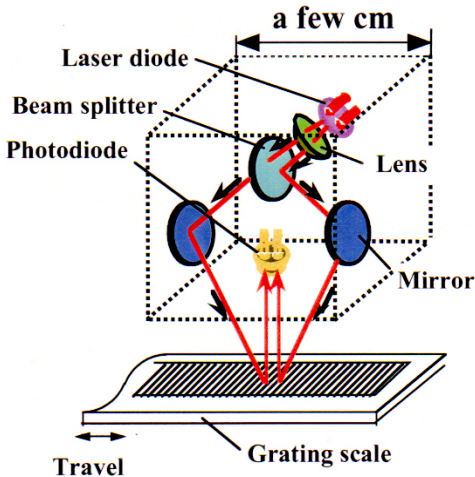
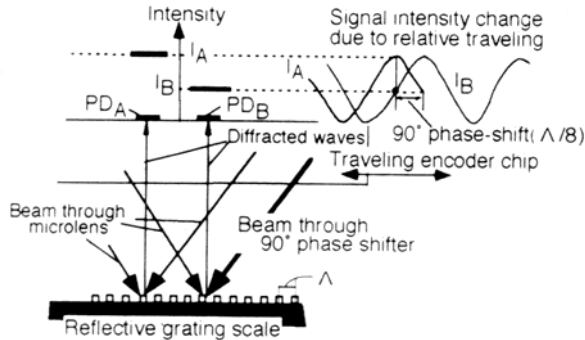


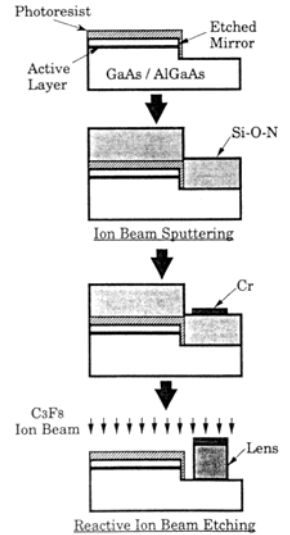
# Optical Encoder (NTT)



Principle of conventional optical encoder

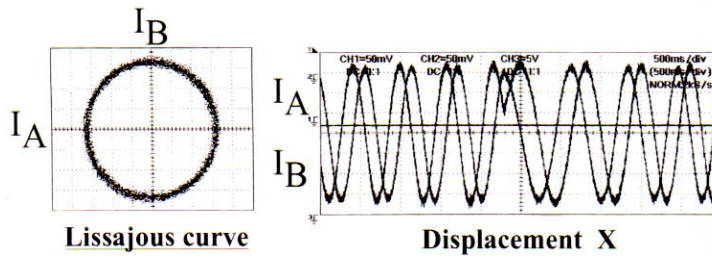


Principle of the developed optical encoder



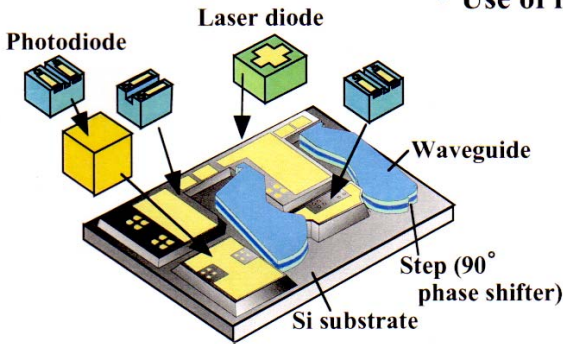
Fabrication of etched mirror

One revolution of Lissajous curve corresponds to displacement of 0.8 or 1.6  $\mu\text{m}$ .

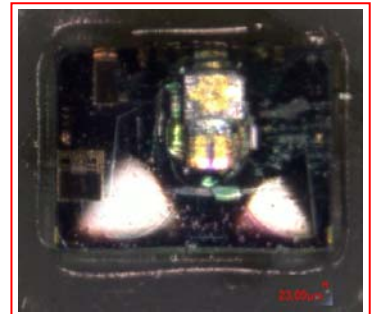
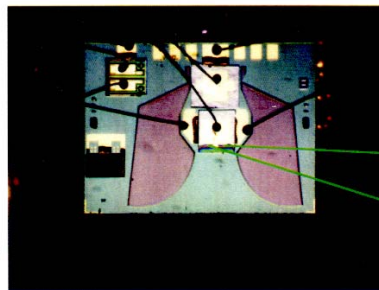


Lissajous curve  
Displacement X  
Measurement of displacement

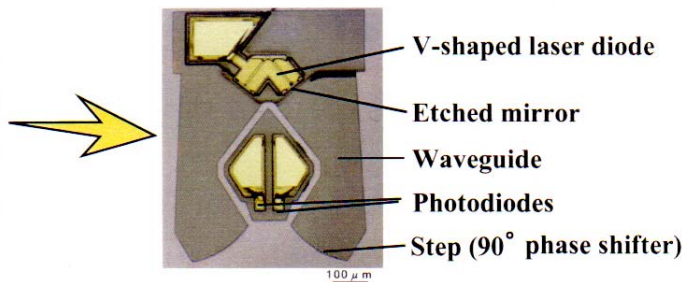
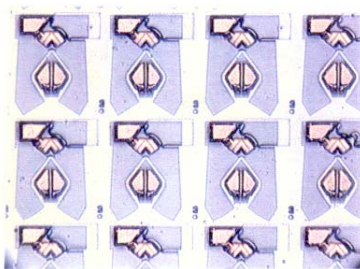
- Accurate bonding on silicon substrate
- Use of long-life optical elements (LD, PD)



Hybrid method (assembly)



- 4000 chips fabricated using batch process on 2-inch GaAs substrate



Monolithic method

