In this work COMSOL is utilized to obtain the Mason lumped parameter model for a piezoelectric transformer (PT) design. The Mason lumped parameters are relevant in the design process of power converters. The magnitude of the impedance is simulated for a specific: interleaved multilayer thickness mode PT. Interleaved indicates that the primary section of the PT has been interleaved into the secondary section. Furthermore the primary section is build with interdigitated electrodes (IDE). The PT design has been prototyped and the measurements results are compared with simulations. Two methods for simplifying the PT model are given in order to decrease the simulation time. This paper aims to aid electrical engineers with less knowledge within the field of mechanics, to be able to simulate a PT design with COMSOL and extract the key electrical parameters.