

Ultrasonic transducer S1823

DATASHEET

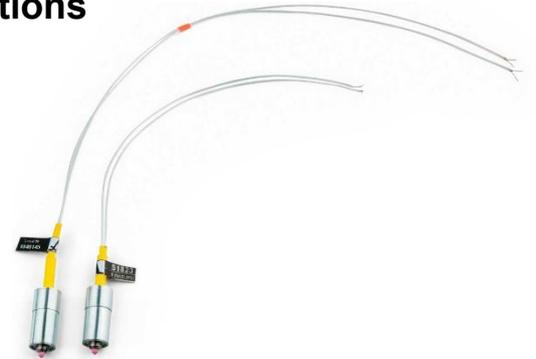
Intended use

Dry point contact ultrasonic transducers S1823 with wave type switching and a are used to perform ultrasonic inspections of various non-metallic materials and products to determine their physical and mechanical properties.

The transducers are regularly used as a transmitter-receiver couple.

Main technical specifications

Type of transducer:	Dry-point-contact
Type of generated wave mode:	Longitudinal or shear-horizontal
Special properties:	Couplant-free operation
Nominal frequency:	120 kHz
Electric capacity of the piezoelectric element:	1.400 ± 200 pF
Maximum excitation pulse voltage, V:	400 V
Connector type:	OSMT or LEMO00
Overall dimensions:	11x22.6 mm
Weight:	14 gr



Measurement conditions and equipment used

Temperature 25°C, rel. humidity 43%

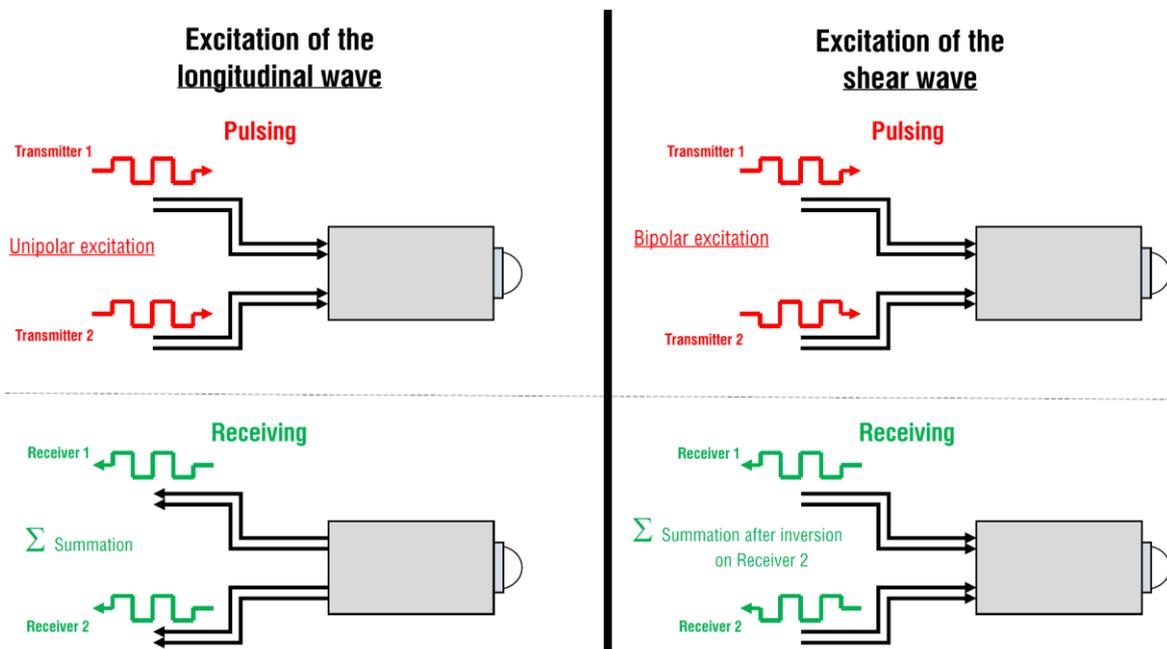
The method of passing of the ultrasonic waves through a tapered sample from fluoroplastic is used. The tested transducer operates in the transmission mode. As an ultrasonic pulse receiver, a broad-band single-crystal piezoelectric transducer with the operating frequency 5 MHz and effective aperture 10 mm is used.

Generator transmitting signal: half-sine video pulse with 200 V amplitude and 2.0 mcs duration time at the -20 dB level from the maximum.

Receiving path parameters: the integrating amplifier AKS310 is used. The amplification is 400 at 100 kHz frequency, the band 2 is 250 kHz and the input impedance is 40 kOhm.

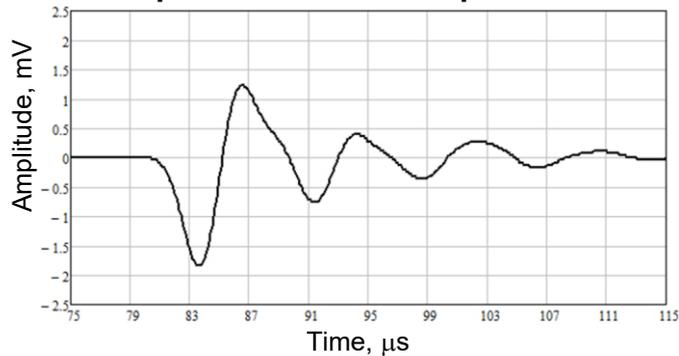
In the longitudinal wave generation and receiving mode, the piezoelectric elements of the tested transducer are connected in parallel and co-phasal. In the shear wave mode, they are connected antiphasal via the transformer with the interrupted ferrite core, the transformation ratio is 1:1 and the inductivity of each coil is 20 mH.

Excitation scheme for longitudinal and shear wave generation

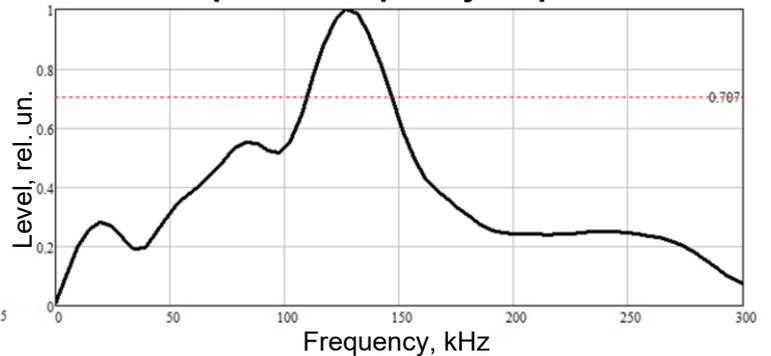


Measured characteristics in the longitudinal wave mode

Shape of the measured pulse



Amplitude frequency response

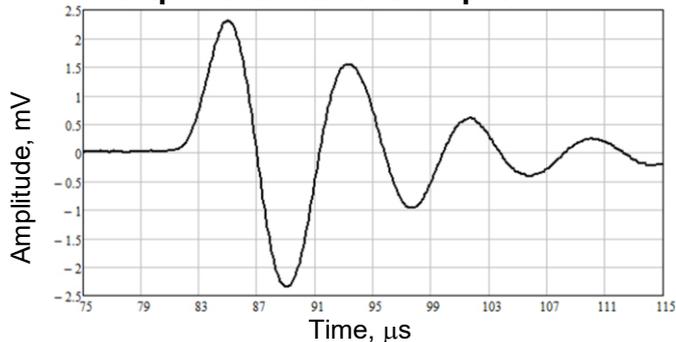


Signal parameters

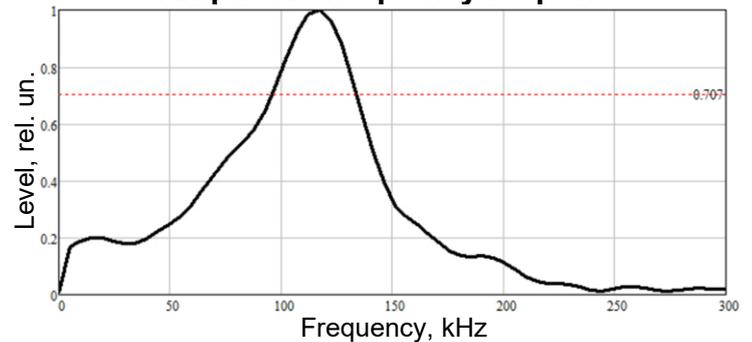
Maximum half-wave amplitude of the pulse, mV	$AL_{max} = 1.9$	Lower band frequency at the -3 dB level, kHz	$FL_1 = 110$
Pulse duration at the -14 dB, msec	$\tau_{L14dB} = 170$	Upper band frequency at the -3 dB level, kHz	$FL_2 = 144$
Maximum spectrum frequency, kHz	$FL_{max} = 127$	Average band frequency at the -3 dB level, kHz	$FL_c = 127$
Relative frequency band at the -3 dB level, %	$PL_{3dB} = 26.9$	Average compound band frequency at the -3 dB level, kHz	$FL_g = 126$

Measured characteristics in the shear wave mode

Shape of the measured pulse



Amplitude frequency response



Signal parameters

Maximum half-wave amplitude of the pulse, mV	$AS_{max} = 2.3$	Lower band frequency at the -3 dB level, kHz	$FS_1 = 95.2$
Pulse duration at the -14 dB, msec	$\tau_{S14dB} = 200$	Upper band frequency at the -3 dB level, kHz	$FS_2 = 134$
Maximum spectrum frequency, kHz	$FS_{max} = 117$	Average band frequency at the -3 dB level, kHz	$FS_c = 115$
Relative frequency band at the -3 dB level, %	$PS_{3dB} = 34$	Average compound band frequency at the -3 dB level, kHz	$FS_g = 113$