Abstracts

Frequency and Low-Temperature Characteristics of High-Q Dielectric Resonators

Y. Kobayashi, Y. Kabe, Y. Kogami and T. Yamagishi. "Frequency and Low-Temperature Characteristics of High-Q Dielectric Resonators." 1989 MTT-S International Microwave Symposium Digest 89.3 (1989 Vol. III [MWSYM]): 1239-1242.

Accurate calculations of unloaded Q are described for the TE/sub 01delta/, TM/sub 01delta/, EH/sub 11delta, and HE/sub 11delta/ modes in a dielectric rod resonator placed in a conductor cavity. These calculated results are verified experimentally. Mode designation is investigated from a viewpoint of field distribution. In particular, for high-Q TE/sub 01delta/-mode dielectric resonators, the frequency and temperature characteristics are discussed. A typical result measured at 4 GHz shows the unloaded Q values of 45,000 at 20°C and of 140,000 at -180°C with the temperature coefficient of frequency of 1.5 ppm/°C.

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