NON LINEAR DEMO KIT

DESIGN MANUAL

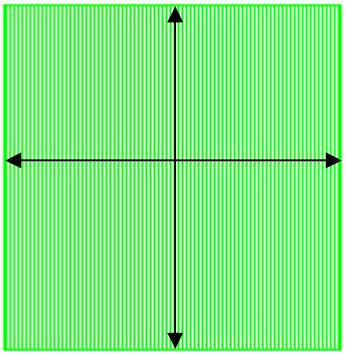
REV 1.0

January 2010

Width

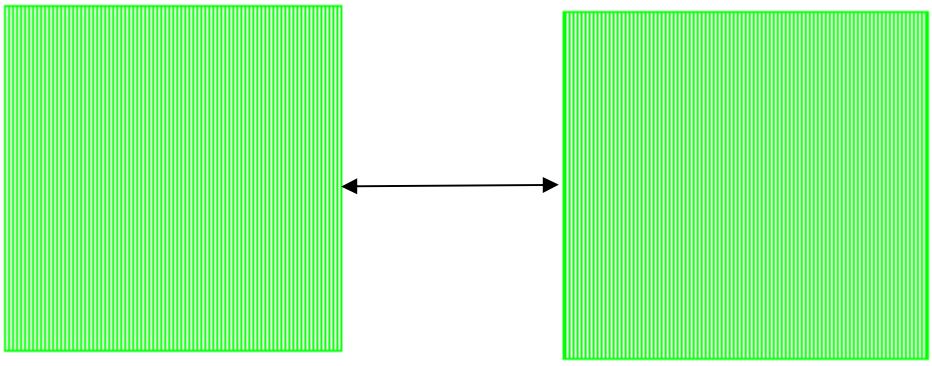
The width is the distance from the inside of one edge to the inside of another edge of the same polygon. Generally the distance between the opposite edges is checked while checking for the Width of the polygon.

The arrows marked in the figure below show the width of the polygon.



Spacing

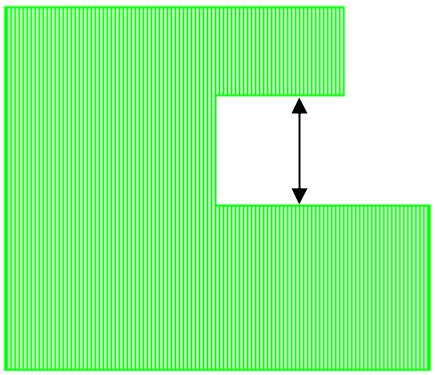
The spacing is the distance from the outside of an edge to the outside of another edge between two (same or different) layers.



Spacing is of two types:-

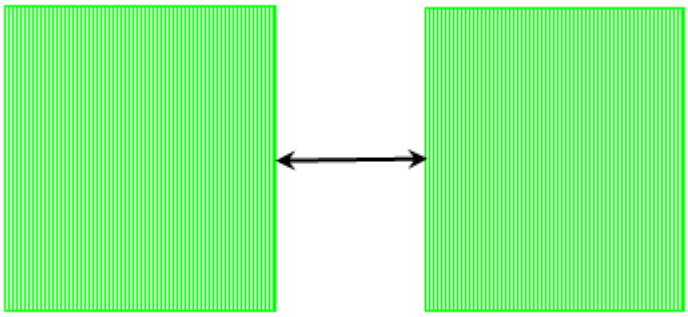
1. Notch - Notch is the spacing within the edges if the same polygon.

   The arrow marked in the figure below shows the Notch distance.



2. Gap - Gap is the spacing between two different polygons.

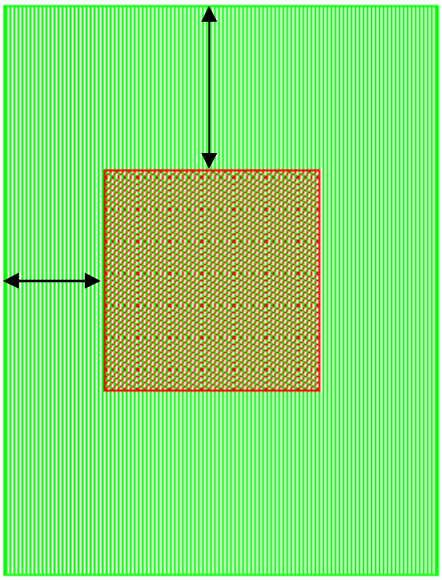
   The arrow marked in the figure below shows the Gap distance.



Inclusion

Inclusion as shown below, is the distance from the inside edge of polygons on the first layer to the outside edge of polygons on the second layer.

In the figure below arrows represents the Inclusion of the Red layer within the Green layer.



Layers Used	ADS Layer ID
mesa	1
nicr	2
Via_Nit1	3
M0	4
Via0_1	5
M1	6
Via1_2	7
M2	8
Via_Pass	9
Bvia	10
Border	12

Design Rules

I. WIDTH RULES

The minimum layer width rules have been tabulated below:-

Minimum Layer Width (um)

Rule Number	Layer	Min. Width(um)
W1	**mesa**	5
W2	**nicr**	5
W3	**Via_Nit1**	5
W4	**M0**	0.15
W5	**Via0_1**	3.8
W6	**M1**	3
W7	**Via1_2**	2
W8	**M2**	1
W9	**Via_Pass**	94

II. SPACING RULES

The minimum layer to layer spacing rules have been tabulated below:-

Minimum Layer to Layer Spacing (um)

1. Spacing Rule for **mesa** Layer

Rule Number	Layer	Min. Spacing(um)
S1.0	**mesa**	5
S1.1	**M0**	0.5
S1.2	**Via0_1**	1
S1.3	**M1**	1.5
S1.4	**Via1_2**	2
S1.5	**M2**	2.5

2. Spacing Rule for **nicr** Layer

Rule Number	Layer	Min. Spacing(um)
S2.0	**nicr**	5
S2.1	**Via_Nit1**	1
S2.2	**M0**	2

3. Spacing Rule for **Via_Nit1** Layer

Rule Number	Layer	Min. Spacing(um)
S3.0	**Via_Nit1**	5
S3.1	**M0**	0.5
S3.2	**Via0_1**	1
S3.3	**M1**	1.5
S3.4	**Via1_2**	2
S3.5	**M2**	2.5
S3.6	**Via_Pass**	3
S3.7	**Bvia**	10

4. Spacing Rule for **M0** Layer

Rule Number	Layer	Min. Spacing(um)
S4.0	**M0**	0.15
S4.1	**Via0_1**	0.5
S4.2	**Via1_2**	1.5
S4.3	**Via_Pass**	2.5
S4.4	**Bvia**	9.5

5. Spacing Rule for **Via0_1** Layer

Rule Number	Layer	Min. Spacing(um)
S5.0	**Via0_1**	3
S5.1	**M1**	0.5
S5.2	**M2**	0.5
S5.3	**Via_Pass**	2
S5.4	**Bvia**	9

6. Spacing Rule for **M1** Layer

Rule Number	Layer	Min. Spacing(um)
S6.0	**M1**	3
S6.1	**Via1_2**	0.5
S6.2	**Via_Pass**	1.5
S6.3	**Bvia**	8.5

7. Spacing Rule for **Via1_2** Layer

Rule Number	Layer	Min. Spacing(um)
S7.0	**Via1_2**	2
S7.1	**M2**	0.5
S7.2	**Via_Pass**	1
S7.3	**Bvia**	8

8. Spacing Rule for **M2** Layer

Rule Number	Layer	Min. Spacing(um)
S8.0	**M2**	1
S8.1	**Via_Pass**	0.5
S8.2	**Bvia**	7.5

9. Spacing Rule for **Via_Pass** Layer

Rule Number	Layer	Min. Spacing(um)
S9.0	**Via_Pass**	94

10. Spacing Rule for **Bvia** Layer

Rule Number	Layer	Min. Spacing(um)
S10.0	**Bvia**	80

11.Spacing Rule for **Border** Layer

Rule Number	Layer	Min. Spacing(um)
S11.0	**Mesa**	30
S11.1	**nicr**	30
S11.2	**Via_Nit1**	30
S11.3	**M0**	30
S11.4	**Via0_1**	30
S11.5	**M1**	30
S11.6	**Via1_2**	30
S11.7	**M2**	30
S11.8	**Via_Pass**	30
S11.9	**Bvia**	30
S11.10	**Border**	50

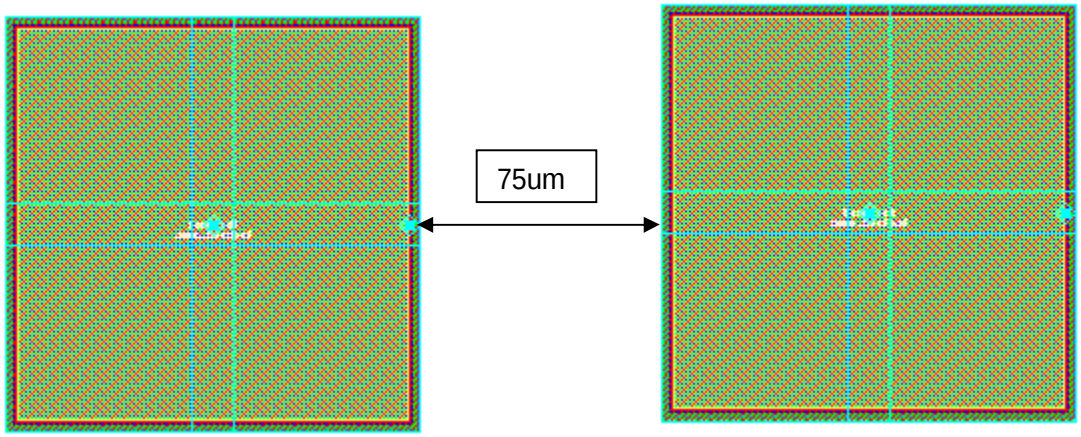
Comprehensive Spacing Rules

	mesa	nicr	Via_Nit1	M0	Via0_1	M1	Via1_2	M2	Via_Pass	Bvia	Border
mesa	5			P(0.5)	P(1)	P(1.5)	P(2)	P(2.5)			
nicr		5	P(1)	P(2)							
Via_Nit1			5	P(0.5)	P(1)	P(1.5)	P(2)	P(2.5)	P(3)	10	
M0				0.15	P(0.5)		P(1.5)		P(2.5)	9.5	
Via0_1					3	P(0.5)	C	P(0.5)	P(2)	9	
M1						3	P(0.5)		P(1.5)	8.5	
Via1_2							2	P(0.5)	P(1)	8	
M2								1	P(0.5)	7.5	
Via_Pass									94		
Bvia										80	
Border	30	30	30	30	30	30	30	30	30	30	50

P(x) = Minimum distance between two parallel layers, where x is the value in 'um'

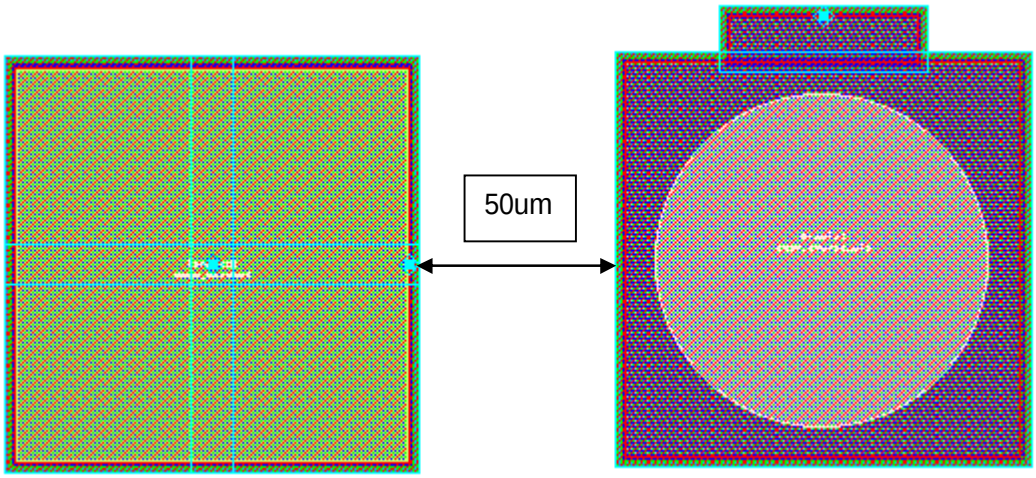
Component Spacing rules:

I. Min Bondpad to Bondpad spacing is 75 um



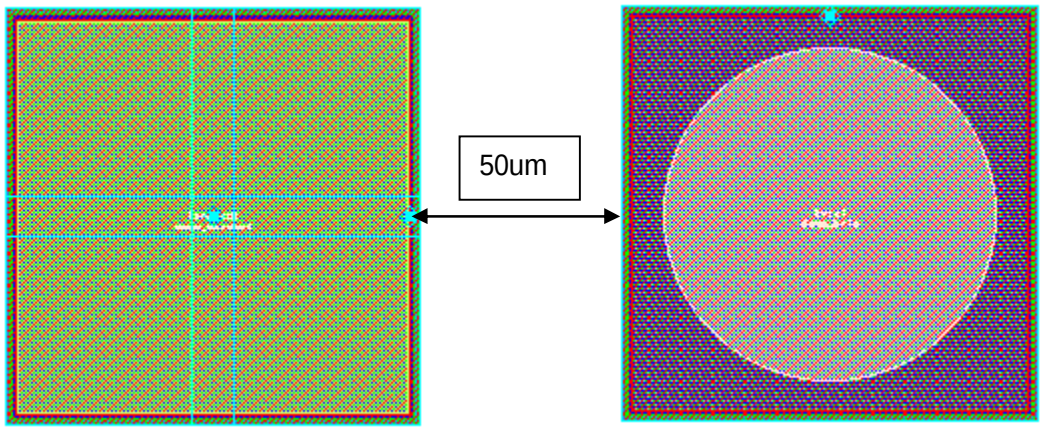
Rule Number	Component	Min. Spacing(um)
CS1.0	Bondpad	75

II. Min Bondpad to SourceVia spacing is 50 um



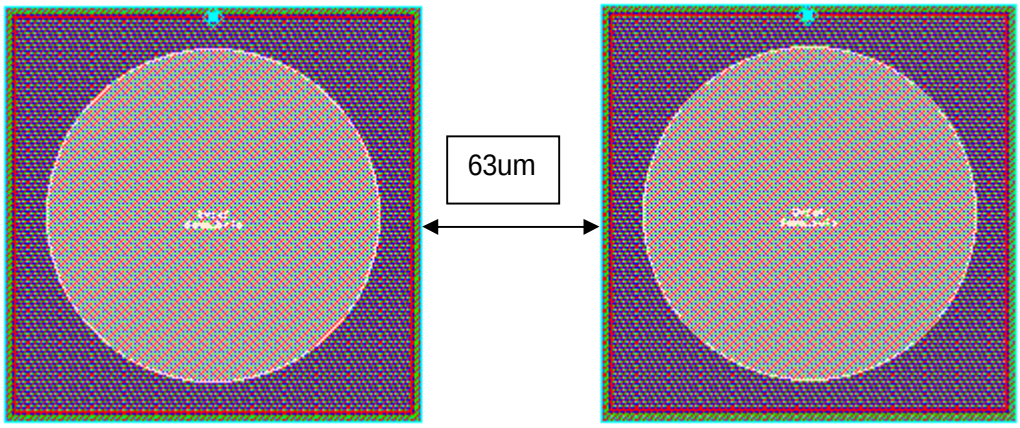
Rule Number	Components	Min. Spacing(um)
CS1.1	Bondpad & SourceVia	50

III. Min Bondpad to GroundVia spacing is 50



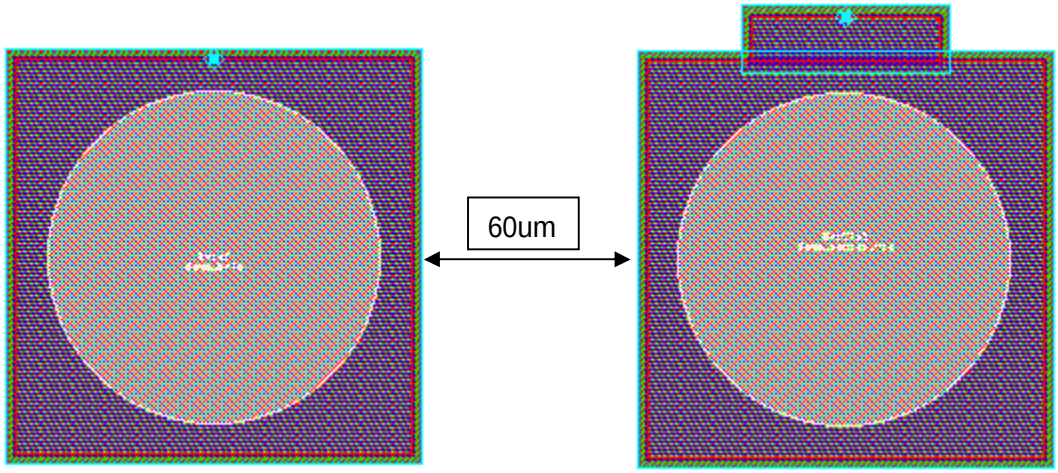
Rule Number	Components	Min. Spacing(um)
CS1.2	Bondpad & GroundVia	50

IV. Min GroundVia to GroundVia spacing is 63



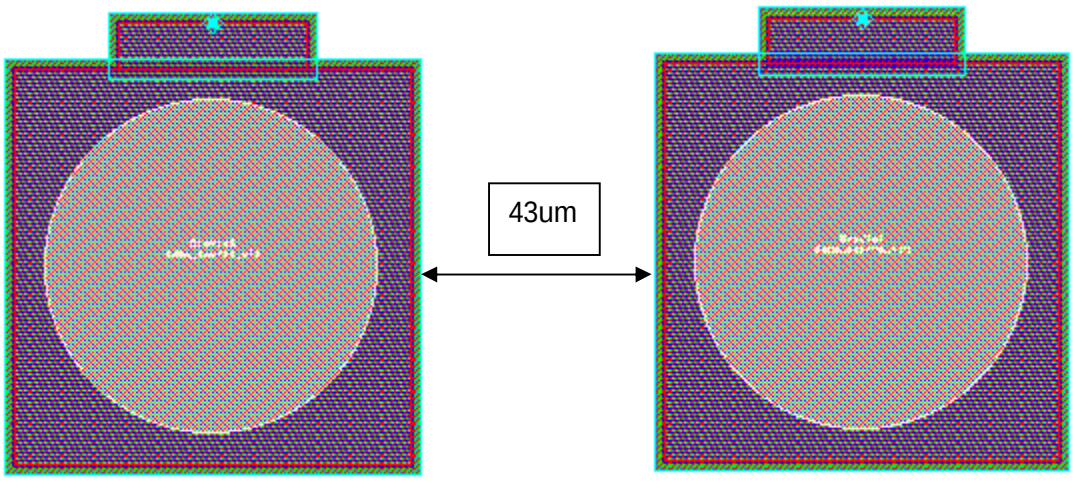
Rule Number	Component	Min. Spacing(um)
CS2.0	GroundVia	63

V. Min GroundVia to SourceVia Spacing is 60



Rule Number	Components	Min. Spacing(um)
CS2.1	GroundVia & SourceVia	60

VI. Min SourceVia to SourceVia spacing is 43



Rule Number	Component	Min. Spacing(um)
CS3.0	SourceVia	43

VII. **FET rules: Inside FET body the minimum layer to layer spacing is 0.5 and it is all tabulated below:-**

Rule Number	Layer1	Layer2	Min. Spacing(um)
F3.0	Via_Nit1	M0	0.5
F3.1	Via_Nit1	Via0_1	0.5
F3.2	Via_Nit1	M1	0.5
F3.3	Via_Nit1	Via1_2	0.5
F3.4	Via_Nit1	M2	0.5
F4.0	M0	Via0_1	0.5
F4.1	M0	M1	0.5
F4.2	M0	Via1_2	0.5
F4.3	M0	M2	0.5
F5.0	Via0_1	M1	0.5
F5.1	Via0_1	Via1_2	0.5
F5.2	Via0_1	M2	0.5
F6.0	M1	Via1_2	0.5
F6.1	M1	M2	0.5
F7.0	Via1_2	M2	0.5

III. INCLUSION RULES

The minimum layer inclusion rules have been tabulated below:-

1. Inclusion of other layers inside **mesa** Layer

Rule Number	Inside Layer	Min. Inclusion(um)
I1.0	**M0**	0.5
I1.1	**Via0_1**	1
I1.2	**M1**	1.5
I1.3	**Via1_2**	2
I1.4	**M2**	2.5

2. Inclusion of other layers inside **Via_Nit1** Layer

Rule Number	Inside Layer	Min. Inclusion(um)
I2.0	**M0**	0.5
I2.1	**Via0_1**	1
I2.2	**M1**	1.5
I2.3	**Via1_2**	2
I2.4	**M2**	2.5
I2.5	**Via_Pass**	3
I2.6	**Bvia**	10

3. Inclusion of other layers inside **M0** Layer

Rule Number	Inside Layer	Min. Inclusion(um)
I3.0	**Via0_1**	0.5
I3.1	**Via1_2**	0.5
I3.2	**Via_Pass**	2.5
I3.3	**Bvia**	9.5

4. Inclusion of other layers inside **Via0_1** Layer

Rule Number	Inside Layer	Min. Inclusion(um)
I4.0	**Via_Pass**	2
I4.1	**Bvia**	9

5. Inclusion of other layers inside **M1** Layer

Rule Number	Inside Layer	Min. Inclusion(um)
I5.0	**Via1_2**	0.4
I5.1	**Via_Pass**	1.5
I5.2	**Bvia**	8.5

6. Inclusion of other layers inside **Via1_2** Layer

Rule Number	Inside Layer	Min. Inclusion(um)
I6.0	**Via_Pass**	1
I6.1	**Bvia**	8

7. Inclusion of other layers inside **M2** Layer

Rule Number	Inside Layer	Min. Inclusion(um)
I7.0	**Via_Pass**	0.5
I7.1	**Bvia**	7.5

Minimum Layer Inclusion (um)

O/I	mesa	nicr	Via_ Nit1	M0	Via0_ 1	M1	Via1 _2	M2	Via_P ass	Bvia
mesa				i(0.5)	i(1)	i(1.5)	i(2)	i(2.5)		
nicr										
Via_Ni t1				i(0.5)	i(1)	i(1.5)	i(2)	i(2.5)	i(3)	i(10)
M0					i(0.5)		i(0.5)		i(2.5)	i(9.5)
Via0_ 1									i(2)	i(9)
M1							i(0.4)		i(1.5)	i(8.5)
Via1_ 2									i(1)	i(8)
M2									i(0.5)	i(7.5)

I is inside O ; i = Complete inclusion ;

IV. GRID RULES

Minimum grid for this Design Kit is 0.01 um.

***Note:- Ignore off-grid rule violations for curved geometries*.**