



Ultrasonic piezoelectric transducer S5096 5.0A60D6CS DATA SHEET

Main technical specifications

Transducer type:	Contact angle beam single
Nominal frequency:	5 MHz
Nominal beam angle:	60 °
Nominal echo pulse duration:	1.1 μ s
Nominal relative band width:	50 %
Nominal sensitivity:	-80 dB
Piezoelement diameter:	6 mm
Nominal piezoelement capacity:	1100 \pm 100 pF
Connector type:	LEMO 00.250
Operation temperature range:	from -20 to +50 °C
Dimensions:	36 \times 18 \times 16 mm
Weight:	20 g

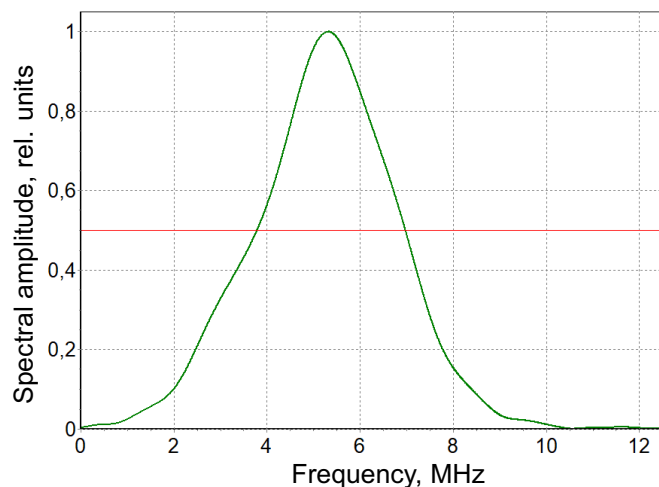
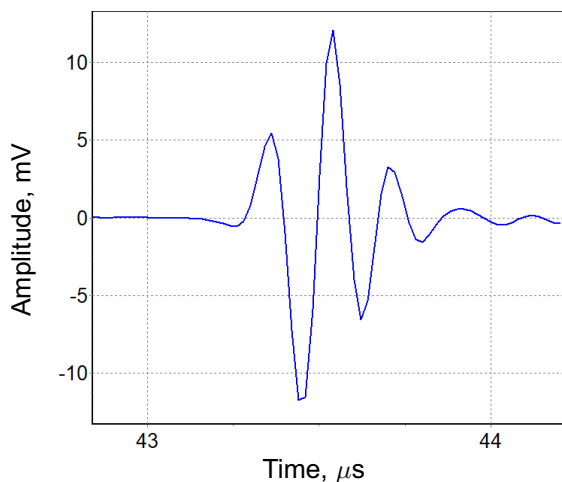


Measurement conditions and used equipment

Excitation:	Rectangular pulse with amplitude 20 V and duration 200 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.
Samples:	1. Calibration block CO-3 from the set of ultrasonic calibration blocks 55724, serial number 190212; 2. Calibration block CO-2 from the set of ultrasonic calibration blocks 55724, serial number 190212; 3. Standard sample CO-1M of steel 20, ultrasonic shear wave velocity 3226 m/s.

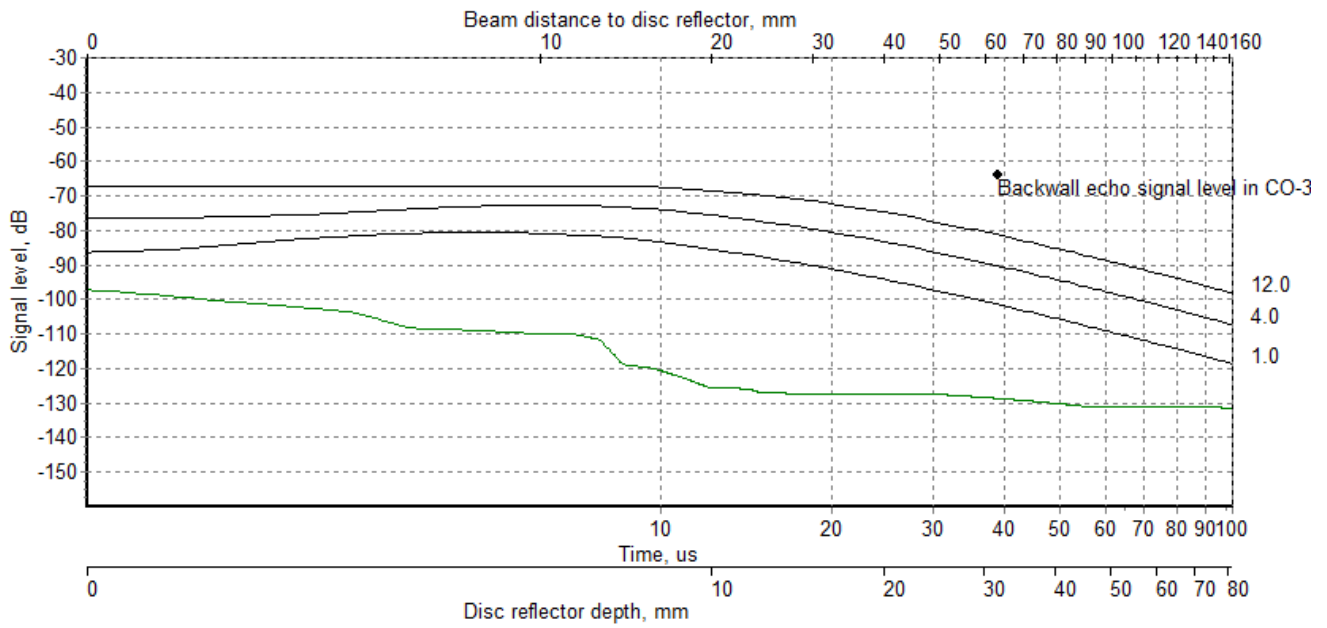
Measurement results

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	5.3	4 – 6	+
Beam angle in steel , °	60	58.5 – 61.5	+
Echo pulse duration (at -20 dB level from maximum) , μs	0.48	<= 1.1	+
Relative spectrum bandwidth (at -6 dB level) , %	60	30 – 70	+
Sensitivity (bottom echo pulse and excitation pulse amplitudes' ratio), dB	-64	>= -80	+
Sensitivity margin above the RNC in the time interval 2 - 50 μs according to DGS for reflector area of 1 mm² , dB	63	>= 40	+
Echo pulse amplitude , mV	12	—	
Transducer offset , mm	9	—	
Delay , μs	4.6	—	
Spectrum maximum frequency , MHz	5.3	—	
Lower spectrum frequency (at -6 dB level) , MHz	3.8	—	
Upper spectrum frequency (at -6 dB level) , MHz	7	—	
Spectrum bandwidth (at -6 dB level) , MHz	3.2	—	