

## Ultrasonic transducer S0205

### DATA SHEET

#### Intended use

The ultrasonic transducer S0205 is used to perform the ultrasonic testing of various materials and products to evaluate their physical and mechanical properties using transmitting and receiving of ultrasonic longitudinal waves. The transducer can be used as a part of ultrasonic low frequency flaw detectors in pulse-echo mode or ultrasonic pulse velocity testers in through-transmission mode

#### Main technical specifications

Type of transducer:	<b>Piezoelectric with liquid contact, low frequency, short pulse, low noise</b>
Type of generated wave mode:	<b>Longitudinal</b>
Nominal frequency:	<b>25 ± 5 kHz</b>
Delay time in the transducer protector:	<b>0.2 μs</b>
Effective transducer aperture diameter:	<b>25 mm</b>
Electric capacity of the piezoelectric element:	<b>12500 ± 1000 pF</b>
Maximum excitation pulse voltage, V:	<b>± 250 V</b>
Connector type:	<b>LEMO00</b>
Overall dimensions:	<b>69 x d28 mm (31 mm on connector)</b>
Weight:	<b>150 gr</b>



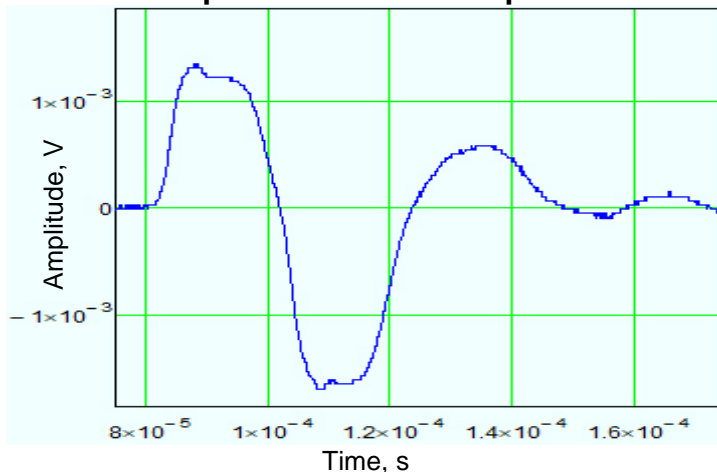
#### Measurement conditions and equipment used

Temperature 25°C, rel. humidity 43%

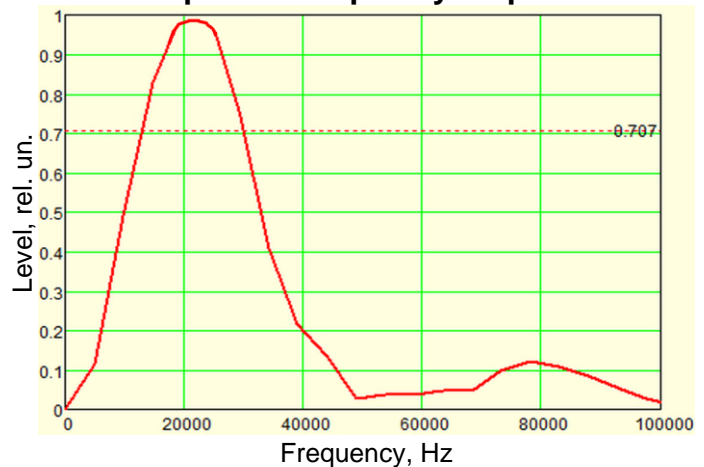
The transducer values are measured at the testing bench consisting of a low-frequency pulser-receiver unit A1560-LF. For evaluating the transducer characteristics, the method of through-transmission of longitudinal ultrasonic waves through a plexiglas sample is used. The thickness of the plexiglass sample is 200 mm. The tested transducer operates in the transmission mode. As an ultrasonic pulse receiver, a broad-band single-crystal piezoelectric transducer with the nominal frequency 1 MHz and effective aperture 20 mm is used.

#### Measured characteristics in the longitudinal wave mode

Shape of the measured pulse



Amplitude frequency response



#### Signal parameters

Maximum half-wave amplitude of the pulse, mV	$AL_{max} = 1.69$	Lower band frequency at the -3 dB level, kHz	$FL_1 = 13.72$
Pulse duration at the -14 dB, msec	$\tau_{L14dB} = 6.14 \times 10^{-2}$	Upper band frequency at the -3 dB level, kHz	$FL_2 = 29.28$
Operating AFR frequency $f_c$ , KHz:	$FL_{max} = 21.45$	Absolute band width P at the -3 dB level, kHz	$FL_c = 15.56$
Spectral maximum, KHz	$\Pi_{L3dB} = 19.53$	Relative band width $B_w$ at the -3 dB level, %	$FL_g = 79.7$