

ABSTRACT

An object is to enhance the mechanical quality factor (Q_m) of a lead-free piezoelectric ceramic composition. The lead-free piezoelectric ceramic composition contains a main phase containing an alkali niobate/tantalate perovskite oxide, and a subphase containing a spinel compound containing Ti (titanium). The lead-free piezoelectric ceramic composition contains Mn (manganese). The Ti content x is greater than 0 mol% and not greater than 4 mol%. The Ti content x and the Mn content y satisfy the following relational expression (1).

10
$$x^2/y \leq 20.0 \quad \text{expression (1)}$$

Figure 1