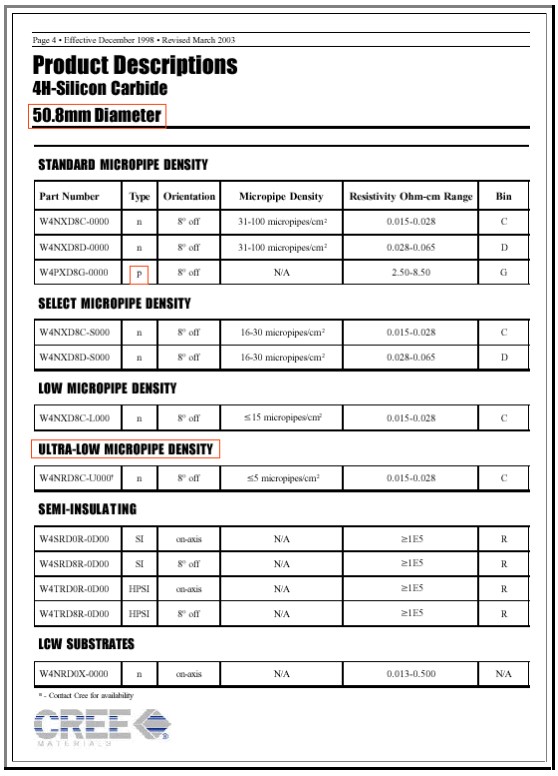
Commercially Available SiC

- 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



Product Descriptions
4H-Silicon Carbide
50.8mm Diameter

STANDARD MICROPIPE DENSITY

Part Number	Type	Orientation	Micropipe Density	Resistivity Ohm-cm Range	Bin
W4NXD8C-0000	n	8° off	31-100 micropipes/cm²	0.015-0.028	C
W4NXD8D-0000	n	8° off	31-100 micropipes/cm²	0.028-0.065	D
W4PXD8G-0000	p	8° off	N/A	2.50-8.50	G

SELECT MICROPIPE DENSITY

W4NXD8C-S000	n	8° off	16-30 micropipes/cm²	0.015-0.028	C
W4NXD8D-S000	n	8° off	16-30 micropipes/cm²	0.028-0.065	D

LOW MICROPIPE DENSITY

W4NXD8C-L000	n	8° off	≤15 micropipes/cm²	0.015-0.028	C

ULTRA-LOW MICROPIPE DENSITY

W4NRD8C-U000*	n	8° off	≤5 micropipes/cm²	0.015-0.028	C

SEMI-INSULATING

W4SRD0R-0D00	SI	on-axis	N/A	≥1E5	R
W4SRD8R-0D00	SI	8° off	N/A	≥1E5	R
W4TRD0R-0D00	HPSI	on-axis	N/A	≥1E5	R
W4TRD8R-0D00	HPSI	8° off	N/A	≥1E5	R

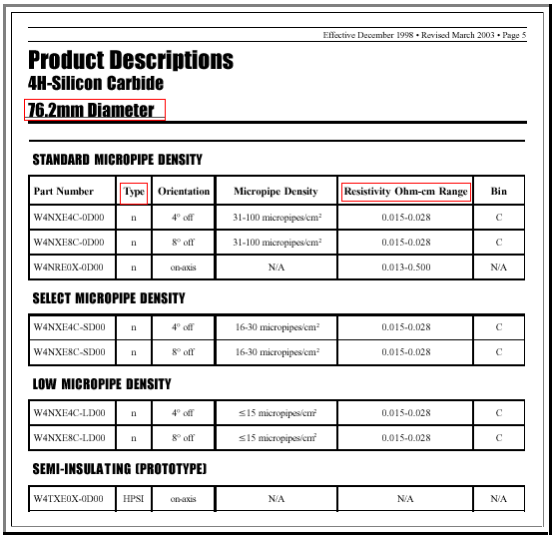
LCW SUBSTRATES

W4NRD0X-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**.



Product Descriptions
4H-Silicon Carbide
76.2mm Diameter

STANDARD MICROPIPE DENSITY

Part Number	Type	Orientation	Micropipe Density	Resistivity Ohm-cm Range	Bin
W4NXE4C-0D00	n	4° off	31-100 micropipes/cm²	0.015-0.028	C
W4NXE8C-0D00	n	8° off	31-100 micropipes/cm²	0.015-0.028	C
W4NRE0X-0D00	n	on-axis	N/A	0.013-0.500	N/A

SELECT MICROPIPE DENSITY

W4NXE4C-SD00	n	4° off	16-30 micropipes/cm²	0.015-0.028	C
W4NXE8C-SD00	n	8° off	16-30 micropipes/cm²	0.015-0.028	C

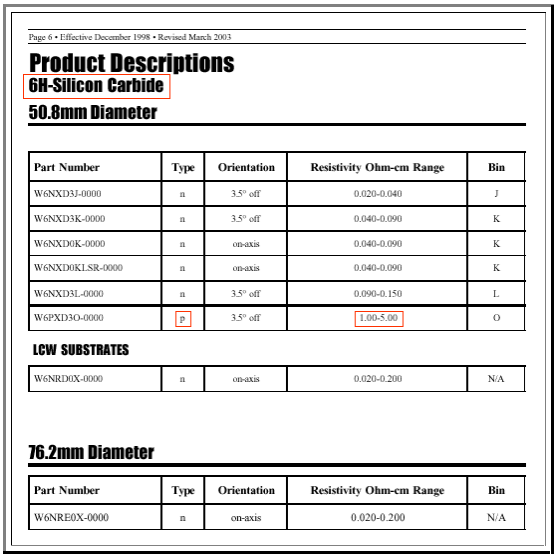
LOW MICROPIPE DENSITY

W4NXE4C-LD00	n	4° off	≤15 micropipes/cm²	0.015-0.028	C
W4NXE8C-LD00	n	8° off	≤15 micropipes/cm²	0.015-0.028	C

SEMI-INSULATING (PROTOTYPE)

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:



Page 6 • Effective December 1998 • Revised March 2003

Product Descriptions

6H-Silicon Carbide

50.8mm Diameter

Part Number	Type	Orientation	Resistivity Ohm-cm Range	Bin
W6NXD3J-0000	n	3.5° off	0.020-0.040	J
W6NXD3K-0000	n	3.5° off	0.040-0.090	K
W6NXD0K-0000	n	on-axis	0.040-0.090	K
W6NXD0KLSR-0000	n	on-axis	0.040-0.090	K
W6NXD3L-0000	n	3.5° off	0.090-0.150	L
W6PXD3O-0000	p	3.5° off	1.00-5.00	O

LCW SUBSTRATES

W6NRD0X-0000	n	on-axis	0.020-0.200	N/A

76.2mm Diameter

Part Number	Type	Orientation	Resistivity Ohm-cm Range	Bin
W6NRE0X-0000	n	on-axis	0.020-0.200	N/A

- Note that there is a lightly **p**-doped **(1 - 5)** Ω**cm** 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.