DPG11 - 11 Channel, 2.5 GS/sec, USB Digital Pattern Generator

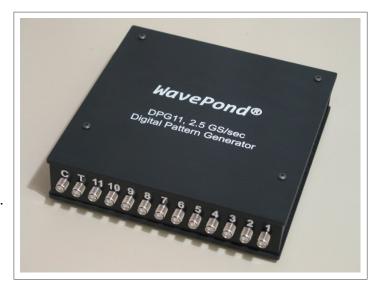*Made by WavePond® - A division of Chase Scientific Company*

FEATURES

- (11) Channel, 2.5 GS/sec per Channel.
- Voltage Swing: 0V to 2V into 50 ohms.
- 8 MPoints/Chan (8,388,608).
- Full scale Trise/Tfall = 250 picoseconds (typ)
- Internal/External Trigger
- 1ppm Internal Clock Stability, < 3psec Jitter
- Internal Master Clock, 25 MHz to 2.5 GHz
- Programmable segmentation size, trig, looping, etc.
- Alum Box 5.3" x 5.3" x 1" with USB, Pwr Brick.
- Software GUI and API for Windows XP, Windows 7/10 (32-bit/64-bit), and others (email).

APPLICATIONS

- FPGA Testing
- Memory Testing
- High Resolution Timing
- Multi-Instrument Synchronization
- Embedded Microprocessor Testing
- General Purpose I/O Testing

DESCRIPTION

General

The 11 channel, 2.5 GSPS, DPG11 is a highly versatile PC controlled Digital Pattern Generator. It incorporates many advanced features such as programmable segment sizes, looping, and individual segment triggering. It also has unique output drivers that can produce extremely clean LVTTL signals with 250 picoseconds rise/fall times into 50 ohm loads.

The high speed Digital Outputs can be clocked internally or externally (opt.). The on-board clock source uses an extremely stable oscillator (1ppm) with ultra-low phase noise (1 psec rms). These specs combined guarantee that the generator will produce what you expect so you can concentrate on your application.

Also, the timing resolution of 400 psec along with the programmable clock rate allows you to create a stress test for almost anything.

Triggering

The DPG11 board can be triggered by a TTL signal, pulsed PECL, or software command. Looping can be set for continuous or under user program control.

Memory

The DPG11 comes standard with 8 Mega-Samples of independent memory PER channel. Segment size controls are common to all channels.

GUI Interface and SDK

The DPG11 comes with a GUI program that can perform tasks like loading waveforms from a file to generating various digital patterns, changing clock rates, triggering etc. The user programming interface for the DPG11 is a simple DLL that uses C type software calls that are compatible with most software development tools.

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┌─────────────────────────────────────────────────────────────────────────────┐
│  SMA-1 →  ┌──────────────┐      ┌──────────────┐      ┌──────────────┐        │
│           │ 10 MHz Ref   │      │ 44:11 MUX    │      │ (11) Digital │        │
│           │ Input        │─────▶│ with LVTTL   │─────▶│ Outputs      │─▶ (11) │
│  SMA-2 →  │ Ext. Trigger │      │ Buffer/Driver│      │ DC Coupled   │   SMA  │
│           │ Input        │      └──────────────┘      │ 0V to 2.0V SE│        │
│           └──────────────┘             ▲              └──────────────┘        │
│           ┌──────────────┐      ┌──────────────┐      ┌──────────────┐        │
│           │ 8 MEG Memory │      │ 25 MHz to    │      │ 1ppm 50 MHz  │        │
│           │ Per Channel  │      │ 2.5 GHz      │◀────▶│ Low Jitter   │        │
│           └──────────────┘      │ Master Clock │      │ Clock Source │        │
│                  ▲              │ Generator    │      └──────────────┘        │
│                  ▼              └──────────────┘                              │
│           ┌──────────────┐      ┌──────────────┐                             │
│           │ MEMORY       │      │ CLOCK        │                             │
│           │ CONTROLLER/  │◀────▶│ CONTROLLER/  │                             │
│           │ SEQUENCER    │      │ GLUE LOGIC   │                             │
│           └──────────────┘      └──────────────┘                             │
│                  ▲                     ▲                                      │
│           ┌──────────────────────────────────────────────────┐              │
│           │  USB  TARGET  INTERFACE  CONTROLLER               │              │
│           └──────────────────────────────────────────────────┘              │
└─────────────────────────────────────────────────────────────────────────────┘
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DPG11-8M BLOCK DIAGRAM

SPECIFICATIONS

Digital Outputs: (11) Data
Digital Inputs: (1) Trigger, (1) 10MHz Ref / optional Ext. Clock

(T=25°C unless otherwise stated)

Parameter	Conditions/other	Typical Values
Vertical Resolution	Fclk = 2.5 GHz	0V or 3.0V
Output Impedance/Coupling		50 ohms / DC Coupling
Amplitude		
(11) Fixed outputs	Fclk = 2.5GHz	0V to 2.0V swing typical single-ended into 50 ohms (SMA connectors)
Rise Time (20-80%, no filters)		250 psec typical into 50 ohms
Fall Time (20-80%, no filters)		250 psec typical into 50 ohms
Internal Clock Jitter		< 3 psec typical
Delay between trigger and output		36 ns typical @ 2GHz
Maximum re-trigger rate		2 MHz

Internal Clock Rate Generator

Frequency range		25 MHz to 2.5 GHz
Resolution		< 10 KHz (typ.)
Stability	T = 0°C – 70°C	+/- 1 ppm

Memory

Waveform	Base Model	8 MWords x 11 Channels

# of User Segments	1 to 60 segments (max)
Segment Size Range	48 Samples up to total memory
Segment Resolution	16 Samples
Maximum Segment Loops	65,534

DIGITAL INPUTS:

Ext. Clk Input	(custom Option) 50 ohms SMA inputs: 100 MHz to 2.0 GHz, square Wave, 0dBm-10dBm, AC coupled.

TTL Trigger Input Rising Edge Retriggerable SMA connector, DC coupled, Threshold=1.0V, 50 ohms.

ENVIRONMENTAL (DAx12000)

Temperature

Operating	0°C to 50°C Ambient
Non-operating	-40°C to 85°C

Humidity

Operating	20% to 80% (no condensation)
Nonoperating	5% to 95% (no condensation)

Power

+5V	TBD Watts @ 2MWords Typical Not Active
	TBD Watts @ 2 MWords Typical Active

Size

DPG11-8M	L=5.30", W=5.3", H= 1.0" (Alum Box)

ORDER INFORMATION

Model Number	Description
DPG11-8M*	11-Ch, 2.5 GSPS Digital Pattern Generator w / 8 MEG Memory/Ch

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