

890AZ

Reticle Design Description

General Description:

The 890AZ is an Alternating Phase Shift reticle. The design is a line/space reticle and it consists of 5 submicron linewidths at various pitch ratios. Although the reticle is clearfield, a small darkfield structure is included in the center of the reticle for etch development purposes.

The overall die size is 32.5 x 26.0mm. The Field Layout is illustrated in **Figure 1** and the floorplan is shown on **Figure 1A**. The reticle has been designed so that smaller field sizes can be patterned; a 20x20mm and a 9x8mm as shown in **Figures 1B and 1C**.

The reticle was manufactured to target the 0.12um features.

The Barcode reads 300A1890AZ.

List of Structures:

The structures featured on this reticle are listed below. Tables detailing what each module contains will follow in the next section. The structure names are as shown on the figures.

1. Line_Cell_Horz_08_Big
2. Line_Cell_Horz_08
3. Line_Cell_Horz_08_Dark
4. Line_Cell_Big

The Line_Cell_Horz_08_Big is placed vertically and horizontally throughout the full field. The other structures are placed vertically in the center of the field.

Structure Descriptions:

Each module consists of five different line sizes at varied pitch ratios. The line size is designated by a letter and the pitch is labeled in nanometers.

A	0.10 μ m line
B	0.12 μ m line
C	0.14 μ m line
D	0.16 μ m line
E	0.18 μ m line

The Tables below will illustrate this. Note that these tables contain “DESIGN SIZES” which do not necessarily reflect the sizes printed on the wafer.

Views of the structures, as well as, closeup views are shown on figures 2 through 5.

TABLE 1 – Feature Sizes for Line_Cell_Horz_08_Big (see **Figure 2**)

Line Width(μm)	Pitch(μm)	Pitch Ratio
0.100	0.200	1:1
0.100	0.220	1.2:1
0.100	0.240	1.4:1
0.100	0.260	1.6:1
0.100	0.280	1.8:1
0.100	0.300	2:1
0.100	0.340	2.4:1
0.100	0.400	3:1
0.100	0.600	5:1
0.100	2.100	ISO

0.120	0.240	1:1
0.120	0.260	1.16:1
0.120	0.280	1.33:1
0.120	0.300	1.5:1
0.120	0.320	1.67:1
0.120	0.360	2:1
0.120	0.400	2.33:1
0.120	0.480	3:1
0.120	0.720	5:1
0.120	2.120	ISO

Table 1 (Cont.)

Line Width(μm)	Pitch(μm)	Pitch Ratio
0.140	0.280	1:1
0.140	0.300	1.14:1
0.140	0.340	1.42:1
0.140	0.360	1.57:1
0.140	0.380	1.71:1
0.140	0.420	2:1
0.140	0.480	2.42:1
0.140	0.560	3:1
0.140	0.840	5:1
0.140	2.140	ISO

0.160	0.320	1:1
0.160	0.360	1.25:1
0.160	0.380	1.38:1
0.160	0.400	1.5:1
0.160	0.440	1.75:1
0.160	0.480	2:1
0.160	0.540	2.37:1
0.160	0.640	3:1
0.160	0.960	5:1
0.160	2.160	ISO

0.180	0.360	1:1
0.180	0.400	1.22:1
0.180	0.440	1.44:1
0.180	0.460	1.56:1
0.180	0.520	1.89:1
0.180	0.540	2:1
0.180	0.620	2.44:1
0.180	0.720	3:1
0.180	1.080	5:1
0.180	2.180	ISO

TABLE 2 – Feature Sizes for Line_Cell_Horz_08 (see **Figure 3**)

Line Width(μm)	Pitch(μm)	Pitch Ratio
0.100	0.200	1:1
0.100	0.260	1.6:1
0.100	0.300	2:1
0.100	0.400	3:1
0.100	0.600	5:1
0.100	2.100	ISO

0.120	0.240	1:1
0.120	0.300	1.5:1
0.120	0.360	2:1
0.120	0.480	3:1
0.120	0.720	5:1
0.120	2.120	ISO

0.140	0.280	1:1
0.140	0.360	1.57:1
0.140	0.420	2:1
0.140	0.560	3:1
0.140	0.840	5:1
0.140	2.140	ISO

0.160	0.320	1:1
0.160	0.400	1.5:1
0.160	0.480	2:1
0.160	0.640	3:1
0.160	0.960	5:1
0.160	2.160	ISO

0.180	0.360	1:1
0.180	0.460	1.56:1
0.180	0.540	2:1
0.180	0.720	3:1
0.180	1.080	5:1
0.180	2.180	ISO

TABLE 3 – Feature Sizes for Line_Cell_Horz_08_Dark (see **Figure 4**)

Line Width(μm)	Pitch(μm)	Pitch Ratio
0.100	0.200	1:1
0.100	0.260	1.6:1
0.100	0.300	2:1
0.120	0.240	1:1
0.120	0.320	1.67:1
0.120	0.360	2:1
0.140	0.280	1:1
0.140	0.360	1.57:1
0.140	0.420	2:1
0.160	0.320	1:1
0.180	0.360	1:1

TABLE 4 – Feature Sizes for Line_Cell_Big (see **Figure 5**)

Line Width(μm)	Pitch(μm)	Pitch Ratio
0.200	0.400	1:1
0.250	0.500	1:1
0.300	0.600	1:1

890AZ Field Layout
Full field (32.5x26mm)

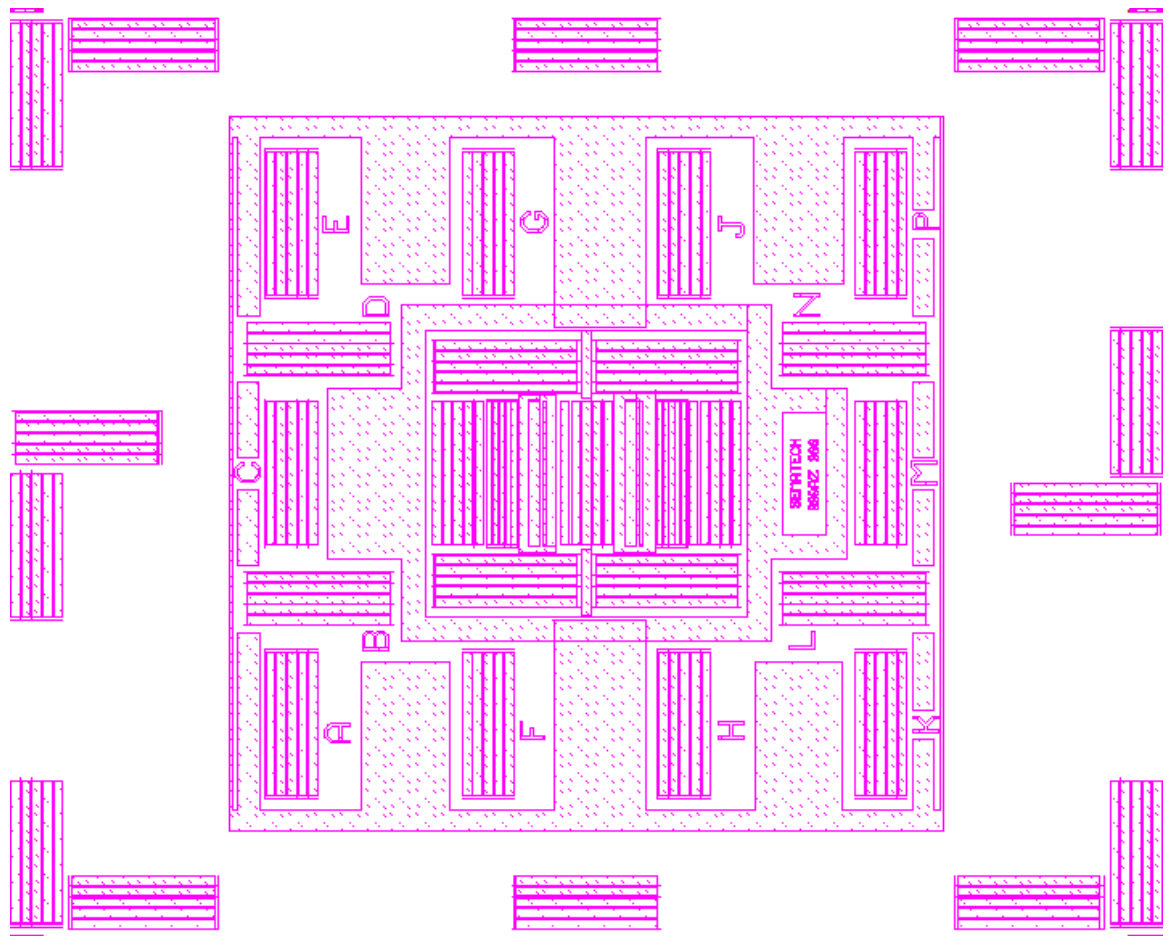


FIGURE 1

890AZ Floorplan Full Field

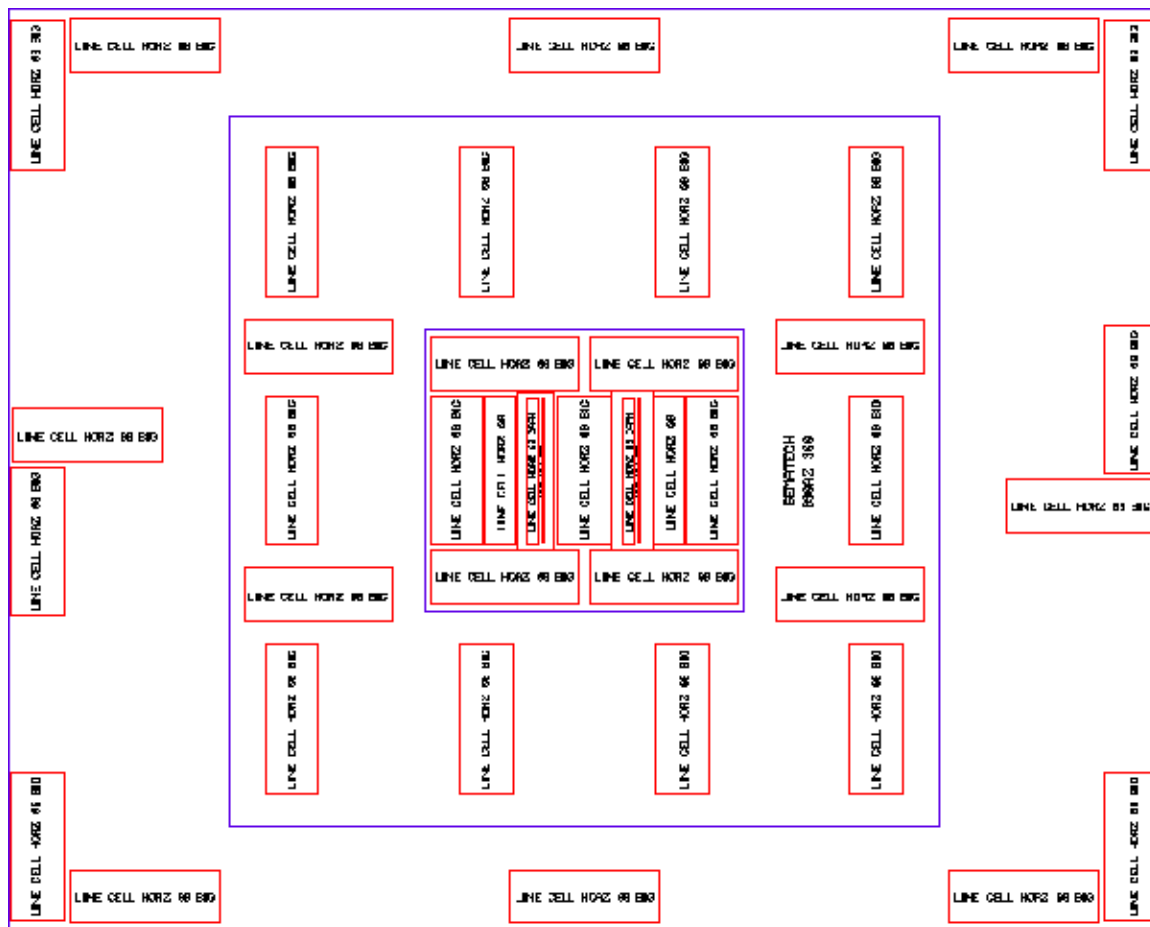


FIGURE 1A

890AZ FLOORPLAN 20X20 FIELD

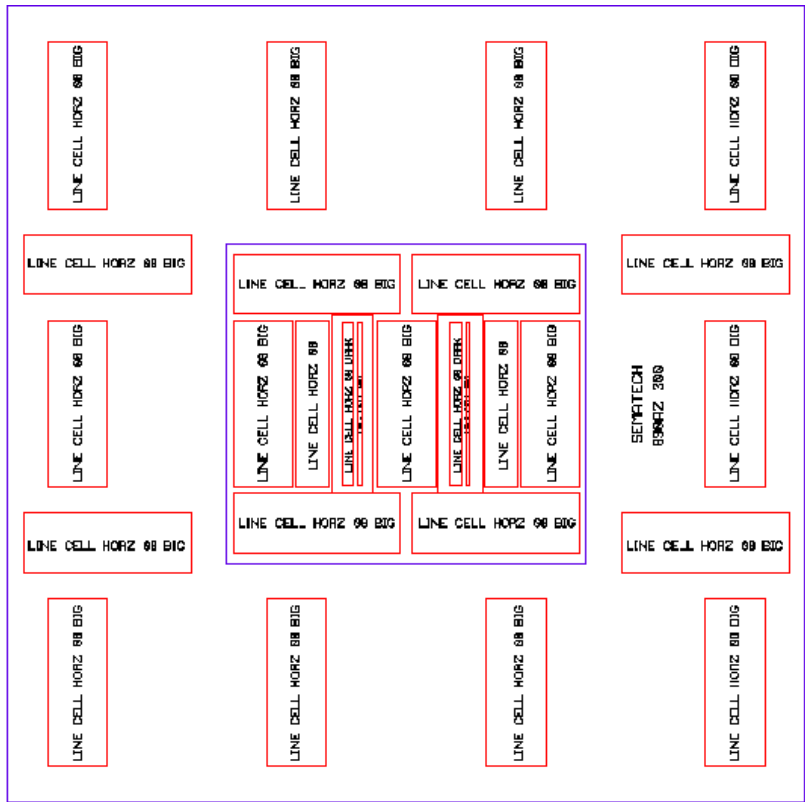


FIGURE 1B

**890AZ FLOORPLAN
Center Field (9x8mm)**

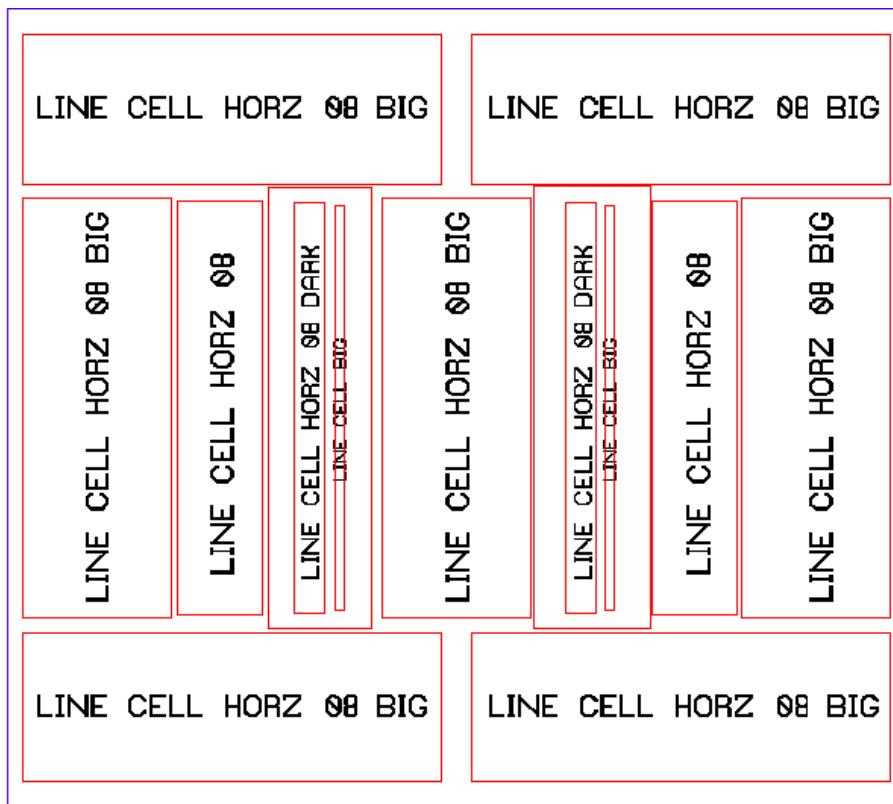


FIGURE 1C

890AZ
Line_Cell_Horz_08_BIG

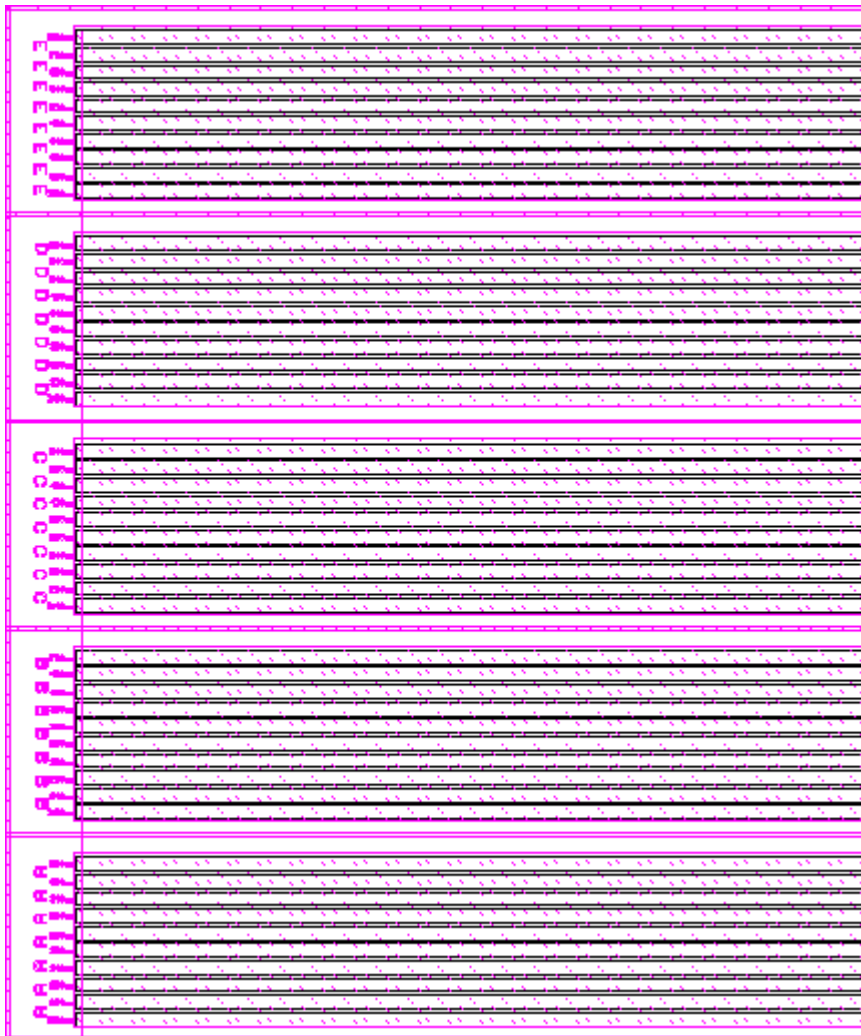
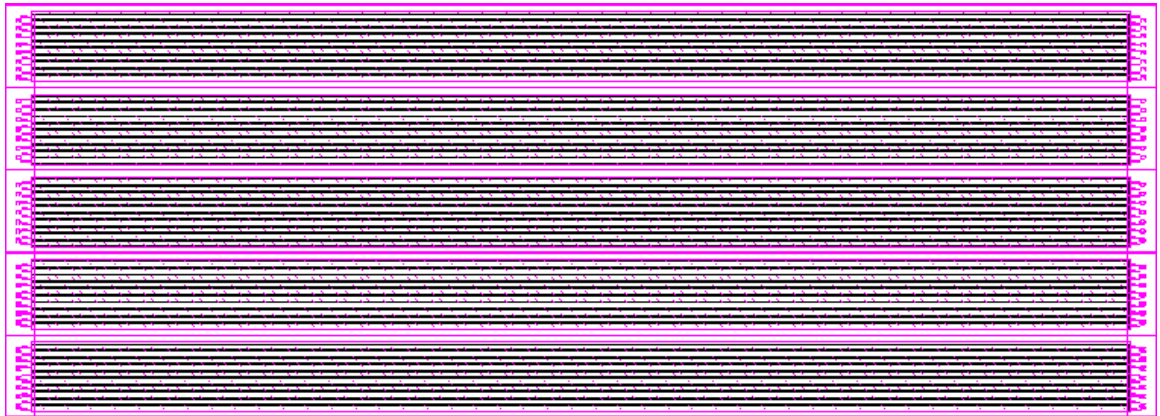


FIGURE 2

890AZ
Line_CELL_Horz_08

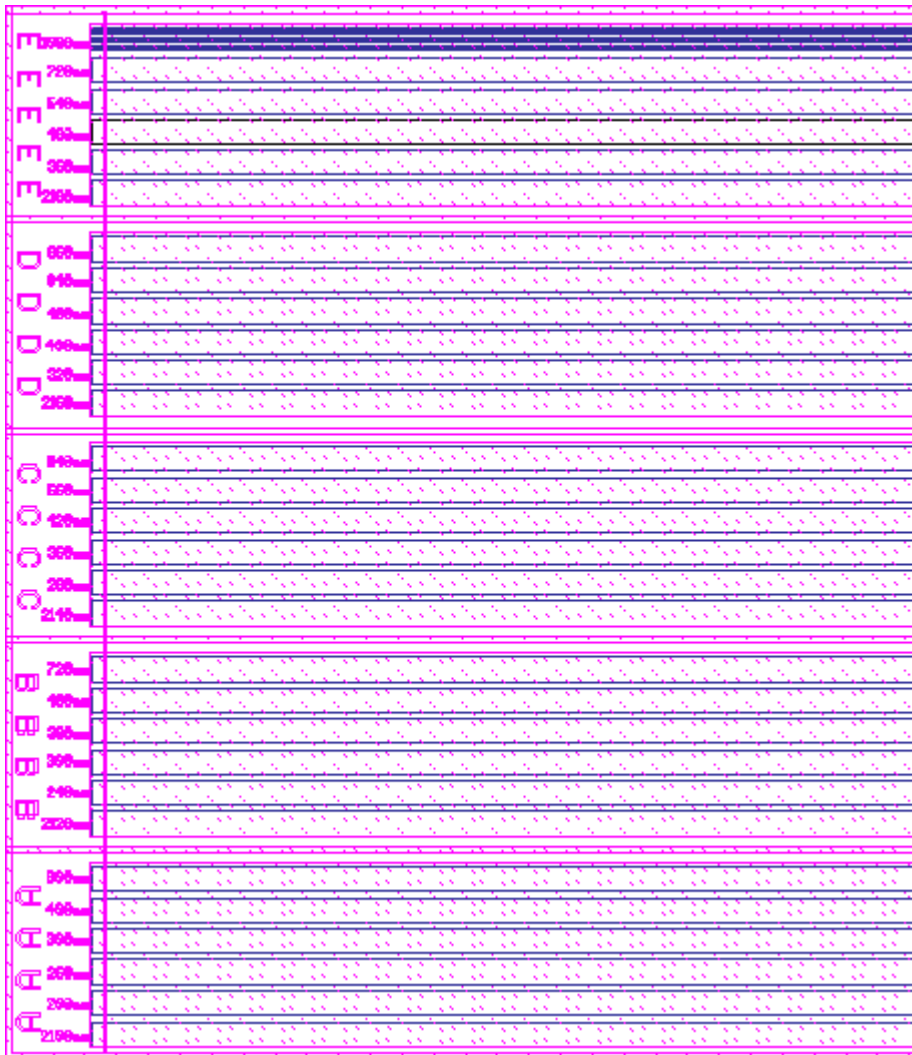
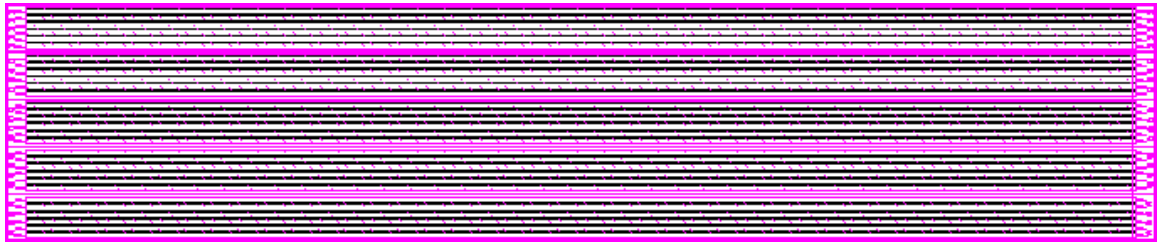


FIGURE 3

890AZ
Line_Cell_Horz_08_Dark

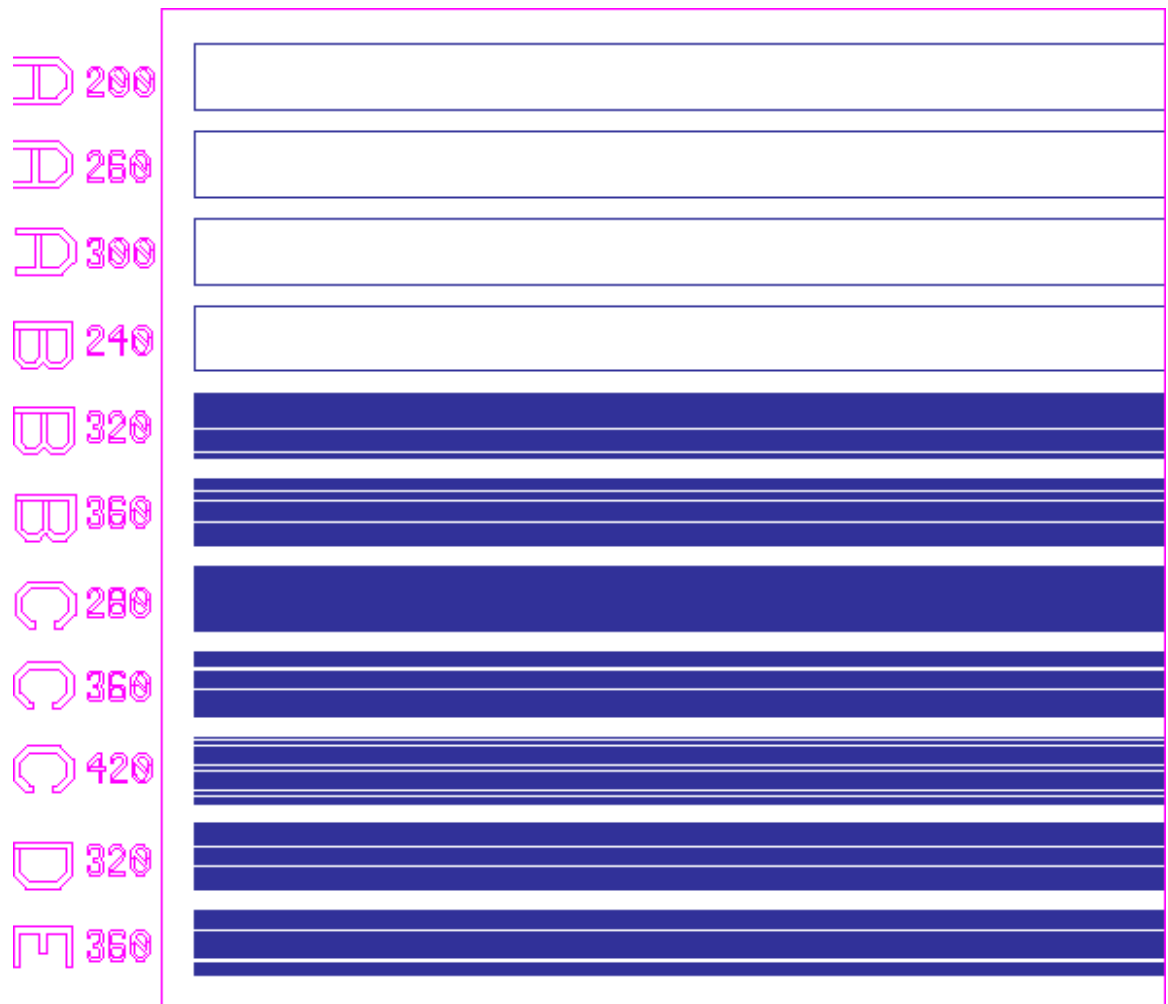


FIGURE 4

890AZ
Line_Cell_BIG

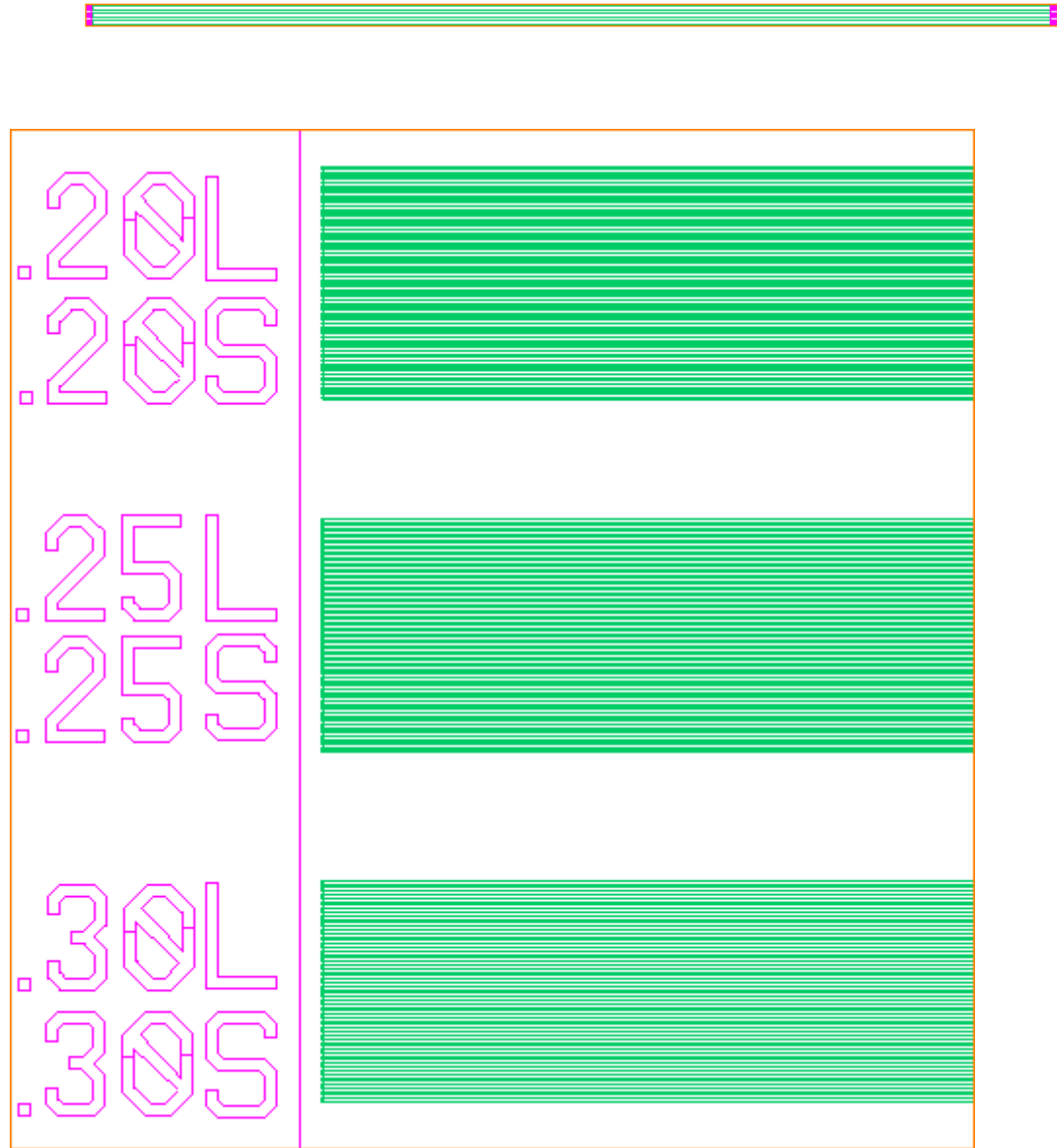


FIGURE 5