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Characterization of behaviors using electric pulse for phase switching operation of Ge₂Sb₂Te₅ material

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Phase change memory (PCM) has attracted much attention as one of the most promising candidates for next-generation nonvolatile memory. In that regard, the purposes of the study are to propose reference of effective pulse parameter to control phase switching operation and to invest the effect of nitrogen doped in PCM materials for improved cycling stability and economic energy consumption. Switching operation of PCM is affected by electric pulse parameter and as shown in figure.1 are composed to RT(rising time), ST(setting time), FT(falling time) and the effect of these parameter was precisely investigated. Transmission electron microscope (TEM) was used to confirm fine structure and retention cycle test was conducted to confirm reliability. Finally improvement reliability and economic power consumption in quantitatively are obtainable by optimum pulse parameter and nitrogen doping in GST material. these study is related to the engineering background of other semiconductor industries and it have confirmed to possibility further applications

Keywords: PCM(phase change memory), GST(Ge₂Sb₂Te₅)

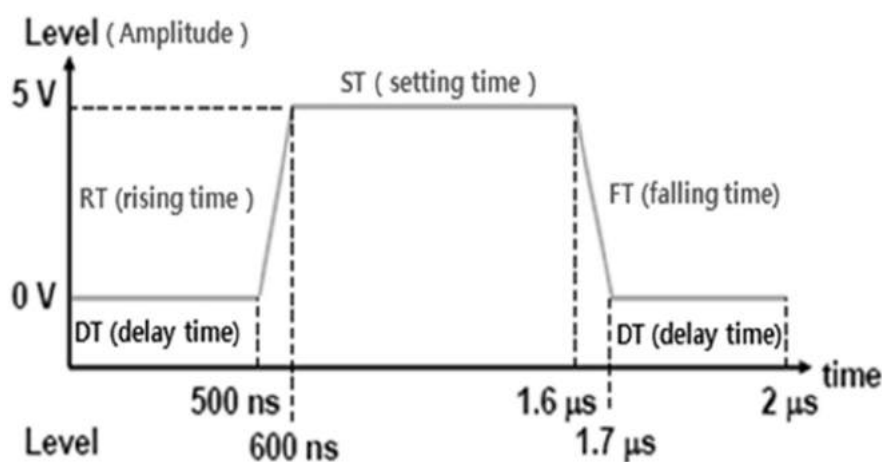


Figure. 1 The major parameter of pulse