

## Ultrasonic transducer S1902

### DATA SHEET

#### Intended use

#### Main technical specifications

Type of generated wave mode:	Shear horizontal
Nominal frequency:	25 kHz
Operating frequency:	(25 ± 10) kHz
Double conversion ratio:	70 dB or better
Relative frequency bandwidth:	> 90 %
Electric capacity of the piezoelectric element:	(1500 ± 800) pF
Maximum excitation pulse voltage:	< 200 V
Connector type:	Lemo 00.250
Overall dimensions:	< 49×Ø17 mm
Weight:	< 66 g
Operating temperature range:	-30 °C to +60 °C



#### Measurement conditions and equipment used

The measurement of the tested DPC transducer characteristics occurs in combination with the reference DPC transducer, whereby both transducers are connected by their tips with the nip force of 4 N. The tested transducer operates as a transmitter and the reference transducer operates as a receiver of ultrasonic waves. The double conversion ratio  $S_{rel}$  is determined as a ratio value between the received signal amplitude on the reference transducer and excitation pulse amplitude on the tested transducer.

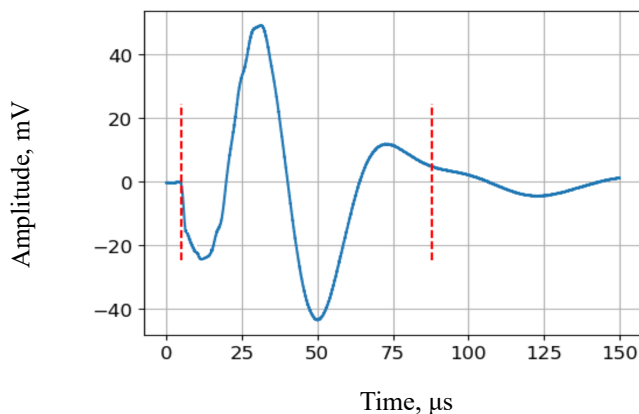
**Excitation signal:** square pulse with the amplitude 200 V, duration 10  $\mu$ s, equal to half period of the nominal.

**Receiver parameters:** integrating amplifier with the bandwidth 0.01 Hz – 400 kHz, input resistance 4 k $\Omega$ , equivalent input noise voltage 10  $\mu$ V.

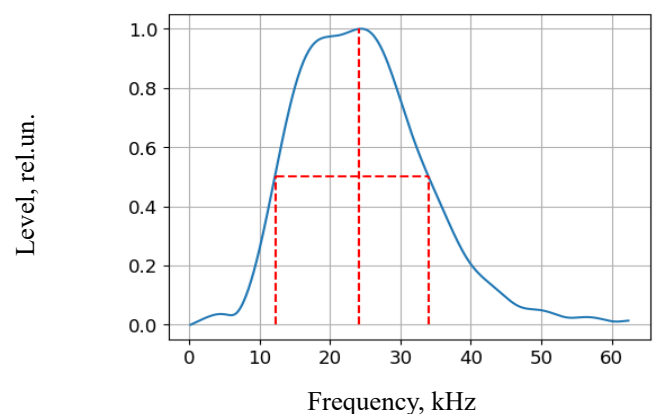
**Environmental conditions:** temperature 24 °C, rel. 36 %.

#### Measured characteristics

Shape of the measured pulse



Amplitude-frequency response



Echo pulse duration $\tau$ :	<b>87.8 <math>\mu</math>s</b>	Operating frequency $f_c$ :	<b>23.1 kHz</b>
AFC frequency maximum $f_p$ :	<b>24.0 kHz</b>	Double conversion ratio AFCmaximum $S_{rel}$ :	<b>-90.8 dB</b>
Lower AFC frequency $f_l$ :	<b>12.2 kHz</b>	Transducer delay $t_d$ :	<b>5.1 <math>\mu</math>s</b>
Upper AFC frequency $f_u$ :	<b>34.0 kHz</b>	Relative frequency bandwidth (at -6 dB) $B_w$ :	<b>94.2 %</b>