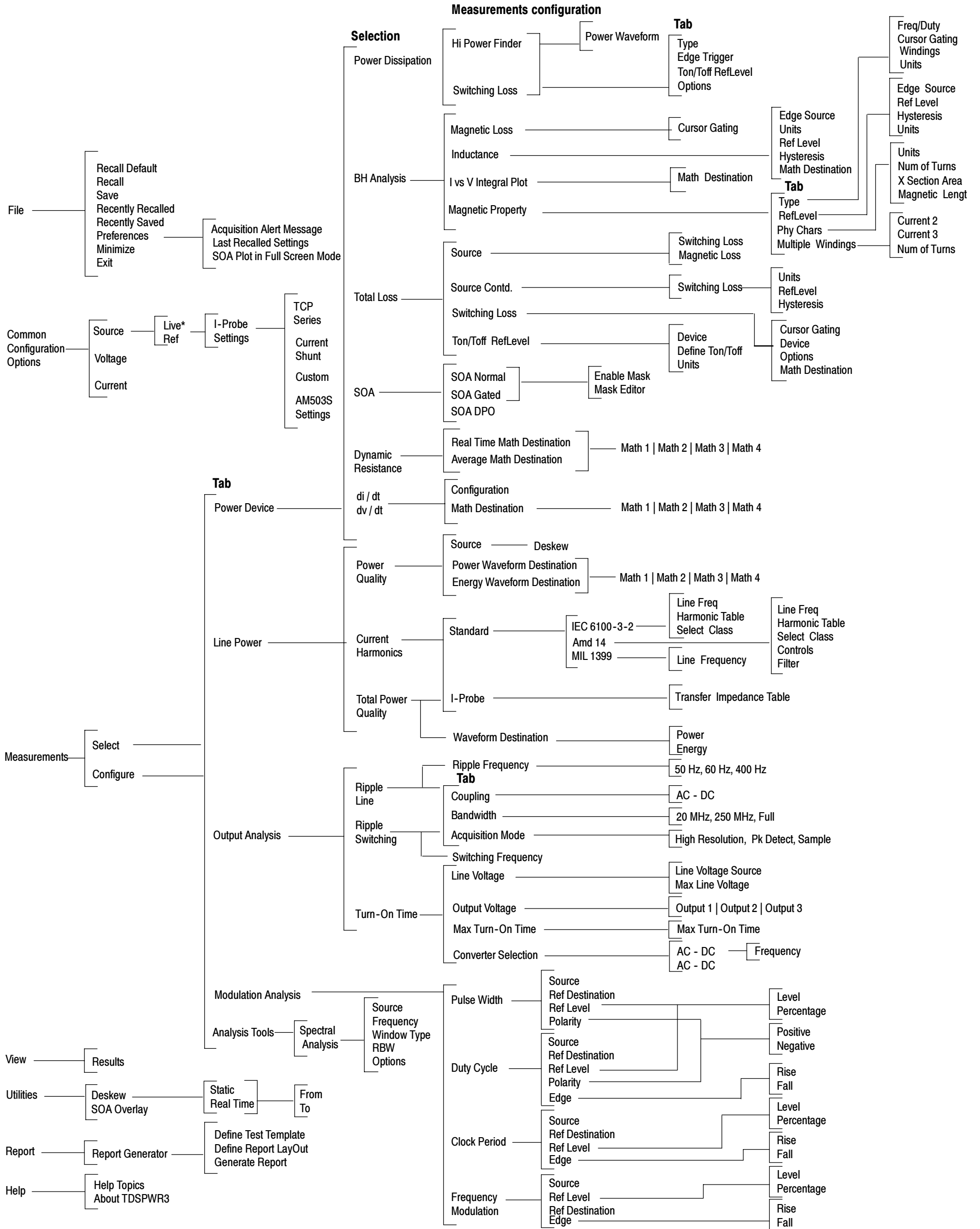- Hi Power Finder — Power Waveform
  - **Tab**: Type, Edge Trigger, Ton/Toff RefLevel, Options
- Switching Loss

BH Analysis
- Magnetic Loss — Cursor Gating
  - Edge Source, Units, Ref Level, Hysteresis, Math Destination
- Inductance
- I vs V Integral Plot — Math Destination
- Magnetic Property
  - **Tab**: Type, RefLevel, Phy Chars, Multiple Windings
  - Freq/Duty, Cursor Gating, Windings, Units
  - Edge Source, Ref Level, Hysteresis, Units
  - Units, Num of Turns, X Section Area, Magnetic Lengt
  - Current 2, Current 3, Num of Turns

Total Loss
- Source
  - Switching Loss
  - Magnetic Loss
- Source Contd. — Switching Loss
  - Units, RefLevel, Hysteresis
- Switching Loss
- Ton/Toff RefLevel — Device, Define Ton/Toff, Units
  - Cursor Gating, Device, Options, Math Destination

SOA
- SOA Normal — Enable Mask, Mask Editor
- SOA Gated
- SOA DPO

Dynamic Resistance
- Real Time Math Destination — Math 1 | Math 2 | Math 3 | Math 4
- Average Math Destination

di / dt
dv / dt
- Configuration
- Math Destination — Math 1 | Math 2 | Math 3 | Math 4

Line Power

Power Quality
- Source — Deskew
- Power Waveform Destination — Math 1 | Math 2 | Math 3 | Math 4
- Energy Waveform Destination

Current Harmonics
- Standard
  - IEC 6100-3-2 — Line Freq, Harmonic Table, Select Class
  - Amd 14 — Line Freq, Harmonic Table, Select Class, Controls, Filter
  - MIL 1399 — Line Frequency

Total Power Quality
- I-Probe — Transfer Impedance Table
- Waveform Destination — Power, Energy

Output Analysis

Ripple Line
- Ripple Frequency — 50 Hz, 60 Hz, 400 Hz

Ripple Switching
- **Tab**
- Coupling — AC - DC
- Bandwidth — 20 MHz, 250 MHz, Full
- Acquisition Mode — High Resolution, Pk Detect, Sample
- Switching Frequency

Turn-On Time
- Line Voltage — Line Voltage Source, Max Line Voltage
- Output Voltage — Output 1 | Output 2 | Output 3
- Max Turn-On Time — Max Turn-On Time
- Converter Selection — AC - DC, AC - DC — Frequency

Modulation Analysis

Analysis Tools
- Spectral Analysis — Source, Frequency, Window Type, RBW, Options

Pulse Width
- Source
- Ref Destination
- Ref Level
- Polarity
  - Level, Percentage
  - Positive, Negative

Duty Cycle
- Source
- Ref Destination
- Ref Level
- Polarity
- Edge
  - Rise, Fall

Clock Period
- Source
- Ref Destination
- Ref Level
- Edge
  - Level, Percentage
  - Rise, Fall

Frequency Modulation
- Source
- Ref Level
- Ref Destination
- Edge
  - Level, Percentage
  - Rise, Fall

View
- Results

Utilities
- Deskew
- SOA Overlay
  - Static
  - Real Time — From, To

Report
- Report Generator
  - Define Test Template
  - Define Report LayOut
  - Generate Report

Help
- Help Topics
- About TDSPWR3

* You can also select Math channels with Live signals.

Tektronix