

Commercially Available SiC

Here are some product specification sheets taken directly from major suppliers for the **4H-SiC** polytype.

- First, the **50.8 mm** standard. Note that there is only one **p**-type wafer, that the resistivity is always very low or extremely large ("semi-insulating"), and that the "micropipe density" is a major parameter

Page 4 • Effective December 1998 • Revised March 2003

Product Descriptions

4H-Silicon Carbide

50.8mm Diameter

STANDARD MICROPIPE DENSITY					
Part Number	Type	Orientation	Micropipe Density	Resistivity Ohm-cm Range	Bin
W4NCD8C-0000	n	8° off	31-100 micropipes/cm ²	0.015-0.028	C
W4NCD8D-0000	n	8° off	31-100 micropipes/cm ²	0.028-0.065	D
W4PCD8G-0000	p	8° off	N/A	2.50-8.50	G

SELECT MICROPIPE DENSITY					
Part Number	Type	Orientation	Micropipe Density	Resistivity Ohm-cm Range	Bin
W4NCD8C-S000	n	8° off	16-30 micropipes/cm ²	0.015-0.028	C
W4NCD8D-S000	n	8° off	16-30 micropipes/cm ²	0.028-0.065	D

LOW MICROPIPE DENSITY					
Part Number	Type	Orientation	Micropipe Density	Resistivity Ohm-cm Range	Bin
W4NCD8C-L000	n	8° off	≤15 micropipes/cm ²	0.015-0.028	C

ULTRA-LOW MICROPIPE DENSITY					
Part Number	Type	Orientation	Micropipe Density	Resistivity Ohm-cm Range	Bin
W4NCD8C-L000P	n	8° off	≤5 micropipes/cm ²	0.015-0.028	C

SEMI-INSULATING					
Part Number	Type	Orientation	Micropipe Density	Resistivity Ohm-cm Range	Bin
W4SRD8R-0D00	SI	on-axis	N/A	≥1E5	R
W4SRD8R-0D00	SI	8° off	N/A	≥1E5	R
W4TRD8R-0D00	HPSI	on-axis	N/A	≥1E5	R
W4TRD8R-0D00	HPSI	8° off	N/A	≥1E5	R

LCW SUBSTRATES					
Part Number	Type	Orientation	Micropipe Density	Resistivity Ohm-cm Range	Bin
W4NRD8X-0000	n	on-axis	N/A	0.013-0.500	N/A

* - Contact Cree for availability

CREE

MATERIALS

- Now the **50.8 mm** standard. Note that there is only **one** p-type wafer, resistivities again are always very low or extremely large ("semi-insulating"), and there is no "ultra-low micropipe density" available in Sept. **2003**.

Effective December 1998 • Revised March 2003 • Page 5

Product Descriptions

4H-Silicon Carbide

76.2mm Diameter

STANDARD MICROPIPE DENSITY					
Part Number	Type	Orientation	Micropipe Density	Resistivity Ohm-cm Range	Bin
W4NXF4C-0D00	n	4° off	31-100 micropipes/cm ²	0.015-0.028	C
W4NXF8C-0D00	n	8° off	31-100 micropipes/cm ²	0.015-0.028	C
W4NRF0X-0D00	n	on-axis	N/A	0.013-0.500	N/A

SELECT MICROPIPE DENSITY					
Part Number	Type	Orientation	Micropipe Density	Resistivity Ohm-cm Range	Bin
W4NXF4C-SD00	n	4° off	16-30 micropipes/cm ²	0.015-0.028	C
W4NXF8C-SD00	n	8° off	16-30 micropipes/cm ²	0.015-0.028	C

LOW MICROPIPE DENSITY					
Part Number	Type	Orientation	Micropipe Density	Resistivity Ohm-cm Range	Bin
W4NXF4C-LD00	n	4° off	≤15 micropipes/cm ²	0.015-0.028	C
W4NXF8C-LD00	n	8° off	≤15 micropipes/cm ²	0.015-0.028	C

SEMI-INSULATING (PROTOTYPE)					
Part Number	Type	Orientation	Micropipe Density	Resistivity Ohm-cm Range	Bin
W4TXE0X-0D00	HPSI	on-axis	N/A	N/A	N/A

- The "Off-axis" specs together with the low resistivity in the "orientation" column tells us that these wafers are only intended as a substrates for an epitaxial layer.

Now the **6H-SiC** wafers:

Product Descriptions**6H-Silicon Carbide****50.8mm Diameter**

Part Number	Type	Orientation	Resistivity Ohm-cm Range	Bin
W6NCD33-0000	n	3.5° off	0.020-0.040	J
W6NCD3K-0000	n	3.5° off	0.040-0.090	K
W6NCD6K-0000	n	on-axis	0.040-0.090	K
W6NCD6KLSR-0000	n	on-axis	0.040-0.090	K
W6NCD3L-0000	n	3.5° off	0.090-0.150	L
W6PXD3O-0000	p	3.5° off	1.00-5.00	O

LCW SUBSTRATES

W6NREDOX-0000	n	on-axis	0.020-0.200	N/A
---------------	---	---------	-------------	-----

76.2mm Diameter

Part Number	Type	Orientation	Resistivity Ohm-cm Range	Bin
W6NREOX-0000	n	on-axis	0.020-0.200	N/A

Note that there is a lightly **p**-doped (**1 - 5**) Ωcm wafer.

No price quotes are given in the Internet. But **SiC** does not come cheaply. Prices of **\$250 - \$500** (depending on specs) for one **50 mm** wafer are presently (**2003**) asked. Anyway, there is progress: In **1995** it was more like **\$600 - \$2000**.

For that kind of money you get several **300 mm Si** wafers, which are far more perfect form a crystal quality point of view. It follows that if people are willing to pay that much money for so little, **SiC** must be useful to some.