Scanning MEMS Mirror – 0.6, 1.5, 2.0 mm Diameter

(Single and Dual-Axis, Up To 7 Degree, High Precision, High Repeatability)

DATASHEET

BUY NOW

The SMEM series of scanning two axis (tip-tilt) and one axis tilt MEMS mirror provide 2D and 1D optical beam-steering functions. The SMEMS features faster scanning, very low power consumption, high precision, and high repeatability. The MEMS is made of single-crystal silicon with flat and smooth mirror coated with a highly refractive gold thin film. The SMEM is hermetically packaged with an optical window designed for 25 years continuously operation. Driving PCB is also offered for convenient evaluations. For volume application contact sales

Features

- Compact
- High Reliability
- Low Power Consumption
- High Repeatability

Applications

- Optical Devices
- Sensors
- Instrumentation

Specifications

Parameter		Min	Typical	Max	Unit
Mirror Diameter		0.6	1.5	2	mm
Operation Wavelength		450		2600	nm
Reflectivity (@1260-1660nm)		95		96	%
Tilt Angle	0.6mm@60V	± 2.2	±2.5	± 2.7	degree
	1.5mm@67V	±6.8	±7	±7.6	
	2.0mm@200V	±5.9	±6	±6.2	
Damage Voltage	0.6mm			70	V
	1.5mm			70	
	2mm X-axis			220	
	2mm Y-axis			100	
Resonance Frequency	0.6mm		600		Hz
	1.5mm		750		
	2mm X-axis		500		
	2mm Y-axis		1000		
Response Time			5	10	ms
Optical Power Handling			500		mW
Durability		10^{10}			Cycle
Device Resistance		2			MOhm
Power Consumption				0.5	mW
Operating Temperature		-40		75	°C
Storage Temperature		-40		85	°C
Reliability		Telcordia 1209 and 1221			
Package Leak Rate		$<10^{-9}$			$Pa.m^3/s$

Rev 04/19/24

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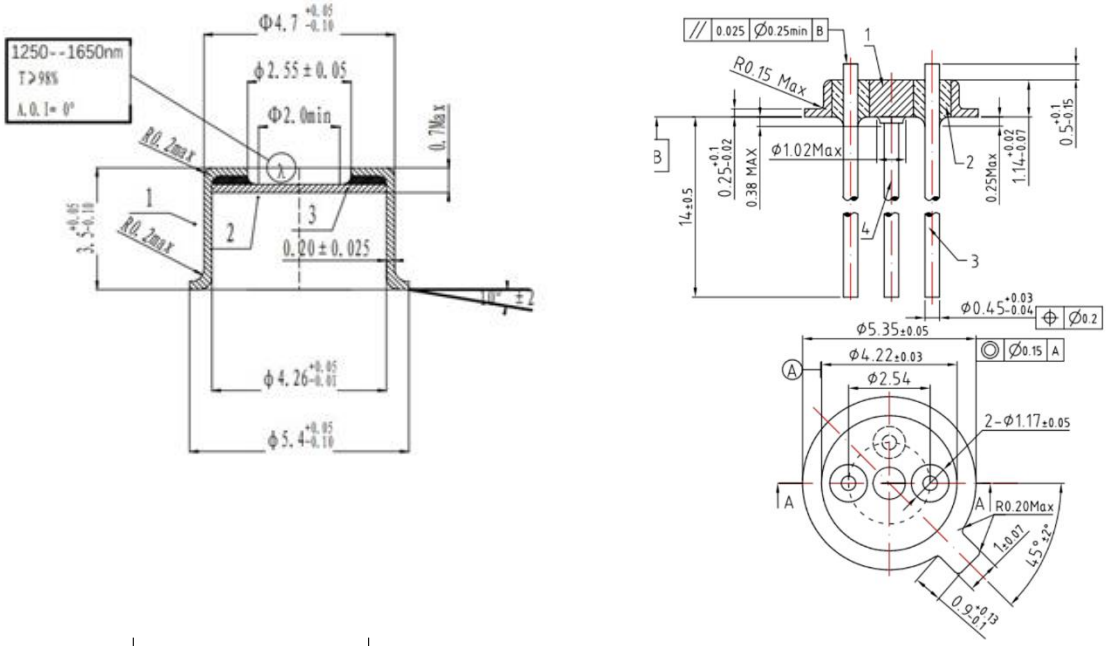
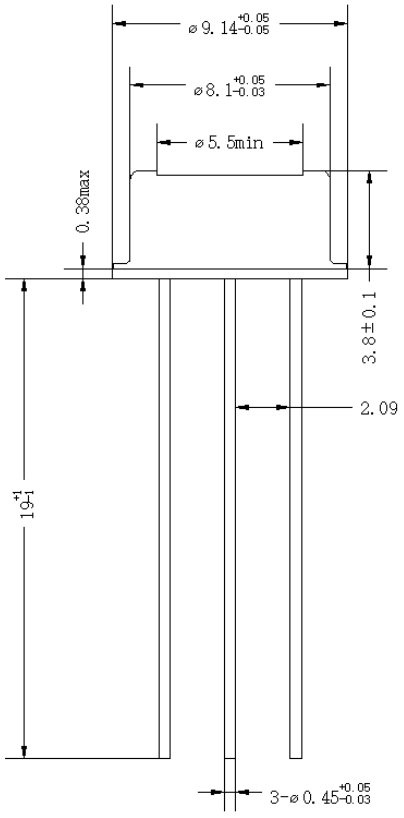
Mechanical Footprint Dimensions (mm)

- 2D 0.6mm



- 1D 1.5mm



*Product dimensions may change without notice. This is sometimes required for non-standard specifications.

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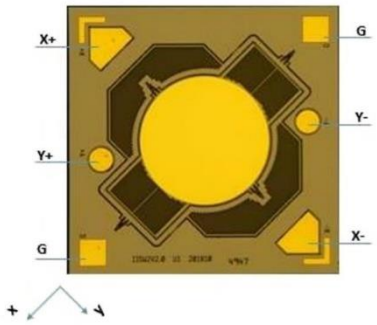
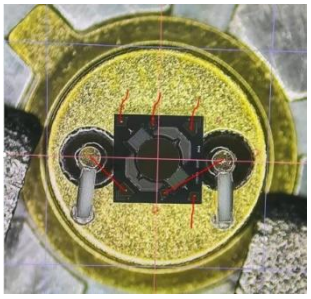
MEMS Structure (2D 0.6mm Diameter Mirror)



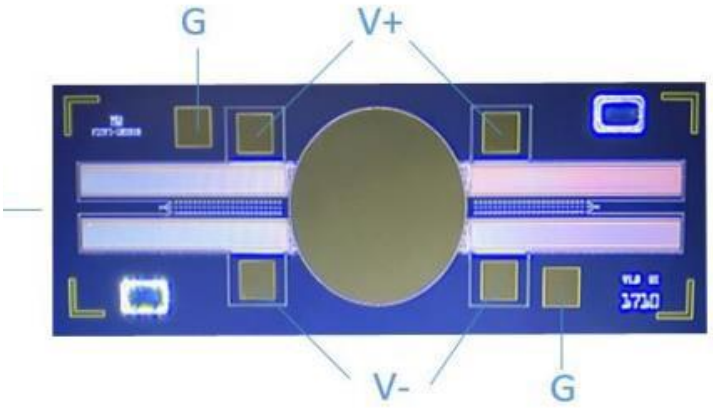


Rotation	DC +	DC -
X+	Pad X+	Pads G, X-,Y+,Y-
X-	Pad X-	Pads G, X+,Y+,Y-
Y+	Pad Y+	Pads G, X+,X-,Y-
Y-	Pad Y-	Pads G, X+,X-,Y+

NOTES:

- The pins coated with 0.4µm thick Gold

MEMS Structure (1D 1.5mm Diameter Mirror)



Rotation	DC +	DC -
X+	Pad V+	Pads G, Pad V-
X-	Pad V-	Pads G, Pad V+

NOTES:

- The pins coated with 0.4µm thick Gold

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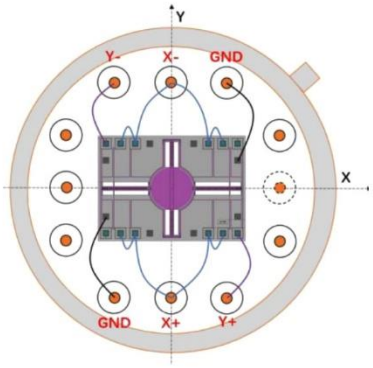
MEMS Structure (2D, 2mm Diameter Mirror)



Electronic Driving Instruction

Rotation	DC	GND
X+	Pad X+	
X-	Pad X-	
Y+	Pad Y+	
Y-	Pad Y-	

NOTES:

- The pins coated with 0.4µm thick Gold

Ordering Information

	☐	☐	☐	1	☐	☐	☐	1 1
Prefix	**Mirror Size**	**Window Coating**	**Axis**	**Surface**	**Chip Package**	**Chip Design**	**USB Electric Driver**	
SMEM-	Ø0.6mm = 6 Ø1.5mm = 1 Ø2.0mm = 2	1230-1650nm = 1 Special = 0	1D = 1 2D = 2	Gold = 1	TOCAN = 2	Standard = 1 Special = 0	None = 1 Yes = 1	

Red for special order

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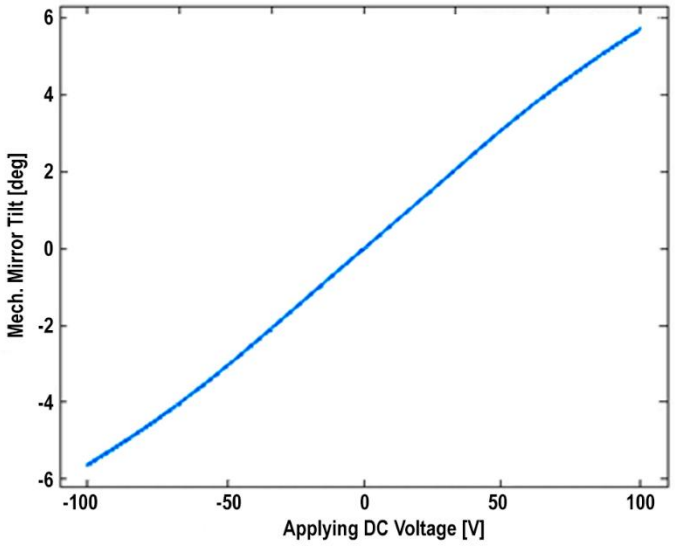
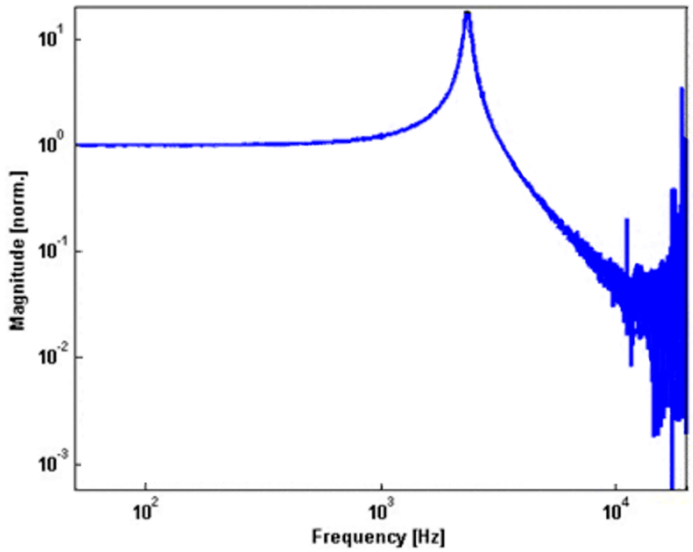
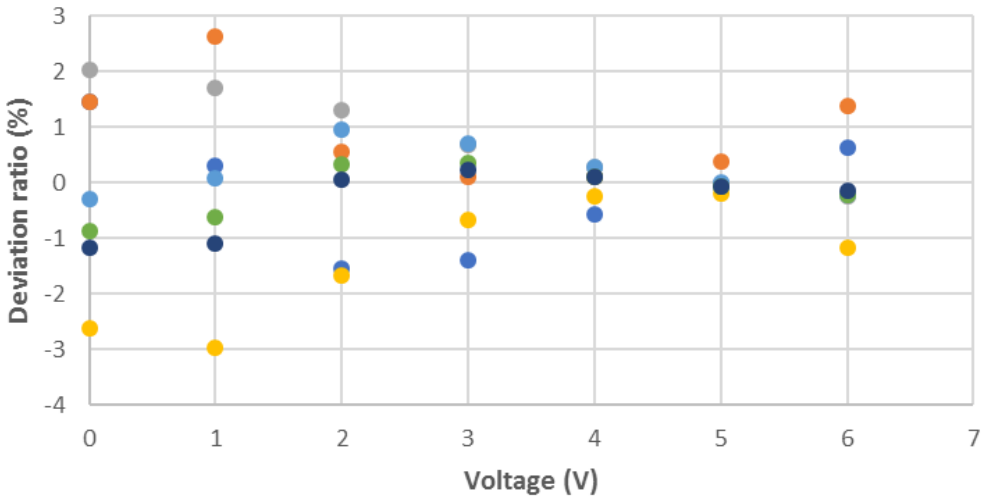
Tilting Performance (Typical)



Frequency Response (Typical)



Typical Repeatability -Position vs Applying Voltage Over 5days (5 colors)



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