

Subnanosecond Pulse Generator Module

PPM0311



- Compact
- High efficiency and high output power
- Stable output pulse waveform with low jitter

Based on Drift Step Recovery Diodes (DSRD) - a new type of semiconductor devices, which allow to obtain high reliability, high efficiency, and long operation lifetime.

PPM0311 pulse generator module can be used for the high-performance ultra-wideband (UWB) radars, and other applications which require high voltage subnanosecond rise time pulses with stable pulse waveform and low jitter. It has no internal triggering and requires external triggering pulse generator as well as external dual voltage DC power supply. The output pulse amplitude is proportional to the level of high voltage DC supply. PPM0311 has over temperature and over frequency protections, and temperature stabilization system which helps to reduce the temperature drift of the output pulses. Pulse generator module is designed for the operation with matched 50 Ohm load, for example, UWB antenna. In case of the operation with unmatched load please connect the generator by the cable with a length of 50 cm or more, and reduce the maximum repetition rate twice.

Pulse amplitude	3 kV (see Fig.2)
Pulse polarity, waveform	positive, bell-like
Pulse rise time	500 ps ... 600 ps, fixed
Pulse width (FWHM)	1.7 ns, fixed
Max repetition rate	300 kHz
Jitter (RMS)	< 20 ps
Jitter (peak-to-peak)	< 100 ps
Mean output power	80 W
Output connector	N type
Input triggering connector	SMA type
Triggering pulse	+5V, 10 ns ... 1 μs width
Power supply	
low voltage	+24V DC; 0.5A
high voltage	+50V...+160V DC; 1.6A

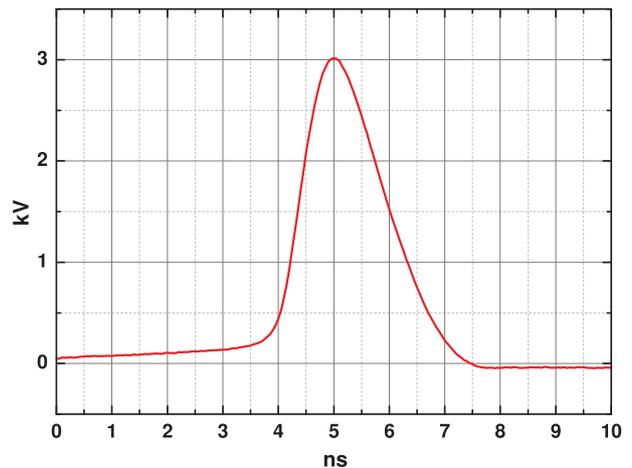
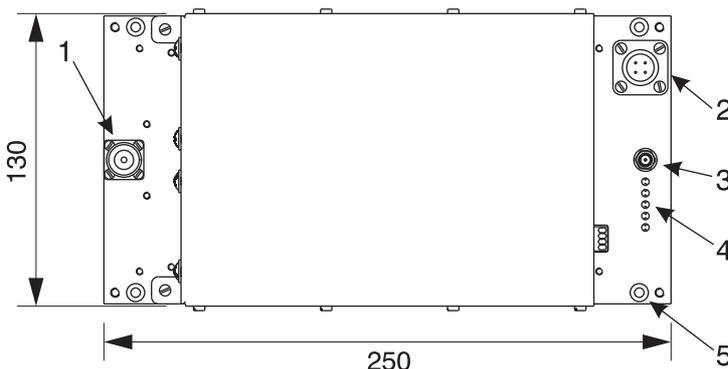
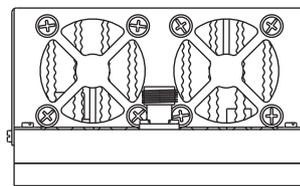
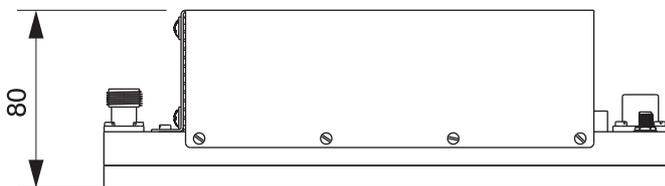


Fig.1. Typical output pulse waveform



- 1 - output N-type connector
- 2 - power supply connector
- 3 - input triggering SMA connector
- 4 - control LED
- 5 - 4x mounting holes, 4.2mm dia, 222mm x 118mm footprint

*) All dimensions are in mm

see next page

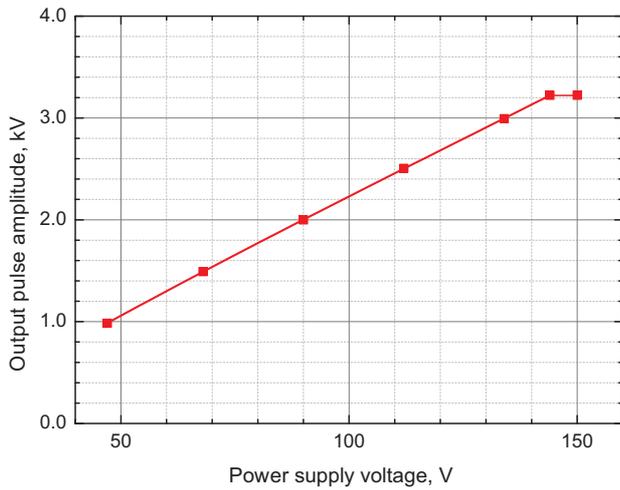


Fig.2. Output pulse amplitude VS high voltage DC power supply

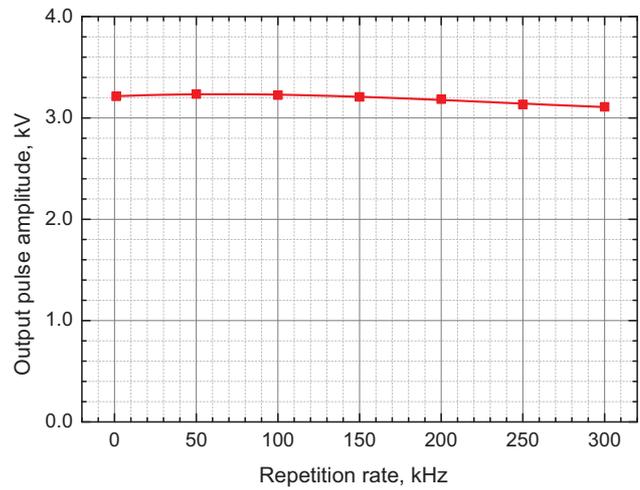


Fig.3. Output pulse amplitude VS repetition rate

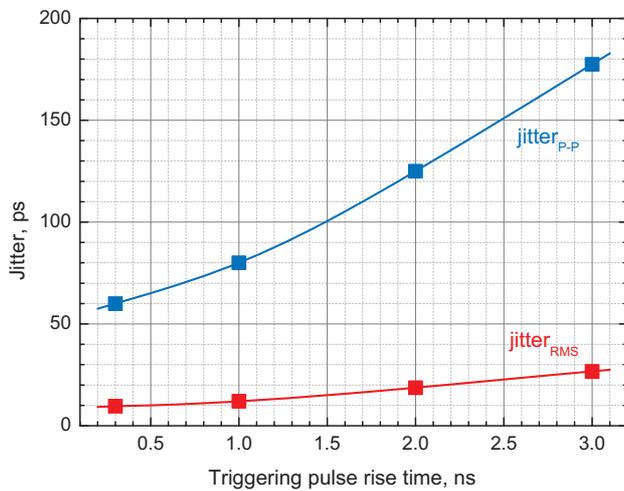


Fig.4. Output pulse jitter_{RMS} and jitter_{P-P} VS triggering pulse front rise time

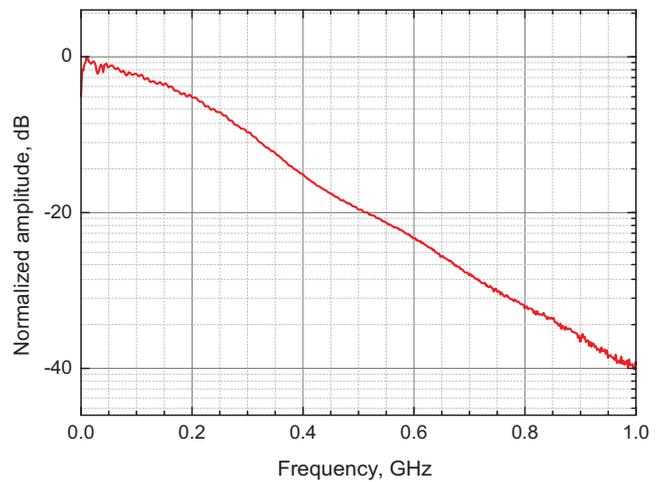


Fig.5. Output pulse spectrum

PPM0311 delivery set includes:

1. PPM0311 pulse generator module.
2. PS3002 fixed DC power supply voltage AC-DC converter.
3. N-SM141(50)-open semirigid 50 cm length output cable assembly with one N-type connector.
4. SMA-RG316(100)-SMA 100 cm length cable assembly with SMA connectors for the triggering pulses feeding.

Accessories:

1. PI-5/100 pulse inverter.
2. N-SM141(50)-N semirigid 50 cm length output cable assembly with two N-type connectors.

Recommended models of the triggering pulse generators:

1. LeCroy 9210 with 9214 or 9211 module (old, only used are available, but cheap and very good).
2. Berkeley Nucleonics 745T (inexpensive, excellent pulse front 350 ps, low pulse-to-pulse jitter, significant pulse width drift, min step of the pulse width 5 ns).
3. Stanford Research DG645 (good parameters).
4. Keysight 81160A (modern, excellent parameters, very expensive).
5. Tektronix AFG31251 (modern and good, but expensive; 2 ns triggering pulse rise time results in increased output pulse jitter).