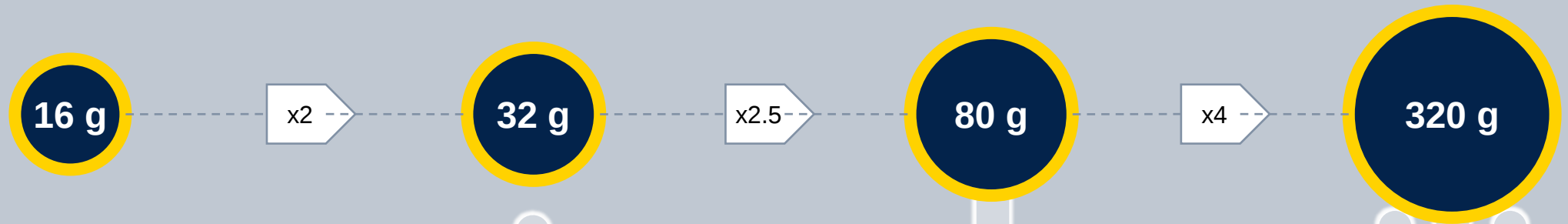




LSM6DSV320X

**For all is on you and
around you**

Continue to unleash the potential of our cutting-edge MEMS sensors



**Motion tracking,
Walking, running, jogging**



**Medium intensity activity
tracking**



**High intensity activities
tracking**

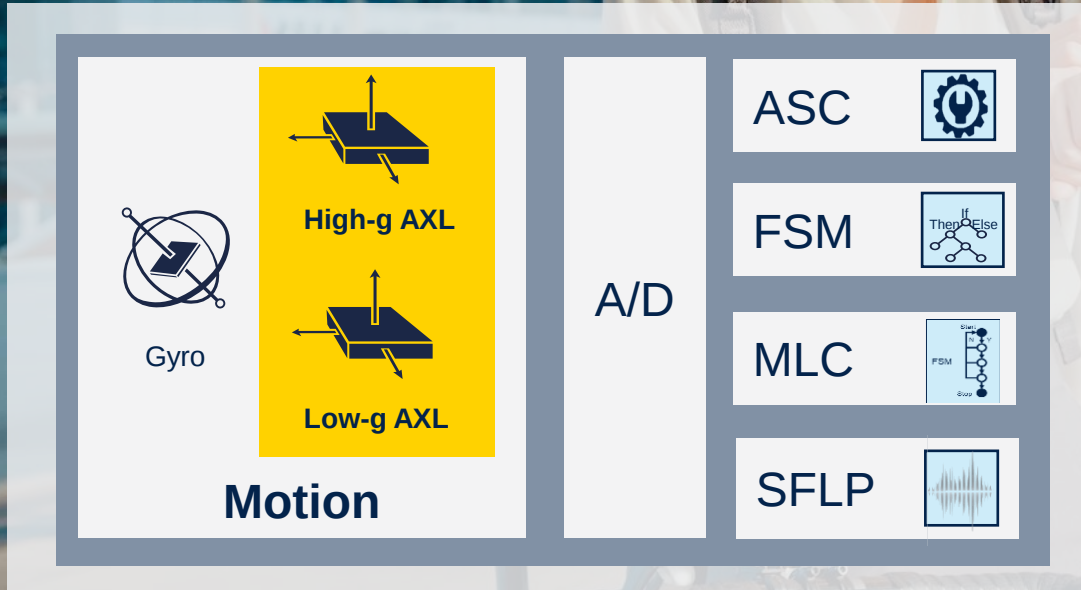


High-g shock tracking



What's the LSM6DSV320X?

New sensor technology for accurate and efficient measurement of both high and low acceleration levels



Accurate and valuable insights for motion and intense impact tracking

Edge AI and self-configuration:
FSM*, MLC*, ASC* and SFLP* embedded resources

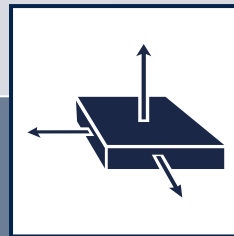
*FSM = finite state machine
*MLC = machine learning core
*ASC = adaptive self-configuration
*SFLP = sensor fusion low power

Which attributes for LSM6DSV320X?



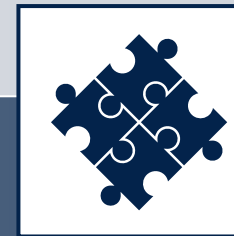
High impact tracking

An innovative new mechanical structure for high and low accelerations



Context identification

Edge AI computing and sensor fusion inside the sensor for spatial orientation



Efficiency

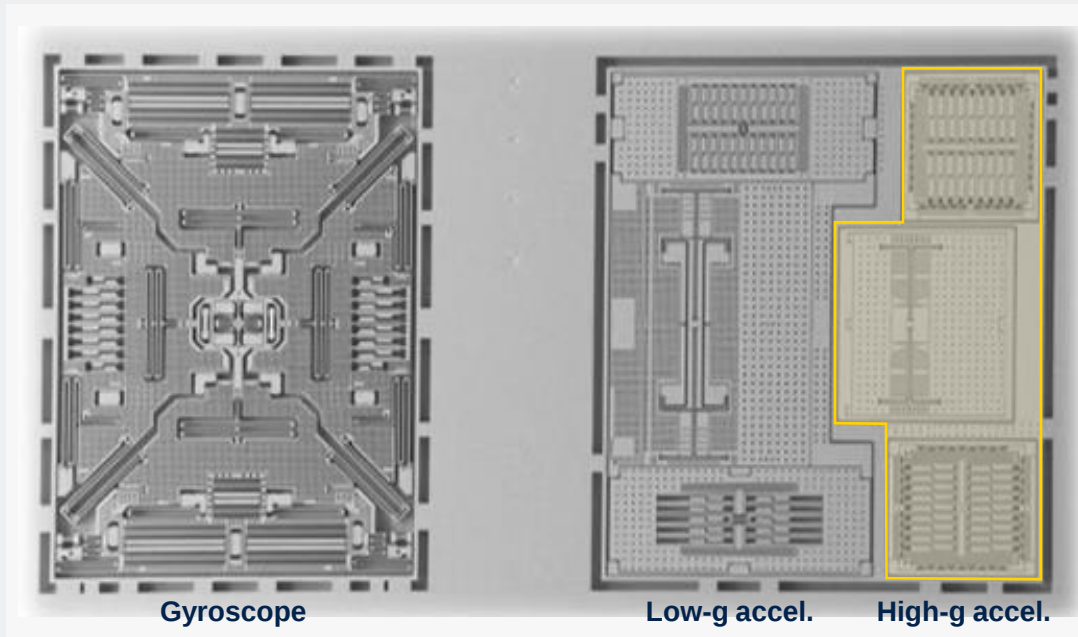
Compact package with three fully synchronized sensors and adaptive sensor configuration (ASC)



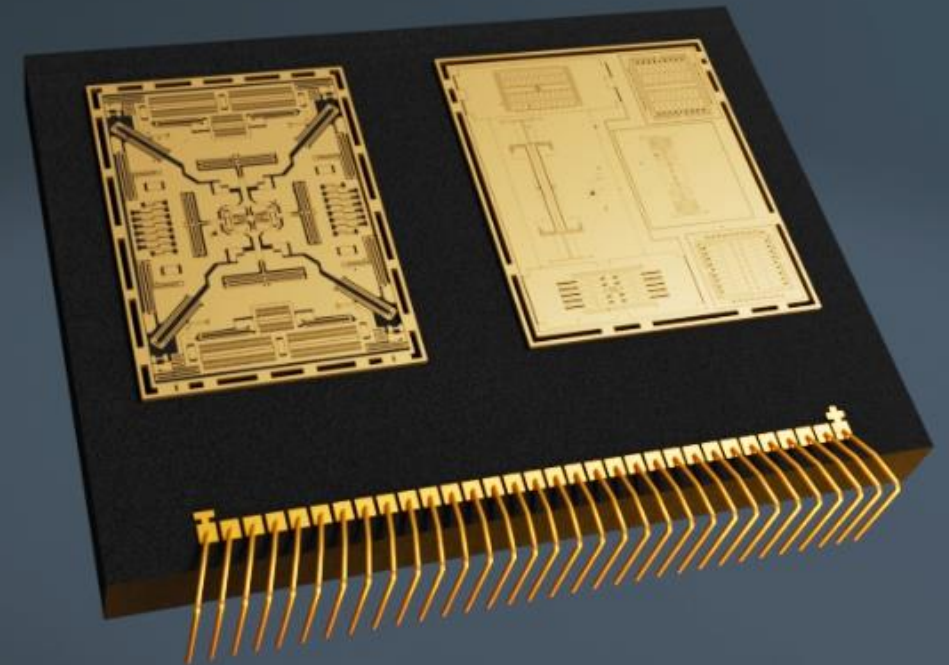
LSM6DSV320X

Differentiating features for new applications

Industry-first high performance 6-axis IMU with a **dedicated high-g accelerometer** for intensity impact and shock detection

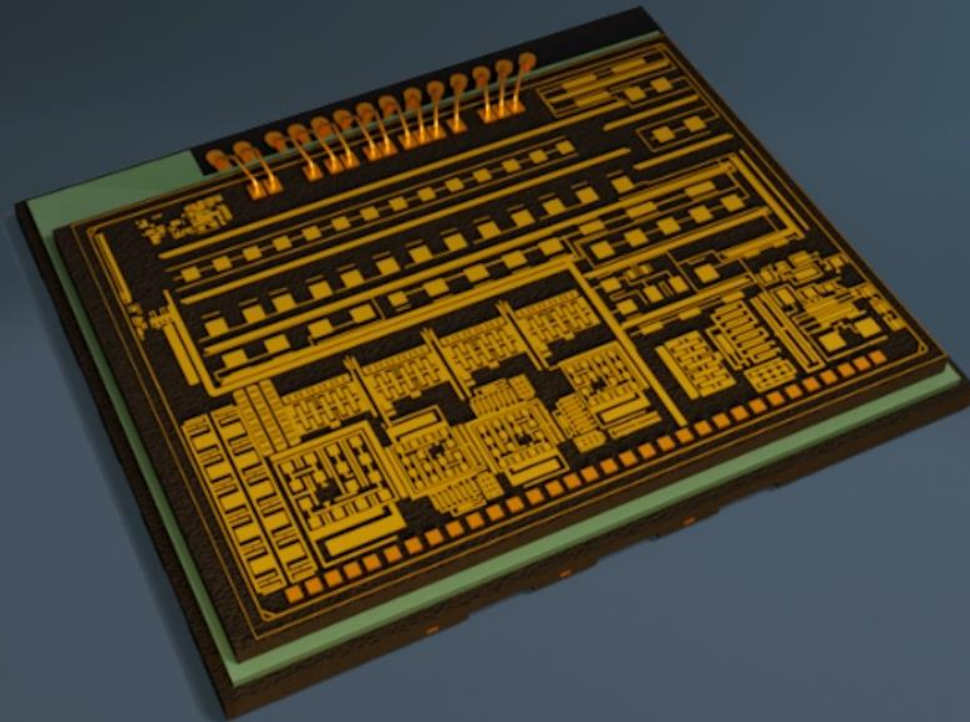


Top view of MEMS unit of LSM6DSV320X



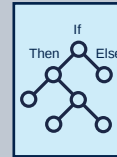
LSM6DSV320X

Differentiating features for new applications

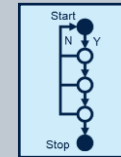


Enhanced **contextual awareness** with an IMU embedding AI and advanced processing features

MLC



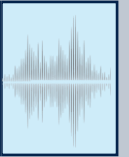
FSM



ASC



SFLP



Emergency calls

Fall/drop reconstruction

Intense movements tracking

Concussion monitoring

You and all around you

Applications with LSM6DSV320X

Smartphone & foldable



Emergency call
Human activity recognition
Lid angle detection
Camera: image stabilization

Wearable



Emergency call
Intense sports tracking
Human activity recognition
Context awareness

Smart tags & IoT



Shock and drops
impact tracking
Motion tracking
Context awareness

PC, laptop, and tablet



High impact recording
Lid angle detection
Context awareness

Gaming



Intense gestures
High impact recording

Now, you can capture all events around you by yourself

A comprehensive ecosystem for developers

Software libraries



Motion XLF

Accuracy data (fusion of high-g and low-g)



Sensor fusion

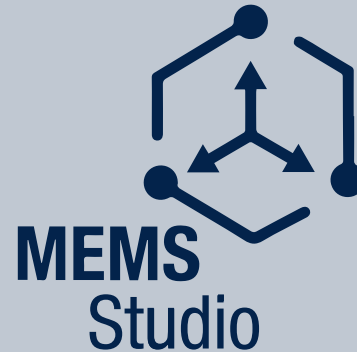
Heterogenous data (different sensors' fusion)



Context awareness (MLC)

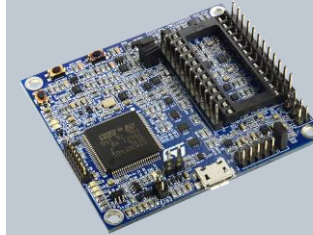
Human activity recognition, gesture from wrist

Software tool



Development kits

Professional MEMS tool (STEVAL-MKI109D)



STEVAL-MKI251A



SensorTile.Box PRO



Evaluate and program the LSM6DSV320X – Develop embedded AI features, design no-code algorithms

LSM6DSV320X

IMU for you and all around you

Innovative structure for optimized low-g and high-g sensing



Flexible

Dual accelerometer with dedicated channels and self test

- Low-g accelerometer: up to ± 16 g
- High-g accelerometer: **up to ± 320 g.**
- Gyroscope: up to ± 4000 dps

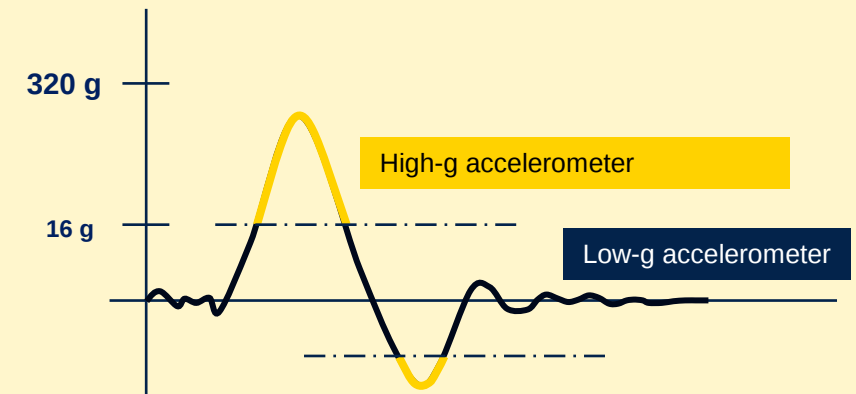
No overhead in the package size

- Compact IMU footprint: 2.5 x 3.0 x 0.83 mm

At-the-edge processing

- Adaptive self-configuration (ASC)
- MLC⁽¹⁾ (1 kHz, 256 nodes), FSM⁽²⁾, SFLP⁽³⁾
- 1.5 KB FIFO (up to 4.5 KB with compression)
- OIS with Aux I³C interface (v1.1)
- And more...

Automatic switch with FSM



(1) MLC: Machine learning core

(2) FSM: Finite state machine

(3) SFLP: Sensor fusion low power **ST Restricted**



Why use LSM6DSV320X?



LSM6DSV320X enables solutions unlocking creativity and transforming applications

- High-g sensing removing false positive detection
- High-fidelity dynamic signal tracking
- Always-on sensing in the best efficient way
- System level complexity reduction and efficiency



LSM6DSV320X: comparison vs competitors

Features	LSM6DSV320X	Competitor IMUs
Mechanical structure	Three sensing elements in a single package • Gyroscope • Low-g accelerometer (± 16 g) • High-g accelerometer (± 320 g)	Two sensing elements in a single package • Gyroscope • Low-g accelerometer (± 32 g)
Signal dynamics reconstruction	Capable of high-fidelity motion tracking and reconstruction	Limited reconstruction of dynamics
False-positive robustness	High robustness with advanced filtering and signal processing	Basic filtering capabilities
Edge AI	Machine learning core and adaptive self-configuration	--
Software libraries	Motion XLF, sensor fusion, context awareness, basic libraries	Basic libraries for standard operations
Target applications	Superior functionality in mobile, IoT, and asset tracking devices	Limited functionality in standard wearable applications

The perfect product for you and all around you

LSM6DSV320X



Industry-first IMU with dual MEMS accelerometer
Measures accurately up to 320 g full-scale range

New frontiers for personal electronics and IoT
Emergency call, drops and falls tracking, concussion, etc

Miniaturized AI-enabled sensor with context-awareness
for system level complexity reduction and efficiency

Our technology starts with You



Find out more at [st.com/LSM6DSV320X](https://www.st.com/LSM6DSV320X)

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