

PRODUCT/PROCESS CHANGE NOTICE (PCN)

PCN Number: **05-08**
 Date Issued: **April 19, 2005**
 Product(s) Affected: **PI5C3301 (all package types)**
 Manufacturing Location Affected: **CSMC-HJ (China PRC)**
 Date Effective: **July 18, 2005 – standard 90 day waiting period.**
Some customers may require additional time.
Note: Supplies of current product may be very limited.

Means of Distinguishing Changed Devices:
 Product Mark:
 Back Mark
 Date Code: **Wafer Fab ID letter code ***
 Other
 * *W - last letter of date code signifies CSMC-HJ*

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Attachment: Yes; No
Pericom Product and Design Engineering Characterization data confirmed CSMC-HJ devices have no critical performance differences from CSMS Fab 1 products. See attached Characterization Comparison Data.
 Samples: **Request from Pericom Sales.**

Description and Purpose of Change:
Product is transferring from wafer fab subcontractor Chartered Semiconductor Manufacturing Singapore's (CSMS) Fab 1 (which closed operations in March 2004), to previously approved CSMC-HJ wafer fab in China. The device maintains the same design, die array, die size, and will be manufactured at CSMC-HJ using the same qualified CMOS 0.5-µm SPDM process type as used in CSMC Fab 1. The key CSMS wafer fab equipment was sold to CSMC-HJ in 2004, and Pericom is using the same CSMS Fab 1 masks. See the CSMC-HJ website for more information about their operations: <http://www.csmc-hj.com.cn/csmc/english/index.asp>

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

Reliability/Qualification Summary: **Process Qualification report is at: http://www.pericom.com/pdf/gen/CSMC_5um.pdf**

Customer Acknowledgement of Receipt:

Customer: _____
 Name: _____
 Title: _____
 Date: _____
 E-Mail: _____
 Phone: _____
 Fax: _____
 Approval for shipments prior to PCN effective date
 Customer Comments (Optional): _____

Date: March 9, 2005

Subject: PI5C3301 Full Characterization Comparison Report

Introduction

PI5C3301 is a SOTiny Single-Bit Bus Switch. **CSMC-HJ** wafer fab version is being compared side by side with **CSMS Fab 1**. CSMC-HJ uses an equivalent 0.5-micron CMOS process.

Reference:

Wafer Fab: **CSMC-HJ**

Process: CMOS 0.5 um, 5V, 1P2M

Lot #: A4CVF1.3A

Date Code: 0507ZC

Package: SOT-23 (T)

Wafer Fab: **CSMS Fab 1**

Process: CMOS 0.5 um, 5V, 1P2M

WO #: 142940

Date Code: 0118FC

Package: SOT-23 (T)

Equipment:

HP power supply & DMM,

HP4145B DC Analyzer

HP4285 LCR Meter

TDS7404 Oscilloscope with TEK P7240 Probes

HP8082A Pulse generator

Thermostream TP04300A

Tables:

Table 1: DC Characteristics

Table 2: AC Characteristics

Table 3: Capacitance, Vcc=5.0V, 25C

Table 4: Dynamic ICC, Vcc=5.5V, 25C

Conclusion:

1. CSMC-HJ product has somewhat lower Ron than CSMS Fab 1.
2. CSMC-HJ has comparable Con to CSMS Fab 1.
3. CSMC-HJ has somewhat faster enable/disable time than CSMS Fab 1.
4. Dynamic Icc for both wafer fabs is similar.

Table 1: DC characteristics

Parameter	Test Conditions	Vcc	CSMC-HJ			CSMS Fab 1			Min Spec	Max Spec	unit
			-40°C	25°C	90°C	-40°C	25°C	90°C			
V _{IH}	Input High Voltage	4.5 V	1.235	1.230	1.225	1.220	1.205	1.195	2.0		V
V _{IH}	Input High Voltage	5.0 V	1.310	1.310	1.310	1.295	1.285	1.280	2.0		V
V _{IH}	Input High Voltage	5.5 V	1.385	1.395	1.400	1.365	1.365	1.365	2.0		V
V _{IL}	Input Low Voltage	4.5 V	1.530	1.540	1.520	1.510	1.500	1.490		0.8	V
V _{IL}	Input Low Voltage	5.0 V	1.640	1.645	1.640	1.620	1.610	1.605		0.8	V
V _{IL}	Input Low Voltage	5.5 V	1.750	1.760	1.755	1.725	1.720	1.720		0.8	V
V _H	Input Hysteresis	4.5 V	0.295	0.310	0.295	0.290	0.295	0.295	typ	0.30	V
V _H	Input Hysteresis	5.0 V	0.330	0.335	0.330	0.325	0.325	0.325	typ	0.30	V
V _H	Input Hysteresis	5.5 V	0.365	0.365	0.355	0.360	0.355	0.355	typ	0.30	V
R _{on}	I _{on} =64mA, V _{in} =0 V	4.5 V	3.63	4.32	5.41	4.25	5.33	6.43		7	Ω
R _{on}	I _{on} =30mA, V _{in} =0 V	4.5 V	3.42	4.17	5.13	4.28	5.13	6.21		7	Ω
R _{on}	I _{on} =+15mA, V _{in} =2.4 V	4.5 V	6.27	8.27	10.70	8.14	10.70	13.80		15	Ω
R _{on}	I _{in} =-15mA, V _{in} =2.4 V	4.0 V	8.87	11.20	13.80	11.40	14.10	17.20		20	Ω
I _{IL}	V _{in} = 0 V	5.5 V	-4.59n	286p	-1.26n	883p	714p	-848p	-1μ	1μ	A
I _{IH}	V _{in} = 5.5 V	5.5 V	4.01n	658p	1.92n	-747p	909p	1.98n	-1μ	1μ	A
I _{IOZL}	V _{oz} = 0 V	5.5 V	1.11n	1.01n	1.82n	1.59n	969p	-1.51n	-1μ	1μ	A
I _{IOZH}	V _{oz} = 5.5V	5.5 V	1.23n	-1.22n	3.37n	-1.15n	-1.04n	3.13n	-1μ	1μ	A
V _{IK}	BE pin, I _s =-18mA	4.5 V	-0.897	-0.821	-0.732	-0.909	-0.827	-0.739		-1.2	V
V _{IK}	A/B/C, I _s =-18mA	4.5 V	-0.826	-0.754	-0.660	-0.844	-0.761	-0.667		-1.2	V
I _{CC}	V _{in} =0 V	5.5 V	4.90n	-379p	4.61n	20.97n	-895p	3.35n		1.0	μA
I _{CC}	V _{in} =5.5V	5.5 V	1.01n	-1.53n	3.38n	2.18n	-1.44n	1.36n		1.0	μA
ΔI _{CC}	V _{in} =3.4V	5.5 V	896.0μ	843.1μ	796μ	611.0μ	561.0μ	524.0μ		2.5m	A

Table 2: AC Characteristics

Symbol	Vcc	Load	CSMC-HJ			CSMS Fab 1			Max Spec	Units
			-40°C	25°C	90°C	-40°C	25°C	90°C		
tp _{ZH}	4.0 V	Load A	1.93	2.04	2.15	2.17	2.33	2.53	5.5	nS
tp _{HZ}	4.0 V	Load A	3.31	3.44	3.50	3.48	3.53	3.58	4.5	nS
tp _{ZL}	4.0 V	Load B	1.91	2.03	2.17	2.10	2.29	2.49	5.5	nS
tp _{LZ}	4.0 V	Load B	1.70	1.81	1.91	1.82	2.01	2.05	4.5	nS
tp _{ZH}	4.5 V	Load A	1.77	1.85	1.95	1.97	2.10	2.25	4.9	nS
tp _{HZ}	4.5 V	Load A	3.01	3.05	3.09	3.10	3.22	3.28	4.2	nS
tp _{ZL}	4.5 V	Load B	1.81	1.91	2.04	1.98	2.15	2.29	4.9	nS
tp _{LZ}	4.5 V	Load B	1.73	1.85	1.95	1.84	2.06	2.10	4.2	nS

Load A: 50pF//500Ω

Load B: 50pF//500Ω, 500Ω to 7V

Table 3: Capacitance at 25C

Symbol	Description	Vcc	CSMC-HJ	CSMS Fab 1	Typical	Units
C _{in}	Control Input	5.0 V	2.54	2.43	3	pF
C _{off}	A Pin Cap, Switch Off	5.0 V	5.28	4.80	5	pF
C _{off}	B Pin Cap, Switch Off	5.0 V	5.60	5.40	5	pF
C _{on}	A to B Cap, Switch On	5.0 V	11.64	11.80	10	pF

Table 4: Dynamic I_{cc}, V_{cc}=5.5V

Frequency	CSMC-HJ	CSMS Fab 1	Units
1MHZ	0.028	0.027	mA
5MHZ	0.140	0.138	mA
10MHZ	0.283	0.280	mA
20MHZ	0.548	0.520	mA
25MHZ	0.663	0.640	mA