

# A Longitudinal P191 Single Ceramic Piezoelectric Transformer : Comparison between 3D Simulations and Experimental Results

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**Abstract :** In present study, three longitudinal piezoelectric transformers with size of  $18.5 \times 3.5 \times 2$  mm<sup>3</sup>,  $26 \times 3 \times 1.5$  mm<sup>3</sup> and  $24 \times 3 \times 2$  mm<sup>3</sup> are fabricated and tested with a soft PZT ( P191) piezoelectric ceramic. The input and the output part vibrate in longitudinal extensional mode. Three configurations of the input and the output voltage are proposed. The electrical measurements results are successfully compared to a three dimensional (3D) Finite Element Analysis using COMSOL Multiphysics software.

**Keywords :** Piezoelectric transformer, 3D simulation, longitudinal vibration, Experimental characterisation