

Ultrasonic piezoelectric transducer D1761 DATA SHEET

Main technical specifications

Transducer type:	contact straight beam double
Nominal frequency:	2.5 MHz
Nominal echo pulse duration:	2 μ s
Nominal relative band width:	50 %
Nominal sensitivity:	-70 dB
Piezoelement diameter:	12 mm
Nominal echo pulse delay in protector:	0.08 μ s
Nominal piezoelement capacity:	1500 \pm 150 pF
Connector type:	LEMO 00.250
Operation temperature range:	from -30 to +50 $^{\circ}$ C
Dimensions:	23 \times 44 \times 15 mm
Weight:	22 g

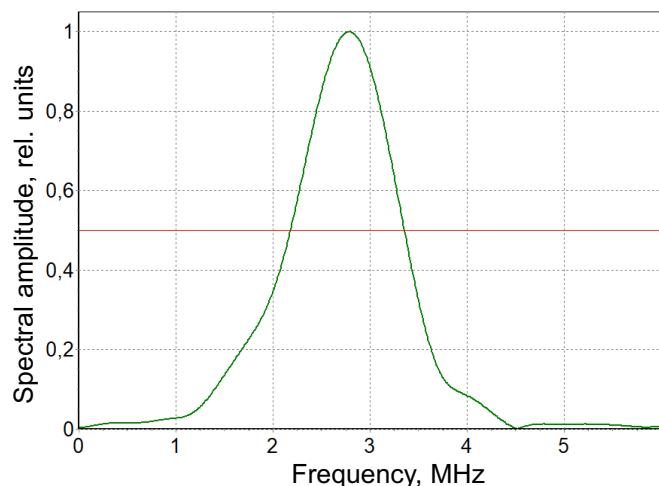
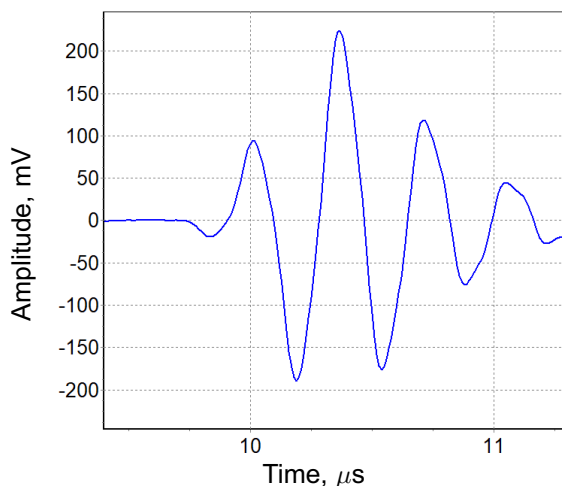


Measurement conditions and used equipment

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:	Double LEMO-LEMO with wave resistance 50 Ω and 1.2 m length.
Calibration blocks:	Standard parallel-sided steel samples, ultrasonic longitudinal wave velocity 5910 m/s, with thickness 100 mm, 50 mm, 30 mm, 20 mm, 10 mm, 2.5 mm, 1.5 mm, 1 mm, 0.7 mm.

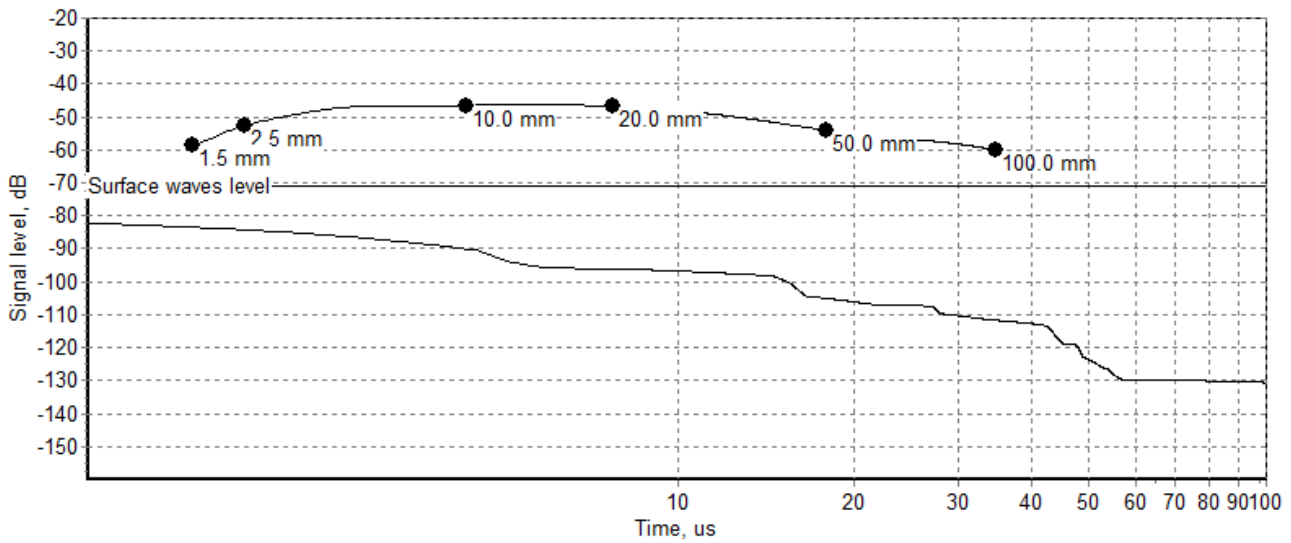
Measurement results

Backwall echo pulse for 20 mm thickness and its spectrum



Reverberation noise characteristics (RNC) for the transducer without acoustic load and the curve of backwall echo signal level for steel samples of different thickness

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



Calculated parameters and acceptance results

Parameter	Value	Tolerance	Result
Work frequency (Mean of border spectrum frequencies) , MHz	2.8	2 – 3	+
Echo pulse duration (at -20 dB level from maximum) , μ s	1.3	\leq 2	+
Relative spectrum bandwidth (at -6 dB level) , %	42	30 – 70	+
Sensitivity (bottom echo pulse and excitation pulse amplitudes' ratio), dB	-39	\geq -70	+
Echo pulse amplitude , mV	217	—	
Delay , μ s	3.6	—	
Spectrum maximum frequency , MHz	2.8	—	
Lower spectrum frequency (at -6 dB level) , MHz	2.2	—	
Upper spectrum frequency (at -6 dB level) , MHz	3.3	—	
Spectrum bandwidth (at -6 dB level) , MHz	1.2	—	