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# PRODUCT/PROCESS CHANGE NOTICE (PCN)

PCN Number: **04-05**

Date Issued: **March 5, 2004**

Product(s) Affected: **PI74STX1G00, 74STX1G02, 74STX1G04, 74STX1G08, 74STX1G14, 74STX1G32, 74STX1G79, 74STX1G86, 74STX1G125, 74STX1G126; PI74STX1GT08.**

Manufacturing Location Affected: **Moving these CSMS Fab 1 products to already approved CSMS Fab 2.**

Date Effective: **June 4, 2004 (calendar week 23, 2004).**  
**All remaining Fab 1 inventory will ship until depleted.**

Means of Distinguishing Changed Devices:

- Product Mark:
- Back Mark
- Date Code: **Added dot symbol \***
- Other

**\* SOT/SC70 packages will have a dot symbol over the last two-digit date code characters, due to insufficient space for the usual "B" in front of the datecode to denote Fab 2**

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Attachment:  Yes;  No

**See attached Characterization Comparison Data Report on a representative product. Data confirms CSM-S Fab 2 devices have no significant performance differences than those produced in Fab 1.**

Samples: **Available upon request**

Description and Purpose of Change:

**Products are transferring from approved wafer fab subcontractor Chartered Semiconductor Manufacturing Singapore's (CSMS) Fab 1, to the already approved Fab 2 facility. The listed devices use the same base array die, design and process, and will be manufactured in Fab 2 with essentially the same qualified CMOS 0.5- $\mu$ m process type as used in Fab 1. CSM is closing the older 150-mm wafer Fab 1 facility at the end of March 2004. Fab 2 will manufacture these Pericom products using 200-mm wafers. See CSMS website for more information:**

<http://www.charteredsemi.com/media/corp/2003n/20030213.asp>

- Die Technology
- Wafer Fabrication
- Assembly Process
- Equipment
- Material
- Testing
- Manufacturing Site
- Data Sheet
- Other: **CSMS Fab 1 closure, porting to Fab 2**

Reliability/Qualification Summary: **See Rel Qual Report with PCN 04- 04; these devices use the same process and design rules**

Customer Acknowledgement of Receipt:

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

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

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

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

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

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

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

Approval for shipments prior to effective date

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

**Date:** October 15, 2003

**Subject:** PI74STX1G08 Characterization Comparison Report

**Introduction**

The PI74STX1G08 device from CSM-S Fab 2 is a SOTiny Gate, STX 2-input AND Gate. DC and AC comparison was done side by side with the S1G5 array from CSM-S Fab 1 product. This device is representative of many other STX type devices that will now be manufactured at the Fab 2 facility due to the closure of Fab 1 in March 2004.

**Reference:**

New Array: S152-1G508-U01  
CSM-S Fab 2 Process: 0.5um, SPDM, 5V (CS2L512)  
Lot #: EZ29064.3A  
Package: SOT23 (T5)

Old Array: S1G5-ENG-U01  
CSM-S Fab 1 Process: CSM 0.5um, SPDM 5V (CS0F5F)  
Lot number: EW84328.4D  
Package: SOT23 (T5)

**Equipment:**

HP power supply & DMM,  
HP4145B DC Analyzer,  
BK810B Capacitance Meter  
TDS8000 Digital Oscilloscope  
HP8110A Pulse Generator  
Thermostream TP041000-A

**Tables:**

Table 1: DC Characteristics  
Table 2: AC Characteristics  
Table 3. Capacitance  
Table 4: CSM-S Fab 2 (S152) Dynamic Icc at 25C  
Table 5: CSM-S Fab 1 (S1G5) Dynamic Icc at 25C

**Conclusions:**

1. Both arrays meet all datasheet spec requirements.

**Table 1. DC Characteristics**

Parameter	Test Conditions	Vcc	CSM-S Fab 2			CSM-S Fab 1			Min	Max	unit
			-10°C	25°C	90°C	-40°C	25°C	90°C			
<b>VIH</b>	Input High Voltage	1.8 V	0.825	0.825	0.835	0.77 V	0.78 V	0.79 V	1.35		V
<b>VIH</b>	Input High Voltage	2.5 V	1.120	1.125	1.140	0.99 V	1.00 V	1.01 V	1.75		V
<b>VIH</b>	Input High Voltage	3.3 V	1.470	1.475	1.490	1.29 V	1.30 V	1.31 V	2.31		V
<b>VIH</b>	Input High Voltage	5.0 V	2.240	2.245	2.260	2.40 V	2.41 V	2.44 V	3.50		V
<b>VIL</b>	Input Low Voltage	1.8 V	0.820	0.820	0.830	0.77 V	0.78 V	0.79 V		0.45	V
<b>VIL</b>	Input Low Voltage	2.5 V	1.115	1.120	1.135	0.99 V	1.00 V	1.01 V		0.75	V
<b>VIL</b>	Input Low Voltage	3.3 V	1.465	1.470	1.485	1.29 V	1.30 V	1.31 V		0.99	V
<b>VIL</b>	Input Low Voltage	5.0 V	2.235	2.240	2.255	2.40 V	2.41 V	2.44 V		1.50	V
<b>VOH</b>	IOH=-4mA	1.65 V	1.51	1.50	1.49	1.52	1.50	1.48	1.29		V
<b>VOH</b>	IOH=-8mA	2.3 V	2.14	2.12	2.09	2.14	2.10	2.08	1.9		V
<b>VOH</b>	IOH=-16mA	3.0 V	2.72	2.70	2.65	2.72	2.69	2.63	2.4		V
<b>VOH</b>	IOH=-24mA	3.0 V	2.56	2.53	2.45	2.56	2.52	2.42	2.3		V
<b>VOH</b>	IOH=-32mA	4.5 V	4.06	4.02	3.98	4.08	4.02	3.94	3.8		V
<b>VOL</b>	IOL= 4mA	1.65 V	0.07	0.07	0.09	0.06	0.07	0.09		0.24	V
<b>VOL</b>	IOL= 8mA	2.3 V	0.09	0.10	0.12	0.09	0.11	0.14		0.30	V
<b>VOL</b>	IOL= 16mA	3.0 V	0.17	0.18	0.22	0.16	0.20	0.24		0.40	V
<b>VOL</b>	IOL= 24mA	3.0 V	0.26	0.28	0.34	0.24	0.30	0.36		0.55	V
<b>VOL</b>	IOL= 32mA	4.5 V	0.29	0.31	0.36	0.27	0.32	0.40		0.55	V
<b>IIL</b>	Vin= 0V	5.5 V	114 p	-3 p	184 p	62 p	107 p	667 p		1u	A
<b>IIH</b>	Vin= 5.5 V	5.5 V	186 p	43 p	197 p	29p	-69 p	-9 p		1u	A
<b>Ioff</b>	Vin = 0V	0 V	146 p	252 p	-135 p	540 p	241 p	1.2 n		1u	A
<b>Ioff</b>	Vin = 5.5V	0 V	227 p	-65 p	1.6 n	197 p	24 p	329 p		1u	A
<b>Iccl</b>	Vin=0V	5.5 V	501 p	857 p	1.3 n	1 n	573 p	4 n		10u	A
<b>Iech</b>	Vin=5.5V	5.5 V	212 p	864 p	2.8 n	151 p	957 p	3 n		10u	A

**Table 2. AC Characteristics**

Parameter	Vcc	Load	CSM-S Fab 2			CSM-S Fab 1			Max (25°C)	Max (90°C)	unit
			-10°C	25°C	90°C	-10°C	25°C	90°C			
<b>tpLH</b>	1.65V	Load A	4.30	4.44	4.67	5.23	5.37	5.67	6.5	7.1	ns
<b>tpHL</b>	1.65V	Load A	4.82	5.02	5.40	5.85	6.05	6.65	6.5	7.1	ns
<b>tpLH</b>	2.3V	Load A	2.48	2.60	2.88	2.82	2.99	3.34	4.1	4.5	ns
<b>tpHL</b>	2.3V	Load A	2.91	3.13	3.52	3.43	3.66	4.13	4.1	4.5	ns
<b>tpLH</b>	3.0V	Load A	1.92	2.03	2.26	2.14	2.27	2.55	3.3	3.6	ns
<b>tpHL</b>	3.0V	Load A	2.40	2.56	2.88	2.69	2.87	3.23	3.3	3.6	ns
<b>tpLH</b>	4.5V	Load A	1.54	1.62	1.78	1.68	1.77	1.96	2.6	2.9	ns
<b>tpHL</b>	4.5V	Load A	1.98	2.09	2.31	2.23	2.33	2.60	2.6	2.9	ns
<b>tpLH</b>	3.0V	Load B	2.49	2.66	2.99	2.77	2.95	3.35	4.4	4.9	ns
<b>tpHL</b>	3.0V	Load B	3.20	3.39	3.71	3.53	3.74	4.20	4.4	4.9	ns
<b>tpLH</b>	4.5V	Load B	1.97	2.08	2.30	2.14	2.25	2.49	3.3	3.7	ns
<b>tpHL</b>	4.5V	Load B	2.44	2.57	2.84	2.74	2.89	3.20	3.3	3.7	ns

Load A: 15pF// 20kΩ to Gnd

Load B: 50pF// 500Ω to Gnd

**Table 3. Capacitance**

	Test Conditions	Vcc	<u>CSM-S Fab 2</u>	<u>CSM-S Fab 1</u>	typ	unit
<b>Cin</b>	Input Capacitance	5.0 V	3.5	3.6	4	pF
<b>Cpd</b>	Power Dissipation	1.8 V	12.8	13.3	--	pF
<b>Cpd</b>	Power Dissipation	2.5 V	16.0	16.8	--	pF
<b>Cpd</b>	Power Dissipation	3.3 V	19.4	20.6	20	pF
<b>Cpd</b>	Power Dissipation	5.0 V	25.8	26.6	30	pF

**Table 4: CSM-S Fab 2 Dynamic ICC at 25C**

Frequency	Vcc=1.8V	Vcc=2.5V	Vcc=3.3V	Vcc=5.0V	Units
1MHZ	0.023	0.040	0.064	0.129	mA
5MHZ	0.118	0.201	0.321	0.645	mA
10MHZ	0.237	0.404	0.342	1.295	mA
20MHZ	0.473	0.808	1.293	2.596	mA

**Table 5: CSM-S Fab 1 Dynamic ICC at 25C**

Frequency	Vcc=1.8V	Vcc=2.5V	Vcc=3.3V	Vcc=5.0V	Units
1MHZ	0.024	0.042	0.068	0.133	mA
5MHZ	0.123	0.212	0.337	0.667	mA
10MHZ	0.245	0.423	0.674	1.331	mA
20MHZ	0.489	0.848	1.353	2.672	mA