Graphene magnetic field sensor for extreme temperatures

6H-SiC technology

Features:

Type: classical Hall effect
Operating temperatures: 80 – 770 K
Current-mode sensitivity: see graph

Structure:

Material: Quasi-free-standing monolayer+ graphene on vanadium-compensated semiinsulating 6H-SiC(0001)
Technology: Epitaxial CVD
Passivation: Aluminum oxide

P-type active layer:

Hole concentration: 4E12 cm^{-2}
Hole mobility: < 3000 cm^2/Vs
Sheet resistance: < 1000 Ω/sq

Power supply:

Feed current: < 10 mA

Package:

Surface mount alumina package: 3.8 mm / 3.8 mm / 1.4 mm

4H-SiC technology

Features:

Type: classical Hall effect
Operating temperatures: 80 – 770 K
Current-mode sensitivity: see graph

Structure:

Material: Quasi-free-standing monolayer+ graphene on high-purity semiinsulating 4H-SiC(0001)
Technology: Epitaxial CVD
Passivation: Aluminum oxide

P-type active layer:

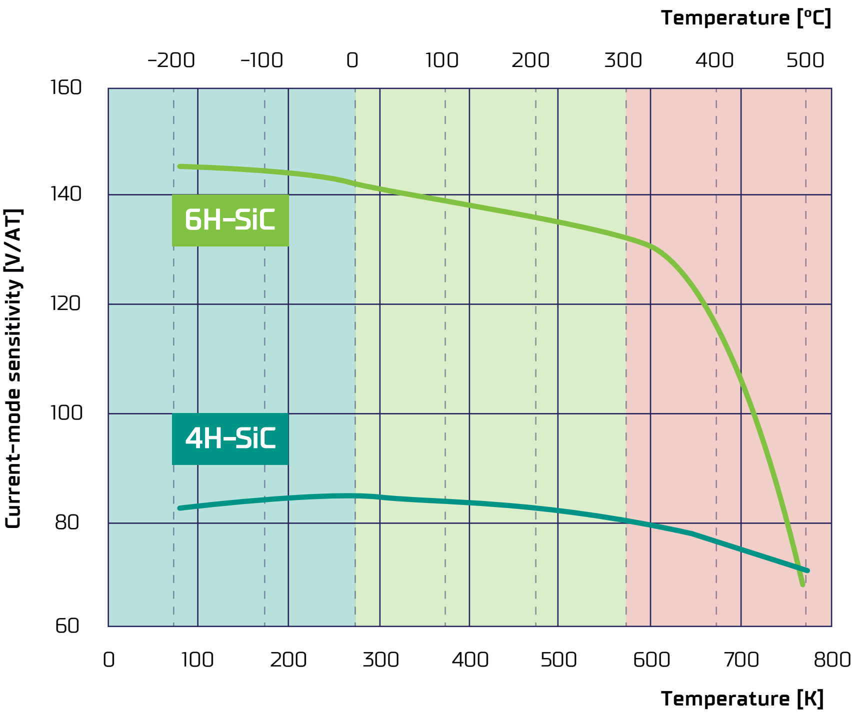
Hole concentration: 8E12 cm^{-2}
Hole mobility: < 3000 cm^2/Vs
Sheet resistance: < 1000 Ω/sq

Power supply:

Feed current: < 10 mA

Package:

Surface mount alumina package: 3.8 mm / 3.8 mm / 1.4 mm



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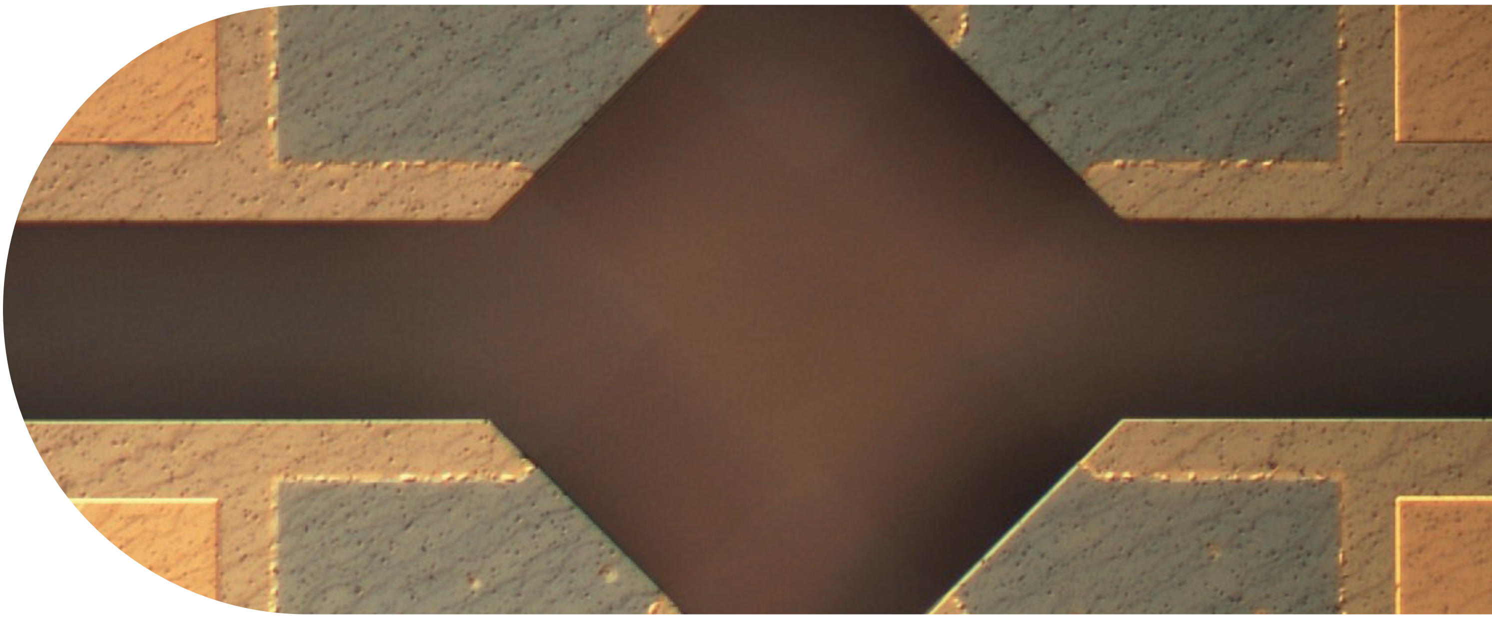
Graphene magnetic field sensor for extreme temperatures

- Potential application in: brushless direct current electric motors (BLDC), permanent magnet synchronous motors (PMSM), electric current sensors, magnetic field detectors operating under high temperatures and neutron irradiation
- Potential areas of competitive advantage: electric vehicles, smart metering, magnetic field confinement fusion reactors



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