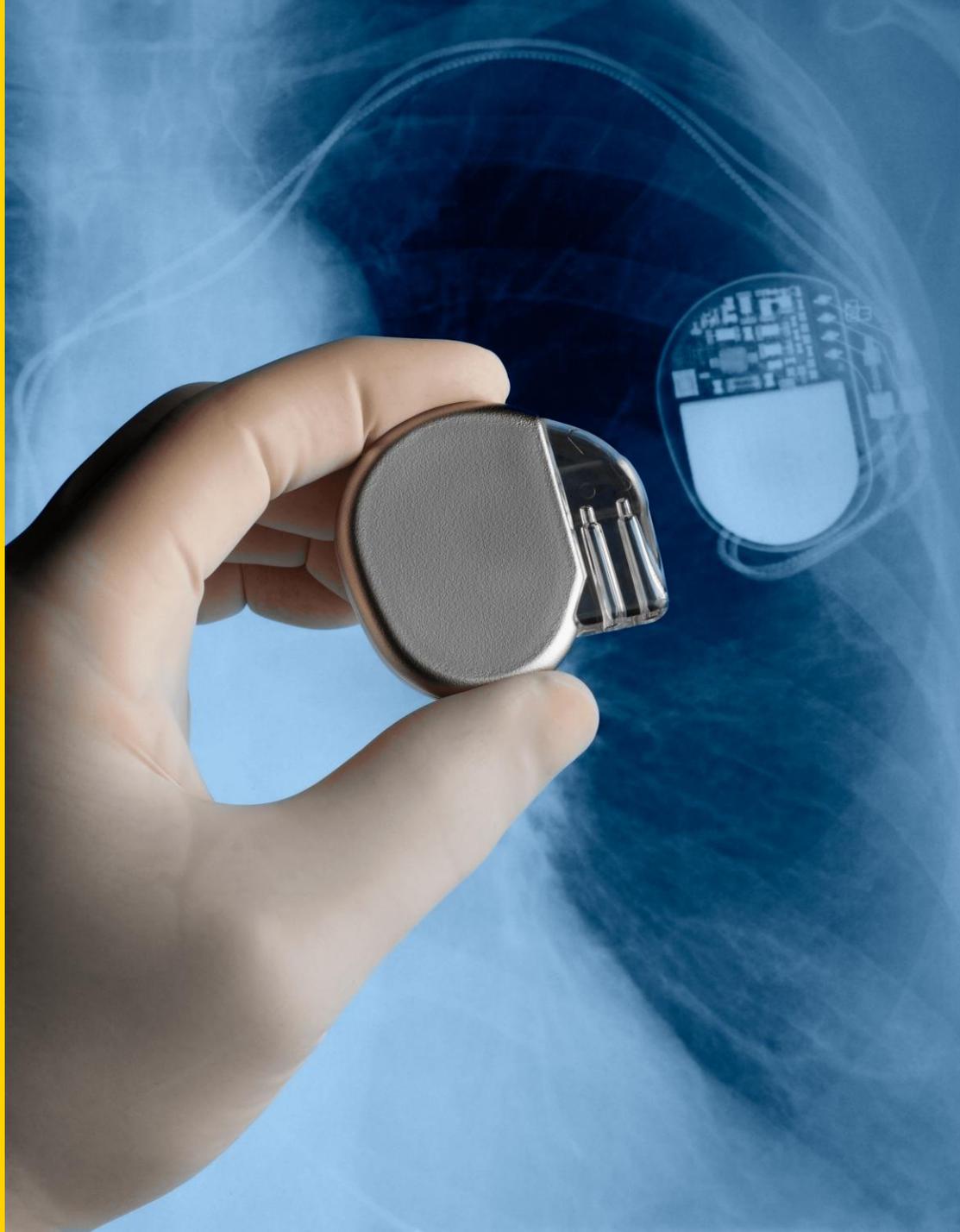


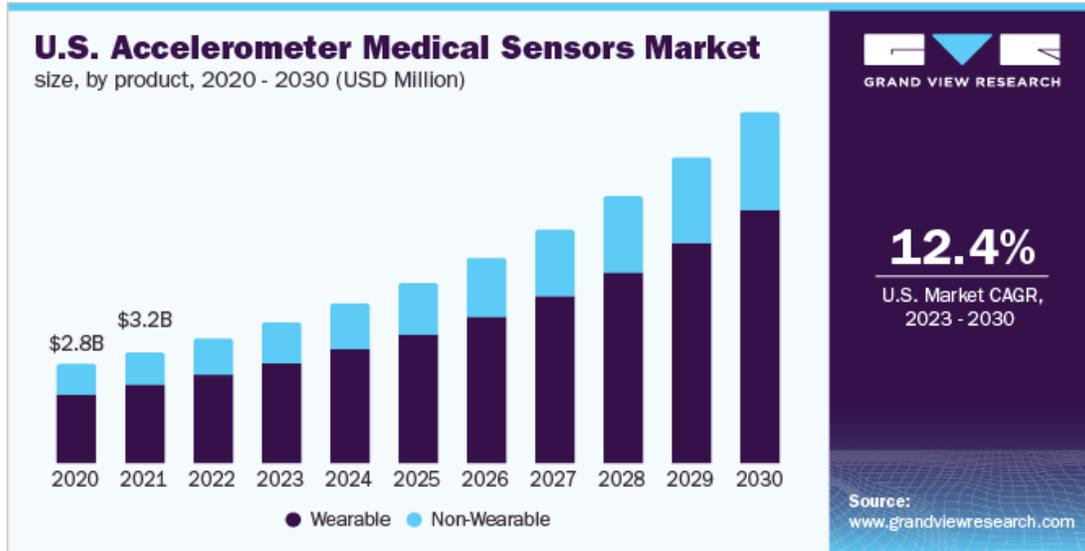


MIS2DU12

Ultra-low-power accelerometer for next-generation medical devices



Global accelerometer market for medical applications

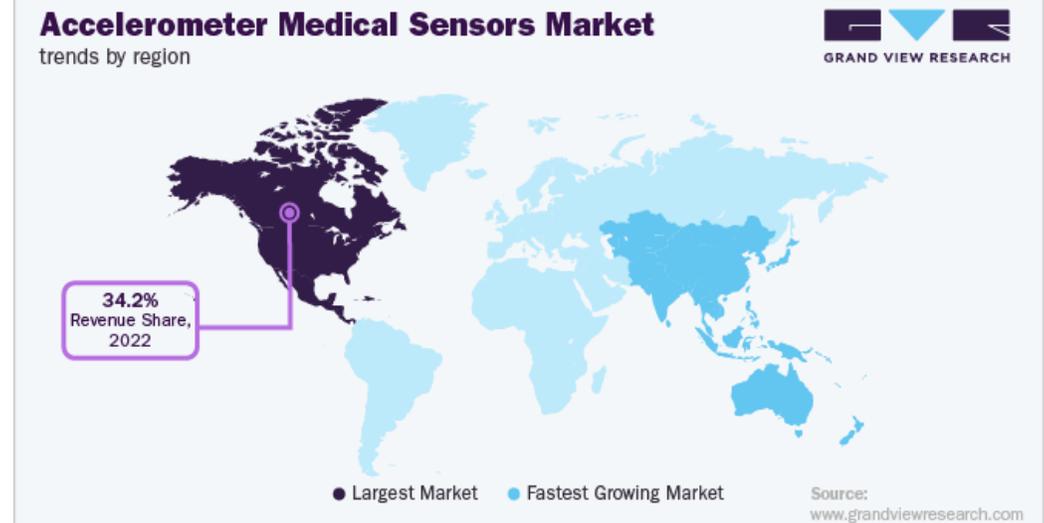


A fast-growing opportunity

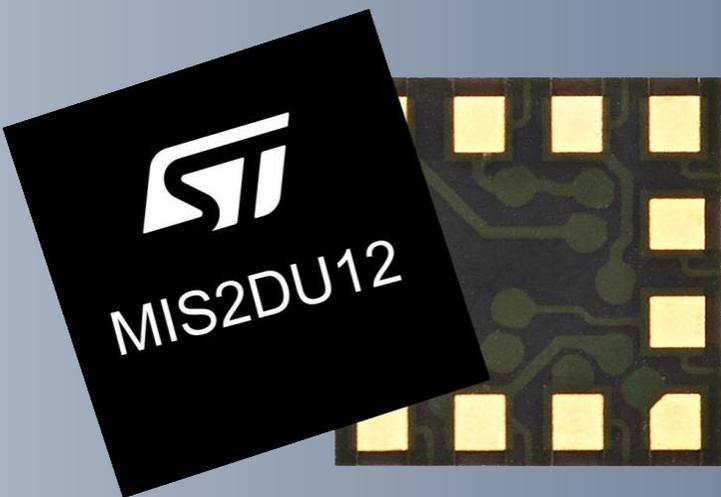
The global medical accelerometer market was **valued at USD 3.6 billion in 2022** and is **projected to grow at a CAGR of over 14% through 2030**. This expansion is driven by the rising of chronic diseases and an aging global population.

North America leading the way

In 2022, **North America accounted for 34.2% of the global medical accelerometer sensor market**, supported by robust healthcare systems, high healthcare expenditure, major industry players, and rapid adoption of advanced technologies.



Key attributes of MIS2DU12



Ultra-low power

Setting a new benchmark in efficiency, drawing just 0.47 μA in ultra-low-power mode at 1.6 Hz ODR, and only 5.6 μA in normal mode



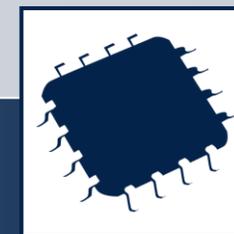
Anti-alias filter

The anti-alias filter blocks out-of-band vibrations. It delivers cleaner data, less post-processing, and significant system-level power savings



Compact size

One of the smallest accelerometers available on the market, and the only one this small with such ultra-low power consumption



MIS2DU12 overview

Minimizing sensor power consumption without compromising performance in medical applications

Configurability and performance

- FS: $\pm 2\text{ g}$ / $\pm 4\text{ g}$ / $\pm 8\text{ g}$ / $\pm 16\text{ g}$
- 4 different operating modes (HP, LP, ULP, one-shot)

Low current consumption

- $6.1\mu\text{A}$ in NM @ 800Hz, $287\mu\text{g}/\sqrt{\text{Hz}}$ with anti-alias filter on
- 0.47nA in LPM @ 1.6Hz, $5.0\text{mg}/\sqrt{\text{Hz}}$

Embedded digital functions

- Free fall, 6D/4D orientation, wake up/inactivity, tap / double tap
- 128 samples FiFo
- 2 user programmable interrupts

Driving integration

- Interface: SPI, I²C, I³C

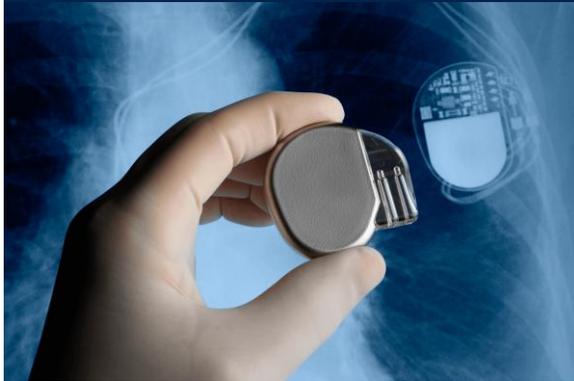


LGA 12 Lead
2.0 x 2.0 x 0.74 mm



MIS2DU12 across your medical portfolio

Medical FDA Class III applications



Reliable motion sensing for **life-critical implantable devices**

Skin patches for glucose monitoring



Discreet, always-on tracking with **multi-year battery life**

Patient monitoring



Continuous activity and posture detection for **smarter, data-driven care**

Motion-activated functions



Trigger, log, and adapt therapies **only when motion matters**

One ultra-low-power accelerometer, **endless possibilities in medical motion sensing**



MIS2DU12: comparison vs competitors

Features	MIS2DU12	Competitor MEMS
Sensing	Ultra-low power 3-axis accelerometer High sensitivity and accuracy for micro-motions Optimized for medical and implantable devices	3-axis accelerometer Good sensitivity but higher power consumption Designed for general medical applications
Power consumption	Industry-leading ultra-low power (<1 μ A in low-power mode)	Higher power consumption, limiting implantable device autonomy
Noise & signal quality	Very low noise density, ideal for micro-motion detection Advanced filtering for artifact reduction	Moderate noise levels, less optimized for micro-motion sensitivity
Package & miniaturization	Compact, small form factor suitable for implantable and wearables	Larger package sizes, less optimized for miniaturization
Biocompatibility	Designed with materials and processes suitable for implantable medical devices	Standard packaging, not specifically optimized for implantable medical devices
Digital features & algorithms	Embedded digital features and algorithms (Free fall, 6D/4D orientation, wake up/inactivity, tap/double tap)	Limited or no embedded digital features
Application focus	Implantable devices, wearables, precise health monitoring	General medical monitoring, less tailored for implantable



Ecosystem for MIS2DU12

Hardware

Evaluate

STEVAL-MKI255A



STEVAL-MKI109D

Develop



X-NUCLEO-IKS4A1

Prototype

STEVAL-MKI255A



STEVAL-MKBOXPRO

Software

Desktop software solution



MEMS
Studio

Mobile application



STBLESensor



Ready-to-go application examples



X-CUBE-MEMS1
FP-SNS-STBOX1
FP-SNS-DATALOG2

Trigger, log, and adapt therapy only when motion matters

Ultra-low power, high accuracy, and tiny form factor for next-generation medical and wearable designs

Maximize device lifetime

Extended autonomy minimizes charging frequency and reduces the need for surgical battery replacements in implants

Enhance clinical insights

High-accuracy sensing delivers superior health monitoring and an optimized user experience for wearables

Design more discreet devices

Ultra-compact sensors enable thinner, more comfortable, and less intrusive medical form factors

Our technology starts with You



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