

## PRODUCT/PROCESS CHANGE NOTICE (PCN)

PCN Number: **04-03**

Date Issued: **March 1, 2004**

Product(s) Affected: **PI5C16862C**

Manufacturing Location Affected: **Hynix Semiconductor**

Date Effective: **June 1, 2004 (calendar week 23, 2004).**

Means of Distinguishing Changed Devices:

- Product Mark:  
 Back Mark  
 Date Code: **Wafer Fab ID letter code \***  
 Other

**\* G - last letter of date code signifies Hynix**

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Attachment:  Yes;  No

Samples: **Available when requested from Pericom Sales.**

Description and Purpose of Change:

**To increase Pericom's manufacturing capacity for this product, we've added this device type to Hynix's standard 0.5-micron (HSOF5F) process that was approved by Pericom over 5 years ago. Generic Information on Hynix's basic process is at:**

[http://www.hynix.com/eng/products/system\\_ic/sms/down/procs\\_5um\\_5VSTD.pdf](http://www.hynix.com/eng/products/system_ic/sms/down/procs_5um_5VSTD.pdf)

**Hynix Semiconductor's facilities are certified to ISO-9000-2000 & ISO-14001, and are located in Gumi, Korea. Their website is at:**

<http://www.hynix.com/eng/index.html>

- Die Technology  
 Wafer Fabrication  
 Assembly Process  
 Equipment  
 Material  
 Testing  
 Manufacturing Site  
 Data Sheet  
 Other:

Reliability/Qualification Summary: **Copy of Electrical Characterization report is attached.**

Customer Acknowledgement of Receipt:

Customer: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

E-Mail: \_\_\_\_\_

Phone: \_\_\_\_\_

Fax: \_\_\_\_\_

Approval for shipments prior to PCN effective date

Customer Comments (Optional): \_\_\_\_\_

**Date:** January 26, 2004

**Subject:** PI5C16862C Characterization Report

### Introduction

This device was manufactured at Hynix Semiconductor in Korea, using an already qualified process (HS0F5F). Measurements were done side by side with the existing die array from TSMC wafer fab in Taiwan.

### Reference

Array: P5CH  
Process: Hynix 0.5um, 1P2M, 5V Process  
Die Size: 23 x 60 mils  
Date Code: Z00402OG  
Lot #: ENYD004.4A  
Package: BQSOP (B48)

Array: TBS24  
Process: TSMC 0.6um, 1P2M, 5V Process  
Die Size: 34 x 64.1 mils  
Date Code: 0323OT  
Lot #: 224066  
Package: BQSOP (B48)

### Equipment

HP power supply & DMM  
HP4145B DC Analyzer  
HP4285A LCR Meter  
TDS8000 Oscilloscope  
HP8110A Pulse Generator  
HP8116A Pulse Generator  
Thermostream TP041000-A

### Tables

Table 1: DC Characteristics  
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Table 5: Dynamic ICC, Vcc=5.5V, 25C

### Conclusion:

PI5C16862 product wafer fabbed at Hynix in Korea is essentially equivalent to the same product manufactured at TSMC, with somewhat lower Ron and faster switching speeds.

**Table 1. DC Characteristics**

Symb.	Test Conditions	Vcc	Hynix			TSMC			Min	Max	unit
			-10°C	25°C	90°C	-10°C	25°C	90°C			
<b>VIH</b>	Input High Voltage	4.5V	1.430	1.415	1.395	1.555	1.535	1.490	2.0		V
<b>VIH</b>	Input High Voltage	5.0V	1.495	1.485	1.465	1.625	1.605	1.555	2.0		V
<b>VIH</b>	Input High Voltage	5.5V	1.555	1.550	1.530	1.685	1.670	1.620	2.0		V
<b>VIL</b>	Input Low Voltage	4.5V	1.555	1.550	1.525	1.730	1.710	1.675		0.8	V
<b>VIL</b>	Input Low Voltage	5.0V	1.625	1.620	1.595	1.810	1.795	1.760		0.8	V
<b>VIL</b>	Input Low Voltage	5.5V	1.685	1.675	1.645	1.885	1.875	1.840		0.8	V
<b>VH</b>	Input Hysteresis	4.5V	0.125	0.135	0.130	0.175	0.175	0.185	typ	0.15	V
<b>VH</b>	Input Hysteresis	5.0V	0.130	0.135	0.130	0.185	0.190	0.205	typ	0.15	V
<b>VH</b>	Input Hysteresis	5.5V	0.130	0.125	0.115	0.200	0.205	0.220	typ	0.15	V
<b>IIL</b>	Vin = 0V	5.5V	7 p	18 p	193 p	24 p	5 p	-23 p		-1u	A
<b>IIH</b>	Vin = 5.5V	5.5V	5 p	67 p	21 n	3 p	3 p	56 p		1u	A
<b>IOZL</b>	Vout = 0V	5.5V	36 p	-13 p	-2 n	-7 p	-15 p	3 p		-1u	A
<b>IOZH</b>	Vout = 5.5V	5.5V	-6 p	8 p	310 p	3 p	24 p	104 p		1u	A
<b>VIK</b>	/BE Pin, Iin = -18mA	4.5V	-1.76	-1.77	-1.82	-1.62	-1.63	-1.64		-1.8	V
<b>VIK</b>	A/B Pin, Iin = -18mA	4.5V	-1.51	-1.52	-1.52	-1.54	-1.54	-1.54		-1.8	V
<b>ICCL</b>	Vin = 0V	5.5V	103 u	93 u	84 u	105 u	79 u	69 u		200u	A
<b>ICCH</b>	Vin = 5.5V	5.5V	103 u	93 u	83 u	105 u	79 u	69 u		200u	A
<b>ΔICC</b>	Vin = 3.4V	5.5V	704 u	683 u	660 u	374 u	336 u	316 u		2.5	mA
<b>Ron</b>	Ion = 48mA, Vin = 0V	4.5V	4.26	4.42	5.30	4.92	5.20	6.05		8	Ω
<b>Ron</b>	Ion = 15mA, Vin = 2.4V	4.5V	9.73	10.5	12.2	13.3	14.2	16.0		16	Ω

**Table 2. Capacitance at 25C**

Symbol	Description	Vcc	Hynix	TSMC	typ	Units
<b>Cin</b>	Control Input	5 V	2.8	3.0	6	pF
<b>Coff</b>	A Cap, Switch Off	5 V	3.0	4.0	6	pF
<b>Coff</b>	B Cap, Switch Off	5 V	3.0	4.0	6	pF
<b>Con</b>	A-B, Switch On	5 V	6.8	8.8	10	pF

HP4285A LCR Meter

**Table 3: Ron Measurement, all paths, Vcc=4.5V, 25C**

Channel	Hynix		TSMC		Units
	Ion=48mA Vin=0V	Ion=15mA Vin=2.4V	Ion=48mA Vin=0V	Ion=15mA Vin=2.4V	
A0-B0	4.47	10.3	5.34	14.1	Ω
A1-B1	4.55	10.4	5.24	14.1	Ω
A2-B2	4.32	10.2	5.20	13.9	Ω
A3-B3	4.53	10.5	5.17	13.8	Ω
A4-B4	4.32	10.2	5.20	14.3	Ω
A5-B5	4.53	10.5	5.26	14.1	Ω
A6-B6	4.32	10.2	5.22	14.1	Ω
A7-B7	4.67	10.6	5.22	13.8	Ω
A8-B8	4.47	10.3	5.38	14.5	Ω
A9-B9	4.67	10.6	5.32	14.2	Ω
A10-B10	4.45	10.5	5.32	13.6	Ω
A11-B11	4.36	10.5	5.17	13.5	Ω
A12-B12	4.40	10.5	5.17	13.7	Ω
A13-B13	4.34	10.4	5.17	13.6	Ω
A14-B14	4.40	10.5	5.20	14.0	Ω
A15-B15	4.51	10.5	5.24	14.0	Ω
A16-B16	4.30	10.3	5.20	13.8	Ω
A17-B17	4.30	10.3	5.26	13.9	Ω
A18-B18	4.34	10.3	5.28	14.3	Ω
A19-B19	4.40	10.6	5.30	14.4	Ω

**Table 4. AC Characteristics**

Symbol	Vcc	Load	Hynix			TSMC			Max Spec	Units
			-10°C	25°C	90°C	-10°C	25°C	90°C		
tpZH	4.5 V	Load A	2.39	2.47	2.66	3.43	3.58	3.92	6.5	ns
tpHZ	4.5 V	Load A	3.18	3.21	3.28	3.98	4.15	4.47	5.5	ns
tpZL	4.5 V	Load B	2.52	2.60	2.80	3.61	3.76	4.08	6.5	ns
tpLZ	4.5 V	Load B	2.36	2.71	2.77	3.23	3.33	3.59	5.5	ns

Load A: 50pF//500Ω

Load B: 50pF//500Ω, 500Ω to 2Vcc

**Table 5. Dynamic Icc, Vcc=5.5V, 25C**

Frequency	Hynix	TSMC	Units
1MHz	0.165	0.183	mA
5MHz	0.426	0.579	mA
10MHz	0.752	0.940	mA
20MHz	1.385	1.775	mA