



## NEWS RELEASE

**FOR IMMEDIATE RELEASE**

**February 2011**

**Contact: Eric Garcia**

**[ericgarcia@merictech.com](mailto:ericgarcia@merictech.com)**

**+1 (408)773-2767**

### **OPTICAL MEMS SCANNING MICROMIRRORS MUCH SMALLER, MUCH FASTER, MUCH MORE ROBUST AND MUCH LESS POWER CONSUMING THAN CONVENTIONAL OPTICAL SCANNING SYSTEMS.**

Lemoptix silicon-based, magnetically actuated MEMS micromirror technologies are best in class replacement solutions to traditional galvanometer and rotating mirrors, bringing outstanding performance and space reduction.

Responding to industry requests to significantly reduce size, power consumption and increased performance of micromirror devices, Lemoptix has developed a bottom-up approach by using semi-conductor-like equipment to build micromirrors with actuation based on magnetic and heat-dissipating principles instead of gears. Lemoptix laser scanning micromirrors can be used in numerous optical applications such as 3D measurement, barcode scanners, endoscopy/confocal microscopy, optical spectrometers & medical imaging, scanners, printers, head-up displays, projectors etc....

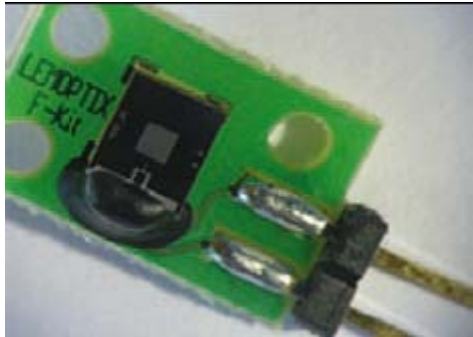
Lemoptix, a Swiss based company, with a team loaded with expertise in development, microfabrication and industrialization of Micro-Electro-Mechanical System (MEMS) scanning micromirrors has taken MEMS scanning mirror technology to the next level. The company has developed a unique expertise in the areas of the mechanical and electrical design of MEMS scanning mirrors, magnetic actuation optimization and mirror optical properties. The result of this is a highly innovative product that features:

- Extremely large optical scanning angle above 40° in static (step by step, DC) mirrors
- Large optical scanning angle above 70° in resonant mirrors
- Integrated mirror position sensor, to sense the mirror position at any time (patented)
- Ultra-precise MEMS driving and sensing electronics
- Low voltage, below 5V
- Extremely low power consumption down to  $\mu$ W
- Large reflective surface of > 2.5mm x 2.5mm
- High shock resistance
- No hysteresis behavior
- Insensitive to ESD (Electro Static Discharge) and radiation

All of these features are essential requirements for industrial and consumer applications alike. Lemoptix micromirrors, made of single-crystal silicon demonstrate very high robustness and long-term stability. The surface reflectivity is enhanced by a thin coating of metal material. The highly flexible fabrication process means that a large variety of materials can be coated, thereby catering to light sources of different wavelengths.

### Applications:

Lemoptix LSCAN laser scanning micromirrors are integrated by OEM customers into a number of immediately available applications like optical spectrometers, laser range finders and microscopes, enhancing performances and enabling the development of smaller, higher resolution and lower cost products. Lemoptix' resonant and static scanning micromirrors are designed to rotate and deflect light and can be used in a myriad of optical applications due to the unique combination of performance and size.



*Chip on 3mm x 10mm standard PCB board  
(including magnets) Pin Package*

### Applications include:

- **3D measurement/ scanning:** (where for longer range scanning only lasers can be used) the unique and extremely large optical angle in static mirrors is a must.
- **Barcode scanners:** MEMS scanning micromirrors are ideal for long range laser barcodes and small scanning module heads.
- **Endoscopy/confocal microscopy:** Tiny scanning micromirrors can be used in endoscope heads or in confocal microscopes.
- **Optical spectrometers:** Lemoptix technology is suitable for low cost, high sensitivity and ultra-large spectrum optical spectrometers.
- **Medical imaging:** Suitable for high speed high resolution medical imaging.

### Lemoptix MEMS scanning micromirror technology

With more than 10 years of development in the field of MEMS micromirrors, Lemoptix has a unique track record of several hundred different MEMS micromirrors designed and fabricated. The company has developed very efficient tools to achieve rapid prototyping of MEMS from the design to the fabrication. Average timing from the development of new MEMS, including design fabrication, assembly and testing is less than 3 months.

Lemoptix uses very advanced analytical and FEM (Finite Element Modeling) tools to do the complete MEMS design. The result is a product based on the following technology:

### Magnetic actuation principle and characteristics

MEMS mirror actuation does not use gearing effects or any other mechanical contact-based effects. It uses an innovative fatigue-free magnetic actuation: an electric current flowing on the mirror itself, under a magnetic field, induces mechanical displacement, advantageously used for optical scanning.



*Chip on 3mm x 10mm standard PCB board  
(including magnets)*



*3 D Scanning System*



*MEMS Mirror Chip Actual Size*

**Resonant actuation:** specifically designed MEMS mirrors to be actuated at their mechanical resonant frequency. The maximum intrinsic silicon material gain is used to obtain the widest possible scanning angle at an ultra-low power consumption level.

**Static actuation:** specifically designed MEMS mirrors to be actuated in static operation, meaning that the mirror is titled and the position is held stable. It is here that the expertise of Lemoptix really comes to the fore by achieving a best in class optical scanning angle of more than 40° coupled with remarkably low power consumption and input voltage. The scanning angle being highly linear to the applied signal level.

#### **Building blocks for future vision**

With the core technology of the MEMS Mirrors as a base and using the same expertise that created them, Lemoptix has developed key IP and expertise in design and manufacture of microprojectors that will ultimately fit inside a mobile phone bringing a new dimension to how users experience mobile phones and other mobile internet devices. Other applications include Head Up Displays in cars, Helmet/Head mounted displays, Retail displays etc.

#### **The projector includes:**

- Complete projection optical module integrating MEMS mirror, laser light sources and optical components
- Complete analog and digital electronics to drive and sense in closed-loop operation the MEMS mirror



- Standard video interface to easily connect the microprojector in embedded or external devices Lemoptix microprojector is a plug-and-play solution for demanding applications that require high brightness, low power consumption and ultra-miniaturization.

For more information please contact local Lemoptix Agent  
Eric Garcia +1 (408) 773-2767, Email: [sales@merictech.com](mailto:sales@merictech.com)  
<http://www.merictech.com/micromirrors.htm>