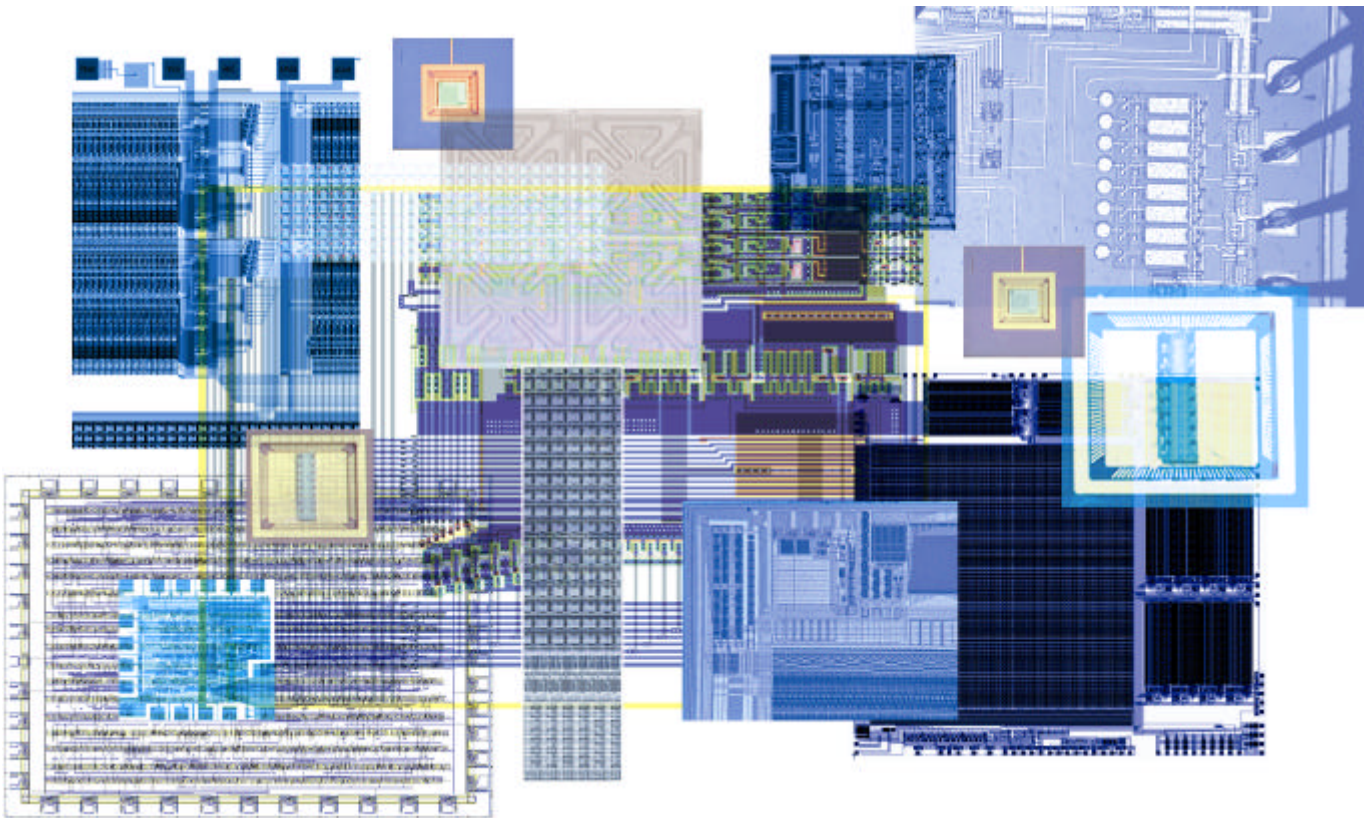


2650 East Foothill Blvd.
Pasadena, CA 91107 USA
Tel: (626) 792-3000
Fax: (626) 792-0300
ces@tanner.com

The MOSIS Service
Hi-ESD Pad Library
AMI C5N (0.5 μ) Process

November 1998



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We accomplish this through training programs, consulting services,
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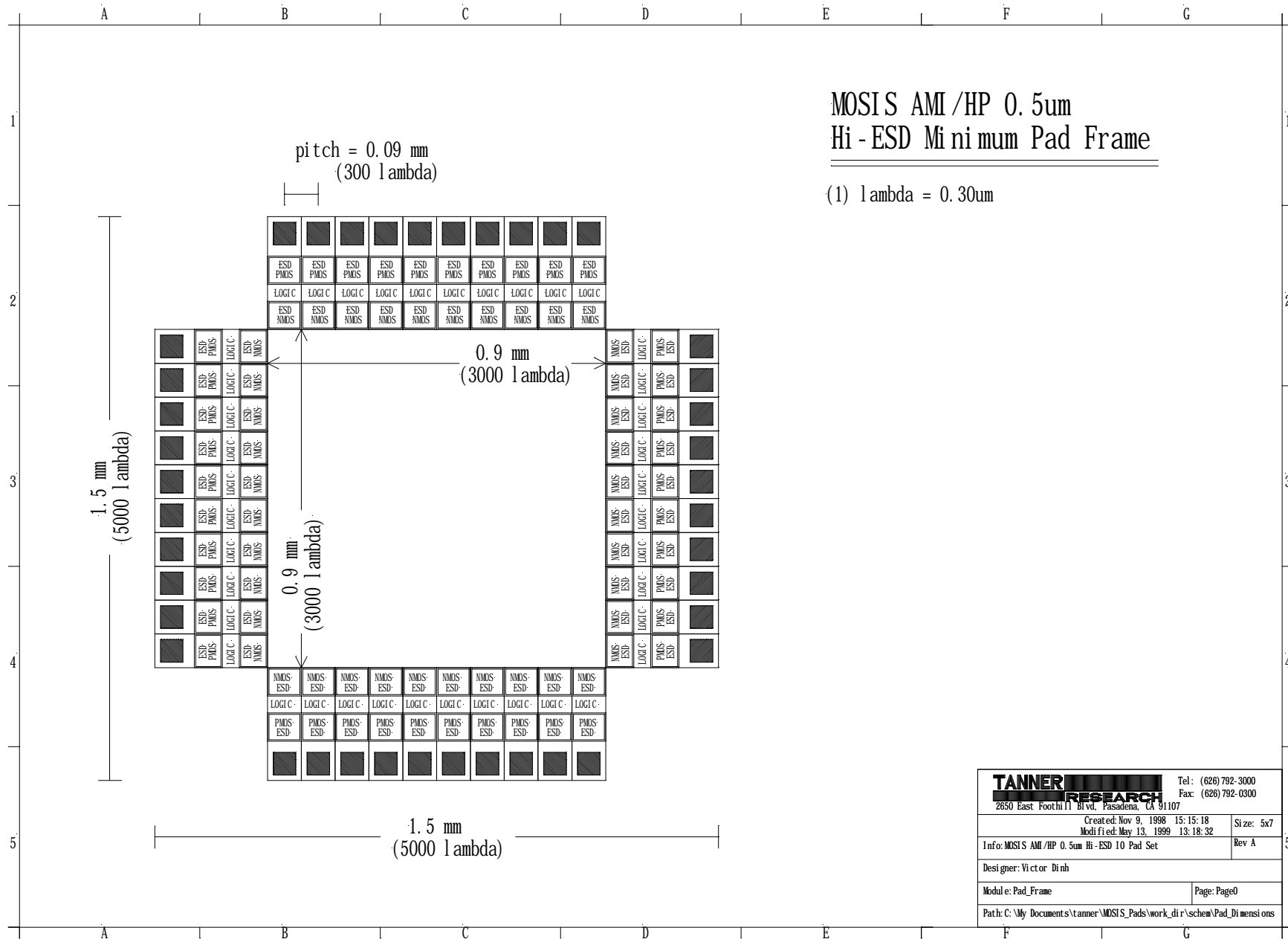
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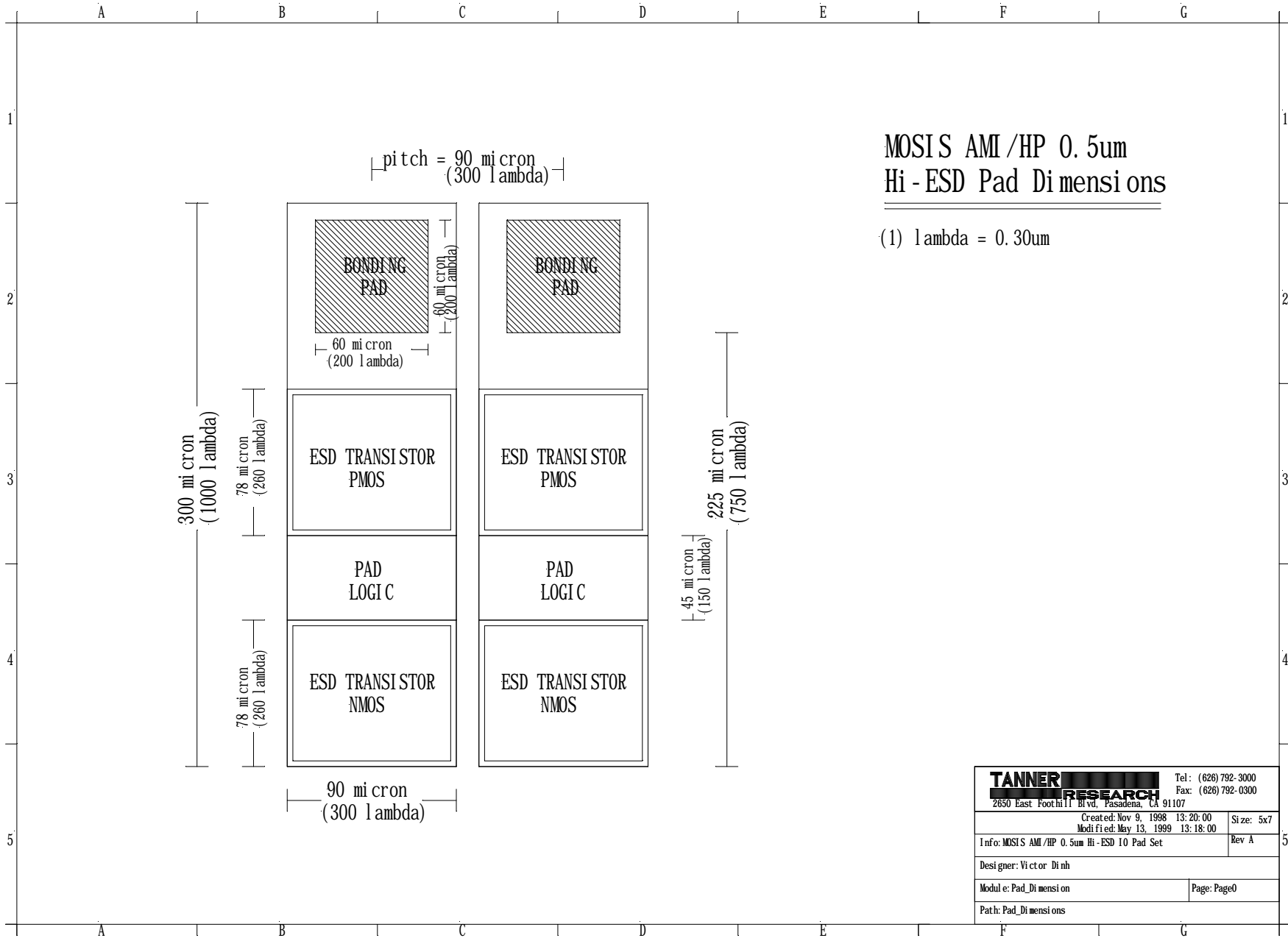
Redistribution Agreement: MOSIS will distribute GDS-II and CIF files of these cells to its customers. The cells are to be supplied on an as-is basis. Further customer demands will be passed to Tanner Research for technical support. Error reports and feature requests from MOSIS customers will be relayed to Tanner CES for maintenance and upgrade. Every updated file version will be sent to MOSIS promptly. In the meantime, Tanner Research will include the cell set into Tanner EDA product packages, with complete design tool supports and interfaces.

MOSIS AMI /HP 0.5um Hi - ESD Minimum Pad Frame

(1) 1 lambda = 0.30um



TANNER RESEARCH		Tel: (626) 792-3000
2650 East Foothill Blvd, Pasadena, CA 91107		Fax: (626) 792-0300
Created: Nov 9, 1998 15:15:18	Modified: May 13, 1999 13:18:32	Size: 5x7
Info: MOSIS AMI /HP 0.5um Hi-ESD 10 Pad Set		Rev A
Designer: Victor Dinh		
Module: Pad_Frame		Page: Page0
Path: C:\My Documents\tanner\MOSIS_Pads\work_dir\schem\Pad_Dimensions		



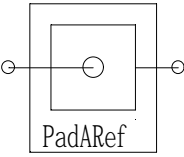
MOSIS AMI /HP 0.5um
Hi - ESD Pad Dimensions

(1) lambda = 0.30um

TANNER RESEARCH		Tel: (626) 792-3000	
2650 East Foothill Blvd, Pasadena, CA 91107		Fax: (626) 792-0300	
Created: Nov 9, 1998 13:20:00		Size: 5x7	
Modified: May 13, 1999 13:18:00		Rev A	
Info: MOSIS AMI /HP 0.5um Hi - ESD 10 Pad Set			
Designer: Victor Dinh			
Module: Pad_Dimensions		Page: Page0	
Path: Pad_Dimensions			

Description: Analog Reference Pad

Library: MOSIS AMI 050P Primitive Set: Tanner SCMOS.Cells
 Schematic: S-Edit File: TannerLb\scmos\mAMI05P.sdb
 Mask layout: L-Edit Module: PADAREF
 Mapping Macros: GateSim: TannerLb\nettran\scmos\scms2sim.mac
 L-Edit/SPR: TannerLb\nettran\scmos\scms2tpr.mac

Logic Symbol	Truth Table	Capacitance
 <p style="text-align: center;">PadARef</p>	N/A	N/A

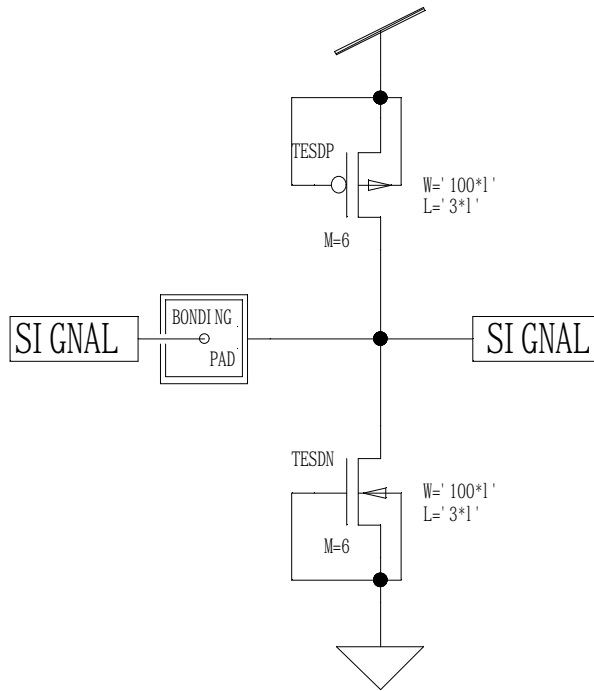
Height	Width	Area	Equivalent Gate	Drive
300 μ	90 μ	27000 μ ²	N/A	N/A

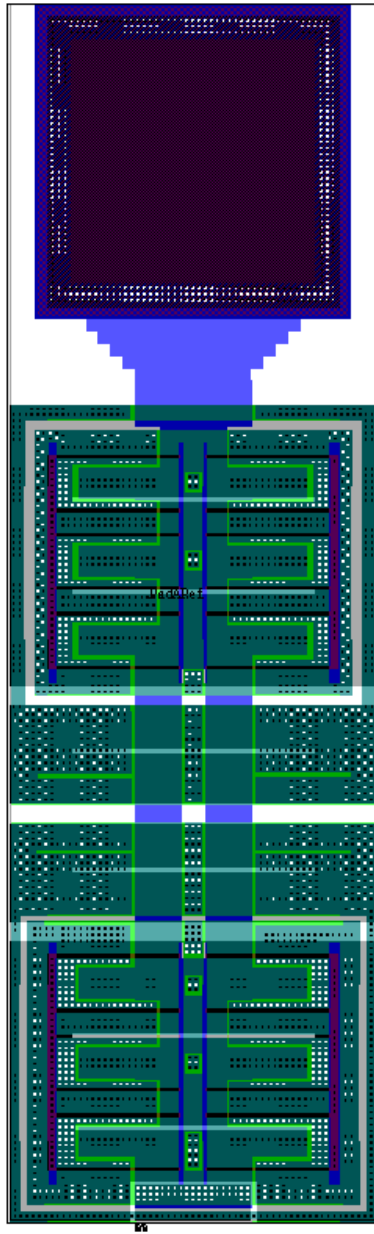
Logic Equation
N/A

Delay Characteristics: N/A

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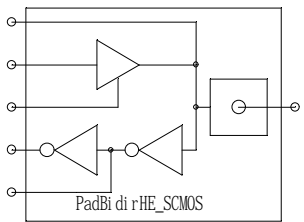
PadAREf





Description: Bi-Directional Pad with Buffer

Library: MOSIS AMI 050P	Primitive Set: Tanner SCMOS.Cells Tanner.TIB.Samples
Schematic: S-Edit	File: TannerLb\scmos\mAMI05P.sdb Module: PADBIDIR
Mask layout: L-Edit	File: TannerLb\scmos\mAMI05P.tdb Cell: PADBIDIR
Mapping Macros: GateSim: L-Edit/SPR:	TannerLb\nettran\scmos\scms2sim.mac TannerLb\nettran\scmos\scms2tpr.mac

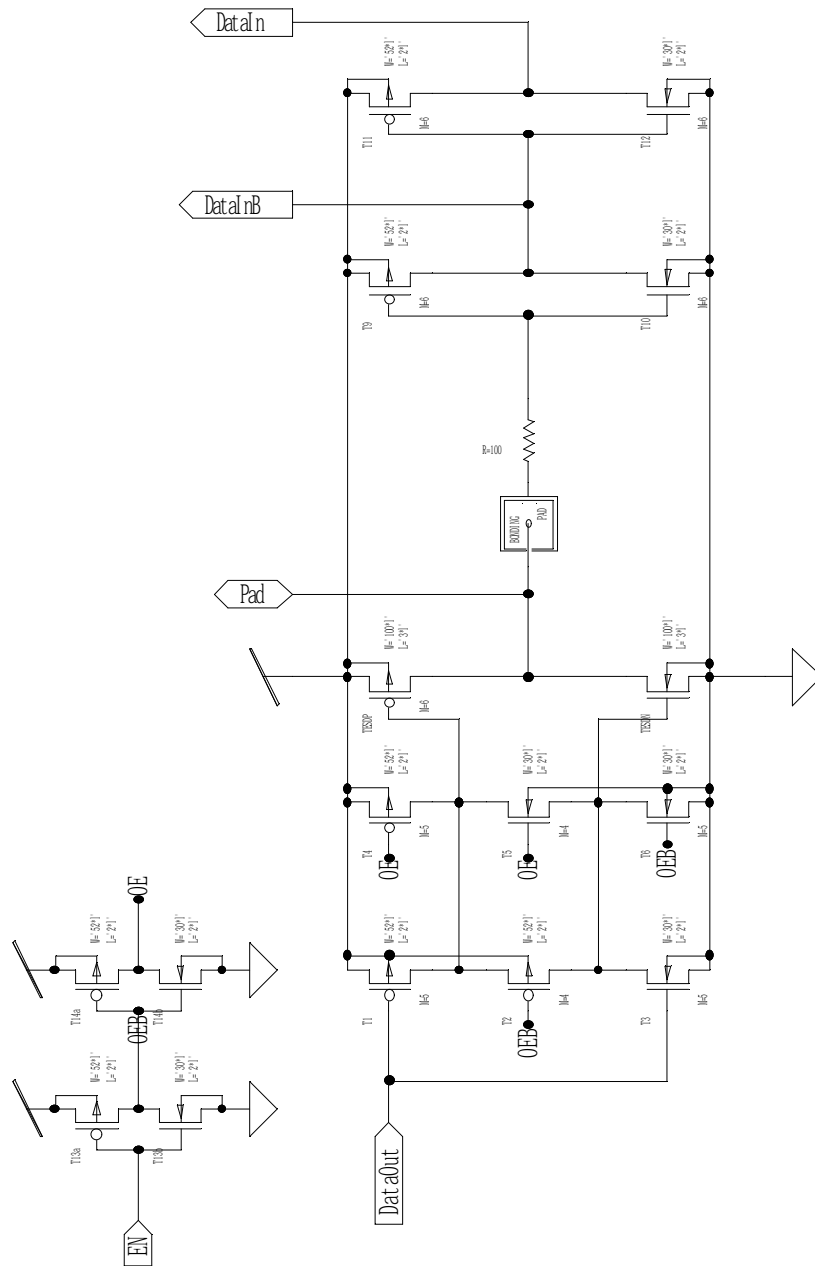
Logic Symbol	Truth Table	Capacitance																
 <p>PadBiDirHE_SCMOS</p>	<table border="1"> <thead> <tr> <th>PAD</th> <th>OE</th> <th>DI</th> <th>DO</th> </tr> </thead> <tbody> <tr> <td>X</td> <td>1</td> <td>X</td> <td>In</td> </tr> <tr> <td>1</td> <td>0</td> <td>1</td> <td>X</td> </tr> <tr> <td>0</td> <td>0</td> <td>0</td> <td>X</td> </tr> </tbody> </table>	PAD	OE	DI	DO	X	1	X	In	1	0	1	X	0	0	0	X	N/A
PAD	OE	DI	DO															
X	1	X	In															
1	0	1	X															
0	0	0	X															

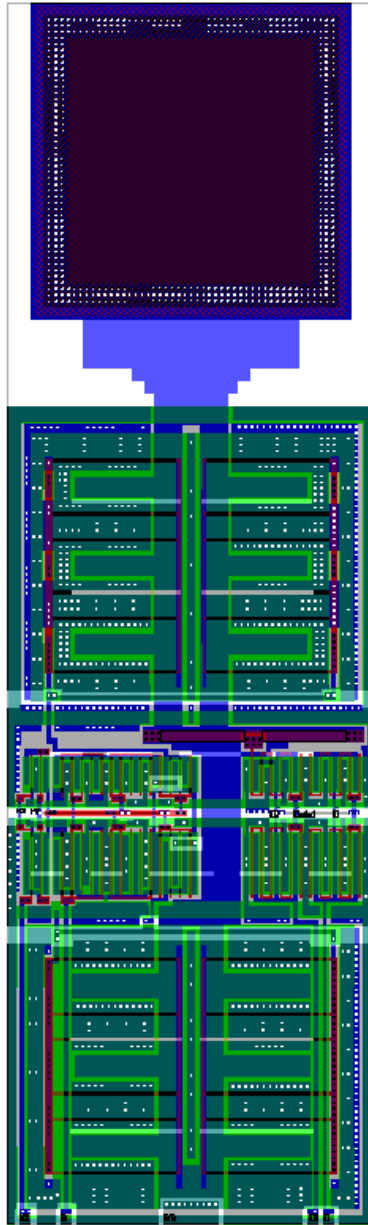
Height	Width	Area	Equivalent Gate	Drive
300 μ	90 μ	27000 μ ²	N/A	N/A

Logic Equation
See truth table

Delay Characteristics: N/A

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Description: Pad Frame Corner

Library: MOSIS AMI 050P	Primitive Set: Tanner SCMOS.Cells Tanner.TIB.Samples
Schematic: S-Edit	File: TannerLb\scmos\mAMI05P.sdb Module: N/A
Mask layout: L-Edit	File: TannerLb\scmos\mAMI05P.tdb Cell: PADFC
Mapping Macros: GateSim: L-Edit/SPR:	TannerLb\nettran\scmos\scms2sim.mac TannerLb\nettran\scmos\scms2tpr.mac

Logic Symbol	Truth Table	Capacitance
N/A	N/A	N/A

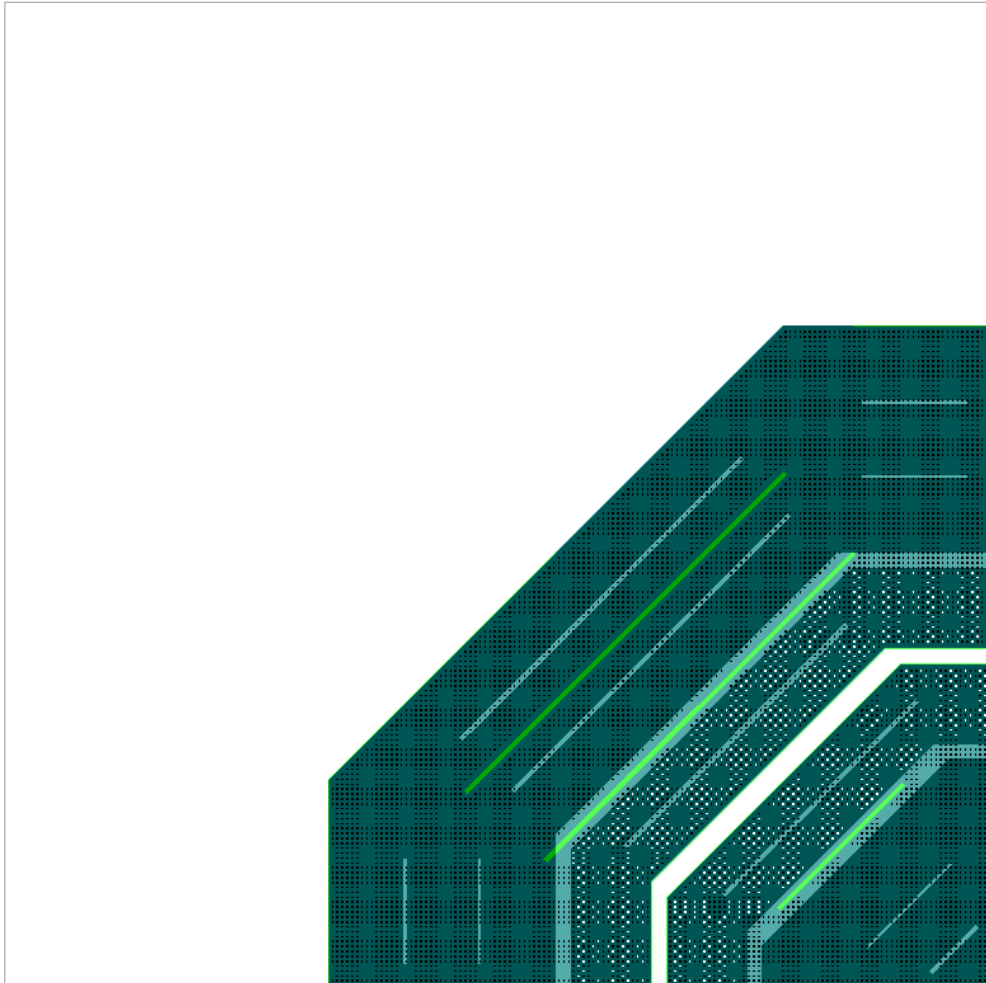
Height	Width	Area	Equivalent Gate	Drive
300 μ	300 μ	90000 μ ²	N/A	N/A

Logic Equation
N/A

Delay Characteristics: N/A

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N/A



Description: Pad Frame

Library: MOSIS AMI 050P	Primitive Set:	Tanner SCMOS.Cells Tanner.TIB.Samples
Schematic: S-Edit	File:	TannerLb\scmos\mAMI05P.sdb
	Module:	N/A
Mask layout: L-Edit	File:	TannerLb\scmos\mAMI05P.tdb
	Cell:	FRAME
Mapping Macros: GateSim:	TannerLb\nettran\scmos\scms2sim.mac	
L-Edit/SPR:	TannerLb\nettran\scmos\scms2tpr.mac	

Logic Symbol	Truth Table	Capacitance
N/A	N/A	N/A

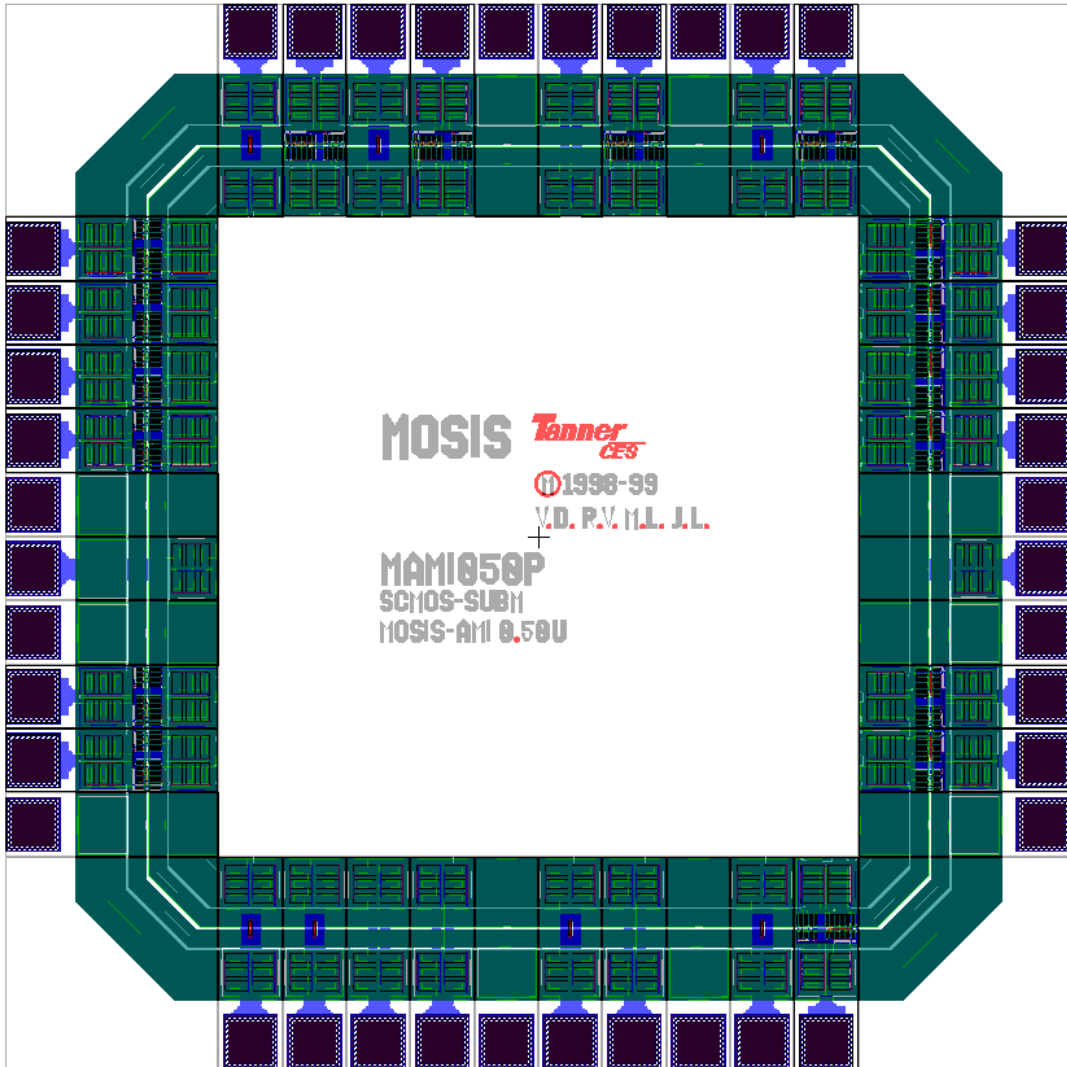
Height	Width	Area	Equivalent Gate	Drive
1.5 mm	1.5 mm	2.25 mm ²	N/A	N/A

Logic Equation
N/A

Delay Characteristics: N/A

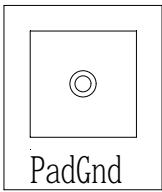
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N/A



Description: Ground Pad

Library: MOSIS AMI 050P Primitive Set: Tanner SCMOS.Cells
 Schematic: S-Edit File: TannerLb\scmos\mAMI05P.sdb
 Mask layout: L-Edit Module: PADGND
 File: TannerLb\scmos\mAMI05P.tdb
 Cell: PADGND
 Mapping Macros: GateSim: TannerLb\nettran\scmos\scms2sim.mac
 L-Edit/SPR: TannerLb\nettran\scmos\scms2tpr.mac

Logic Symbol	Truth Table	Capacitance
 PadGnd	N/A	N/A

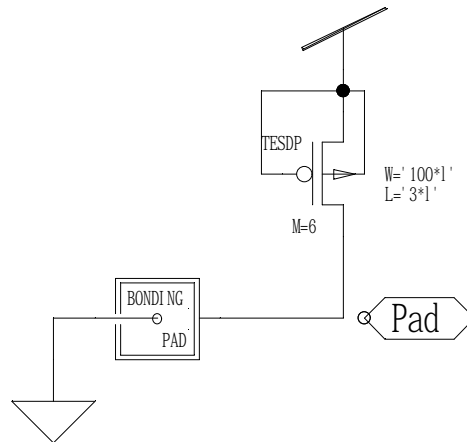
Height	Width	Area	Equivalent Gate	Drive
300 μ	90 μ	27000 μ ²	N/A	N/A

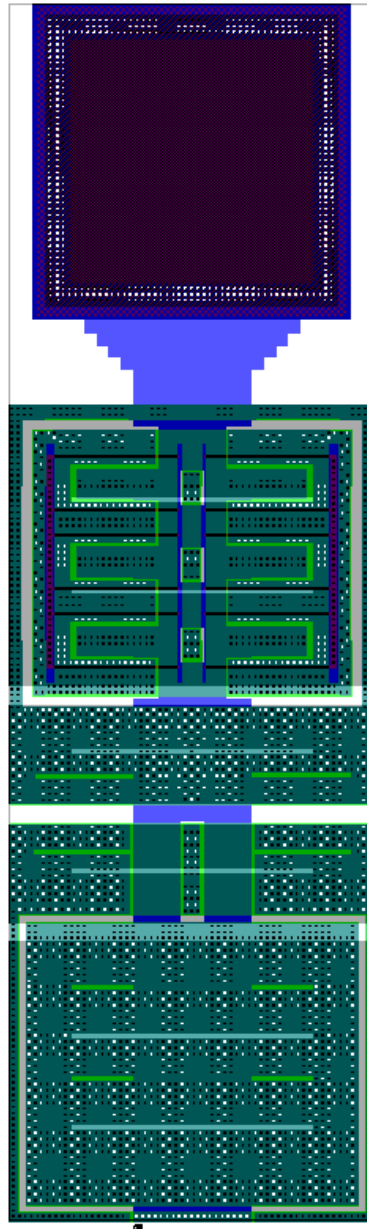
Logic Equation
N/A

Delay Characteristics: N/A

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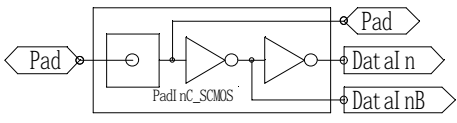
PadGnd





Description: Buffered Input Pad with Complementary Signals

Library: MOSIS AMI 050P Primitive Set: Tanner SCMOS.Cells
 Schematic: S-Edit File: TannerLb\scmos\mAMI05P.sdb
 Mask layout: L-Edit Module: PADINC
 File: TannerLb\scmos\mAMI05P.tdb
 Cell: PADINC
 Mapping Macros: GateSim: TannerLb\nettran\scmos\scms2sim.mac
 L-Edit/SPR: TannerLb\nettran\scmos\scms2tpr.mac

Logic Symbol	Truth Table	Capacitance									
	<table border="1"> <thead> <tr> <th>PAD</th> <th>DI</th> <th>DIB</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>1</td> </tr> <tr> <td>1</td> <td>1</td> <td>0</td> </tr> </tbody> </table>	PAD	DI	DIB	0	0	1	1	1	0	N/A
PAD	DI	DIB									
0	0	1									
1	1	0									

Height	Width	Area	Equivalent Gate	Drive
300 μ	90 μ	27000 μ ²	N/A	N/A

Logic Equation
See truth table

Delay Characteristics:

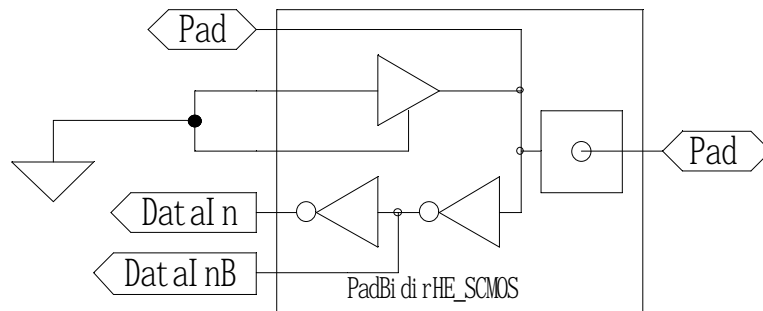
$T_{pd} = 0.40ns$

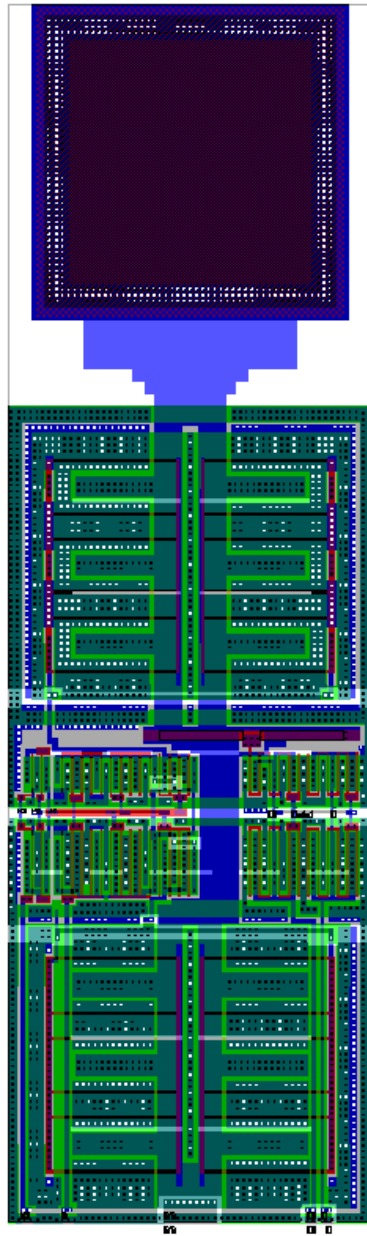
$T_r = 0.40ns$

$T_f = 0.30ns$

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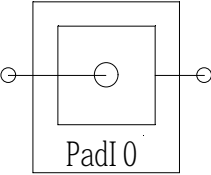
PadInc





Description: Input/Output Pad

Library: MOSIS AMI 050P	Primitive Set: Tanner SCMOS.Cells Tanner.TIB.Samples
Schematic: S-Edit	File: TannerLb\scmos\mAMI05P.sdb Module: PADIO
Mask layout: L-Edit	File: TannerLb\scmos\mAMI05P.tdb Cell: PADIO
Mapping Macros: GateSim:	TannerLb\nettran\scmos\scms2sim.mac
L-Edit/SPR:	TannerLb\nettran\scmos\scms2tpr.mac

Logic Symbol	Truth Table	Capacitance
	N/A	N/A

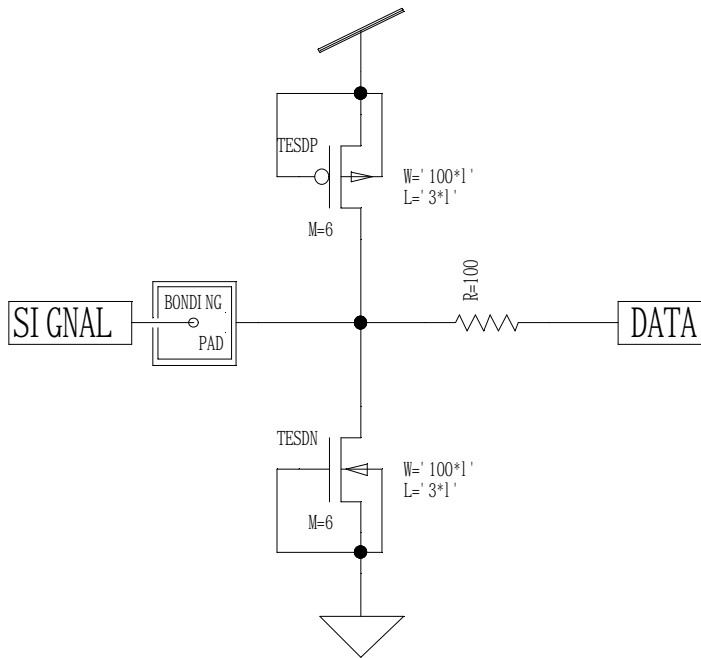
Height	Width	Area	Equivalent Gate	Drive
300 μ	90 μ	27000 μ^2	N/A	N/A

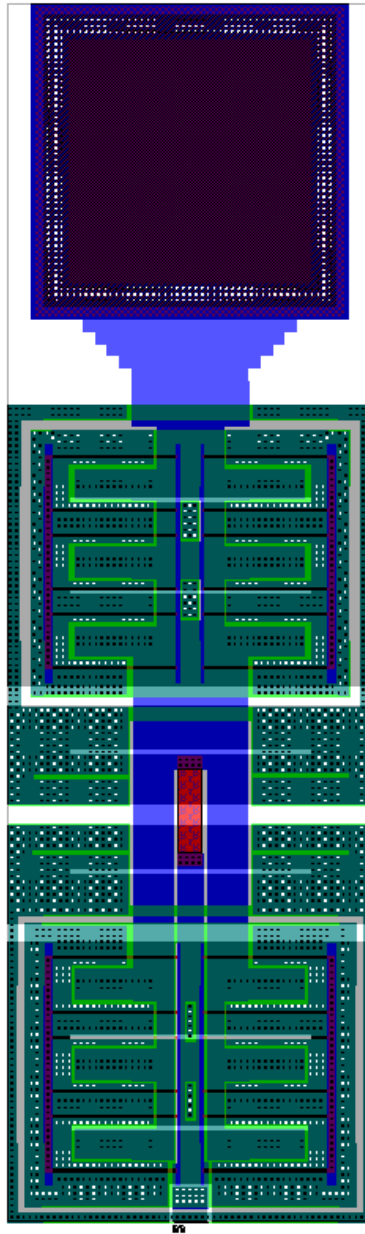
Logic Equation
N/A

Delay Characteristics: N/A

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PadI 0





Description: Pad Library

Library: MOSIS AMI 050P	Primitive Set: Tanner SCMOS.Cells Tanner.TIB.Samples
Schematic: S-Edit	File: TannerLb\scmos\mAMI05P.sdb
Mask layout: L-Edit	Module: Library
	File: TannerLb\scmos\mAMI05P.tdb
	Cell: Lib_Pads
Mapping Macros: GateSim:	TannerLb\nettran\scmos\scms2sim.mac
L-Edit/SPR:	TannerLb\nettran\scmos\scms2tpr.mac

Logic Symbol	Truth Table	Capacitance
N/A	N/A	N/A

Height	Width	Area	Equivalent Gate	Drive
N/A	N/A	N/A	N/A	N/A

Logic Equation
N/A

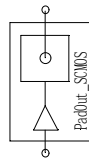
Delay Characteristics: N/A



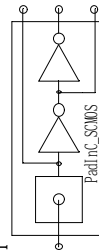
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MOSIS HP/AMI 0.5um - Submicron Rules
 Hi - ESD IO PAD SET

Input Pad with Buffer



Output Pad with Buffer



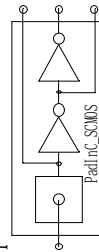
Vdd Pad with ESD



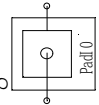
Gnd Pad with ESD



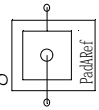
Analog IO Pad with Buffer

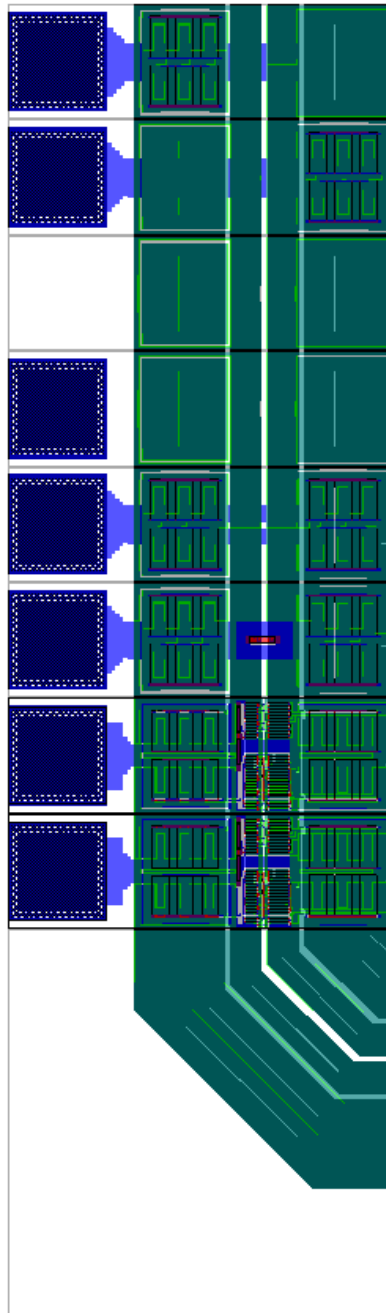


Analog IO Pad with ESD



Analog Reference Pad with ESD





Description: Pad Spacer with No Connection to Bonding Pad

Library: MOSIS AMI 050P	Primitive Set: Tanner SCMOS.Cells Tanner.TIB.Samples
Schematic: S-Edit	File: TannerLb\scmos\mAMI05P.sdb Module: N/A
Mask layout: L-Edit	File: TannerLb\scmos\ mAMI05P.tdb Cell: PADNC
Mapping Macros: GateSim:	TannerLb\nettran\scmos\scms2sim.mac
L-Edit/SPR:	TannerLb\nettran\scmos\scms2tpr.mac

Logic Symbol	Truth Table	Capacitance
N/A	N/A	N/A

Height	Width	Area	Equivalent Gate	Drive
300 μ	90 μ	27000 μ ²	N/A	N/A

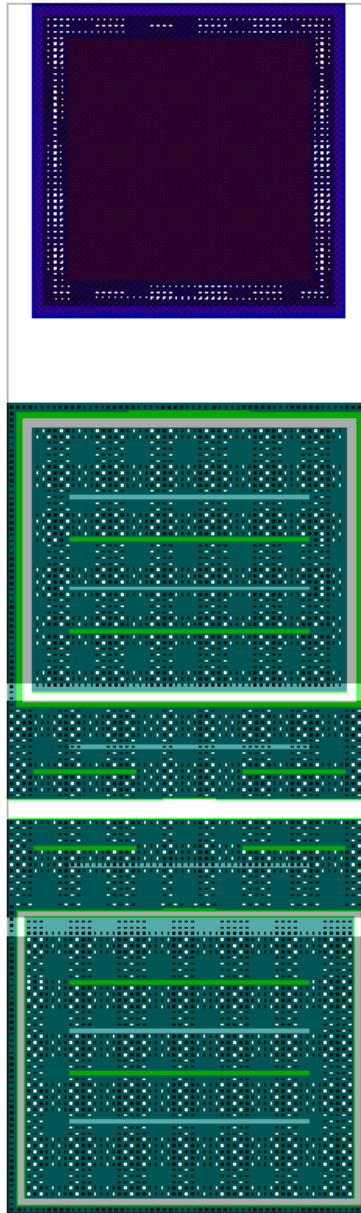
Logic Equation
N/A

Delay Characteristics: N/A



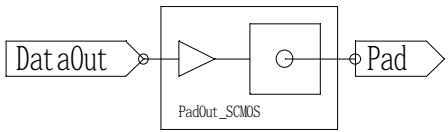
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N/A



Description: Output Pad with Buffer

Library: MOSIS AMI 050P Primitive Set: Tanner SCMOS.Cells
 Schematic: S-Edit File: TannerLb\scmos\mAMI05P.sdb
 Mask layout: L-Edit Module: PADOUT
 Mapping Macros: GateSim: TannerLb\nettran\scmos\scms2sim.mac
 L-Edit/SPR: TannerLb\nettran\scmos\scms2tpr.mac

Logic Symbol	Truth Table	Capacitance						
	<table border="1"> <thead> <tr> <th>PAD</th> <th>D0</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> </tr> <tr> <td>1</td> <td>1</td> </tr> </tbody> </table>	PAD	D0	0	0	1	1	N/A
PAD	D0							
0	0							
1	1							

Height	Width	Area	Equivalent Gate	Drive
300 μ	90 μ	27000 μ ²	N/A	N/A

Logic Equation
Pad = DataOut

Delay Characteristics:

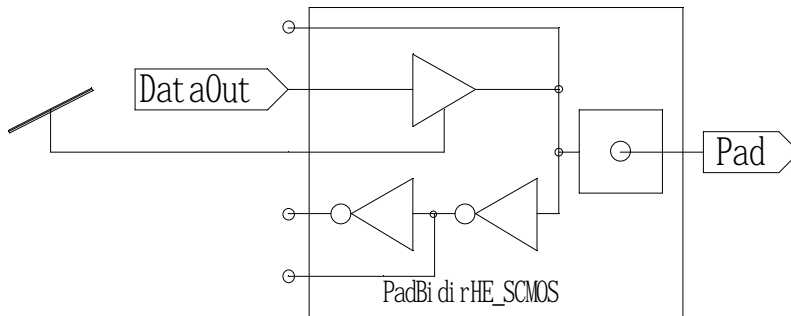
$T_{pd} = 1.65ns$

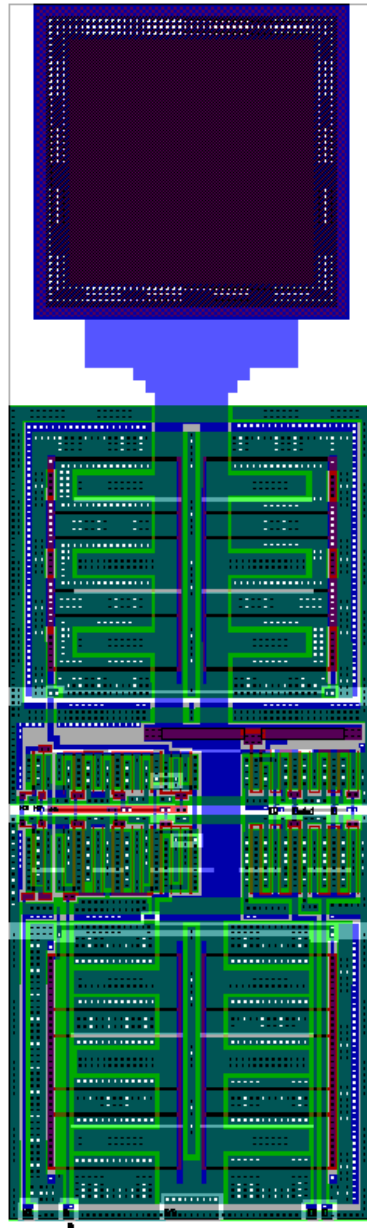
$T_r = 1.50ns$

$T_f = 1.0ns$

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PadOut





Description: Padless Spacer without Bonding Pad

Library: MOSIS AMI 050P	Primitive Set: Tanner SCMOS.Cells Tanner.TIB.Samples
Schematic: S-Edit	File: TannerLb\scmos\ mAMI05P.sdb Module: PADSPACE
Mask layout: L-Edit	File: TannerLb\scmos\ mAMI05P.tdb Cell: PADLESSSP
Mapping Macros: GateSim:	TannerLb\nettran\scmos\scms2sim.mac
L-Edit/SPR:	TannerLb\nettran\scmos\scms2tpr.mac

Logic Symbol	Truth Table	Capacitance
N/A	N/A	N/A

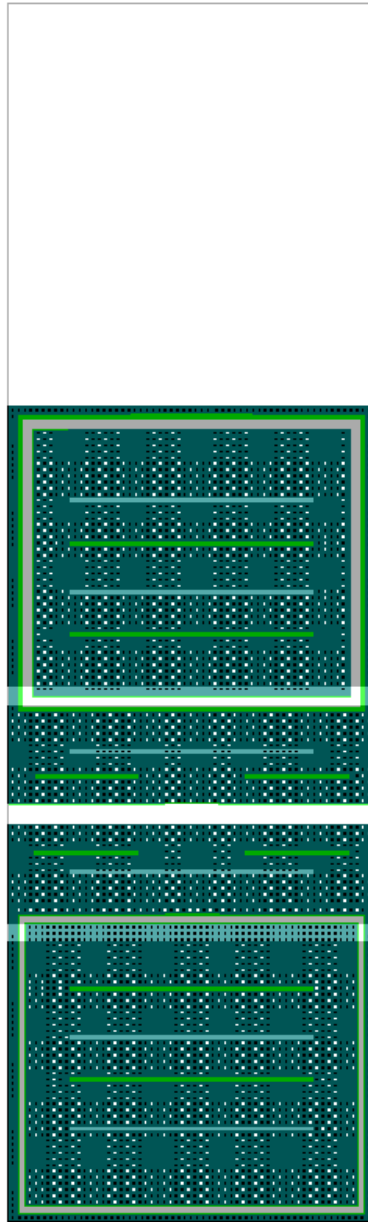
Height	Width	Area	Equivalent Gate	Drive
300 μ	90 μ	27000 μ ²	N/A	N/A

Logic Equation
N/A

Delay Characteristics: N/A

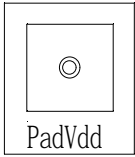
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N/A



Description: Power Pad

Library: MOSIS AMI 050P Primitive Set: Tanner SCMOS.Cells
 Schematic: S-Edit File: TannerLb\scmos\mAMIP05.sdb
 Mask layout: L-Edit Module: PADVDD
 Mapping Macros: GateSim: TannerLb\nettran\scmos\scms2sim.mac
 L-Edit/SPR: TannerLb\nettran\scmos\scms2tpr.mac

Logic Symbol	Truth Table	Capacitance
	N/A	N/A

Height	Width	Area	Equivalent Gate	Drive
300 μ	90 μ	27000 μ ²	N/A	N/A

Logic Equation
N/A

Delay Characteristics: N/A

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PadVdd

