**NOTE:** special requirements, tighter tolerances, other parameters, which are beyond the above specifications, are possible (upon request). **PACKAGE:** Thermal package (vacuum sealing or plastic bag), then put into cartoon boxes filled with shock resistant material.

**Crystalline form**

Monocrystalline; polycrystalline

N

**Conductivity Type**

[111] ± 2º; [100] ± 2º

**Orientation**

5÷40, others as agreed

**Resistivity, Ohm\*cm**

≥ 99.999%

**Purity**

**MATERIAL SPECIFICATION**

**Parameter Sizes Tolerances**

0.1

0.15

diameters more than 200 мм

0.05

for diameters till 100 мм

forfor diameters 100÷200 мм

**Parallelism, flatness for plano blanks**

0.1

0.05

diameters more than 200 м

0.03

ffor diameters till 100 мм

for or diameters 100÷200 мм м

**ETV, mm**

<0.5 mm

**Edge chips, mm**

0.1÷0.8±0.1

**Chamfer**

0.1

0.15

200÷400

0.05

10÷100

100÷200

**Thickness, sag, length and width, mm**

400

320

**monocrystalline**

**polycrystalline**

**Maximum diameter**

**sizes, mm:**

0.2

0.1

200÷400

0.05

10÷100

100÷200

**Diameter, mm**

**GENERATED GERMANIUM BLANKS/WEDGES/DISKS/WINDOWS**

**Surface finish, Ra, μm generated blanks plano blanks**

**GERMANIUM FOR OPTICAL APPLICATIONS**

**Index of refraction**

4.0032±0.0002 at λ= 10.6 μm at t=25ºC

2,5 3 4 5 6 7 8 9 10,6 11 12 13 14

46,1 46,3 46,5 46,5 46,5 46,3 46,0 46,9 46,4 46,2 38,0 48,5 39,0

**Typical transmission on a polished sample (germanium monocrystalline, resistivity 5-40 Ohm\*cm) 10mm thick depending on wavelength.**

0.03 max at λ= 10.6 μm at t= 25ºC

**Absorption coefficient, cm-1**

≤ 4·10-4

**Temperature coefficient of refraction index**

≤ 2·10-4

**Homogeneity of index of refraction**

**OPTICAL PROPERTIES**

≤ 1.5;≤ 1.0; ≤ 0.5 (0.3 – instrument D7)

≤ 2.0;≤ 1.5;≤ 1.0

**GERMANIUM FOR SOLAR APPLICATIONS**

**Parameter**

**Value**

60/40

**Scratch/Dig**

<2

**Parallelism (wedge tolerance), arc min**

5/1

**Power/Irregularity wave @ 633 mm**

Protective/dimensional

**Chamfer**

from 0.4 to 25 mm

**Thickness**

from 8 to 300 mm

**Diameter/Diagonal**

Oval

Round

Rectangular

**Shape**

**POLISHED GERMANIUM WINDOWS/WEDGES/LENSES/PRISMS**

**COATED GERMANIUM WINDOWS/WEDGES/LENSES**

Antireflection protective DLC coatings to increase durability and transmission, enhance contrast and eliminate ghost images.

Maximum size – 140 mm for lenses, for windows, wedges and prisms. All request (specifications) are treated individually.

**Parameter**

**Value**

Generated

**Nonworking surface finish**

Polished, epi-ready

**Working surface finish**

According to SEMI М79-0211

**Chamfer**

No more than 20 µm

**Warp**

No more than 10 µm

**Bow**

No more than 10 µm

**TTV**

32.5±1.0 mm

**Size of primary flat**

145±10 µm

**Thickness of wafer**

100±0.5 mm

**Diameter of wafer**

0.01-0.06 Ohm\*cm

**ETV**

P

**Conductivity type**

Not more than 300 cm²

**Dislocation density**

[100]+6°—>[111]

**Crystallographic orientation**

**MONOCRYSTALLINE GERMANIUM SUBSTRATES FOR SOLAR CELLS**