LEO BODNAR ELECTRONICS

LBE-1322

30ps Fast Risetime Pulse Generator With Ext Trigger

FEATURES

- **Rise time and fall time of 30ps**
- Variable Frequency From 30kHz to 300MHz
- 50% Duty Cycle
- Output signal amplitude 50mVpp to 1.2Vpp (set via USB.) DC coupled, negative going.
- Trigger output with 1.5Vpp amplitude into 50Ω load. AC coupled
- SMA socket output (BNC With adaptor)
- USB powered - requires 200mA at 5V. Can be used with USB charger or powerbank
- Each device is individually tested for rise/fall times and supplied with high speed scope trace
- 50Ω Output impedance
- Virtual Serial Terminal for Configuration

APPLICATIONS

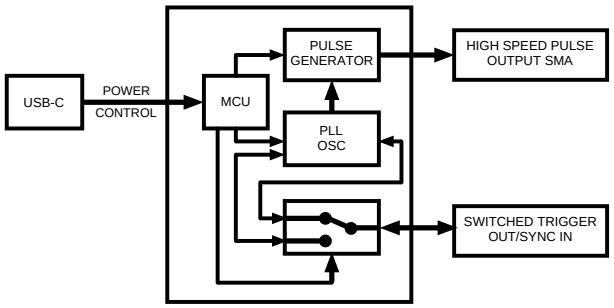
- Testing lab instruments and probes frequency bandwidth and risetime
- Time domain reflectometry (TDR)
- Generating wide spectral contents signal with harmonics extending into tens of GHz

DESCRIPTION

The LBE-1322 is a compact testing device which can output a signal with a rise time of 30ps. This speed makes it ideal for a wide range of applications, from testing lab instruments and probes to conducting time domain reflectometry (TDR) experiments. With harmonics extending into the tens of GHz, it delivers a compact solution for exploring frequency bandwidth and risetime characteristics. A switchable trigger output and sync input allows the device to drive a sampling oscilloscope or sync external equipment, or to be synced to external equipment.

The device is powered via a USB-C connector, and a USB-A to USB-C cable is supplied. An SMA-male to SMA-male coupler and a high-bandwidth SMA-male to BNC-male coupler are also included, allowing direct connection to either SMA or BNC equipment while preserving the fast rise time.

BLOCK DIAGRAM



SPECIFICATIONS

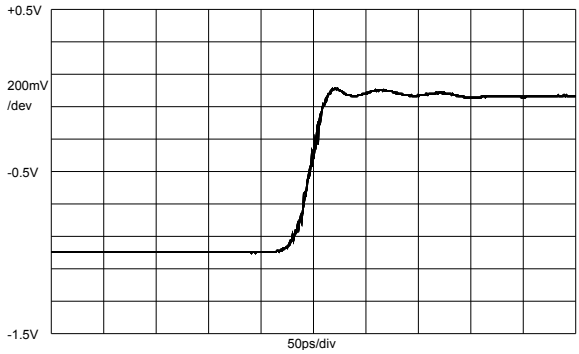
POWER	
Connector	USB Mini Socket
Voltage	5V ±10%
Current	250mA ±10% @ 5V
PULSE OUTPUT	
Connector	SMA Female (Supplied with M/M coupler)
Amplitude	0.6V - 1.1V Adjustable via software
Coupling	DC
Signal Shape	Square Wave
Frequency	Variable 30kHz to 300MHz
Duty Cycle	50% ±2%
Impedance	50Ω
Timing	Within 0.5ns of pulse output
Connector	SMA Female
TRIGGER OUTPUT	
Voltage	1.6V into 50Ω
Coupling	DC
Signal Shape	Square Wave
Frequency	Matched to Pulse Output
DIMENSIONS	
With Connectors	43x32x15.6mm
Weight	0.3kg
With Connectors	63.6x32x15.6mm

TYPICAL PERFORMANCE CHARACTERISTICS

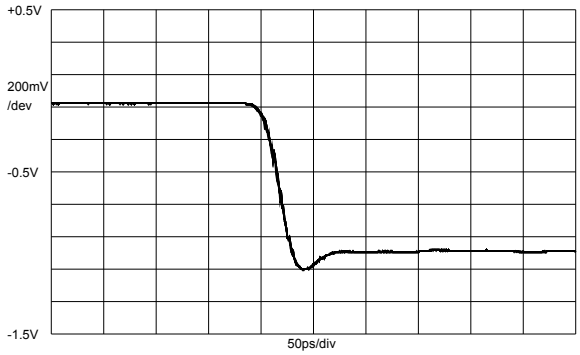
MEASUREMENTS

Falltime	30ps +/- 2ps
Risetime	30ps +/- 2ps
Overshoot	5% +/- 2%
Undershoot	12% +/- 2%
Amplitude	0.97V (Optimised for fastest risetime)

Typical Rise Trace



Typical Fall Trace



Traces measured from Tektronix CSA 803

OPERATIONAL INSTRUCTIONS

Scope Bandwidth Measurement

To eliminate movement on device front panel connectors, connect the trigger out (if needed for sampling scopes etc) and the USB connector first, before attaching to the front end connector of the device under test. For modern digital oscilloscopes with a fast roll-off filter, the bandwidth can be calculated with the following formula

0.45 / rise time = bandwidth

For example, a scope with a measured rise time of 1ns would give the following

0.45 / (1 x 10^-9s) = 450 MHz

CONFIGURATION APPLICATION

The optimum settings are preset in the device when shipped. However a configuration application can be downloaded from www.leobodnar.com to control the parameters of the device.

Datasheet Version: V1.0-21-04-2026