MEMS mirror introduction

YITOA MICRO TECHNOLOGY CORPORATION

Sep-10-2025

Overview

COMPANY PROFILE

Capital	1.0 Billion Yen
Sales	9.3 Billion Yen (CY24)
Business content	Development, Engineering, Manufacturing and sales of semiconductors and MEMS.
Employee	246 (2025.4.1)
President	Keisuke Motosugi
Location	465, Osato-cho, Kofu-shi, Yamanashi

YITOA MICRO TECHNOLOGY CORPORATION

HISTORY

1977.10	**Pioneer corporation** established its semiconductor research Lab.
1981.04	Started development of semiconductor for its own product.
1985.10	Pioneer corporation transferred of semiconductor operations to "**Pioneer video corporation**", and started sales products to outside of pioneer group. (Mainly audio and video IC products)
1994.01	Obtained ISO 9001 certification.
1998.07	Obtained ISO 14001 certification.
2001.01	Started operation of 6 inch wafer process line (Bipolar).
2003.04	Established "**Pioneer Micro Technology corporation**".
2020.10	Changed the company name to "**YITOA Micro Technology Corporation**"

Development History

Started R&D study — 2003

Began Production — 2004

- Introduction of MEMS simulator

2005

- Bulk MEMS motion sensor prototype.
- Introduction of Wafer-level bonding equipment and double-sided aligner.

2006

- Introduction of gyro-measuring device

2007

- introduction of DRIE (wafer deep bore etching equipment)

2008

- Prototype surface-type gyro-sensor

2009

- Sensor Conditioner IC + Prototype sensor with integrated gyro sensor

Started development of MEMS Mirror for LiDAR — 2011

- Started MEMS R&D and manufacturing
- **Began development of MEMS mirror for HUD**

Began Mass Production — 2019

- Began designing and production of MEMS Mirror for LiDAR

Started development of New MEMS Mirror — 2020

- Mass Production shipment

2022

- Sample Shipment in July 2022

Pioneer

2020: 3D LiDAR 1st Model
- 4mm MEMS Mirror with APD
- Detecting Range : 40m Human
  70m Automobile

Pioneer

2021: 3D LiDAR 1st Model Medium Range
- 4mm MEMS Mirror with APD
- Detecting Range : 80m Human
  120m Automobile

2019: LiDAR for Marine vessel

東京海洋大学

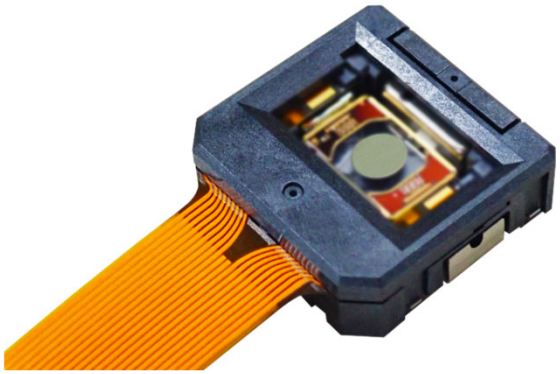
MEMS mirror lineup

Item	CG0006AR/BR	CG0007AR	CG0008AR	CG0009AR
Product Photo				**(TBU)**
mirror size	Φ3.6*4.0mm	Φ1.0*1.1mm	Φ8.0*8.0mm	Φ1.6*1.6mm
PKG size	19.5×19.0×7.0 mm^3	12.2×12.3×6.28 mm^3	24.8×23.14×7.58 mm^3	12.9×13.47×6.28 mm^3
1-axis [Operation mode]	Linear	Linear	Linear	Linear
1-axis [Drive frequency]	1~100Hz(20Hz)	1~100Hz(60Hz)	1~70Hz(10Hz)	1~70Hz(10Hz)
Optical FOV	±15°	±13°	±12.5°	±15°
2-axis [Operation mode]	Resonant	Resonant	Resonant	Resonant
2-axis [Resonance frequency]	1100Hz	27kHz	810Hz	20kHz
Optical FOV	±30°	±22°	±15°	±20°
Operating voltage	3V	3V	3V	3V
Power consumption	62mW	225mW	110mW	230mW
Target wavelength	905nm-1550nm	400nm-700nm	905nm-1550nm	400nm-700nm
Reflectivity	94.6%	90.0%	98.0%	90.0%
Status	2025/7 MP予定	Samples provided	Samples provided	Samples provided
Purpose	3D-LiDAR（Middle）	HUD,Pico-projector	3D-LiDAR（Long）	HUD,Pico-projector

Feature of MEMS mirror

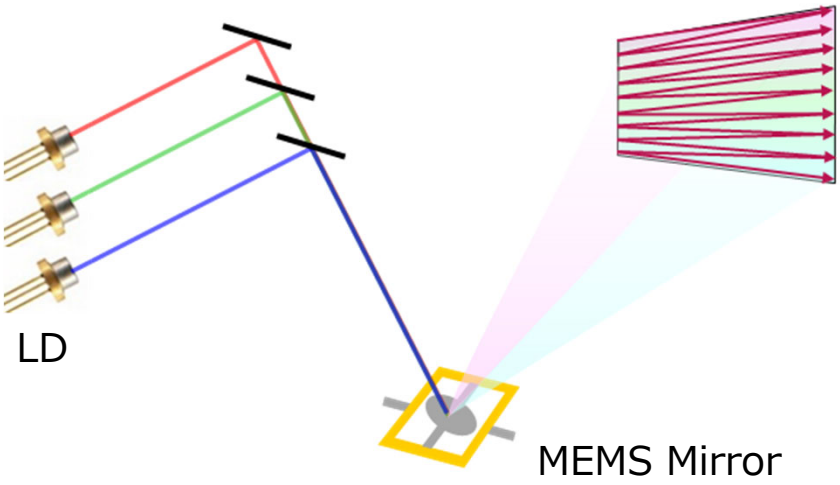
- Feature
  - Electromagnetic type
  - Compact 2-axis integrated
  - Horizontal : Resonance drive
    Vertical : Non-resonant drive (raster scan)
  - Wide Field of View
  - **Built-in angle sensor (piezo sensor)**
  - **Low crosstalk (between 2 axis drive signals)**
  - Low drive voltage, low power consumption
  - Flat mirror surface
  - **Automotive reliability**
  - **Long life and high reliability**
  - ES2 Samples of the final shape will be available in late 2024 or early 2025.

4mmϕ (CG0006AR)

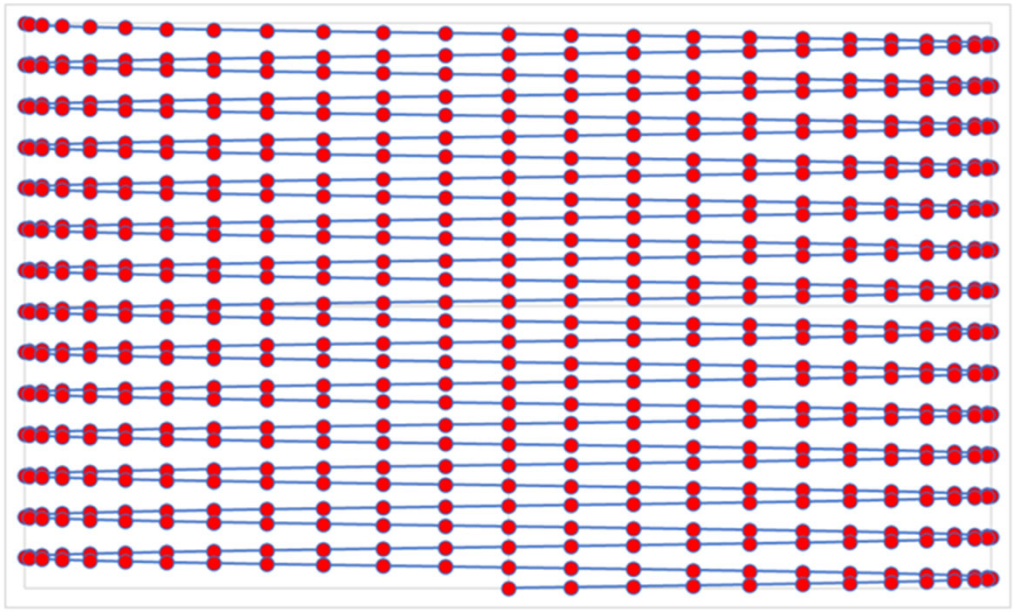


Raster scan image

Our MEMS mirrors are compact, long-lasting, and have low crosstalk, making them ideal for HUD.



※Raster scan image



Applications of MEMS mirror

<Pico-Projector>

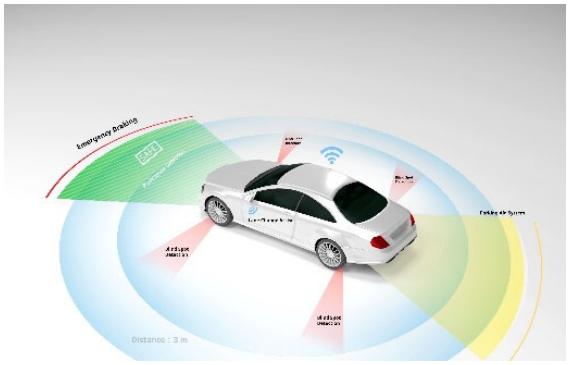
The use of laser MEMS technology enables the realization of ultra-compact, focus-free projectors.

<Head Up Display>

Projects navigation information, speed, and other image information onto the front window of the car.

<3D LiDAR>

LiDAR is a ranging sensor that uses laser light.
It measures the distance to objects around a vehicle as 3D data.



Product roadmap

	2024				2025				2026				2027			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
LiDAR Mid range φ4mm								MP								
LiDAR Mid+ range Φ4mm (Au)											MP					
LiDAR Long range φ8mm						ES2						MP				
Projector (DGP、HUD) φ1mm							ES2						MP			
Projector (DGP、HUD) φ1.6 mm