Abstracts

DC and RF characteristics of advanced MIM capacitors for MMIC's using ultra-thin remote-PECVD Si/sub 3/N/sub 4/ dielectric layers

Jae-Hak Lee, Dae-Hyun Kim, Yong-Soon Park, Myoung-Kyu Sohn and Kwang-Seok Seo. "DC and RF characteristics of advanced MIM capacitors for MMIC's using ultra-thin remote-PECVD Si/sub 3/N/sub 4/ dielectric layers." 1999 Microwave and Guided Wave Letters 9.9 (Sep. 1999 [MGWL]): 345-347.

We have fabricated advanced metal-insulator-metal (MIM) capacitors with ultra-thin (200 /spl Aring/) remote-PECVD Si/sub 3/N/sub 4/ dielectric layers having excellent electrical properties. The breakdown field strength of MIM capacitors with 200-/spl Aring/-thick Si/sub 3/N/sub 4/ was larger than 3.5 MV/cm, which indicates the excellent quality of the deposited Si/sub 3/N/sub 4/ film. The main capacitance per unit area extracted by radio frequency (RF) measurements was as high as 2900 pF/mm/sup 2/. Tenfold reduction of MIM capacitor size was successfully performed compared with conventional MIM capacitor with 2000-/spl Aring/ PECVD Si/sub 3/N/sub 4/ dielectric layer. Despite ultra-thin dielectric films of 200-/spl Aring/ thickness, the fabricated MIM capacitors showed good RF performance and high yield.

❑ Return to main document.