CREE®

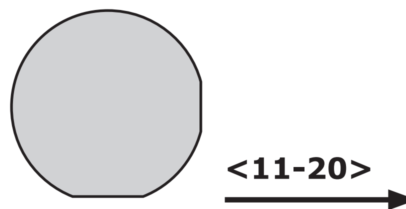
GaN Substrate Products

GaN free-standing substrates are offered in multiple sizes and grades. All wafers are nominally on-axis and have a polished gallium surface. Wafer orientation in plane is indicated with a flat as shown below. A description of the measurement techniques used for grading and additional terms and conditions follow the wafer specifications.

2" (50.8mm) Gallium Nitride Substrates

N-type GaN substrates typically have a resistivity of 0.01–0.1 Ω-cm. Si and O are the primary donor impurities.

Part Number	Dimensions (mm)	Thickness (microns)	Dislocation Density (cm^{-2})	Macroscopic Defect Density (cm^{-2})	Usable Surface Area
W3NRD0T-0200-x	50.8 ø	450 (± 50)	≤ 1 x 10^7	≤ 25	> 80%



Measurement Techniques and Product Details

Physical dimensions, macroscopic defect density, resistivity and usable surface area are measured for every wafer. In addition, dislocation density is measured for wafer batches. A description of the measurement procedures is provided below.

Wafers may contain chips or flawed areas that reduce the usable surface area. The usable area is visually determined. Material characteristics are measured in the usable portion of the wafers.

Wafer thickness is measured in five predetermined locations for 2" wafers and in the center of 10 mm wafers. The average of the measurements is reported on the datasheets. Dislocation data is measured by etch and optical imaging and/or atomic force microscopy and/or CL. Following etching or polishing, small-diameter shallow pits are formed at the site of threading dislocations and are readily observed by atomic force microscopy. The dislocation density is sampled on the wafer and the average value is reported. Dislocation density is measured on at least 10% of the wafer batch. For an additional charge we will measure the dislocation density on specific wafers.

Wafers are inspected by differential interference contrast (DIC) microscopy. Macroscopic defect density is measured by DIC microscopy in predetermined locations; the average of the measurements is reported on the datasheets. The macroscopic defect density for production-grade wafers is verified by visual inspection. Examples of macroscopic defects include pits, depressions, scratches and misoriented crystal grains.

Additional Terms and Conditions

Specification sheets may change without notice. Please contact Cree, Inc. or one of our representatives for an updated specification sheet.

GaN wafers are offered subject to the CREE, INC. Sales Terms and Conditions, a copy of which may be obtained by contacting a Cree representative or by downloading from www.cree.com/ftp/pub/termsandconditionsread.pdf. In particular, the recipient may not use purchased wafers in the bulk growth of Group III-nitride based materials or in the development of processes for bulk growth of such materials.

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