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(54) **FERROELECTRIC FILM PROPERTY MEASURING DEVICE, MEASURING METHOD THEREFOR AND MEASURING METHOD FOR SEMICONDUCTOR MEMORY UNITS**

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(57) **ABSTRACT**

A ferroelectric film measuring instrument and measuring method of the same which are able to measure the transient current during the polarization inversion of a ferroelectric capacitor having a small capacity with high precision. A pulse generator **10** generates a pulse signal and applies it through a transmission line and a tip **50** to an upper electrode **62** of a ferroelectric capacitor. The output current i_{FE} from a lower electrode **64** at the time of application of the pulse is converted to a voltage V_o by a resistor **30**. This is amplified by a preamplifier **40** and output. The current i_{FE} is measured by the output voltage V_o . By applying pulses having positive and negative amplitudes twice each in succession to the upper electrode **62**, measuring the output currents when the pulses are applied, and finding the difference of the currents according to the first and second pulses, it is possible to eliminate the influence of the charge current of the parasitic capacity of the transmission line, to extract only the polarization current due to the polarization inversion of the ferroelectric, and to measure the characteristics of the ferroelectric film with a high precision.

16 Claims, 5 Drawing Sheets

