Graphenea

Technical Datasheet

Graphene Field-Effect Transistor Chip: S11

General Description

The GFET chip from Graphenea delivers state-of-the-art graphene devices directly to the customer to allow application-driven research without the added burden of having to fabricate high-quality devices from the start.

The GFET-S11 chip from Graphenea provides 31 graphene devices with a van der Pauw (vdP) geometry, distributed in 3 different sizes. 3 vdPs have a 2x2mm^2 footprint, 14 vdPs have a 500x500µm^2 footprint and 14 vdPs have a 125x125µm^2 footprint. These devices have an optimized geometry for 4-probe measurements in a vdP configuration. These varying graphene device dimensions allow investigation of geometry dependence on device properties, enabling immediate optimization.

Features

- State-of-the-art vdPs utilizing Graphenea's established high-quality graphene
- Devices not encapsulated ready for your functionalization
- Perfect platform device for new sensor research and development
- 31 individual vdPs per chip
- Mobilities typically in excess of 1000 cm^2/V·s

Applications

- Graphene device research
- Quantum transport
- Gas sensors
- Chemical sensors
- Magnetic sensors

Typical Specifications

Chip dimensions	10 mm x 10 mm
Chip thickness	525 µm
Number of GFETs per chip	31
Gate Oxide thickness	90 nm
Gate Oxide material	SiO_2
Resistivity of substrate	1-10 Ω·cm
Metallization	Au contacts
Average graphene field-effect mobility	> 1000 cm^2/V·s
Dirac point	< 50 V
Yield	> 75 %

Absolute Maximum Ratings

Maximum gate-ground voltage	± 50 V
Maximum temperature rating	150 °C
Maximum current density	10^7 A·cm^{-2}

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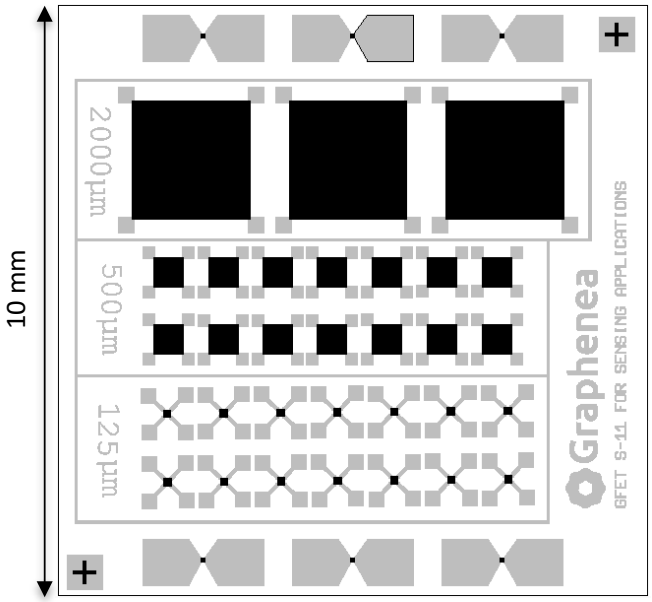
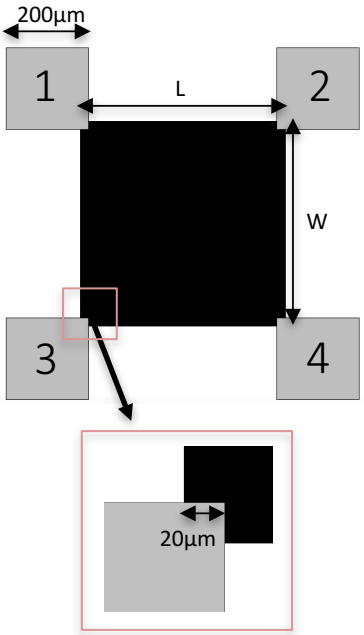
GFET-S11 Layout

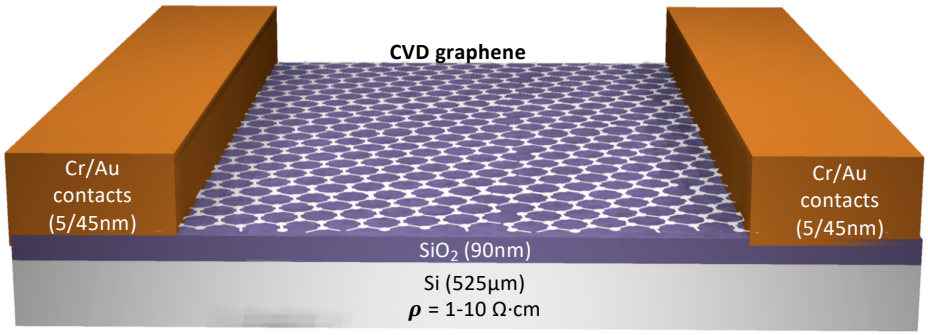




Channel geometries

Description	W (µm)	L (µm)	Quantity
2000	2000	2000	3
500	500	500	14
125	125	125	14

Cross section



Typical characteristics

Output curves of pairs of vdP contacts. Measured at bias voltage of 20mV (right), measured at room temperature and vacuum conditions on a device with W=L=500 µm.