

Electromagnetic acoustic transducer S7692

DATA SHEET

MAIN TECHNICAL SPECIFICATION

Transducer type:	straight-beam electromagnetic acoustic transducer with permanent magnet for generating and receiving shear waves with radial polarization
Nominal frequency:	3 MHz $\pm$ 10%
Effective aperture diameter:	25 mm
Inspection range:	0.9 to 100 mm (when using A1270 EMAT)
Lift-off/through-coating thickness:	up to 4 mm (for inspection range up to 50 mm)
Maximal excitation pulse voltage:	600 V
Direct current resistance of signal inductor:	5 $\pm$ 1 Ohm
Operating temperature range:	-30 to +60 °C
Overall dimensions:	40x55 mm
Type of socket:	LEMO ERN.00.250
Weight:	250 g

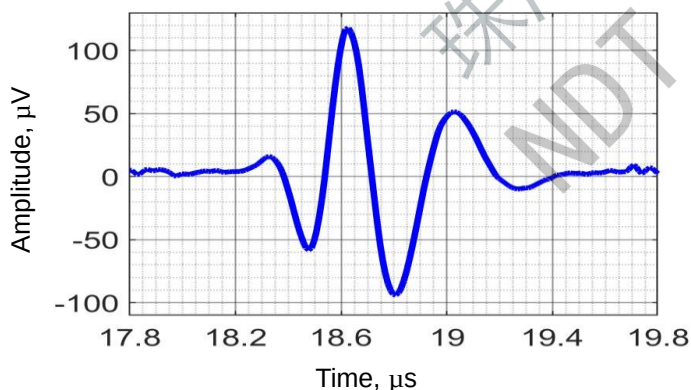


MEASUREMENT CONDITIONS AND EQUIPMENT

Reference excitation signal: unipolar square pulse with amplitude 400 V $\pm$ 40 V, pulse duration 170 $\pm$ 13 ns by 50% of the maximum voltage amplitude.
Reference block: CO-2, steel 20, serial number 006 longitudinal wave velocity 5930 m/s, shear waves velocity 3247 m/s.
Measured pulse: echo pulse from the backwall of reference block, depth 30 mm.
Induced noise: white thermal noise with 2 mV effective amplitude, generated in inductor coil placed adjacent to the protector of the transducer.

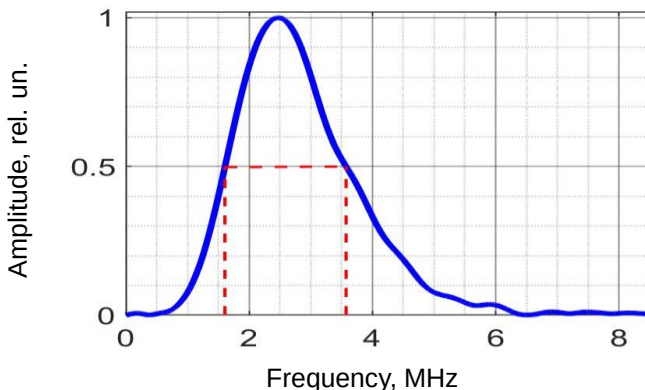
MEASURED CHARACTERISTICS

Shape of the measured echo pulse



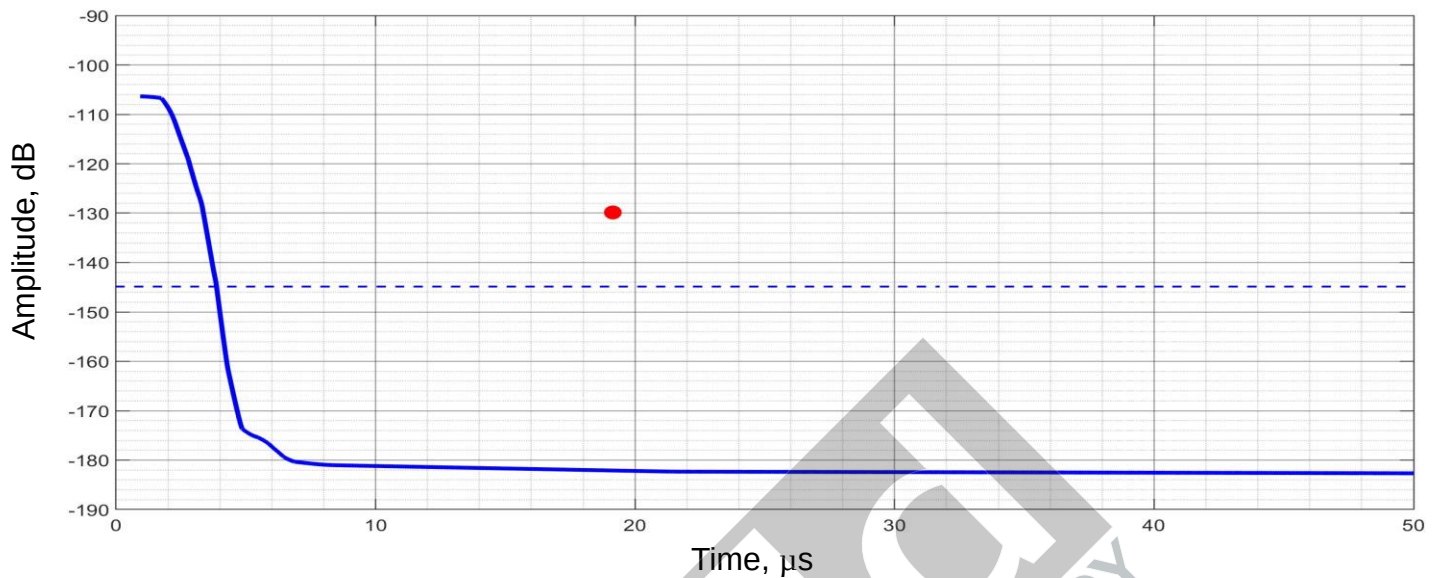
Echo pulse duration:	1.01 μs
Echo pulse amplitude A_e :	114.4 μV
Bandwidth II:	2 MHz
Relative bandwidth B_w :	76%

Amplitude frequency response



Peak frequency f_p :	2.5 MHz
Lower cut-off frequency f_l :	1.7 MHz
Upper cut-off frequency f_u :	3.8 MHz
Centre frequency f_c :	2.8 MHz

Reverberation noise curve (RNC)



Signal-to-noise ratio between the backwall signal in the reference block and transducer self-noise:

52 dB

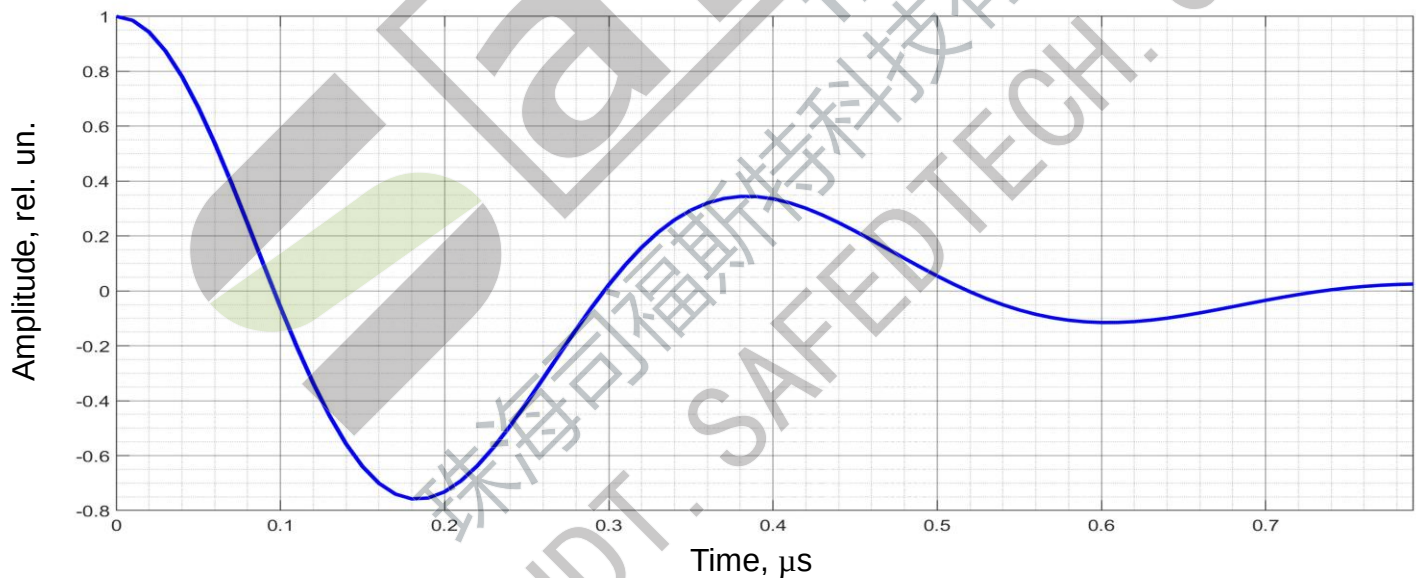
Signal-to-noise ratio between the backwall signal in the reference block and transducer self-noise in presence of electromagnetic noise:

15 dB

RNC level at 5 μs :

-174 dB

Autocorrelation function (ACF)



Amplitude of the first maximum of ACF:

0.34

Time position of the first maximum of ACF:

0.38 μs

Note:

The RNC is normalized by test excitation signal amplitude and given in logarithmic scale. Transducer RNC is indicated by the solid line. The dash line shows the amplitude of induced noise in sum with the RNC. The dot indicates the echo pulse amplitude received on the CO-2 reference block.