

Pulse Generator

PSPL2600C Datasheet



The PSPL2600C Pulse Generators provide high amplitude positive or negative pulses with convenient front panel control. The output has fast edge rates, smooth transitions and minimal overshoot and ringing. Adjustable output levels are obtained using internal step attenuators, ensuring consistent signal shape at all settings. The outputs are designed for a 50 Ω impedance, but can safely drive any load from a short circuit to an open.

Key performance specifications

- Positive or negative polarity pulses
- Adjustable pulse amplitude from < 16 mV to 50 V
- Rise Time \leq 300 ps
- Adjustable duration from < 1 ns to 100 ns
- Single shot, or 1 Hz to 100 kHz repetition rate

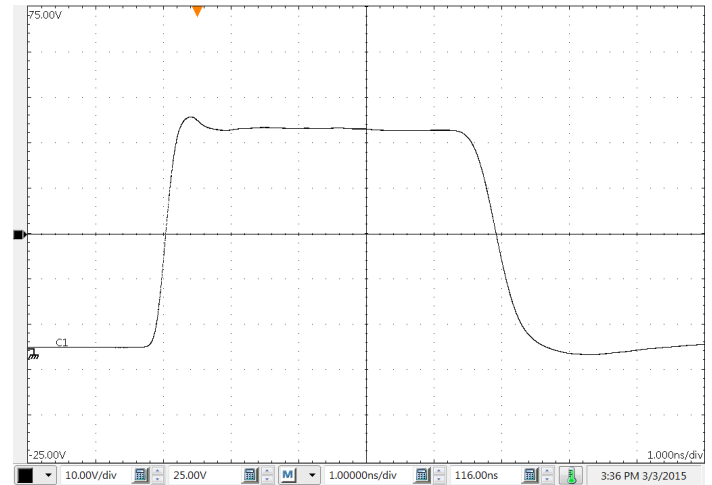
Key features

- Front panel operation
- Internal, external or manual trigger modes
- Continuously variable repetition rate and duration settings

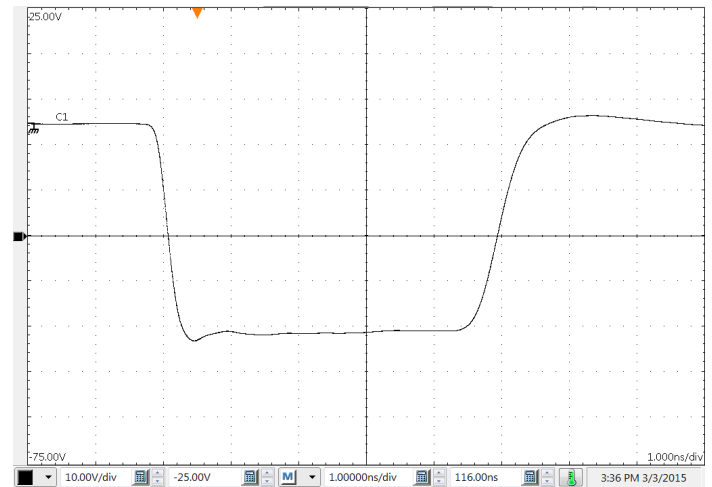
Applications

- University education and research
- UWB signal source
- Semiconductor characterization
- Laser driver

Typical performance

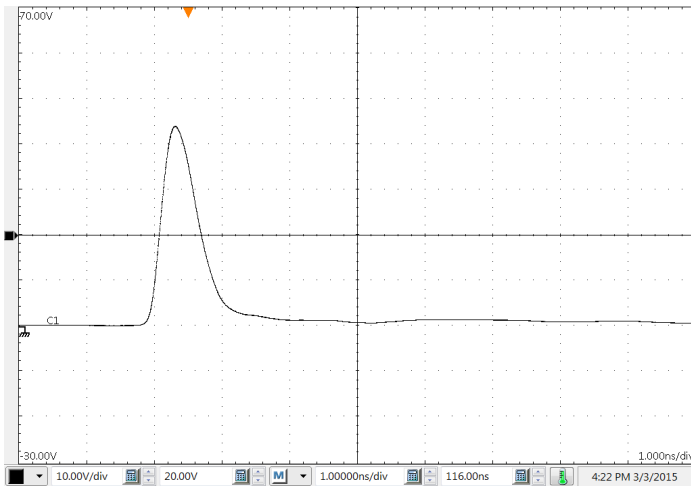


Positive pulse

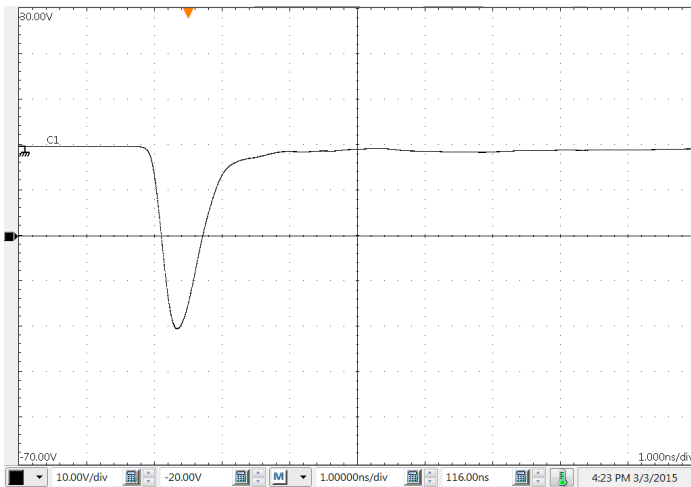


Negative pulse

The following figures show typical positive and negative waveforms with the pattern generator Duration control set to minimum. The displays are set to 10 V/div and 1 ns/div.

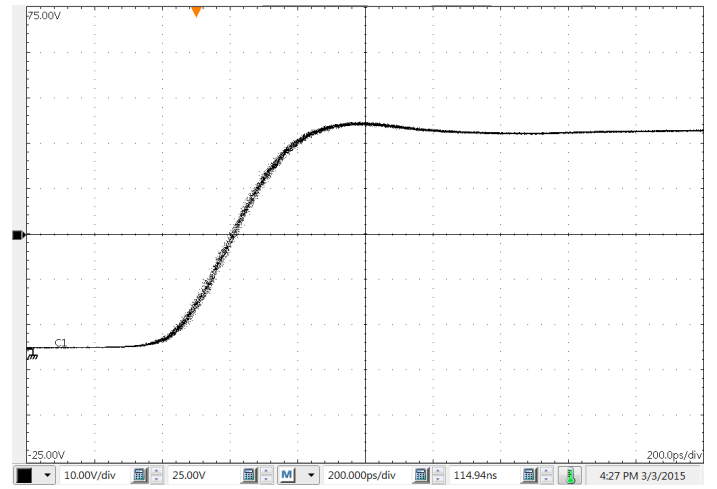


Minimum duration positive pulse

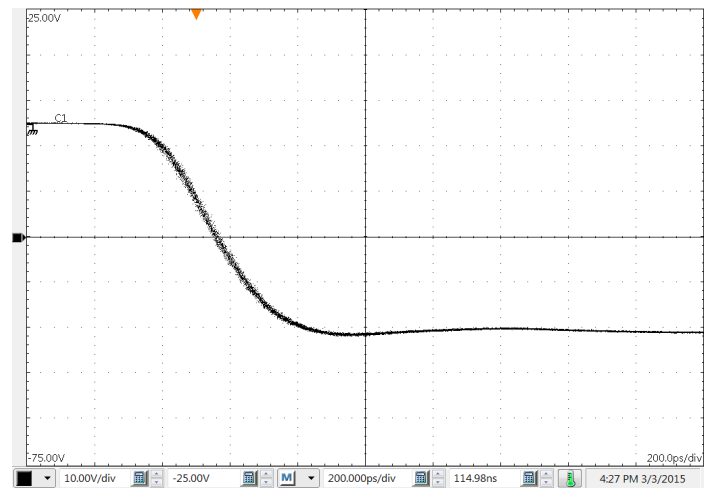


Minimum duration negative pulse

The following figures show typical leading edge and trailing edge waveforms. The displays are set to 10 V/div and 200 ps/div.

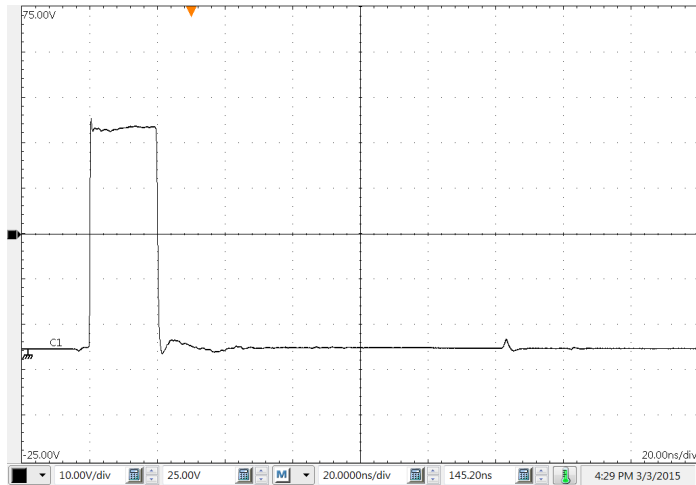


Leading edge waveform

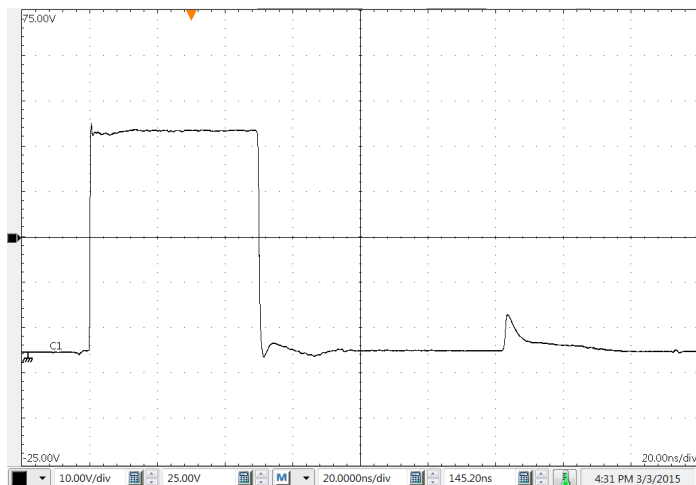


Trailing edge waveform

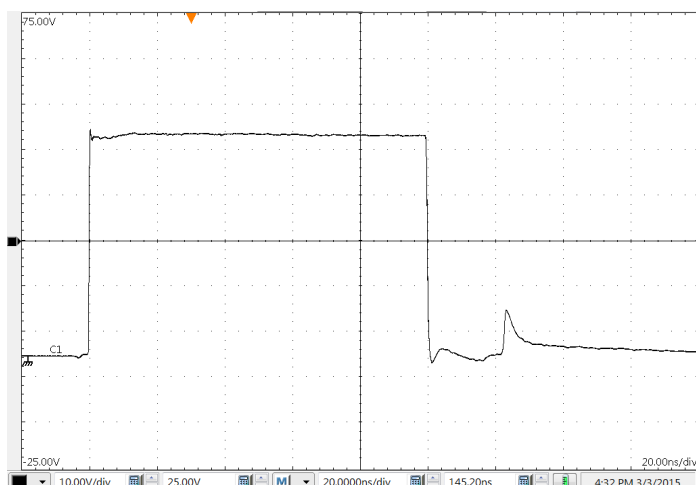
The following figures show typical pulses with various pulse waveform durations. The displays are set to 10 V/div and 20 ns/div.



20 ns duration pulse waveform

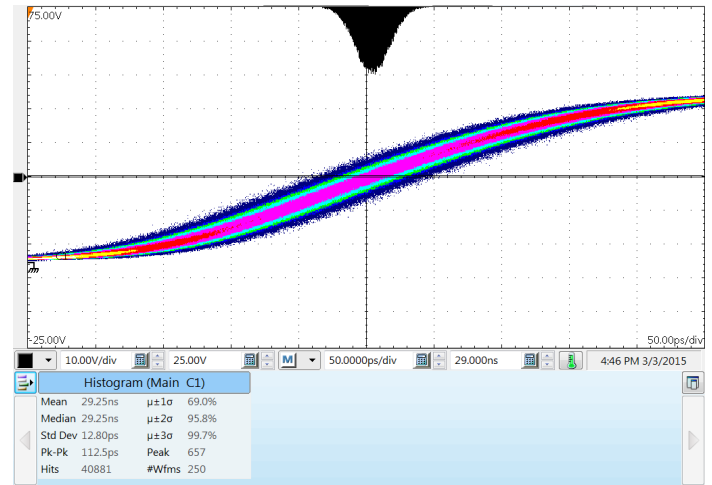


50 ns duration pulse waveform

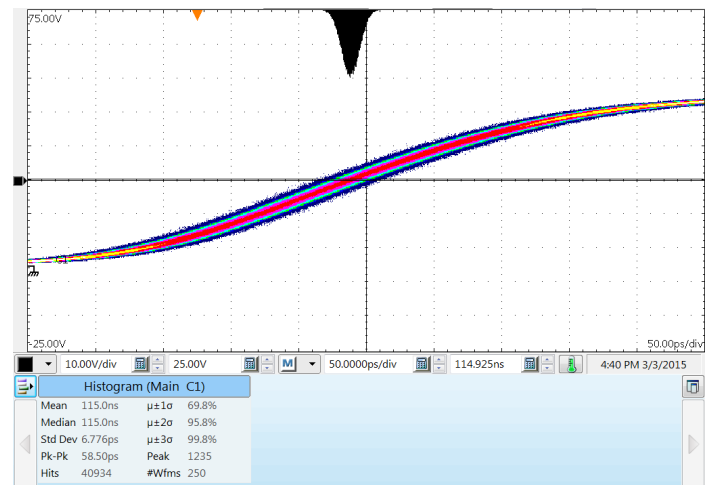


100 ns duration pulse waveform

The following figures show typical histogram measurements of the timing jitter. The displays are set to 10 V/div and 50 ps/div.

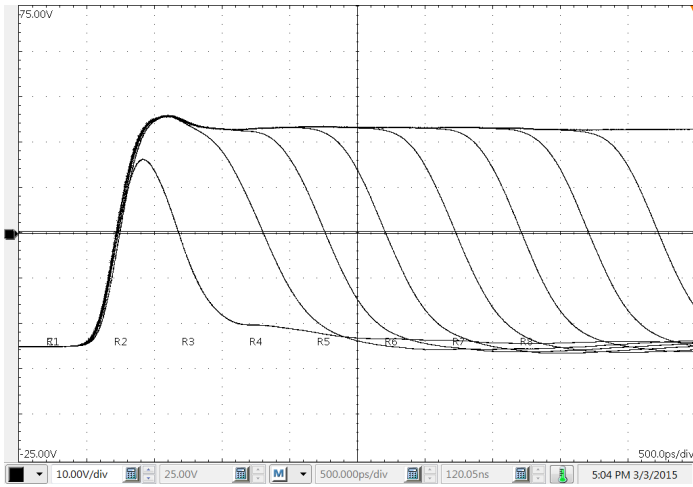


Adjustable delay trigger, trigger measures 12.8 ps_{rms}



Fixed 115 ns delay trigger, jitter measures 6.8 ps_{rms}

The following figure shows an adjustable duration waveform from 1 ns to 100 ns. The display is set to 10 V/div and 500 ps/div.



Adjustable duration waveform

Specifications

All specifications apply to all models unless noted otherwise.

Model overview

The performance parameters listed here are typical values. Parameters are guaranteed at 23 °C (± 3 °C) when maximum and/or minimum limits are given.

Parameter	PSPL2600C	PSPL2600C TURBO
Amplitude range into 50 Ω ¹	14 mV to 45 V, ≥ 40 V min.	16 mV to 50 V, ≥ 45 V min.
Transition time, leading edge (10 – 90%) ¹	400 ps, ≤ 500 ps max.	250 ps, ≤ 350 ps max.
Transition time, trailing edge (10 – 90%) ¹	1 ns, ≤ 1.8 ns max.	800 ps, ≤ 1 ns max.
Topline overshoot	$\leq 2\%$	$< 4\%$
Attenuation	0 to 70 dB, 1 dB steps	
Polarity	Positive or negative	
Baseline	0 V	
Reflection coefficient	-30% during pulse, +50% after pulse. Improves with increasing attenuation.	
Source impedance (nominal)	50 Ω	
Duration (FWHM)	< 1 ns to 100 ns, continuously adjustable	
Baseline precursor	$< \pm 2\%$	
Topline perturbations	$< \pm 2\%$	
Spurious pulse at 115 ns	+6% with duration ≤ 20 ns, +30% for pulse duration = 100 ns	

Trigger and timing

The performance parameters listed in this table are typical values; parameters are guaranteed only when maximum and/or minimum limits are given.

Parameter	Value
Adjustable delay	0 to 100 ns
Adjustable delay jitter, RMS	≤ 35 ps
Fixed trigger delay	115 ns
Fixed trigger delay jitter, RMS	≤ 12 ps
Repetition rate	1 Hz to 100 kHz continuously adjustable
External trigger input level	TTL pulse required, level > 1.5 V, + slope, > 10 ns duration
External trigger impedance	430 Ω
Trigger output into 50 Ω	0.8 V
Trigger in/out delay	200 ns

¹ Parameters listed are for positive polarity pulse. Negative polarity pulse amplitude is typically 1 dB less and the rise times and fall times are typically 75 ps slower.

General specifications

Parameter	Description
Accessories included	Power cord, front handles, rack mount kit, instruction manual
Front panel controls	Power, repetition rate range, rep. rate vernier, delay, duration, polarity, and attenuation
Power supply (mains)	100, 115, or 230 VAC, $\pm 10\%$ switch selectable, 50 or 60 Hz
Power consumption	42 VA (60 Hz), 65 VA (50 Hz)
Operating environment	
Temperature	40 °C (104 °F); low limit of 0 °C (32 °F)
Humidity	80% for temperatures up to 31 °C (88 °F), decreasing linearly to 50% at 40 °C (104 °F)
Elevation	2000 m (6562 ft.)
Dimensions	17 x 13 x 3.25 in. (43.2 x 33.0 x 8.3 cm)
Weight	15 lbs (6.8 kg)
Connectors	SMA output, BNC for trigger in and trigger output
Warranty	One year

Ordering information

Models

PSPL2600C PULSE GENERATOR, 400 ps, 45 V, 1-100 ns

Options

PSPL2600C TURBO Supports 50 V, 250 ps rise time pulses

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