

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

DATASHEET

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.com



Features

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

Applications

- Optical Devices
- Sensors
- Instrumentation

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

Specifications

Parameter		Min	Typical	Max	Unit	
Mirror Diameter		0.6	1.5	2	mm	
Operation Wavelength		450		2600	nm	
Reflectivity (@1260-16	60nm)	95		96	%	
	0.6mm@60V	\pm 2.2	±2.5	± 2.7		
Tilt Angle	1.5mm@67V	\pm 6.8	±7	±7.6	degree	
	2.0mm@200V	±5.9	±6	±6.2		
	0.6mm			70		
Damaga Valtaga	1.5mm			70	N	
Damage voltage	2mm X-axis			220	v	
	2mm Y-axis			100		
	0.6mm		600			
	1.5mm		750			
Resonance Frequency	2mm X-axis		500		HZ	
	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						
Package Leak Rate			<10 ⁻⁹		Pa.m ³ /s	

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Mechanical Footprint Dimensions (mm)



*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)





Rota	ation	DC +	DC -
Х+		Pad X+	Pads G, X-,Y+,Y-
Х-		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-	
Х-	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+		
Х-	Pad X-		
Y+	Pad Y+		
Y-	Pad Y-		

NOTES:

The pins coated with 0.4µm thick Gold

Ordering Information

				1				11
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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