



Ultrasonic piezoelectric transducer S3569 5.0A0D10CL DATA SHEET

Main technical specifications

Transducer type:	Contact straight beam single
Nominal frequency:	5 MHz
Nominal echo pulse duration:	1.1 μ s
Nominal relative band width:	50 %
Nominal sensitivity:	-60 dB
Piezoelement diameter:	10 mm
Nominal echo pulse delay in protector:	0.15 μ s
Nominal piezoelement capacity:	1300 \pm 100 pF
Connector type:	LEMO 00.250
Operation temperature range:	from -20 to +50 $^{\circ}$ C
Dimensions:	24 \times 19 \times 16 mm
Weight:	26 g

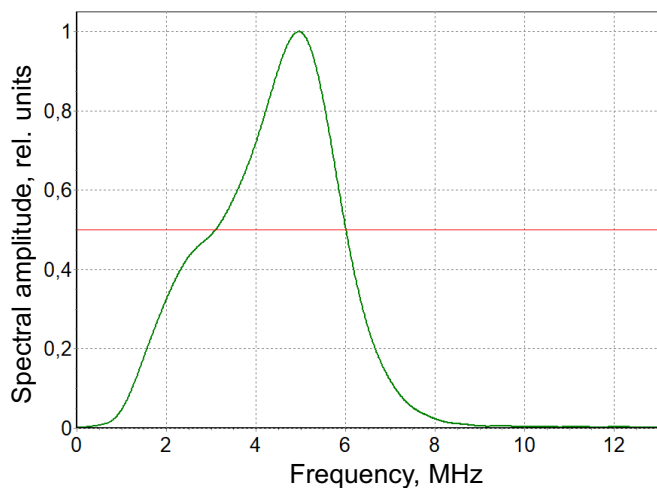
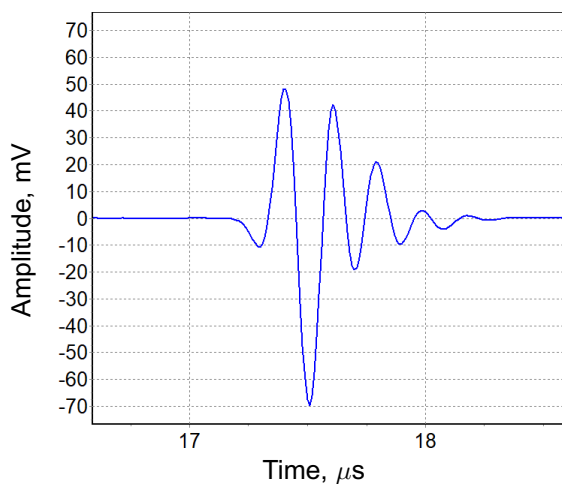


Measurement conditions and used equipment

Excitation:	Rectangular pulse with amplitude 20 V and duration 100 ns , equal to half-period of nominal frequency oscillations.
Receiver:	Amplifier with 0.01-15 MHz bandwidth and 400 Ω input impedance. Effective noise level, normalized to the amplifier input level, is less than 20 μ V.
Damping resistor:	100 Ω (connected in parallel to the transducer).
Cable:	Single LEMO-LEMO with wave resistance 50 Ω and 1.2 m length.
Calibration block:	Calibration block CB002-2 from a set of ultrasonic samples of thickness and ultrasonic wave velocity, SN004. Calibration certificate 0930220 of 17.02.2020. Longitudinal wave velocity 5918 m/s, thickness 50 mm (dimensions 230 \times 120 \times 50 mm).

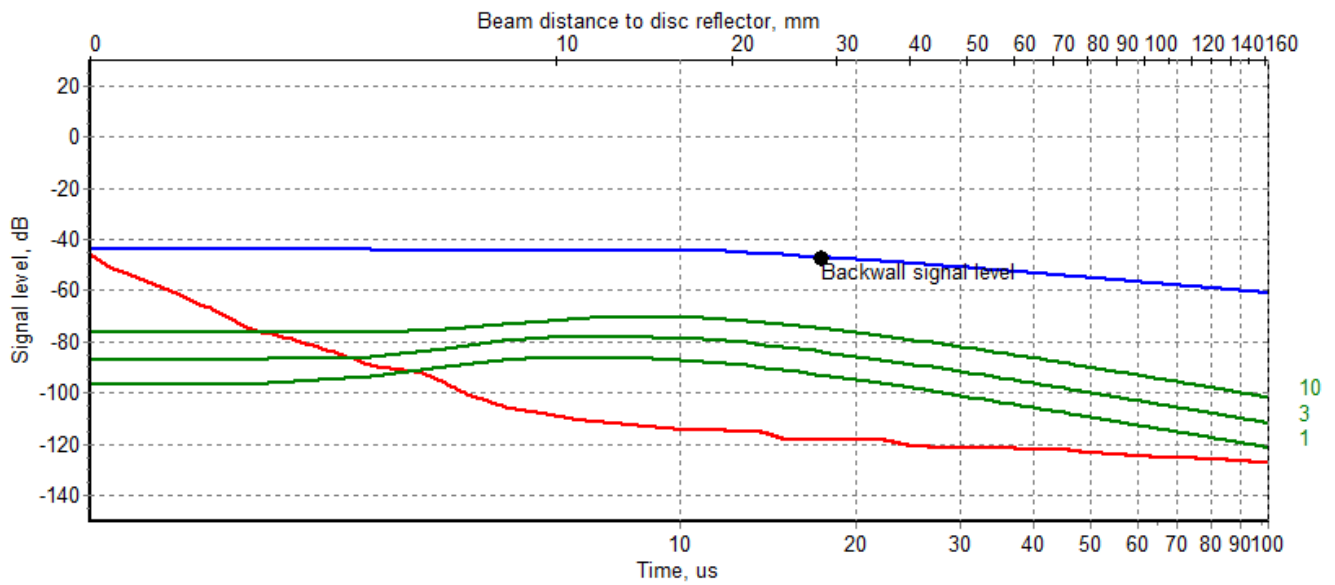
Measurement results

Backwall echo pulse for 50 mm thickness and its spectrum



Reverberation-noise characteristics (RNC) of the transducer without acoustic load and DGS diagram for flat bottomed reflectors with area 1, 3 and 10 mm²

The level of 0 dB corresponds to the amplitude of the transducer excitation pulse.



Calculated parameters and acceptance results

Parameter	Value	Tolerance	Result
Work frequency (Mean of border spectrum frequencies) , MHz	4.7	4 – 6	+
Echo pulse duration (at -20 dB level from maximum) , μ s	0.64	\leq 1.1	+
Relative spectrum bandwidth (at -6 dB level) , %	58	30 – 70	+
Sensitivity (bottom echo pulse and excitation pulse amplitudes' ratio), dB	-48	\geq -60	+
Sensitivity margin above the RNC in the time interval 2 - 50 μs according to ADD for reflector area of 1 mm² , dB	69	\geq 10	+
Echo pulse amplitude , mV	81	—	
Delay , μ s	0.6	—	
Spectrum maximum frequency , MHz	5	—	
Lower spectrum frequency (at -6 dB level) , MHz	3.1	—	
Upper spectrum frequency (at -6 dB level) , MHz	6	—	
Spectrum bandwidth (at -6 dB level) , MHz	2.9	—	
Amplitude of the first maximum of the 1st lobe of aouto-correlation function(ACF)	0.48	—	
Time position of the maximum of the 1st lobe of ACF , μ s	0,41	—	