

## 33-20 Development of an ultra-precision positioner and its applications

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Along with the miniaturization of LSIs, many researches have been carried out for the sub- $0.1\ \mu\text{m}$  ULSI generation. For the achievement of this, not only the electron beam control for the nano-scale patterning, but also the development of a totally controlled system including an ultra-precision stage is significant. This study reports the application of the ultra-precision positioner to a high velocity stage for the sub- $0.1\ \mu\text{m}$  range where conventional positioners couldn't reach.

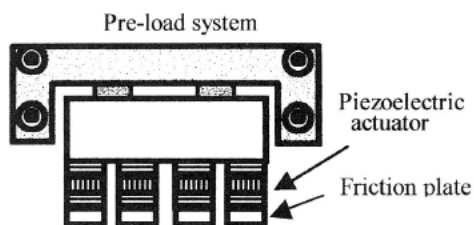


Fig.1 Illustration of the ultra-precision positioner

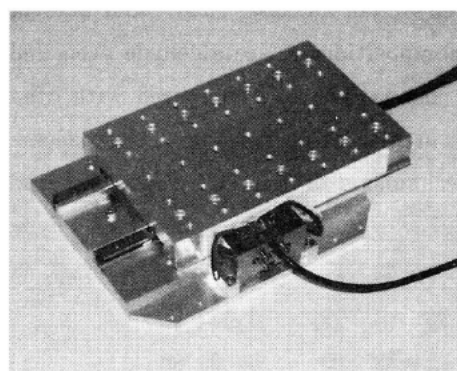


Fig.2 Ultra-precision stage

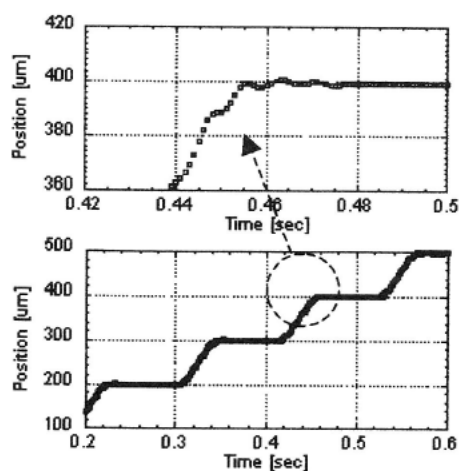


Fig.3  $100\ \mu\text{m}$  step & repeat response