

Global PiezoMEMS Market 2025-2035

https://marketpublishers.com/r/G537CD3FF9AFEN.html

Date: January 2025

Pages: 262

Price: US\$ 1,500.00 (Single User License)

ID: G537CD3FF9AFEN

Abstracts

Piezoelectric microelectromechanical sensors and actuators are used in a wide variety of applications. Compared to traditional capacitive MEMS, piezoelectric MEMS deliver superior performance and manufacturing efficiency. Piezoelectric thin films, particularly PZT, form the new basis for high-growth MEMS products such as microphones and micromirrors, gas sensors, image stabilizers, ultrasonic transducers, piezo printers that deliver excellent printing results, AR glasses and RF filters for enhanced telecommunications.

The piezoMEMS sector represents a significant segment within the broader MEMS industry, with particularly strong presence in consumer electronics, telecommunications, and emerging IoT applications. The piezoMEMS market is expected to grow significantly faster than the broader MEMS driven by:

Expansion of 5G networks and eventual 6G development

Increasing adoption in automotive safety and autonomous systems

Growth in medical imaging and diagnostic applications

Emergence of new consumer electronics applications

The emergence of new applications, particularly in IoT, automotive, and medical sectors, is expected to drive sustained growth through 2035, with potential for breakthrough applications in emerging fields such as quantum computing and advanced sensing systems.

The Global PiezoMEMS Market 2025-2035 report analyzes the global piezoelectric MEMS (PiezoMEMS) sector, providing detailed insights into technology developments,



market trends, and growth opportunities from 2025 to 2035. The study examines the entire value chain from materials and manufacturing to end-user applications, with particular focus on emerging technologies and market dynamics. Report contents include:

Extensive analysis of the PiezoMEMS industry, including detailed market forecasts, technology assessments, and competitive analysis.

Key applications such as RF filters, sensors, actuators, and transducers across various sectors including consumer electronics, automotive, medical, and industrial applications.

Key Market Segments covered include:

Sensors (microphones, accelerometers, force sensors)

Actuators (inkjet printheads, microspeakers, optical MEMS)

Transducers (ultrasonic fingerprint sensors, medical imaging)

RF Filters (BAW technology, FBAR/SMR solutions)

Detailed market analysis including:

Global revenue projections (2025-2035)

Volume forecasts by device type

Regional market analysis

Production capacity assessment

Wafer-level analysis

Supply chain evaluation

Technology roadmaps and development trends

Manufacturing strategies and challenges



Regional market dynamics
Detailed analysis of key application areas:
Consumer electronics (smartphones, wearables)
Automotive sensors and actuators
Medical devices and imaging systems
Industrial applications
IoT and emerging applications
Manufacturing and Production:
Wafer fabrication processes
Integration technologies
Quality control methods
Capacity utilization
Regional production distribution
Cost analysis
Technology Trends and Innovation:
Material innovations and enhancements
Manufacturing advances
Device miniaturization
Performance improvements



Novel applications Integration strategies Market opportunities and growth drivers: Technical barriers and solutions Market adoption factors Competition analysis Environmental considerations Regulatory compliance Future opportunities Comprehensive profiles of over 150 companies including: Major MEMS manufacturers Material suppliers Equipment providers Technology developers **End-product manufacturers** Companies covered include Abbott, Aeponyx, AKM, Akoustis, AlphaMOS, Alps Alpine,

Companies covered include Abbott, Aeponyx, AKM, Akoustis, AlphaMOS, Alps Alpine, Amphenol, Analog Devices, Anello Photonics, Apple, Arioso, ASAIR, Asia Pacific Microsystems, ASMC, Aspinity, Atomica, Audiopixels, Beijing Zhixin Tech, Blickfeld, Boehringer Ingelheim Microparts, Bosch, Broadcom, Butterfly Networks, Canon, Cartesiam, CEA Leti, Chongqing Silian Sensor Technology, Cirrus Logic, Colibrys, CRMicro, Denso, DRS, EPCOS, EpicMEMS, eXo Imaging, Figaro, Flusso, Formfactor, Fraunhofer IPMS, Fujifilm Dimatix, Gettop, GMEMS Technologies, Goermicro, Goertek, Google, Guide IR, GWIC, Hanking Electronics, Heimann Sensor, Hewlett Packard,



Hikvision, Honeywell, HuaHong Grace, Huntersun, Hypernano, IceMOS, Illumina, IMEC, Infineon Technologies, IonTorrent, LAM Research, Lynred, Maxim, Mekonos, Melexis, MEMJET, MEMSCAP, MEMSDrive, MEMSensing, MEMSIC, MEMSonics, MEMSRight, MenloMicro, Merit Sensor, Merry Electronics, Microchip, Microfab, Micronit, Minebea Mitsumi, Mirrorcle, Murata, Nanox, Novosense, NXP, Okmetic, Omnitron Sensors, One Silicon Chip Photonics, OQmented, Oriental System Technology, Panasonic, Partron, Philips Engineering Solution, poLight ASA, Posifa Technologies, Preciseley, Qorvo, Qualcomm, Raytheon, Ricoh, Resonant, Robosense, Rohm, Safran Sensing Technologies, Samsung, Sappland Microelectronics, ScioSense, Seiko Epson Corporation, Semefab, Senba Sensing, Sensata, sensiBel, Sensirion, Sercalo, Silicon Austria Labs, Silicon Design Inc, Silicon Sensing Systems, Silex Microsystems/SMEI, SiTime, Skyworks, SMIC, Sofant Technologies, Soitec, Sonic Edge, Sonion, Sumitomo

Precision, TDK Electronics and more.



Contents

1 INTRODUCTION

- 1.1 The Global MEMS market
 - 1.1.1 Historical
- 1.1.2 Current market (2024-2025)
- 1.2 Overview of Piezoelectric Technology
 - 1.2.1 Fundamentals of Piezoelectricity
 - 1.2.2 Direct and Inverse Piezoelectric Effects
 - 1.2.3 Key Parameters and Measurements
 - 1.2.4 Design Considerations
- 1.3 Evolution of PiezoMEMS Technology
- 1.4 PiezoMEMS Market 2020-2024
 - 1.4.1 Market Size and Growth Trends
 - 1.4.2 Application Development
 - 1.4.3 Technology Advancement
- 1.5 Technology Landscape
 - 1.5.1 Core Technologies
 - 1.5.2 Integration Approaches
 - 1.5.3 Competing Technologies
- 1.5.4 Technology Readiness Levels
- 1.6 Regulatory Framework

2 PIEZOELECTRIC MATERIALS AND TECHNOLOGIES

- 2.1 Fundamentals of Piezoelectric Materials
 - 2.1.1 Working Principles
 - 2.1.1.1 Crystal Structure
 - 2.1.1.2 Polarization Mechanisms
 - 2.1.1.3 Electromechanical Coupling
 - 2.1.1.4 Material Physics
 - 2.1.2 Key Performance Metrics
 - 2.1.3 Manufacturing Processes
- 2.2 Material Categories
 - 2.2.1 Aluminum Nitride (AIN)
 - 2.2.1.1 Properties and Characteristics
 - 2.2.1.2 Applications
 - 2.2.1.3 Cost Structure



- 2.2.2 Scandium-doped AIN
 - 2.2.2.1 Doping Effects
 - 2.2.2.2 Performance Improvements
 - 2.2.2.3 Manufacturing Challenges
 - 2.2.2.4 Cost-Benefit Analysis
 - 2.2.2.5 Market Adoption
- 2.2.3 Lead Zirconate Titanate (PZT)
- 2.2.3.1 Material Properties
- 2.2.3.2 Processing Methods
- 2.2.3.3 Performance Characteristics
- 2.2.3.4 Environmental Concerns
- 2.2.3.5 Application Areas
- 2.2.4 Emerging Materials
 - 2.2.4.1 KNN
 - 2.2.4.2 LiNbO3
- 2.3 Processing Technologies
 - 2.3.1 Thin-film Deposition
 - 2.3.1.1 Sputtering Techniques
 - 2.3.1.2 Chemical Vapor Deposition
 - 2.3.1.3 Sol-Gel Processing
 - 2.3.1.4 Other Methods
 - 2.3.2 Integration Techniques
 - 2.3.2.1 CMOS Integration
 - 2.3.2.2 Wafer Bonding
 - 2.3.2.3 Packaging Solutions
 - 2.3.3 Quality Control Methods

3 MARKET ANALYSIS AND FORECASTS 2025-2035

- 3.1 Market Size and Growth
 - 3.1.1 Global Revenue Projections
 - 3.1.2 Volume Forecasts
 - 3.1.2.1 Unit Production Trends
 - 3.1.2.2 Volume by Device Type
 - 3.1.2.3 Production Capacity Analysis
 - 3.1.2.4 Capacity Utilization Rates
 - 3.1.3 Regional Analysis
 - 3.1.3.1 North America
 - 3.1.3.2 Europe



- 3.1.3.3 Asia Pacific
- 3.1.3.4 China
- 3.2 Market Segmentation
 - 3.2.1 By Device Type
 - 3.2.2 By Material Type
 - 3.2.3 By End-user Industry
- 3.3 Wafer-level Analysis
 - 3.3.1 Wafer Starts by Material
 - 3.3.2 Wafer Size Trends
 - 3.3.3 Manufacturing Capacity
 - 3.3.4 Regional Production Distribution

4 APPLICATION SEGMENTS

- 4.1 Sensors
 - 4.1.1 Microphones
 - 4.1.2 Accelerometers
 - 4.1.3 Force Sensors
 - 4.1.4 Market Forecast
- 4.2 Actuators
 - 4.2.1 Inkjet Printheads
 - 4.2.2 Microspeakers
 - 4.2.3 Optical MEMS
 - 4.2.4 Market Forecast
- 4.3 Transducers
 - 4.3.1 Ultrasonic Fingerprint Sensors
 - 4.3.2 Medical Imaging
 - 4.3.3 Market Forecast
- 4.4 RF Filters
 - 4.4.1 BAW Technology
 - 4.4.2 FBAR/SMR Solutions
 - 4.4.3 Market Forecast

5 SUPPLY CHAIN

6 TECHNOLOGY TRENDS AND INNOVATION

- 6.1 Material Innovations
 - 6.1.1 Enhanced Performance Materials



- 6.1.2 Lead-free Alternatives
- 6.1.3 Novel Compositions
- 6.2 Manufacturing Advances
 - 6.2.1 Process Improvements
 - 6.2.2 Integration Technologies
 - 6.2.3 Quality Control Methods
- 6.3 Device Innovations
 - 6.3.1 Miniaturization Trends
 - 6.3.2 Performance Enhancements
 - 6.3.3 New Applications

7 CHALLENGES AND OPPORTUNITIES

- 7.1 Technical Challenges
- 7.2 Market Barriers
- 7.3 Growth Opportunities
- 7.4 Future Applications

8 COMPANY PROFILES 134 (156 COMPANY PROFILES)

9 APPENDICES

- 9.1 Research Methodology
- 9.2 Abbreviations
- 9.3 References



List Of Tables

LIST OF TABLES

- Table 1. Global MEMS market 2020-2024 (Billion USD), by end user market.
- Table 2. Key piezoelectric parameters and their significance.
- Table 3. Core Technologies in PiezoMEMS.
- Table 4. PiezoMEMS Integration Approaches.
- Table 5. Comparison of competing technologies.
- Table 6. PiezoMEMS Technology Readiness Levels.
- Table 7. Key regulations affecting piezoMEMS industry.
- Table 8. PiezoMEMS key performance metrics.
- Table 9. PiezoMEMS Manufacturing Processes.
- Table 10. AIN properties and applications
- Table 11. Sc-AIN vs standard AIN comparison.
- Table 12. PZT variations and properties.
- Table 13. PZT performance metrics.
- Table 14. Emerging materials comparison.
- Table 15. Technology readiness assessment.
- Table 16. Deposition technology comparison.
- Table 17. Process parameters for different methods.
- Table 18. Integration challenges and solutions.
- Table 19. Global PiezoMEMS market revenue forecast 2020-2035 (Billions USD).
- Table 20. Capacity utilization rates.
- Table 21. Production volumes by device type, 2020-2035.
- Table 22. Global PiezoMEMS revenues by device type 2020-2035.
- Table 23. Global PiezoMEMS revenues by material type 2020-2035.
- Table 24. Global PiezoMEMS revenues by end-user industry 2020-2035.
- Table 25. Wafer production trends.
- Table 26. PiezoMEMS wafer share by fab.
- Table 27. Global PiezoMEMS market forecast in Sensors (2024-2035).
- Table 28. Global PiezoMEMS market forecast in Actuators (2024-2035).
- Table 29. Global PiezoMEMS market forecast in Transducers (2024-2035).
- Table 30. Global PiezoMEMS market forecast in Transducers (2024-2035).
- Table 31. Enhanced Performance Materials for PiezoMEMS.
- Table 32. PiezoMEMS Lead-free Alternatives.
- Table 33. PiezoMEMS technical challenges.
- Table 34. Market barriers.
- Table 35. Future applications analysis.







List Of Figures

LIST OF FIGURES

- Figure 1. Global MEMS market 2020-2024 (Millions USD), by end user market.
- Figure 2. Schematic illustration of piezoelectric effect.
- Figure 3. Evolution of PiezoMEMS Technology.
- Figure 4. PiezoMEMS Market 2020-2024 (Billion USD).
- Figure 5. Manufacturing process flow diagram.
- Figure 6. PiezoMEMS material roadmap.
- Figure 7. Integration process flows.
- Figure 8. Global PiezoMEMS market revenue forecast 2020-2035 (Billions USD).
- Figure 9. Production volumes by device type, 2020-2035.
- Figure 10. Global PiezoMEMS revenues by device type 2020-2035.
- Figure 11. Global PiezoMEMS revenues by material type 2020-2035.
- Figure 12. Global PiezoMEMS revenues by end-user industry 2020-2035.
- Figure 13. Wafer capacity by region.
- Figure 14. Global PiezoMEMS market forecast in Sensors (2024-2035).
- Figure 15. Global PiezoMEMS market forecast in Actuators (2024-2035).
- Figure 16. Global PiezoMEMS market forecast in Transducers (2024-2035).
- Figure 17. Global PiezoMEMS market forecast in Transducers (2024-2035).
- Figure 18. PiezoMEMS Market supply chain.
- Figure 19. Bosch BMI270 6-axis IMU.
- Figure 20. Broadcom FBAR RF Filter Products.
- Figure 21. Butterfly Network Butterfly iQ+ Ultrasound System.
- Figure 22. Fujifilm Dimatix Samba Printhead Technology.
- Figure 23. Infineon XENSIV™ MEMS Microphones.
- Figure 24. Murata SAW Filter Products.
- Figure 25. poLight TLens® Autofocus Actuator.
- Figure 26. Qorvo BAW Filter Portfolio.
- Figure 27. Qualcomm 3D Sonic Sensor (Ultrasonic Fingerprint).
- Figure 28. STMicroelectronics MEMS microphones (MP23DB01HP).
- Figure 29. TDK InvenSense ICP-10125 High-Performance Pressure Sensor.
- Figure 30. Vesper VM3000 Piezoelectric MEMS Microphone.
- Figure 31. USound MEMS Speaker Technology.
- Figure 32. xMEMS Montara Microspeaker.



I would like to order

Product name: Global PiezoMEMS Market 2025-2035

Product link: https://marketpublishers.com/r/G537CD3FF9AFEN.html

Price: US\$ 1,500.00 (Single User License / Electronic Delivery)

If you want to order Corporate License or Hard Copy, please, contact our Customer

Service:

info@marketpublishers.com

Payment

To pay by Credit Card (Visa, MasterCard, American Express, PayPal), please, click button on product page https://marketpublishers.com/r/G537CD3FF9AFEN.html