

利用鈣鈦礦陶瓷材料實現縮小化陶瓷濾波器之研製 = Study and fabrication of miniaturized ceramic bandpass filter using ...

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摘要

本論文以 $(1-x)\text{CaTiO}_3-(x)\text{Sm}(\text{Co}_{1/2}\text{Ti}_{1/2})\text{O}_3$, ($x=0.2, 0.4, 0.6, 0.8$)為研究主題, 並以0.6SCT-0.4CT為基板材料, 燒結溫度為1420°C其介電特性為($\epsilon_r=27.3, Q \times f=1748, f=6\text{ppm}/^\circ\text{C}$), 而其頻率飄移係數介於 $-10\text{ppm}/^\circ\text{C}$ 至 $+10\text{ppm}/^\circ\text{C}$, 與預期相為符合。元件電路設計上, 基板材料則採用氧化鋁板與自製基板, 其元件形式為步階阻抗髮夾式共振器與指叉電容髮夾式共振器所構成四階交錯耦合濾波器, 指叉電容髮夾式共振器(電耦合)與步階阻抗髮夾式共振器(磁耦合)所構成之濾波器其中心頻率為2GHz、反射損失為-26dB、插入損失為-2.32dB。步階阻抗髮夾式共振器(電耦合)與指叉電容髮夾式共振器(磁耦合)所構成之濾波器中心頻率為2GHz、反射損失為-27.84dB、插入損失為-2.07dB。

關鍵詞: 微波陶瓷材料;交錯耦合濾波器

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