

MULTI-LAYER PIEZOELECTRIC SUBSTRATE WITH CONTROLLABLE DELTA TEMPERATURE COEFFICIENT OF FREQUENCY

ABSTRACT

5 An electronic device includes a multi-layer piezoelectric substrate including a carrier
substrate, a layer of piezoelectric material disposed on a front side of the carrier substrate,
and a back-side layer of material disposed on a rear side of the carrier substrate, the back-side
layer of material having a coefficient of thermal expansion different than a coefficient of
thermal expansion of the carrier substrate, and one or more acoustic wave devices disposed
10 on a front side of the multi-layer piezoelectric substrate, the one or more acoustic wave
devices exhibiting a lesser difference in temperature coefficient of frequency at respective
resonant and antiresonant frequencies than in a substantially similar device lacking the back-
side layer of material.

15 Fig. 7