

# BOIN

## scientific software

WAFERMAP for Windows

### APPLICATION NOTE 5: Temperature Mapping Using Multiple Thermocouples

An easy way to monitor temperature distributions on semiconductor wafers is to use a wafer, instrumented with a number of embedded thermocouples (TC). Typical applications of TC-wafers are thermal analysis of processing steps carried out in a diffusion furnace or Rapid Thermal Processing chamber. The temperature readout of these TC's can be stored during processing for later use.

WAFERMAP can be used to visualize the measured temperature distributions for any TC configuration. The number and location of TC's is user-defined. The measured temperature values can either be entered manually in WAFERMAP, or, if the data can be accessed via files, a data conversion tool may be used to generate WAFERMAP files. In the following we will show an example of TC arrangement, measured temperature distribution and mapping.

**Figures:**

#	x coord	y coord	value
1	0	0	700
2	0	-47,5	702
3	33,58	-33,58	702,5
4	47,5	0	701,2998
5	33,58	33,58	702,1195
6	0	47,5	703,1593
7	-33,58	33,58	703,2002
8	-47,5	0	704,5498
9	-33,58	-33,58	704,4004
10	0	-95	700,8805
11	67,17	-67,17	700,2191
12	95	0	698,4004
13	67,17	67,17	699,2002
14	0	95	700,5907
15	-67,17	67,17	706,0996
16	-95	0	709,2002
17	-67,17	-67,17	702,4691

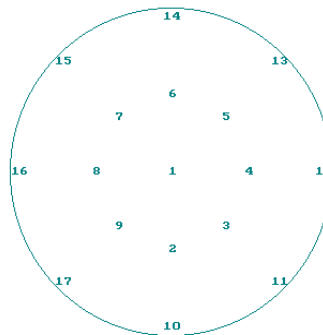


Fig.1: Locations of the 17 TC's

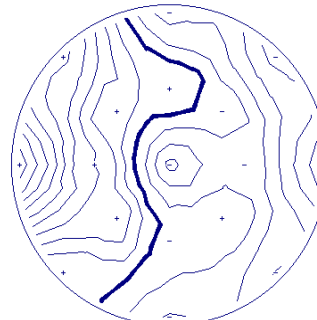


Fig.2: Contour plot of temperature distribution  
(Mean: 702.37°C, Std.Dev.: 0.38%, Interval: 0.1%)