# Stimulus and Response Solutions
## from Agilent Technologies

# Pulse Pattern Generators from Agilent Technologies

1 mHz to 3.35 GHz

15 mV to 100 V

Agilent Technologies

# Product Portfolio

- **Entry and Performance Products:**
  - 81100 Series: 81101A, 81104A, 81110A, 81130A
    - max. frequency 50 MHz to 660 MHz
- **High-End Products:**
  - 81133A and 81134A (1/2 channel)
    - 15 MHz to 3.35 GHz
    - Jitter Insertion capability
- **Special Application Products:**
  - 8114A
    - 100 V amplitude up to 15 MHz

# 81100 Series

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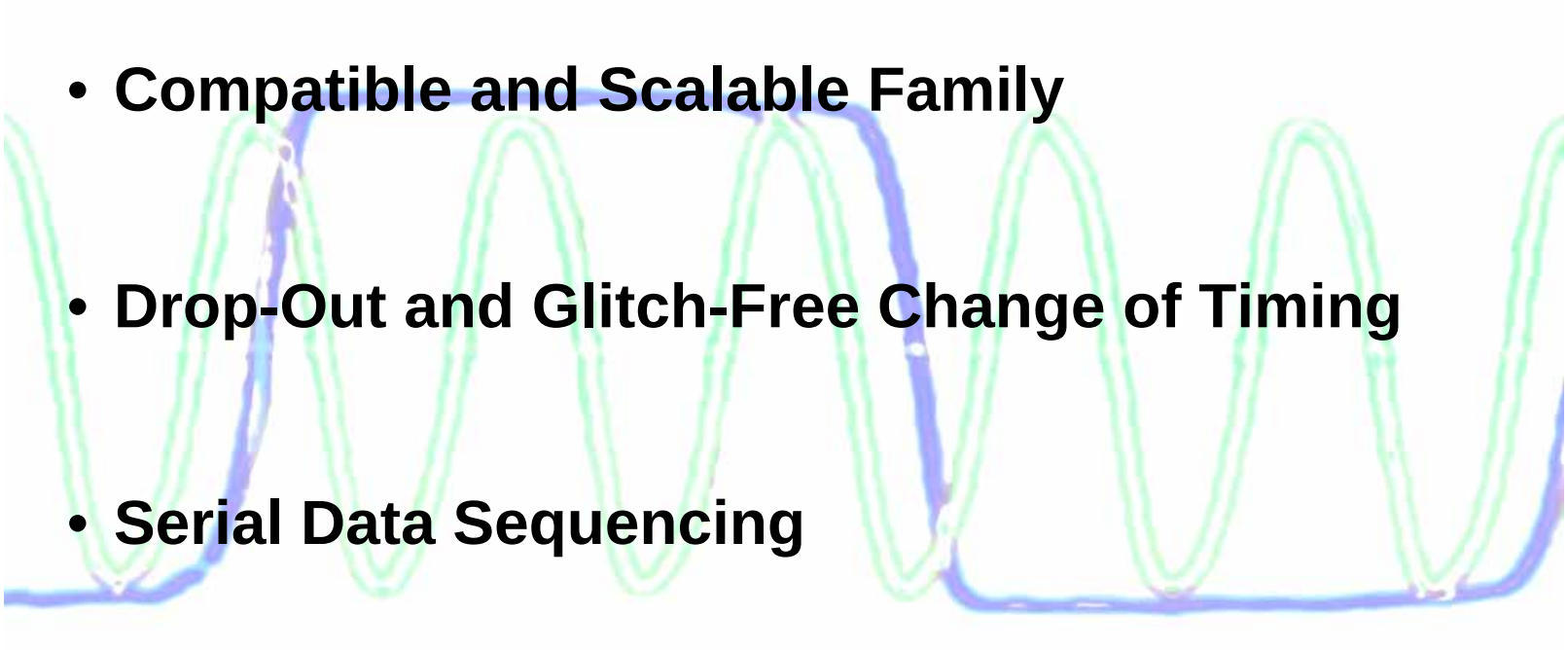
# Agilent 81100 Series Key Features



- **Compatible and Scalable Family**
- **Drop-Out and Glitch-Free Change of Timing**
- **Serial Data Sequencing**

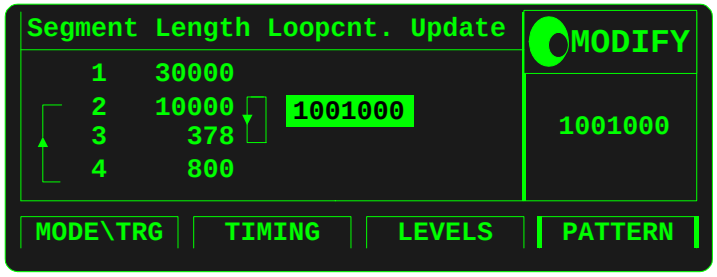
# Continuous Operation: Drop-out and glitch-free timing changes

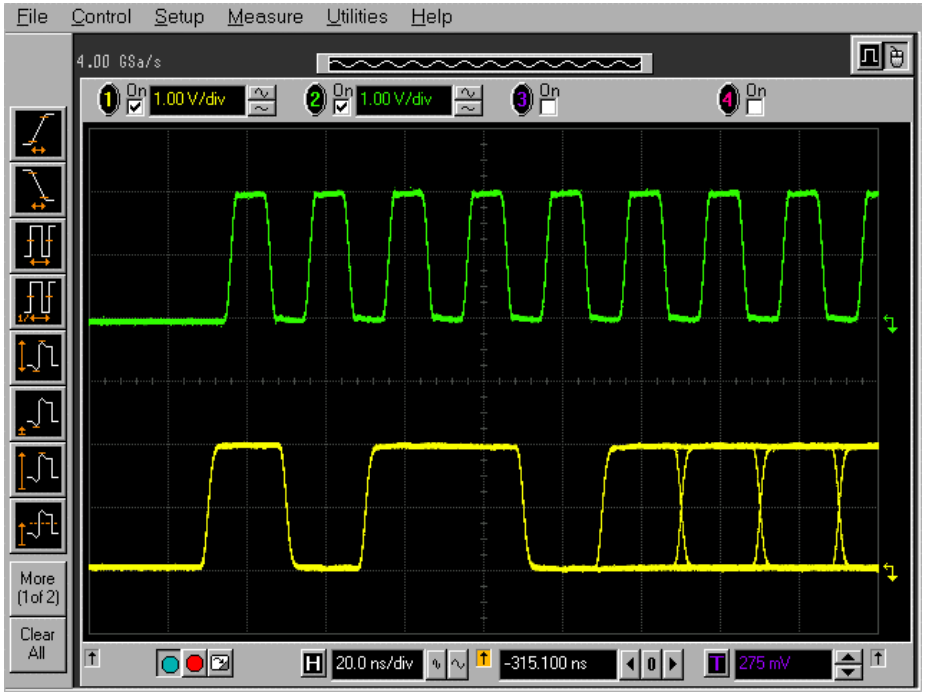
The outputs of the Agilent 81101A, 81104A and 81110A allow to change timing parameters like frequency without creating drop-outs or glitches.
This allows a continuous operation without rebooting or resetting the DUT to measure a PLL's pull-in / hold range or to characterize the DUT over clock frequency.


Device example: ABS sensor

# Generating arbitrary Data Pattern: Serial data sequencing

The Agilent 81130A provides powerful data sequencing features, that allow to generate complex data, for example packet data consisting of a header, a PRBS data section and a trailer.
With programming up to 4 segments with the 64 KBit/channel data and one freely placeable loop (count: 1 to 2^20), the 81130A is a powerful data generator.

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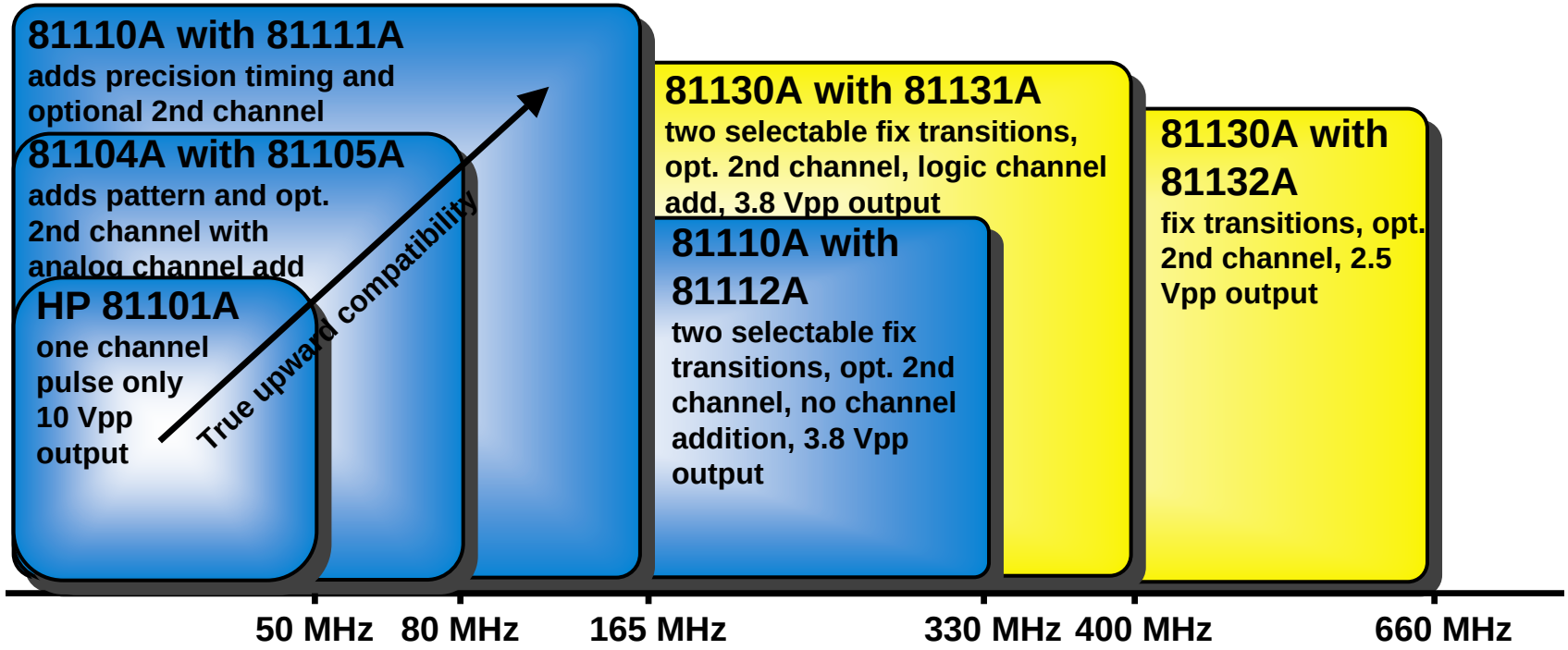
# 81110 Family Product Structure

**Triggerable Models**
fixed delay from <Trigger in> to <Signal out> and glitch-free change of timing /or PLL selectable

**Precision Models**
PLL based with data sequencing and precise and flexible edge placement

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# Applications

- Design Verification – clock to stress telecom boards (e.g. routers/switches)
- A/D Converter
- digital ASIC design for disk drives


- digital circuit
- evaluate boards
- microprocessors
- stimulate clocking of wireless LAN chipsets

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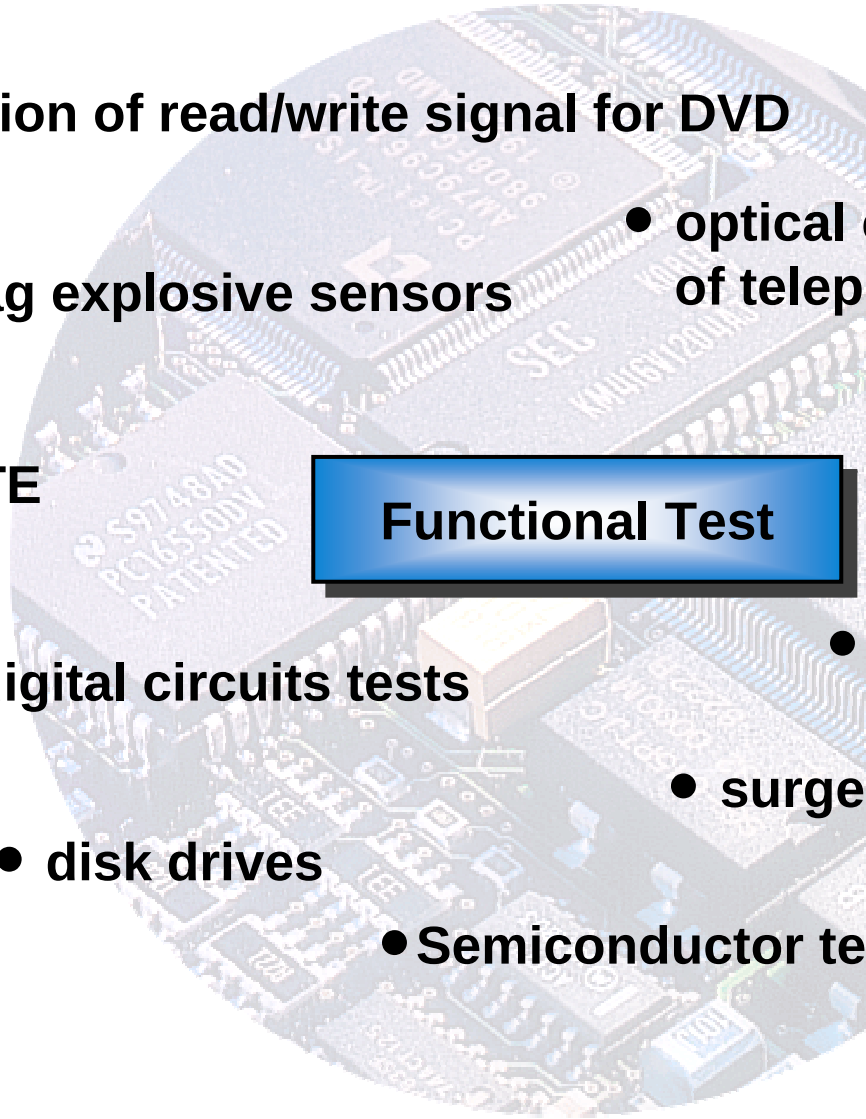
# Applications

- simulation of read/write signal for DVD
- optical card as part of telephone systems
- airbag explosive sensors
- flash memory
- ATE

**Functional Test**

- amplifiers
- digital circuits tests
- surge suppressors
- disk drives
- Semiconductor tests



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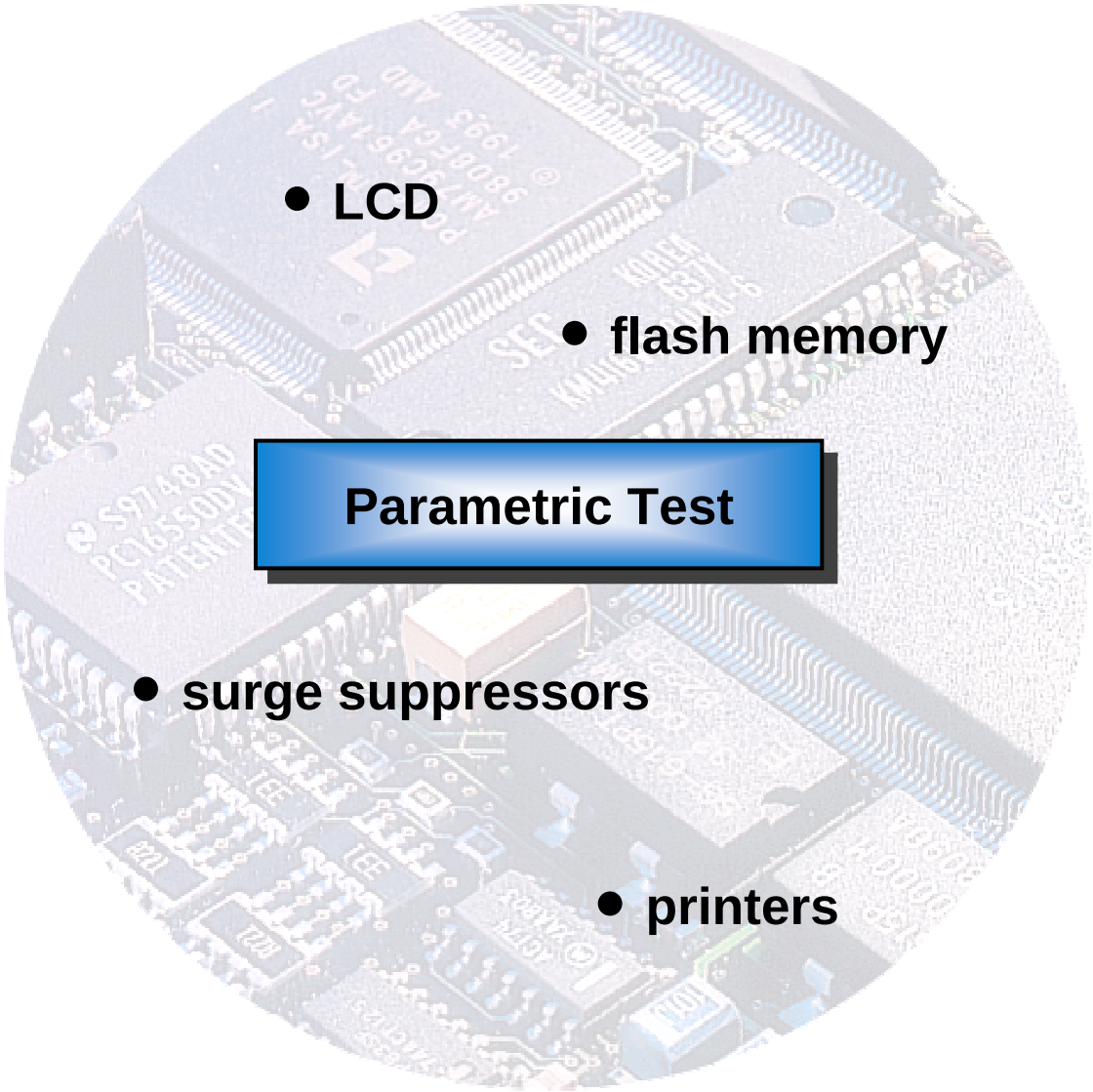
# Applications

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# Applications

- pulse modulate MW signal generators to generate RF pulses
- simulate noise
- optical source drives
- STM-1/4 carrying PRBS
- missile: BPSK base band signal generator for seeker test
- radar: pulse coded data generation

**Data/Signal Generation**

- simulate radar signals
- radar signal process simulation
- calibrate pulse generators, scopes or signal analyzers
- modulate radar carriers
- simulate IFF (Identify Friend or Foe) signals


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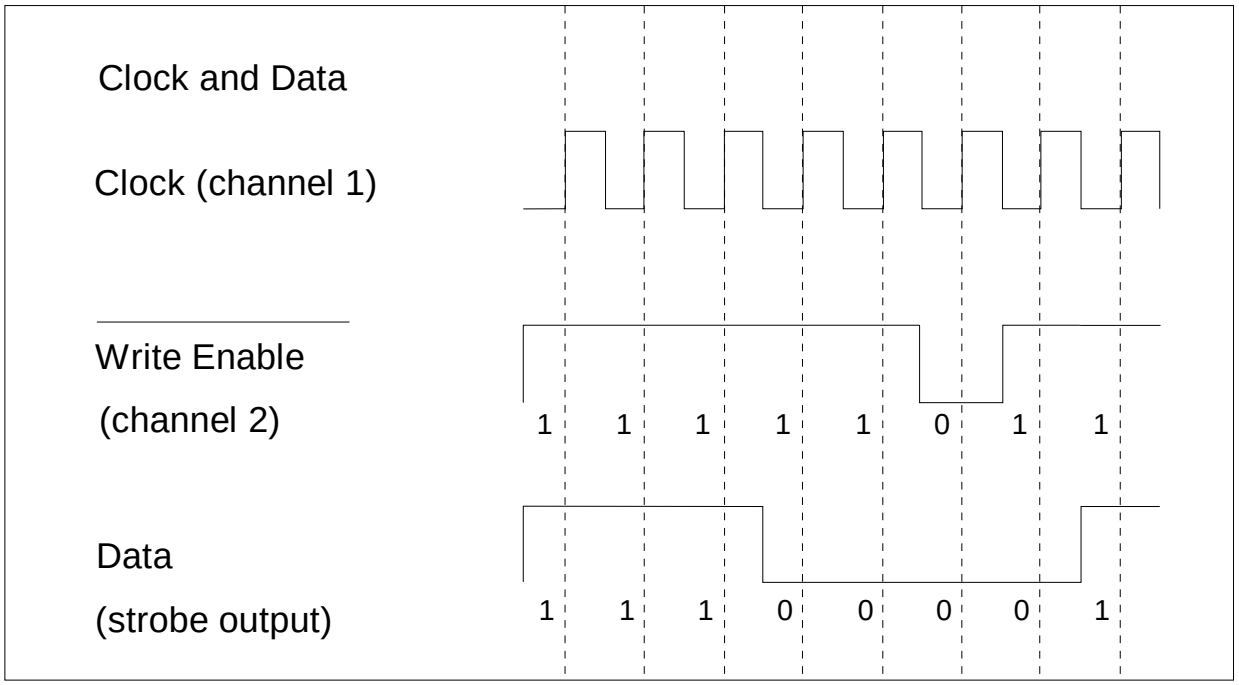
# Versatile Waveform Generation with pattern- and data-based timing




**With the 81104A and 81110A, it is possible to generate clock and data signals needed for your application.**

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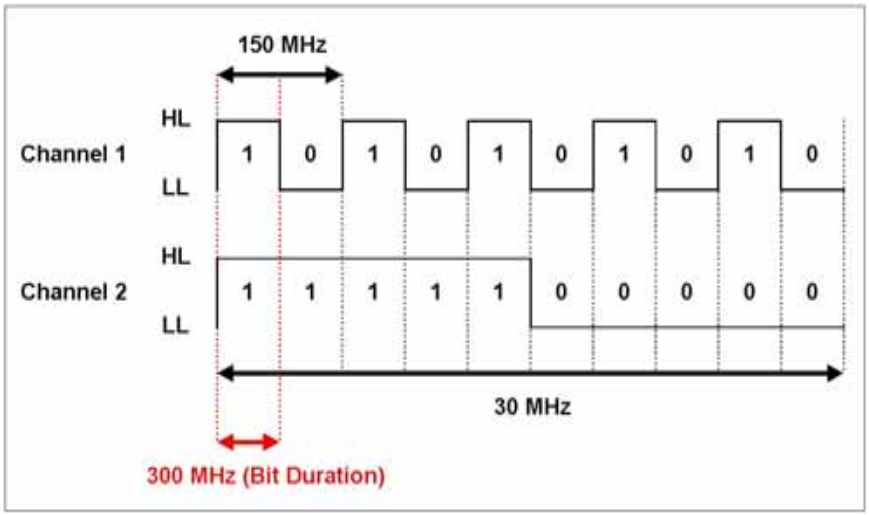
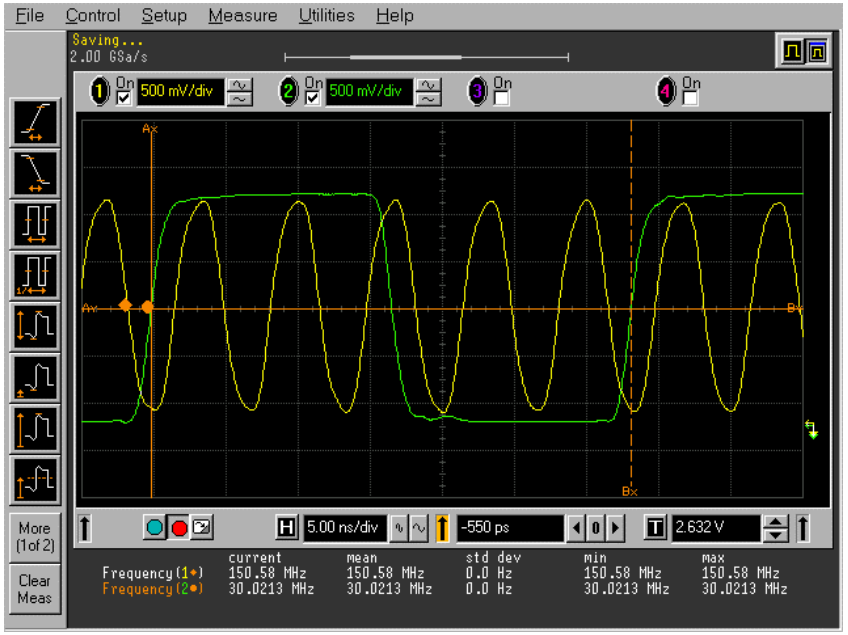
# Versatile Waveform Generation with pattern- and data-based timing

**Single, dual or delayed clock signals or up to 16 KBit user-definable data per channel can be programmed easily**




**Dual Clock Set-up**




**Screen Shot of an 150 MHz / 30 MHz dual clock**

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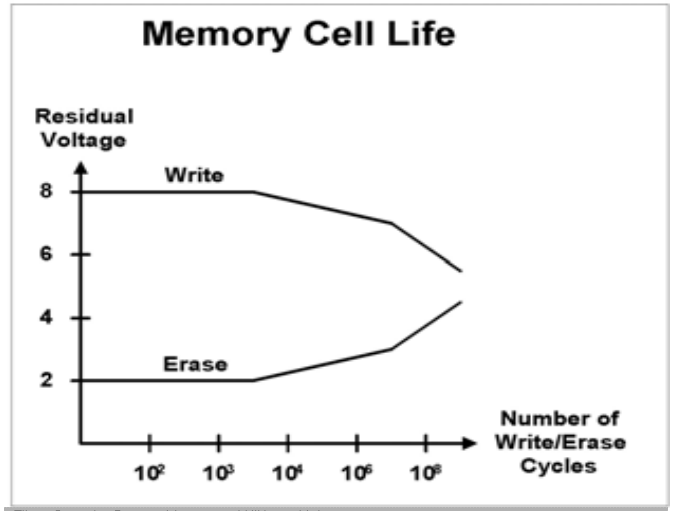
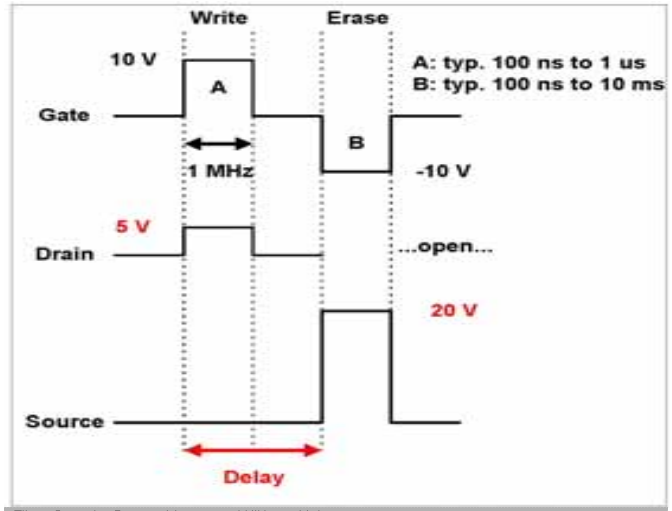
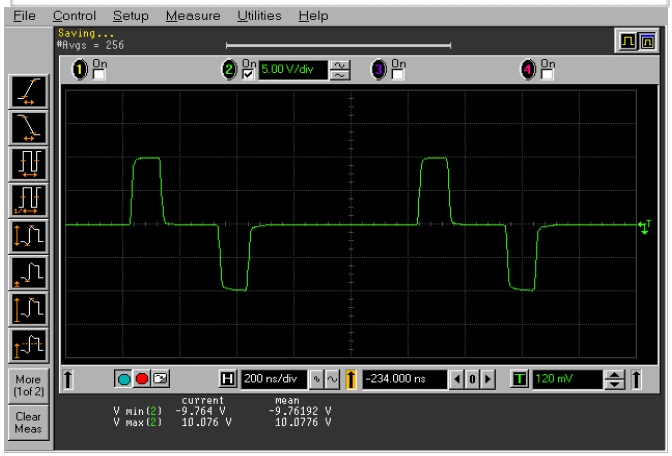
# Versatile Waveform Generation
# Channel-add feature

E.g. generating signals for Flash EEprom Tests:




# Agilent 81133A / 81134A
# 3.35 GHz Pulse Pattern Generator

**For Applications where Timing, Performance is critical and Control over Signal Quality is required**

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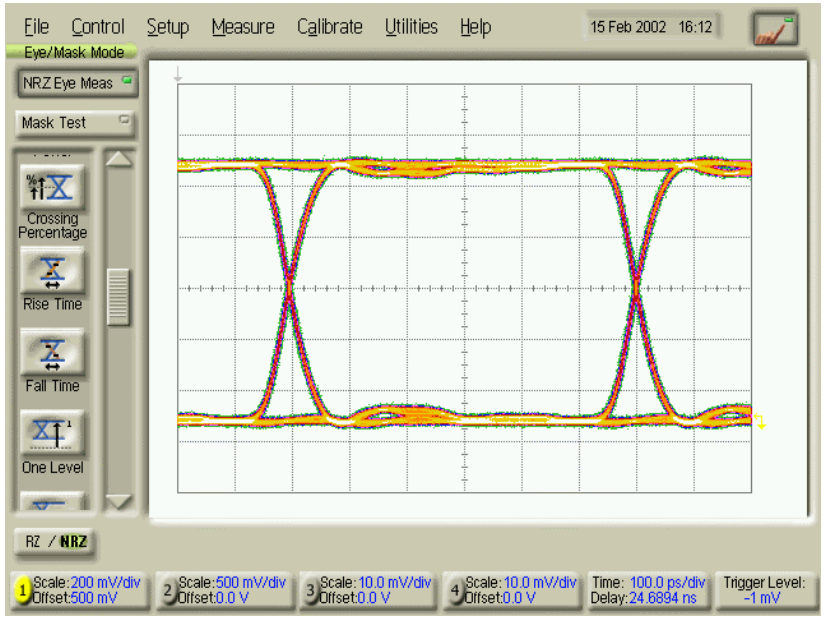
# Agilent 81133A / 81134A Overview

- **Pulses, pattern and data from 15 MHz to 3.35 GHz**
- **Ideal when timing and performance is critical**
- **Test the DUT and not the pulse or data source**
- **Ideal data- and pattern-source for eye diagram measurements**

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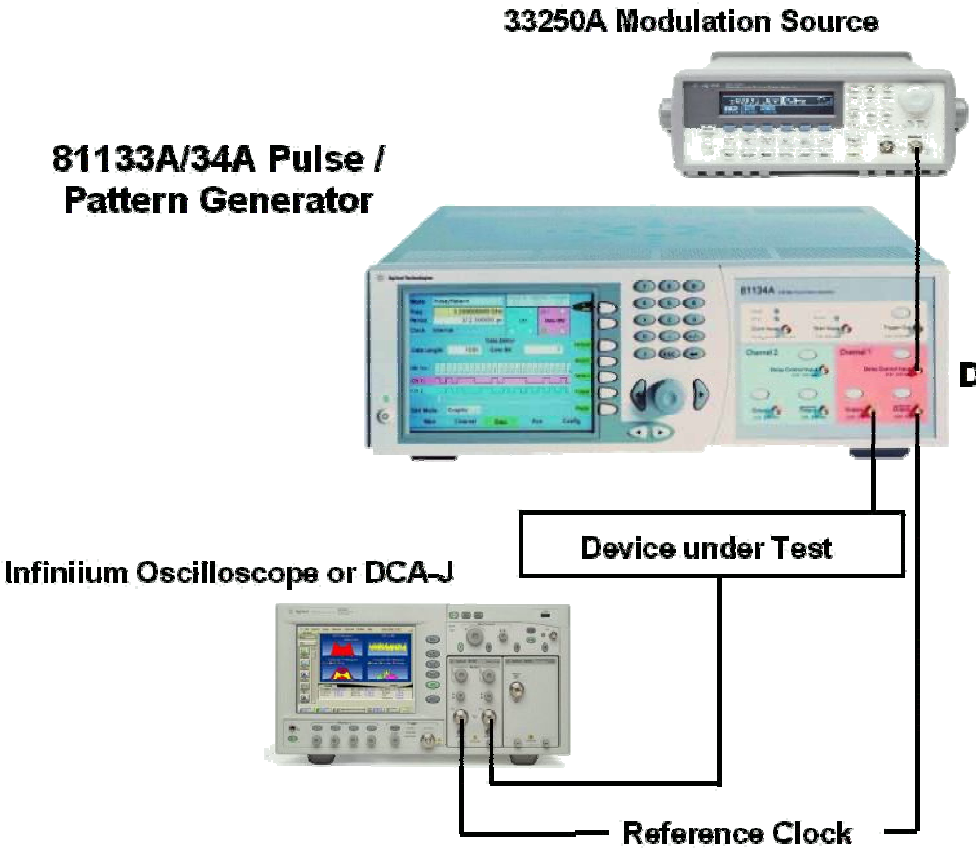
# Agilent 81133A / 81134A Key Benefits

- Pulses, patterns and data from 15 MHz to 3.35 GHz
- The 81133/34A is an ideal pulse, clock and data source due to its:
  - Fast transition times (60ps for 20-80%)
  - Low intrinsic jitter of less than 2ps (typical)
  - Full parameter flexibility
  - 12 Mbit pattern memory per channel for user defined data
  - PRBS generation with PRBS from 2^5-1 to 2^31-1
  - Delay modulation for easy Jitter injection
  - Deform the ‘eye’ with the Variable Cross-Over Point
  - Full functionality on all output channels

# Agilent 81133A / 81134A Key Benefits

- **The 81133A is a 1 channel configuration, the 81134A provides 2 output channels**
- **LVDS levels are addressed with output levels from 50 mV to 2 V**
- **The easy-to-use Graphical User Interface provides access to all necessary parameters**
- **Remote programming and access via GPIB, LAN and USB 2.0**
- **Code-compatible with the 8133A Timing Generator**

# Jitter Generation and Stressed Eye Diagram Measurements

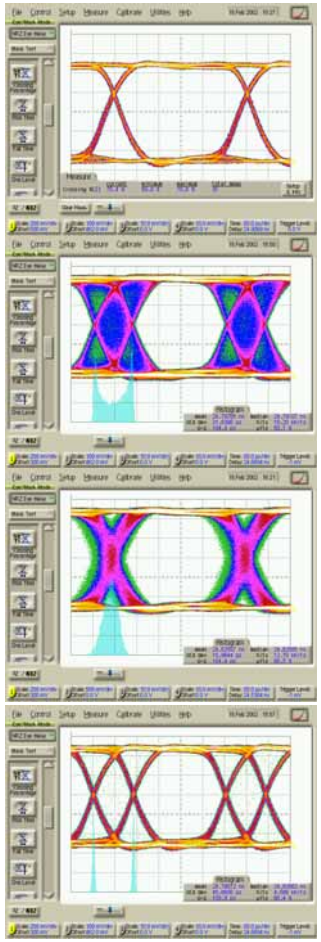



Jitter modulated with Rectangle-Wave

Jitter modulated with Sine-Wave

Jitter modulated with Noise

Variable Cross Over point at 70%



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# Applications

- **Jitter generation for Signal Integrity measurements of high-speed digital signals**
- **Stimulus for serial high-speed bus tests**
  - Serial ATA
  - PCI Express
- **Disk-drive tests**
- **Stimulus for a broad range of measurements with**
  - **Infiniium DCA-J sampling oscilloscopes (86100C family) or**
  - **Infiniium real-time oscilloscopes (54850A series)**