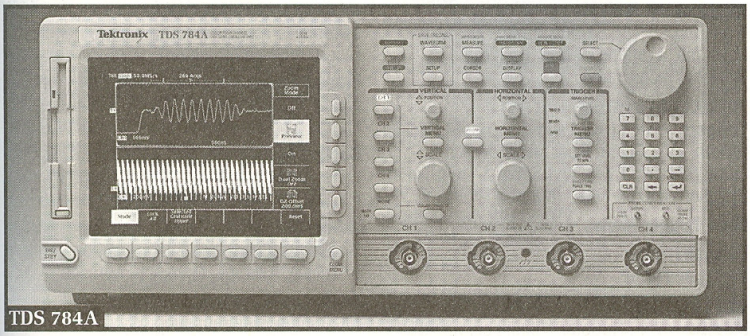
Digitizing Oscilloscopes

TDS 784A
TDS 744A



TDS 784A

Characteristics

SIGNAL ACQUISITION SYSTEM

	TDS 744A	TDS 784A
Channels	4	4
Samplers	4	4
Bandwidth	500 MHz	1 GHz
Maximum Sample Rate		
1 Channel	2 GS/s	4 GS/s
2 Channels	1 GS/s	2 GS/s
3, 4 Channels	500 MS/s	1 GS/s

MAXIMUM RECORD LENGTH

TDS 784A/744A	Standard	Optional
1 Channel	50,000 pts	500,000 pts
2 Channels	50,000 pts	250,000 pts
3, 4 Channels	50,000 pts	130,000 pts

TIME BASE SYSTEM

Time Bases – Main, Delayed.

Time/Division Range –
TDS744A: 500 ps to 10 s/div.
TDS784A: 200 ps to 10 s/div.

Time Base Accuracy – ±25 ppm over any interval ≥1 ms.

Pre-Trigger Position – 0 to 100% of record.

Delay Between Channels – ≤50 ps between any two channels with equal V/div and coupling.

VERTICAL SYSTEM

DC Gain Accuracy – ±1.0%.

Vertical Resolution – 8-bits (256 levels over 10.24 vertical divisions), >13-bits with Hi-Res, 11-bits with averaging.

Analog Bandwidth Selections – 20 MHz, 100 MHz, and full.

Input Coupling – AC, DC or GND.

Input Impedance Selections – 1 MΩ in parallel with 10 pF, or 50 Ω (AC and DC coupling).

TDS 784A/TDS 744A

- 1 GHz and 500 MHz Bandwidth
- Sample Rates to 4 GS/s
- 4 Input Channels
- InstaVu™ Acquisition Mode
- Pulse Width, 1 ns Glitch, Runt, Pattern and State, Setup & Hold Violation, and Slew Rate Triggering
- HDTV Video Triggering
- 1 mV/div to 10 V/div Sensitivity
- Infinite and Variable Persistence Displays
- Record Lengths to 500,000 Points
- 8-bit Vertical Resolution and up to 13-bit Resolution with Hi-Res Acquisition Mode
- Vertical Accuracy to 1%
- FFT, Integration and Differentiation
- 25 Automatic Measurements
- High Resolution Color Monitor
- 3.5 in. DOS Format Floppy Drive
- VGA-Output to External Monitor
- Waveform Pass/Fail Testing
- 1 ns Peak Detect
- FastFrame™ Acquisition Mode
- 3 Year Warranty

Featuring the waveform capture rate of the fastest analog oscilloscopes in a state-of-the-art DSO for advanced digital design, analog design, and R&D applications.

Product(s) available through your local Tektronix representative (listed in the back of this catalog) or call 1-800-426-2200.

GPIB IEEE-488 — The TDS Series complies with IEEE Standard 488.2-1987, and with Tektronix Standard Codes and Formats.

ISO 9001 — Accredited by the Dutch Council for Certification

Tektronix Measurement products are manufactured in ISO registered facilities.

APPLICATIONS

- **Digital Design and Debug**
- **Analog Design and Debug**
- **Research and Development**

TDS 784A
TDS 744A

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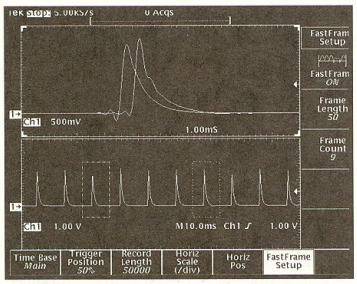

Dual window zoom is effective for managing the 500 K acquisition memory. FastFrame™ allows you to capture multiple events in a single record.

Maximum Input Voltage – ±400 V (DC + peak AC). Derate at 20 dB/decade above 1 MHz. 1 MΩ or GND coupled.

Channel Isolation – >100:1 at 100 MHz and >30:1 at bandwidth for any two channels having equal V/div settings.

AC Coupled Low Frequency Limit – ≤10 Hz when AC 1 MΩ coupled. ≤200 kHz when AC 50 Ω coupled.

Effective Bits –
TDS 784A: 6.0-bits (1 GHz at 4 GS/s), 9.3-bits with Hi-Res (1 MHz at 25 MS/s).
TDS 744A: 6.6-bits (500 MHz at 2 GS/s); 9.3-bits with Hi-Res (1 MHz at 25 MS/s).

Step Response Setting – ≤0.5% error within 20 ns of a ≤2 V step.

Sensitivity – 1 mV to 10 V/div.

Position Range – ±5 Divisions.

Offset – ±1 V from 1 to 100 mV/div. ±10 V from 101 mV to 1 V/div. ±100 V from 1.01 to 10 V/div.

ACQUISITION MODES
1 ns Peak Detect, Sample, Single Sequence, Envelope, Average, Hi-Res, FastFrame™, InstaVu™ acquisition.

TRIGGERING SYSTEM
Triggers – Edge (main and developed), Pulse (Width, 1 ns Glitch, Runt and Slew Rate), Logic (Pattern, State, and Setup & Hold Time Violation), HDTV Video (optional).

Main Trigger Modes – Auto, Normal, Single.

Delayed Trigger – Delay by time, events, or events and time.

DISPLAY
Monitor – 7 in. NuColor™ liquid crystal full-color shutter, 256 levels.

Waveform Style – Dots, vectors, variable persistence with color grading, infinite persistence, and intensified real samples.

Format – YT, XY, Zoom, Fit-to-Screen, Zoom, Dual Window Zoom.

Waveform Capture Rate –
InstaVu™ acquisition: >400,000 wfm/sec.
Infinite persistence (500 pts): 150 wfm/sec.

MEASUREMENT SYSTEM
Automatic Measurements – 25 (on entire record or in gated region).

Measurement Accuracy – TDS 744A: <80 ps typical @ 2 GS/s single shot, TDS 784A: <38 ps typical @ 4 GS/s single shot.

Cursors Measurements – Absolute, Delta; volts, time, frequency. NTSC IRE units and line number with video trigger option.

WAVEFORM PROCESSING
Waveform Functions – Interpolation (sin(x)/x or linear), Average, Envelope, Autosetup.

Advanced Waveform Functions – FFT, Integration, Differentiation, Waveform (math or acquired) Limit Testing.

Arithmetic Operations– Add, Subtract, Multiply, Divide, Invert.