GLIMMERGLASS

Modular MEMS for an 80 x 80 Optical Cross-Connect Switch

Windsor E. Owens, Andres Fernandez, Bryan P. Staker, and William C. Banyai

Applications

Government / Defense
Establish connections between single mode fibers optically, connecting analog signals transparently, without conversion or regeneration.

Optical Networks
Achieve affordable 10GigE throughputs today with Glimmerglass photonic switches, and get ready for 40Gig and more tomorrow
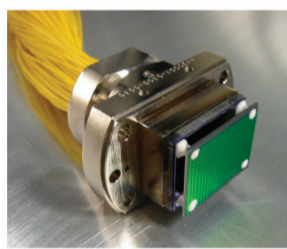
Test & Measurement
Ship better products and services - perform deeper, more thorough tests in less time with automated fiber management
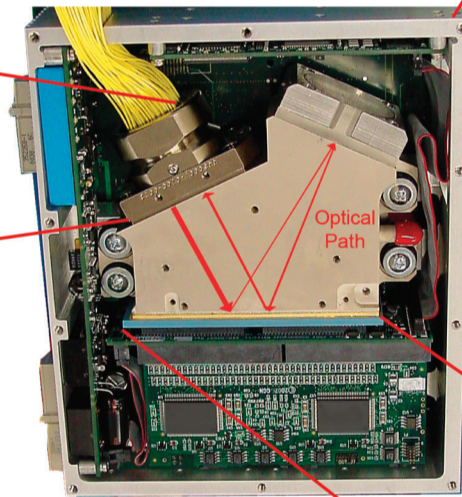
Examples of customers that have benefited from using Glimmerglass' transparent optical switch

GLIMMERGLASS
Brilliance™ Microphotonics Technology

Optical Path

Dimensions: 11.9 cm x 7.6 cm x 3.8 cm

Glimmerglass System 300 80x80 Optical Switch with an integrated fiber patch panel

Glimmerglass offers a range of reliable optical switches based on its Brilliance technology. 16x16 to 160x160
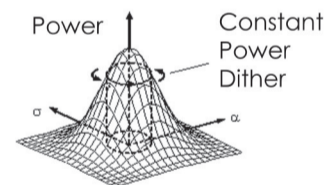
Fiber and micro-lens arrays
Fiber array key factor: fiber pointing
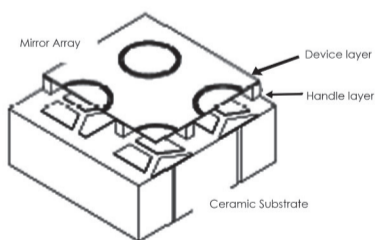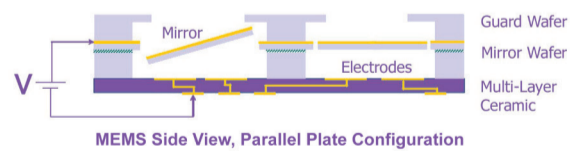Lens array key factor: focal length uniformity

Closed Loop Servo Design

Power   Constant Power Dither
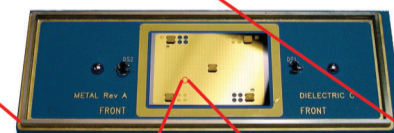
Constant-Power Dithering for Low Ripple and Loss Equalization

Mirror Array
Device layer
Handle layer
Ceramic Substrate
Cutaway view of a mirror array mounted to top of ceramic

Mirror
Electrodes
Guard Wafer
Mirror Wafer
Multi-Layer Ceramic
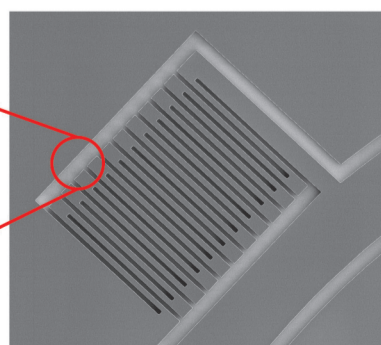V
MEMS Side View, Parallel Plate Configuration

METAL Rev. A FRONT   DIELECTRIC FRONT

MEMS mirror array mounted on ceramic
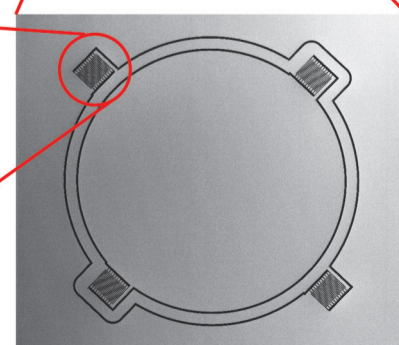Key factor: Actuation routing density
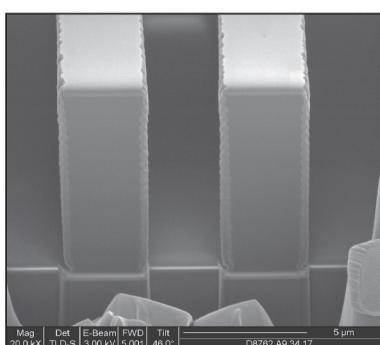
MEMS spring-hinge detail

MEMS spring-hinge
Key factor: hinge design has no rubbing surfaces

MEMS mirror, 1 mm diameter double gimbal design
Key factor: flatness, radius of curvature