Active Probes
TAP2500 - TAP3500 - TAP4000 Datasheet

The TAP2500, TAP3500 and TAP4000 Single-ended Active FET probes provide excellent high-speed electrical and mechanical performance required for today's digital system designs.

Key features

- Outstanding electrical performance
  - High probe bandwidth
  - Fast probe rise time
  - Excellent signal fidelity
  - ≤0.8 pF input capacitance
  - 40 kΩ input resistance
  - -4 V to +4 V input dynamic range
  - -10 V to +10 V DC input offset range
  - ±30 V (DC + peak AC) Maximum input voltage (nondestructive)

- Versatile mechanical performance
  - Small compact probe head for probing small geometry circuit elements
  - DUT attachment accessories enable connection to SMDs as small as 0.5 mm pitch
  - Robust design for reliability

- Easy to use
  - Connects directly to oscilloscopes with the TekVPI™ probe interface
  - Provides automatic units scaling and readout on the oscilloscope display
  - Easy access to oscilloscope probe menu display for probe status/diagnostic information and to control probe DC offset
  - Remote GPIB/USB probe control through the oscilloscope

Applications

- Verification, debug, and characterization of high-speed designs
- Signal integrity, jitter, and timing analysis
- Manufacturing engineering and test
- Signals with voltage swings up to 8 V_{p-p}
TAP2500, TAP3500 and TAP4000 active probes for TekVPI™ probe interface

Selecting the right probe for your application is key to attaining the best signal fidelity in your measurements. Active probes provide truer signal reproduction and fidelity for high-frequency measurements. With our ultra-low input capacitance and unique interface, the TAP2500, TAP3500 and TAP4000 Single-ended Active FET probes provide excellent high-speed electrical and mechanical performance required for today's digital system designs.

Specifically designed for use and direct connection to oscilloscopes with the TekVPI™ probe interface, the TAP2500, TAP3500 and TAP4000 Active FET probes achieve high-speed signal acquisition and measurement fidelity by solving three traditional problems:

- Lower DUT loading effects with ≤0.8 pF input capacitance and 40 kΩ input resistance
- Versatile DUT connectivity for attaching to small SMDs
- Preserves instrument bandwidth at the probe tip for up to 3.5 GHz oscilloscopes

Specifications

All specifications are guaranteed unless noted otherwise. All specifications apply to all models unless noted otherwise.

Warranted electrical characteristics

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attenuation (probe only)</td>
<td>10X</td>
</tr>
<tr>
<td>Rise time (probe only)</td>
<td>&lt;140 ps (TAP2500)</td>
</tr>
<tr>
<td></td>
<td>&lt;130 ps (TAP3500)</td>
</tr>
</tbody>
</table>

Typical characteristics

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bandwidth (probe only)</td>
<td>≥2.5 GHz (TAP2500)</td>
</tr>
<tr>
<td></td>
<td>≥3.5 GHz (TAP3500)</td>
</tr>
<tr>
<td></td>
<td>≥4 GHz (TAP4000)</td>
</tr>
<tr>
<td>Rise time (probe only)</td>
<td>≤115 ps (TAP4000)</td>
</tr>
<tr>
<td>Input capacitance</td>
<td>≤0.8 pF</td>
</tr>
<tr>
<td>Input resistance</td>
<td>40 kΩ</td>
</tr>
<tr>
<td>Input dynamic range</td>
<td>±4.0 V</td>
</tr>
<tr>
<td>Input offset range</td>
<td>±10 V</td>
</tr>
<tr>
<td>Maximum non-destructive input voltage</td>
<td>±30 V (DC + peak AC)</td>
</tr>
<tr>
<td>Propagation delay</td>
<td>5.3 ns</td>
</tr>
</tbody>
</table>
Physical characteristics

Probe head size
- Height: 7.6 mm (0.30 in)
- Width: 7.6 mm (0.30 in)
- Length: 57.2 mm (2.25 in)

Other dimensions
- Cable length: 1300 mm (51 in)

Weight
- Unit: 1.55 kg (3.44 lbs) (probes, accessories, and packaging)
- Net: 0.091 kg (0.2 lbs) (probe only, using ME lab scale)

Power requirements

The probe is powered directly by oscilloscopes with the TekVPI probe interface.

EMC, environment, and safety

Temperature
- Operating: 0 °C to +50 °C (+32 °F to 122 °F)
- Nonoperating: -40 °C to +71 °C (-40 °F to 160 °F)

Humidity
- Operating: 5% to 95% Relative Humidity up to +30 °C (+86 °F) 5% to 85% Relative Humidity at 30 °C to +50 °C (+86 °F to +122 °F) noncondensing
- Nonoperating: 5% to 95% Relative Humidity up to +30 °C (+86 °F) 5% to 85% Relative Humidity at 30 °C to +75 °C (+86 °F to +167 °F) noncondensing

Altitude
- Operating: Up to 4,400 m (14,436 ft)
- Nonoperating: Up to 12,192 m (40,000 ft)

Emissions compliance
- EN 55011, Class A

Regulatory Compliance labeling
- C-Tick (Australia/New Zealand)
- CE (European Union)
- WEEE (European Union)

Ordering information

Models
- TAP2500: 2.5 GHz Active Probe
- TAP3500: 3.5 GHz Active Probe
- TAP4000: 4 GHz Active Probe
Standard accessories

<table>
<thead>
<tr>
<th>Description</th>
<th>Quantity with TAP2500, TAP3500 or TAP4000</th>
<th>Reorder part number</th>
<th>Reorder quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y-lead adapter (2 each) and 3 in. ground lead (3 each)</td>
<td>1 set</td>
<td>196-3456-xx</td>
<td>1 set</td>
</tr>
<tr>
<td>Micro CKT test tip</td>
<td>2 each</td>
<td>206-0569-xx</td>
<td>1 each</td>
</tr>
<tr>
<td>Customizable ground lead (set of 5)</td>
<td>1 set</td>
<td>196-3482-xx</td>
<td>1 set</td>
</tr>
<tr>
<td>Color band kit (5 colored pairs)</td>
<td>1 set</td>
<td>016-1315-xx</td>
<td>1 set</td>
</tr>
<tr>
<td>Pogo pin ground (set of 10)</td>
<td>1 set</td>
<td>016-1772-10</td>
<td>1 set</td>
</tr>
<tr>
<td>Square pin socket (set of 10)</td>
<td>1 set</td>
<td>016-1773-10</td>
<td>1 set</td>
</tr>
<tr>
<td>Push-in probe tip (set of 10)</td>
<td>1 set</td>
<td>131-5638-11</td>
<td>1 set</td>
</tr>
<tr>
<td>Right-angle adapter (set of 10)</td>
<td>1 set</td>
<td>016-1774-xx</td>
<td>1 set</td>
</tr>
<tr>
<td>SureToe™ Adapter (set of 4)</td>
<td>1 set</td>
<td>131-6254-xx</td>
<td>1 set</td>
</tr>
<tr>
<td>Antistatic wrist strap</td>
<td>1 each</td>
<td>006-3415-xx</td>
<td>1 each</td>
</tr>
<tr>
<td>Nylon carrying case</td>
<td>1 each</td>
<td>016-1952-xx</td>
<td>1 each</td>
</tr>
<tr>
<td>Plastic accessory case</td>
<td>1 each</td>
<td>006-7164-xx</td>
<td>1 each</td>
</tr>
<tr>
<td>Instruction manual</td>
<td>1 each</td>
<td>071-1836-xx</td>
<td>1 each</td>
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</tbody>
</table>

Recommended oscilloscopes
Oscilloscopes with the TekVPI™ probe interface.

Warranty
One-year warranty covering all parts and labor.

Options

Manual options
- Opt. L7 Simplified Chinese manual

Service options
- Opt. C3 Calibration Service 3 Years
- Opt. C5 Calibration Service 5 Years
- Opt. D1 Calibration Data Report
- Opt. D5 Calibration Data Report 5 Years (with Opt. C5)
- Opt. R3 Repair Service 3 Years (including warranty)
- Opt. R5 Repair Service 5 Years (including warranty)
- Opt. SILV600 Standard warranty extended to 5 years
<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>013-0309-xx</td>
<td>IC Micro Grabber, Qty 2</td>
</tr>
<tr>
<td>015-0678-xx</td>
<td>SMA-to-Probe tip adapter</td>
</tr>
<tr>
<td>067-1701-xx</td>
<td>TekVPI calibration fixture (for PV)</td>
</tr>
</tbody>
</table>

CE Marking Not Applicable.

Tektronix is registered to ISO 9001 and ISO 14001 by SRI Quality System Registrar.