

CupLids – Fine Leak Hermetic Packages for Optoelectronics

EPIC Members New Product Release

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MATERION

// BALZERS OPTICS

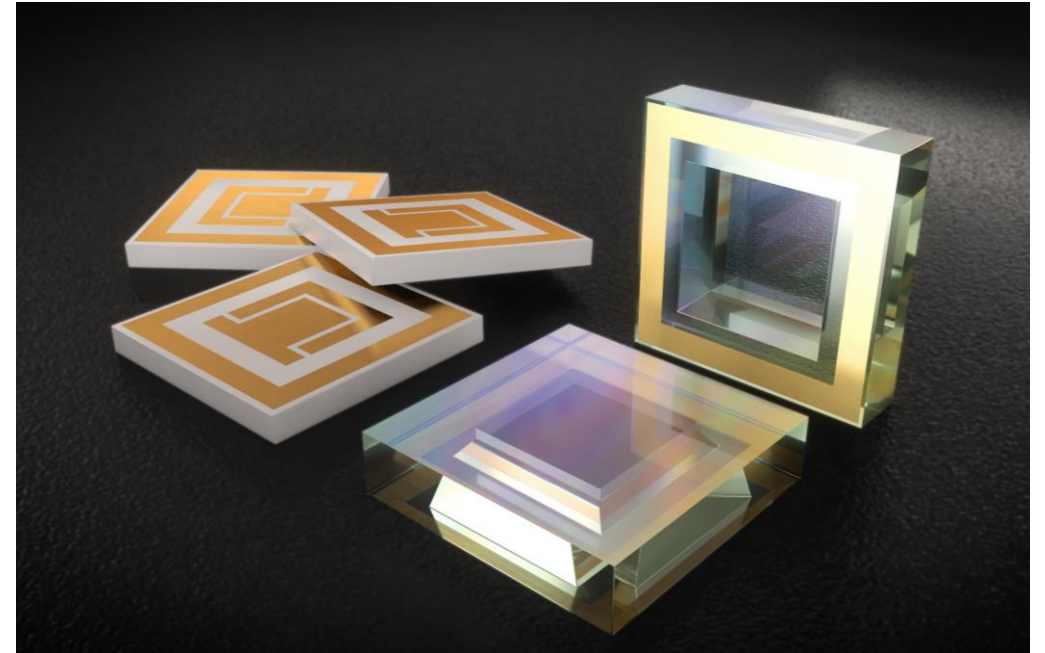
Materion at a Glance

- Materion founded in 1931, Balzers Optics founded in 1946
- A global high-tech solutions provider of performance alloys, precision coatings and advanced materials
- 100+ years of materials knowledge
- ~33 manufacturing plants, >3000 employees, present in 59 countries
- In excess of \$1 billion in sales
- Publicly traded since 1972 – NYSE (MTRN)



CupLids - Hermetic Packages for Optoelectronics

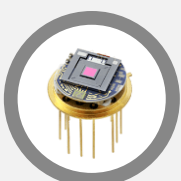
- Surface-mount package for automated chip-scale packaging and PCB assembly of photonic chips
- Fineleak hermetic - solder-bonded cavity window and ceramic submount with filled vias
- Easy die-attach and excellent heat dissipation with planar AlN ceramic submount
- Comprehensive solution portfolio to support a broad range of custom package outlines, cavity shapes and optical coatings



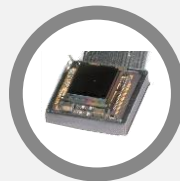
Supported Photonic Chips



Photon Detector



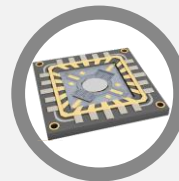
Infrared Detector



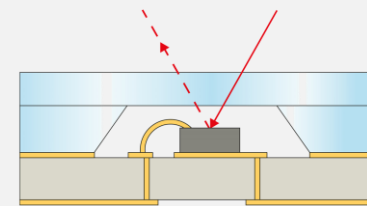
μ-Bolometer



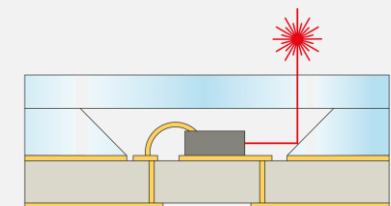
LED & Laser Diode



MEMS



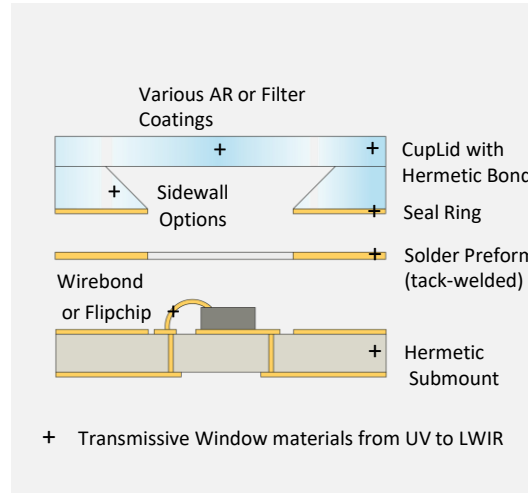
Detector CupLid



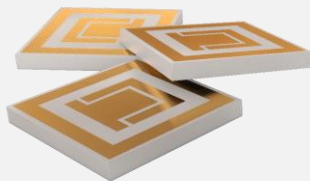
Reflector CupLid

The CupLid Advantage

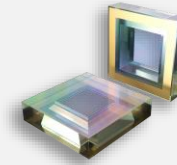
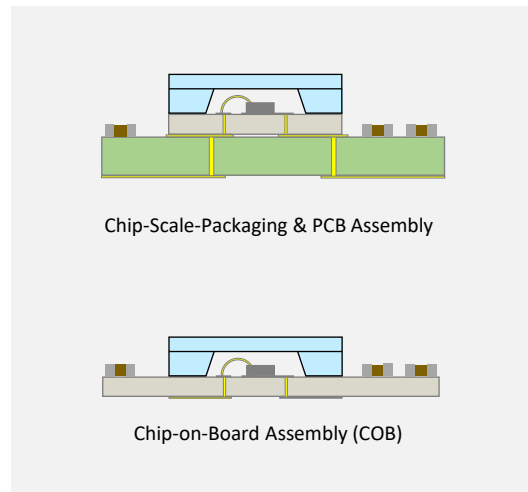
- **space-saving and surface-mount**
- **die-attach and wirebond on a flat hermetic submount**
- **cool chips with excellent heat dissipation of AlN**
- **ready to use with tack-welded solder preforms**



Offer for Prototyping



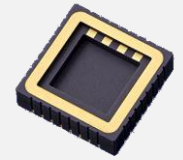
- + ceramic submounts with hermetic vias
- + custom designs for wirebond or flipchip
- + AlN or Al₂O₃, single chips or in panels
- + CupLid Sample Kit – Reference Design



CupLid



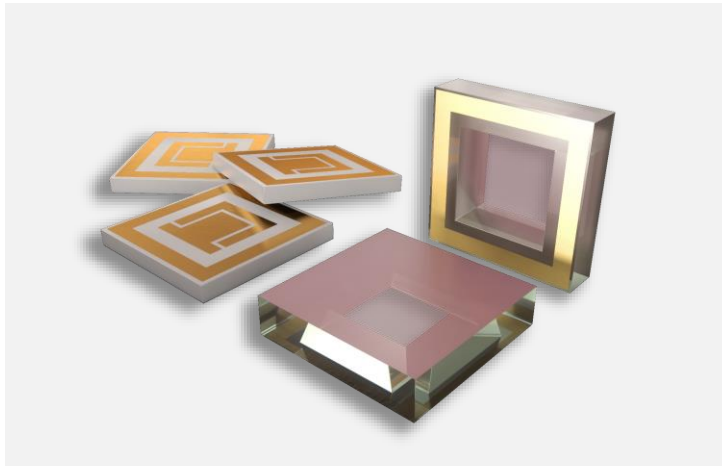
TO Can



Ceramic

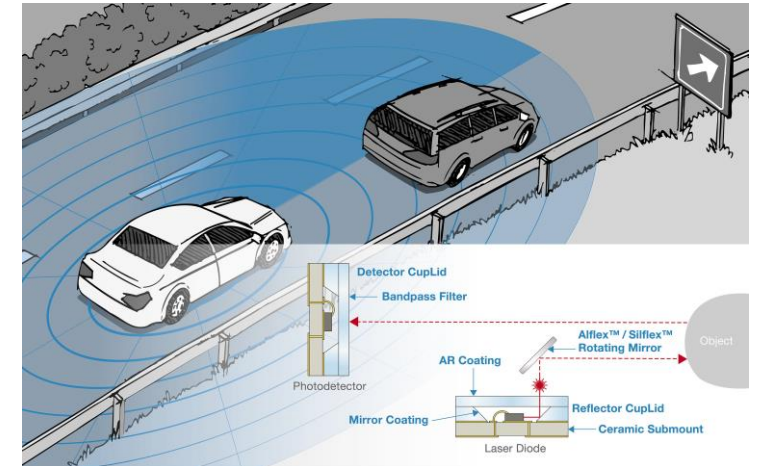
	CupLid	TO Can	Ceramic
Technology	Surface-mount	Through-hole	Surface-mount
Hermetic Seal	Solder Seal	Seam Seal	Seam Seal Solder Seal
Heat dissipation	Excellent (AlN) Good (Al ₂ O ₃)	Fair (Kovar, glass, leads)	Excellent (AlN) Good (Al ₂ O ₃)
Package outlines	Scalable to custom sizes	large & bulky standard sizes	MOQ applies for custom sizes
Ease-of-Use	Simple die attach on flat submount	Manual assembly	
Availability	••	•••	•
Package Costs	\$\$	\$	\$\$
Total-Cost-of-Ownership	\$\$	\$\$\$	\$\$

CupLid Applications



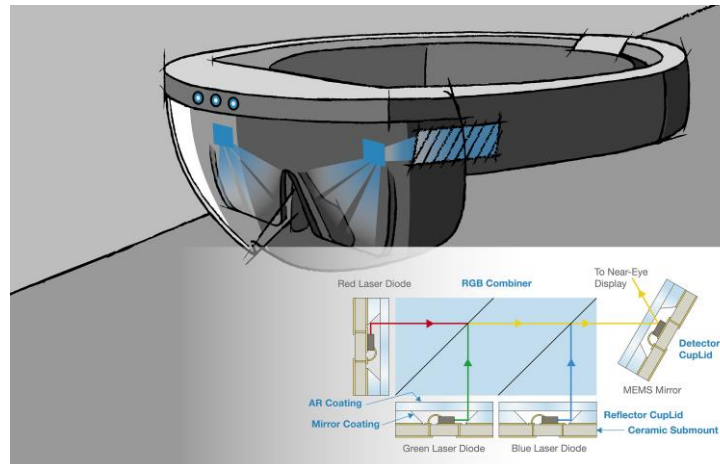
Automotive applications

- CupLid with near-IR bandpass filter for photon detectors (APD, SPAD, SiPM) in LiDAR systems
- CupLids with anti-reflective coatings for laser diodes in headlights
- CupLids with anti-reflective coatings (905, 1550nm) for laser diodes and MEMS scanning mirrors in LiDAR systems



Application examples across the Spectrum

- Fused Silica windows for UV Disinfection
- Near-IR Bandpass for LiDAR & 3D Sensing
- Mid-IR Bandpass for Gas Sensing
- LWIR Window for Motion Detection & Thermal Sensing
- Broadband- and V-Cut anti-reflective coatings
- Metallized sidewalls as broadband reflectors



Augmented Reality Smart Glasses

- CupLid with broadband anti-reflective coating for visible light laser diodes and MEMS scanning mirrors in laser beam scanning displays
- CupLids with anti-reflective coatings in near-IR for 3D Sensing VCSEL and edge emitting laser diodes

CupLid Solution Portfolio & Summary

Solution Portfolio

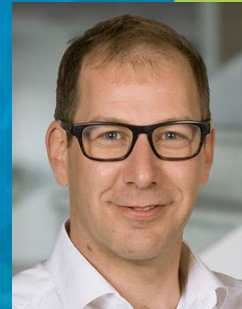
	UV	Visible	NIR	SWIR	MWIR	LWIR
Optical Coating	Antireflective	Short-/Long Wavepass	Bandpass / Notchfilter	Beamsplitter	Mirrors	Black Coatings
Window Material	Fused Silica, Glass			Silicon		
Window Type						
Seal Ring	Gelot™, Cr, Ni, Pt, Au					
Solder Attachment	Solder Preforms from AuSn, SnSb			Various solder alloys on request		
Hermetic Package for Target Application	UV Disinfection Lithography Wafer Inspection	LBS Displays Image Sensors LED Lighting	LiDAR 3D Imaging NIR Detectors Optical Transceivers	LiDAR 3D Imaging SWIR Detectors Optical Transceivers	IR Detectors Gas Sensor IR Imagers IR Emitters	Motion detector μ-Bolometer

Summary

- CupLids are available for order now!
 - Sample Kits and Reference CupLid Designs for fast prototyping
 - Tailored packages for customer's product development
- CupLids offer a space-saving and easy-to-automate surface-mount alternative to TO-style packages with their known disadvantages
- A combination of established manufacturing processes allows us to offer tailored CupLid solutions for a wide range of applications
- We are continuously expanding our portfolio – let us know your requirements!
- For application support please contact us: reto.keller@opticsbalzers.com

Materion enables what's next™

To learn more about Materion and our capabilities, please feel free to contact me:



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