SmarTest PG3204
1-29 Gb/s 4-Channel Pattern Generator

Data Sheet

1-29 Gb/s continuos operation

Programmable de-emphasis

< 12 ps rise and fall time

< 500 fs Random Jitter typical

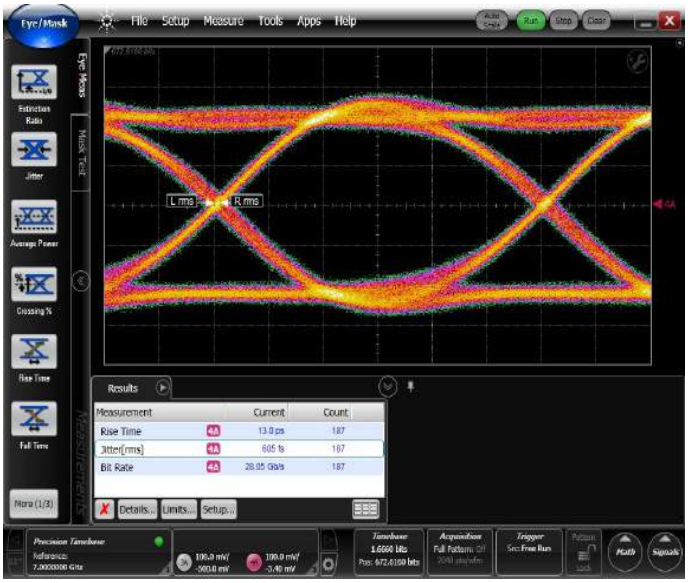
SmarTest

The Pattern Generator Re-imagined

- 4 channels pattern generator
- Programmable de-emphasis processor
- From 1 to 29 Gb/s with excellent signal fidelity
- USB controlled with simple set up
- Flexible, compact and expandable

The SmarTest PG3204 multi channel Pattern Generator provides industry-leading signal generation for design verification, characterization and manufacturing of semiconductor and communication devices up to 100 Gb/s system at an incredibly low cost per channel.

The PG3204 offers four full rate channels with the possibility to combine multiple units to achieve an unlimited number of test channels.



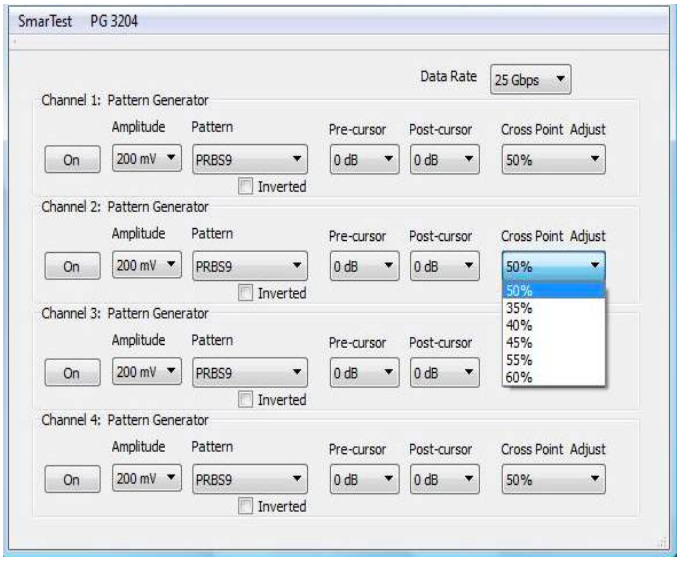
Example PG output at 28 Gb/s, PRBS-9 showing fast rise and fall times, low jitter

The heart of the PG-series instruments is the SmarTest BERT Engine that powers the Pattern Generators and clock source.

For applications requiring multiple channels, PG-series instruments may be chained together simply using a USB connection.

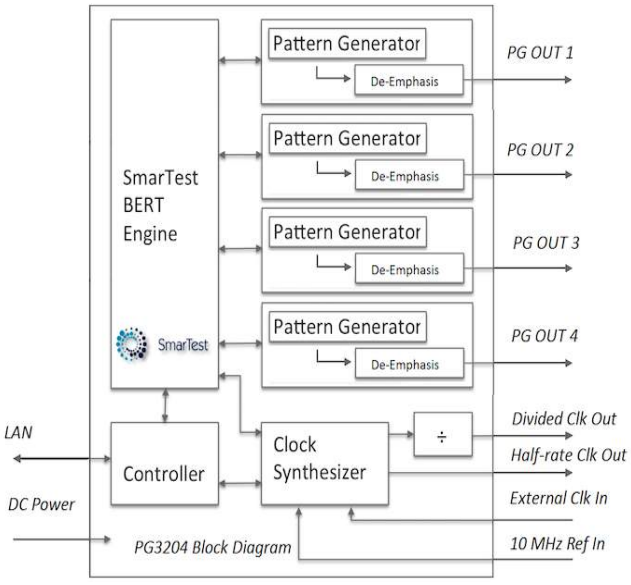
User Interface

Many channels often means many screens, confusing controls and a lot of time wasted. We've put everything you need for all Pattern Generators on one screen; it's easy to see all operational aspects in one glance, and changes can be made to channels individually, or all together. User custom setups can be easily saved and reload for future use.



Pattern generator setup screen showing fast and simple user interface

Built in Flexibility



Block diagram with front panel (right) and rear panel (left) connections

Specifications

PG3204 Optional External Clock Synthesizer

Clock

Frequency	625 MHz to 16 GHz Selectable half rate internal
Stability	1 ppm
Intrinsic RMS jitter	<300 fs typical

External Clock Input

Frequency	Full Rate, 625 MHz to 16 GHz

Clock Out

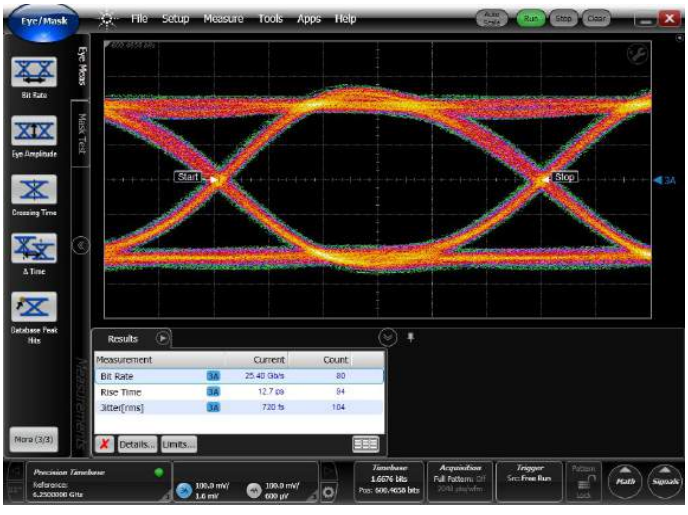
Clock rate	half rate equal to internal clock setting
Impedance	50 Ω nominal, AC-coupled
Amplitude	400 mV typical
Connector	SMA, single ended, front panel

Divided Clock/ Trigger Out

Clock rate	Selectable divided by n, with n=1, 2, 4, 8, 16, 32, 64
Output type	SMA, single ended, front panel
Impedance	50 Ω nominal, AC-coupled
Amplitude	400 mV typical
Connector	SMA, single ended, front panel

10 MHz Reference Input

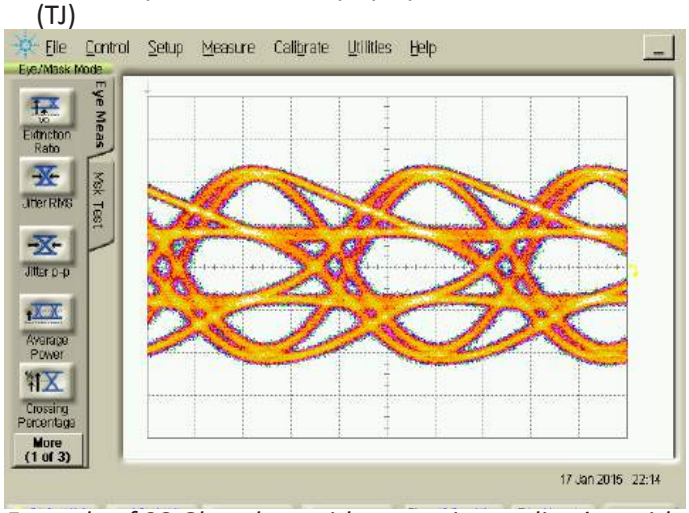
Front panel



Example PG output at 25 Gb/s PRBS 31 showing fast rise tiem and low jitter

PG 3204 Pattern Generator Specifications

Number of PG channels	4, front panel connectors
Connector	2.92 mm, differential, front panel
Soft Front Panel GUI	Green = channel on, Red = channel off
Data output	Differential, AC coupled
Line coding	NRZ
Data rate range	1 to 29 Gb/s (common on all channels)
Output patterns	PRBS 2^n-1, n=9, 15, 31 Divide by 2 ratio Divide by 4 ratio Divide by 8 ratio Divide by 16 ratio Divide by 64 ratio
Polarity invertion	Yes
Output amplitude	200 - 1,100 mVpp differential
Rise/fall times (20%-80%)	12 ps typical
Intrinsic jitter (Rj)	500 fs rms typical
Crossing Point Adjust	35% - 65%
Programmable de-emphasis	Yes
Number of taps	2
Pre and Post	1
Tansmit Equalization	0 dB to 8.2 dB
Output termination	100 Ohm differential
Total Output Jitter (TJ)	5 ps pk-pk on PRBS31 data

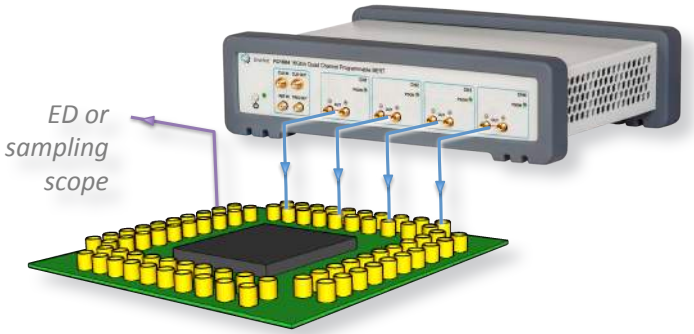


Example of 28 Gbps data with transmit equalization with 8 dB of post cursor applied

Target Applications

Many test set ups have a Pattern Generator at their core for good reason. Whether you are in an R&D lab evaluating silicon, or a transceiver test line in production we have you covered.

- 100GBASE-ER4, -LR4, -SR4: 4 x 25.781 Gbps
- CEI-28G-VSR: 25 Gbps to 28 Gbps
- Multi-channel pattern generation for 4 x 25 Gbps
- Active Optical Cables Testing
- CFP-2/CFP-4 optical modules
- High speed SerDes Characterization



Four channels of pattern generation being used to provide 3 aggressor channels and one victim channel in this example IC evaluation set up.

General

Interfaces	USB2.0
Included power supply	100 V to 240 V AC, 50-60 Hz
Power consumption	150 VA max
Operating Temperature	0°C to 55°C
Storage temperature	-30°C to 70°C
Operative altitude	Up to 2000 m
Dimensions (w x h x d)	Bench top Without bumper 10.5 x 2 x 7.8 inches (267 x 51 x 198 mm) With Bumper 11.5 x 3 x 8 inches (292 x 76 x 203 mm)
Weight	4 lbs (1.8 kg)
Warranty	1 year standard

Included Accessories

US power cord with external power supply; regional-specific replacement power cord options available
USB Cable and User guide with programing reference on CD

Ordering Information

PG3204	4 channel 29 Gb/s pattern generator with external clock synthesizer
PG3204-TC	PG3204 Hard Transit Case
PG3204-RM	PG3204 Rack Mount Kit
PG3204-NC	4 channel 29 Gb/s pattern generator and clock source without clock synthesizer
PG3204-3C	3 years total calibration service, return to factory
PG3204-3W	3 years total warranty
SB3204-AC-AU	Australia
SB3204-AC-CN	China
SB3204-AC-EU	Europe
SB3204-AC-JP	Japan
SB3204-AC-UK	United Kingdom

About us

We are an experienced group of test professionals with decades of combined experience at some of the biggest companies in the measurement business. We've brought BERTs, oscilloscopes and many other instruments to market for the big guys, but wanted to take high speed testing in a new direction. We're based in the heart of Silicon Valley, California.

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