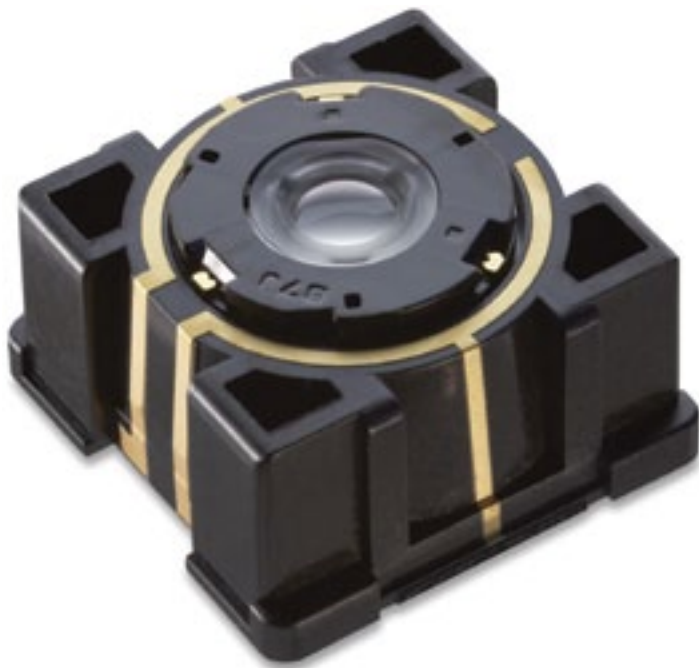


OptiML™ MEMS Auto-Focus Actuator



Auto-focus corrects for variation in the distance to the object as well as variations in the lens with temperature. As the object distance changes or the temperature of the optics changes, the image can become blurry and lose its sharpness. Auto-focus recovers the sharpness by adjusting the position of the lenses.

DigitalOptics Corporation™ (DOC) OptiML auto-focus (AF) actuator uses MEMS technology to precisely position and move a lens inside the camera optics to focus. The AF actuator is based on actuators that utilize electrostatic forces to move a lens with optimal positioning precision and repeatability. The mechanical interface to the AF actuator allows precise alignment of the lens barrel to the moving lens. The electrical interface is simply two pins that are appropriately sized to enable contact using a variety of methods.



Camera module integrated with MEMS AF device

Features

- Fits compact camera model design
 - 6.5 x 6.5 x <5mm
 - Centered optics
- Resolution: ≥ 5 MPix
- Low operating voltage
 - 2.8 to 4.5 V range
- Low power consumption (actuator only)
 - Nominal operating power: 0.2 mW
 - Peak power: 0.45 mW
 - Requires no power at infinity focus
- Superior lens positioning performance
 - Positioning repeatability: $\pm 1.5\mu\text{m}$
 - Hysteresis performance: $\pm 3\mu\text{m}$
- Proprietary MEMS actuator design
- Long life: 1,000,000 cycles or more
- Fast settling time: $\leq 15\text{ms}$
- High shock tolerance: 10,000 g's or more
- Temperature range: -20° to 75°C

The actuator is integrated inside the camera lens barrel, which reduces the overall height of the camera module size. The OptiML Auto-Focus is one of the world's smallest actuators with many advantages over the current voice coil motor (VCM) technology.

Advantages

- Single lens motion inside of lens barrel
 - Enables lowest 'z' height
 - Larger TTL for optical design
 - Faster AF due to reduced range of motion and lower mass
- Lens barrel as housing
 - Enables meeting x-y size specification
 - Reduces number of parts
 - Improves alignment of optics to imager
 - Reduces particles on imager window
- MEMS electrostatic actuation integrated with MEMS motion control
 - Improves lens alignment and movement precision
 - Reduces size
 - Reduces power consumption
 - Reduces assembly complexity and cost
 - Integrated capacitive position sensing available

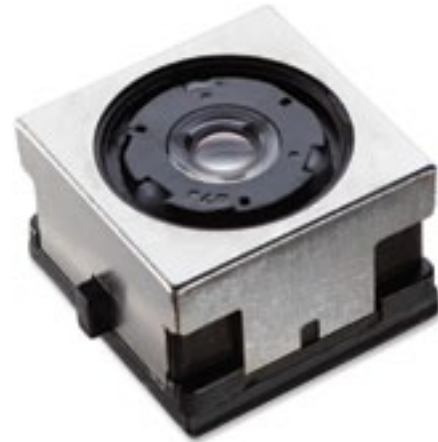
The MEMS actuator technology can be used in smart phones, digital still cameras and other electronic size constrained devices.



MEMS AutoFocus Module

Specifications

Size	1.05 x 5.52mm
Optimal Format	1/4" or 1/3"
Aperature Diameter	2.36mm



Camera module integrated with MEMS AF device

Contact a DOC sales representative for more information.

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