課題番号　　:F-13-IT-0029
利用形態　　:共同研究
利用課題名（日本語）　　:パワーアンプ応用の為の $In_{0.4}Ga_{0.6}As$ メタモルフィック HEMT の研究
Program Title (English)　　:Study of $In_{0.4}Ga_{0.6}As$ Metamorphic HEMTs for Power Amplifier Applications
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1. 概要（Summary）

The purpose of this research is to develop high frequency HEMT with good breakdown voltage for both power amplifier applications. Optimized channel indium content, S-D spacing, gate-recess depth, and gate sinking was used to achieve V_{BD} over 6.5 V.

2. 実験（Experimental）

The 0.09x20um^2 devices with $In_{0.4}Ga_{0.6}As$ channel and L_{SD} of 3um were fabricated following conventional HEMT process; fine gates exposures were obtained by e-beam lithography (JBX-6300 at Tokyo Tech).

3. 結果と考察（Results and Discussion）

The device exhibits I_{dss} =141 mA/mm and peak g_m = 392 mS/mm at V_{DS} = 0.5 V. The device also exhibits high V_{BD} of 6.58 V. This DC characterization shows that even the devices possess high V_{BD}, the degraded g_m keep it away from low noise amplifier applications.

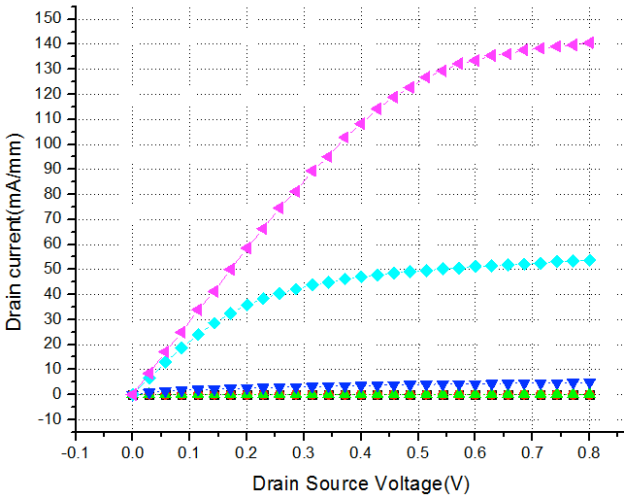

Fig. 1 Output characteristics.

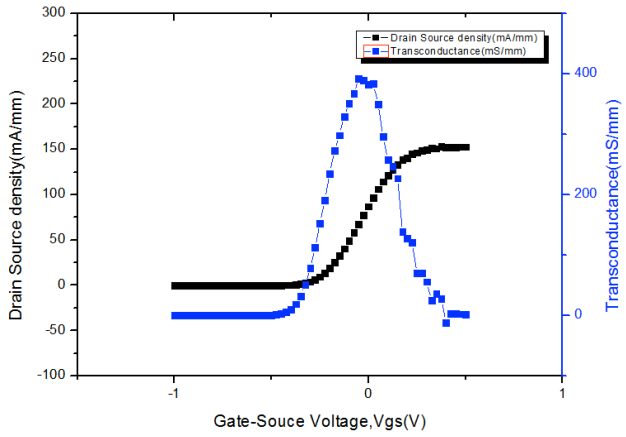

Fig. 2 Transfer characteristics.

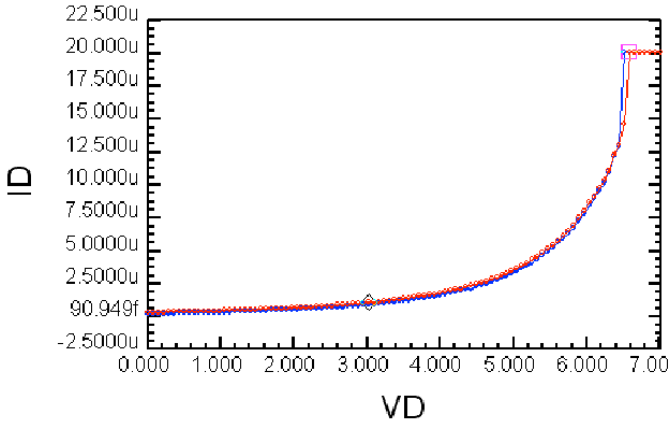

Fig. 3 Breakdown behavior.

4. その他・特記事項（Others）

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5. 論文・学会発表（Publication/Presentation）

None

6. 関連特許（Patent）

None