

# Subnanosecond Pulse Generator Module

## PPM0411



- 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 opening switch, which allows obtaining high reliability, high efficiency, and long operation lifetime.

PPM0411 pulse generator module can be used for the ultra-wideband (UWB) radars and other applications which require high-voltage subnanosecond rise-time pulses with stable pulse waveform and low jitter. It has an external triggering only. The amplitude of the external triggering pulses is 5V, and they should be applied to SMA input connector. The external dual voltages AC-DC converter is used for the power supply. The output pulse amplitude is proportional to the level of the high voltage DC supply and can be varied in a wide range. PPM0411 has over-temperature and over-frequency protections, as well as the temperature stabilization system that helps to reduce the temperature drift of the output pulses. The pulse generator module is designed for the operation with matched 50 Ohm load, for example, UWB antenna. In the case of operation with a non-matched load, please connect the generator by the cable 50 cm in length or more, and reduce the maximum repetition rate twice.

Pulse amplitude	4 kV (see Fig. 1 - 3)
Pulse polarity, waveform	positive, bell-like
Pulse rise time	500 ps ... 600 ps, fixed
Pulse width (FWHM)	1.7 ns, fixed
Max repetition rate	150 kHz
Jitter (RMS)	< 20 ps
Jitter (peak-to-peak)	< 100 ps
Mean output power	60 W
Output connector	N type
Input triggering connector	SMA type
Triggering pulse	+5V, 10 ns ... 1 $\mu$ s width
Power supply	
low voltage	+24V DC; 0.5A
high voltage	+50V...+160V DC; 1.6A

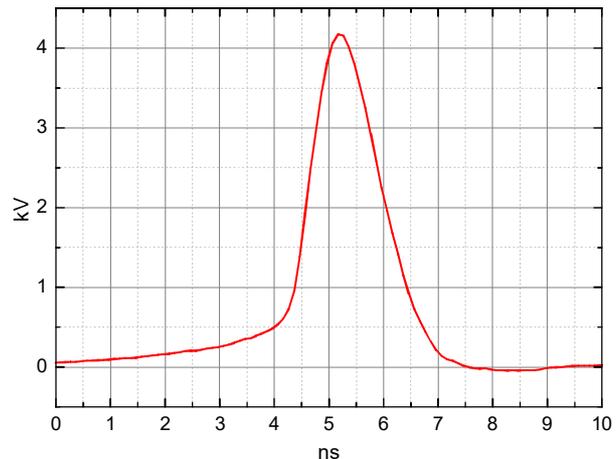
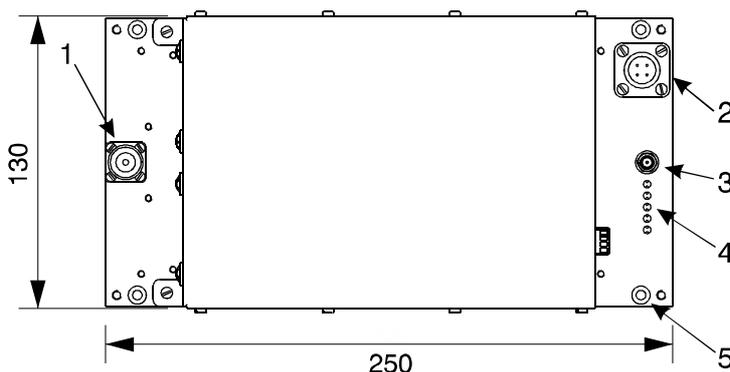
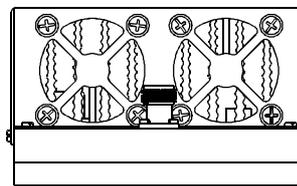
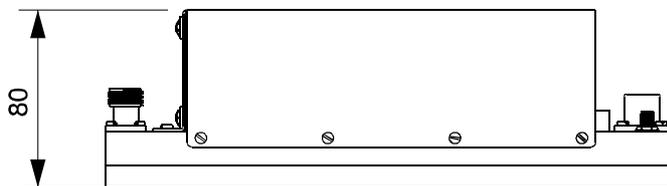


Fig.1. Typical output pulse waveform



- 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**

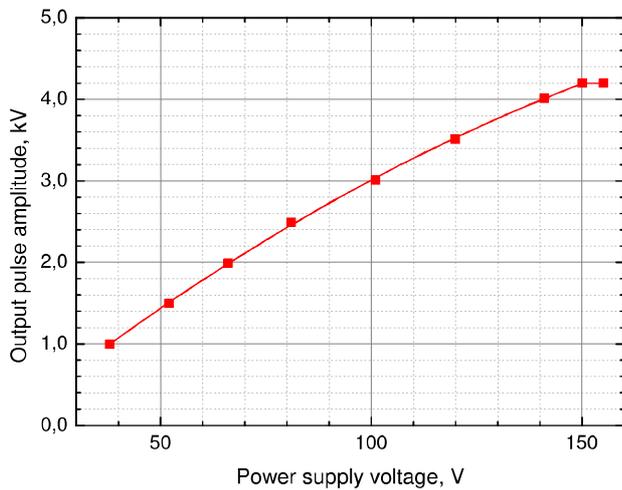


Fig.2. The typical dependence of the output pulse amplitude from high voltage DC power supply.

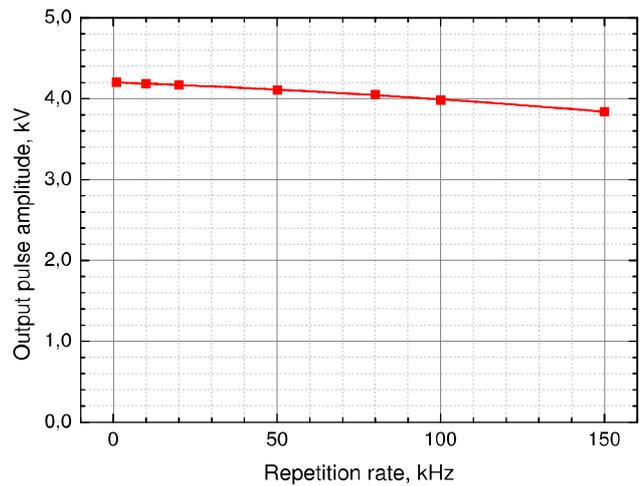


Fig.3. The typical dependence of the output pulse amplitude from repetition rate.

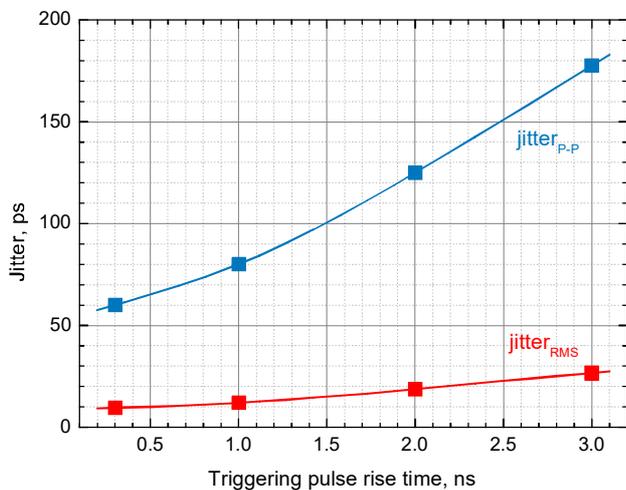


Fig.4. Output pulse jitter<sub>RMS</sub> and jitter<sub>P-P</sub> VS triggering pulse front rise time.

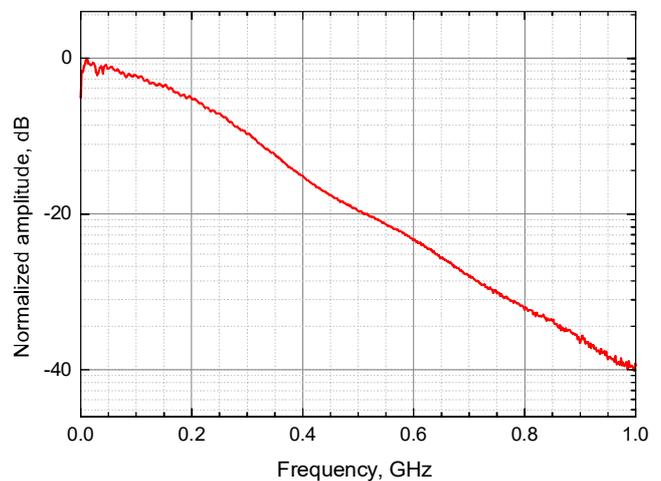


Fig.5. Output pulse spectrum.

**PPM0411 delivery set includes:**

1. PPM0411 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
2. Berkeley Nucleonics 745T
3. Stanford Research DG645
4. Keysight 81160A
5. Tektronix AFG31251