

TEKTRONIX

TDS684C

The Tektronix TDS684C is a high-performance 4-channel Digital Storage Oscilloscope (DSO) designed for demanding digital design, debugging, and characterization applications. It offers a 1 GHz analog bandwidth and delivers an outstanding real-time sampling rate of 5 GS/s on all four channels simultaneously. Coupled with standard 120,000-point record length per channel, advanced waveform DSP, and a bright color liquid crystal shutter display, the TDS684C provides excellent single-shot capture and analysis capability for fast digital signals.

SPECIFICATIONS

General

Interfaces	GPIO (IEEE-488.2), RS-232, Centronics (Parallel), VGA
Display	7-inch color liquid crystal shutter CRT
Warm-up Time	20 minutes
Cooling	Forced-air, fan cooled

Physical

Power Supply	90 to 250 V AC, 45 to 440 Hz, <300 W
Operating Temperature	+4 to +50 °C °C
Dimensions (W×H×D)	445 mm × 193 mm × 463 mm mm
Weight	14.1 kg kg

Vertical System

Number of Channels	4
Analog Bandwidth (-3 dB)	1 GHz
Calculated Rise Time	< 350 ps
Vertical Resolution (ADC)	8 bits
Input Impedance	50 Ω
Input Coupling	DC, GND
Maximum Input Voltage	5 V rms (with peaks ≤ ±30 V)
Vertical Sensitivity Range	1 mV/div to 10 V/div
DC Gain Accuracy	±1.5%
Position Range	±5 divisions
Channel-to-Channel Isolation	>100:1 at 100 MHz, >30:1 at 1 GHz
Standard Probes Included	4× P6243 1 GHz active probes
Bandwidth Limit Filters	20 MHz and 250 MHz
Vertical Offset Range	±1 V (1 mV/div to 99.5 mV/div), ±10 V (100 mV/div to 995 mV/div), ±100 V (1 V/div to 10 V/div)
Input Connector Type	TekProbe Level II BNC

Horizontal System & Sampling

Timebase Range	100 ps/div to 10 s/div
Timebase Accuracy	±15 ppm
Real-Time Sample Rate (1 Channel)	5 GS/s
Real-Time Sample Rate (Multi-Channel)	5 GS/s on all channels simultaneously
Record Length (Standard)	15,000 points per channel
Trigger Holdoff Range	250 ns to 12 s

Acquisition Modes

Sample Mode	Yes
Envelope Mode	Yes (1 to 2000 acquisitions or infinite)
Average Mode	Yes (2 to 10,000 waveforms)
Segmented Memory Mode (FastFrame)	Yes

Trigger System

Trigger Sources	CH1, CH2, CH3, CH4, AUX, AC Line
Trigger Modes	Auto, Normal, Single Sequence
Trigger Coupling	DC, AC, HF Reject, LF Reject, Noise Reject
Trigger Level Range (Internal)	±12 divisions from center of screen
Trigger Sensitivity (Internal)	0.35 div from DC to 50 MHz, increasing to 1 div at 1 GHz
Edge Triggering	Yes
Pulse Width Triggering	Yes (2 ns to 1 s)
Glitch Triggering	Yes (2 ns to 1 s)
Runt Triggering	Yes
Setup/Hold Triggering	Yes
Logic/Pattern Triggering	Yes (AND, OR, NAND, NOR)
State Triggering	Yes
Slew Rate Triggering	Yes
Video Triggering	Optional (Option 05)
External Trigger Input Impedance	1 MΩ
Trigger Sensitivity (Internal, 1 GHz)	1.0 div

Waveform Measurements & Analysis

Automatic Measurements	29 measurements
Waveform Math Operators	Add, Subtract, Multiply, Divide
Advanced Waveform Math (FFT)	FFT, Integration, Differentiation
Limit Testing / Mask Testing	Yes
Cursor Types	V Bars, H Bars, Paired
Cursor Measurements	Absolute, Delta (Time, Volts, Frequency)

Display & User Interface

Display Type	Color Liquid Crystal Shutter CRT
Display Size (Diagonal)	7 in (178 mm)
Display Resolution	640 × 480 pixels
Graticule Options	Full, Grid, Crosshair, Frame
Waveform Display Styles	Vectors, Dots, Variable Persistence, Infinite Persistence

Storage & Connectivity

Internal Waveform Storage	4 reference waveforms (Ref1-Ref4)
Internal Setup Storage	10 front-panel setups
Floppy Disk Drive	3.5-inch 1.44 MB (DOS format)
GPIO (IEEE-488.2) Interface	Standard
VGA Video Output Port	Standard (15-pin D-sub)

Power Specifications

Line Voltage Range	90 to 250 V AC
Line Frequency Range	45 to 440 Hz

Environmental & Physical Characteristics

Operating Humidity	Up to 95% RH at or below +30 °C, up to 45% RH at +50 °C
Operating Altitude	4,500 m (15,000 ft)
Non-Operating Altitude	15,000 m (50,000 ft)
Width	445 mm (with handle)
Height	193 mm (with feet)
Depth	463 mm

Standards & Compliance

Safety Certifications	UL 3111-1, CSA C22.2 No. 1010.1, EN 61010-1
Electromagnetic Compatibility (EMC)	EN 55011 Class A, EN 50082-1
Recommended Calibration Cycle	1 year

Horizontal System

Channel-to-Channel Deskew Range	±100 ns
Horizontal Delay Time Range	Pre-trigger: 0% to 100% of record; Post-trigger: 0 to 10,000 s

Triggering

Trigger Position Range	0% to 100% of record length
Additional Trigger Types	Timeout, Comm (with Option 2C)

Input/Output Ports

PCMCIA Interface	1 x Type II PCMCIA slot
External Reference Input	10 MHz

Measurements

Measurement Statistics	Mean, minimum, maximum, standard deviation
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Math & Analysis

Additional Waveform Math	Integration, differentiation
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Options

Option 1R	Rackmount configuration
Option 2C	Communication Signal Analyzer (adds Comm Trigger and Mask Testing)
Option HD	170 MB internal hard disk
Option 2D	Delete standard probes
Option 1K	K4000 or K420 scope cart
Option 95	Calibration data report
Option 96	Certificate of calibration

Clock & Synchronization

External Reference Input Frequency	10 MHz
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Storage

PCMCIA Slot Compatibility	Type I and Type II
Floppy Disk Format	3.5 in, 1.44 MB or 720 KB (MS-DOS compatible)

Interfaces & Software

Command Set Standards	Tektronix Codes and Formats (IEEE-488.2)
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Environmental

Mechanical Shock (Non-operating)	50 g, 11 ms, half-sine
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TECHNOLOGY

Digital Storage Oscilloscope (DSO)

APPLICATIONS

High-speed digital design debugging, telecom testing, and signal integrity analysis

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