

課題番号 : F-14-IT-0018
 利用形態 : 共同研究
 利用課題名 (日本語) :
 Program Title (English) : T-gate EBL for GaAs HEMT MMIC on 4" wafers
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1. 概要 (Summary)

The objective of this research is to develop low noise GaAs mHEMT MMIC amplifiers for automotive applications. The 90-nm gate E-beam lithography (EBL) has been developed on 4" wafers with good line width control and good alignment.

2. 実験 (Experimental)

Two 4" mechanical wafers were used to develop the e-beam lithography processes, including resist coating, e-beam exposure and resist development conditions. Once developed, the process was applied to device epi wafers. The fine gate exposures were accomplished by e-beam lithography (JBX-6300 at Tokyo Tech and electron-beam lithography software).

3. 結果と考察 (Results and Discussion)

The thickness of various resist material type is shown in Fig. 1.

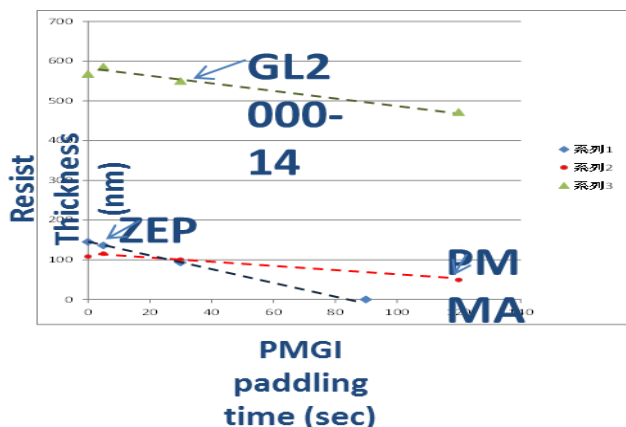


Fig.1 Thickness dependence on paddling time

The optimization of resist thickness, e-beam exposure dosage, and resist development time produces a good 90-nm T-gate resist profile as shown in Fig. 2. The results have been applied to device epi wafers.

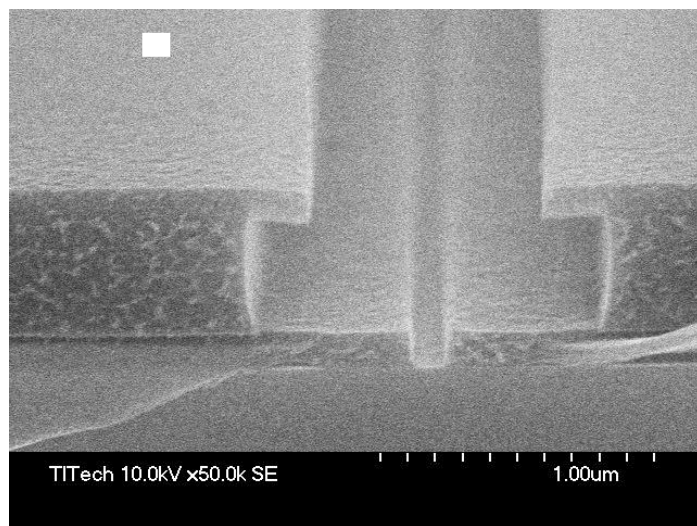


Fig. 2 Cross-section of tri-layer T-gate resist profile

4. その他・特記事項 (Others)

共同研究者等 (Coauthor) :
 Y. Miyamoto, Tokyo Tech
 Szu-Ping Tsai, NCTU

5. 論文・学会発表 (Publication/Presentation)

None

6. 関連特許 (Patent)

None