PERICOM Semiconductor Corporation

3545 North First St. • San Jose, CA 95134 • USA

PRODUCT/PROCESS CHANGE NOTICE (PCN)

PCN Number: **06-01**

Date Issued: **May 25, 2006**

Product(s) Affected: **PI5A121**

Manufacturing Location Affected: **CSMC-Tech (Wuxi, China, PRC)**

Date Effective: **August 25, 2006 – standard 90 day waiting period.**
Note: Current CSMS-Fab 1 product may no longer be available.

Means of Distinguishing Changed Devices:

☐ Product Mark:

☐ Back Mark

☒ Date Code: * 0616 and later

☐ Other

**** The SOT-23 and SC-70 package types are too small to fit the wafer fab ID letter code***

Contact: **Ed Mello**

Title: **Director, Quality Systems**

Phone: (**408) 435-0800, Ext. 207**

Fax: **(408) 321-0324**

E-Mail: emello@pericom.com

Attachment: ☒ Yes; ☐ No

Characterization data by Pericom's Product Engineering confirmed CSMC-Tech 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:

This product has been transferred from wafer fab subcontractor Chartered Semiconductor Manufacturing Singapore's (CSMS) Fab 1 (which closed operations in March 2004), to the previously approved CSMC-Tech, Wuxi, wafer fab in China. The devices are now being manufactured from the same die array, and will retain the same die size and CMOS 0.6-µm, 1P2M process type as used in CSMC Fab 1. The key CSMS wafer fab manufacturing equipment was sold to CSMC in 2005, and Pericom is using the same CSMS Fab 1 masks. See the CSMC-Technologies website for more information about their operations:

http://www.csmc.com.cn/csmc/english/index.asp

☐ Die Technology

☒ Wafer Fabrication

☐ Assembly Process

☐ Equipment

☐ Material

☐ Testing

☒ Manufacturing Site

☐ Data Sheet

☒ Other: Class 2 change

Reliability/Qualification Summary: **Generic Process Qualification report is at:** http://www.pericom.com/pdf/gen/CSMC_6um.pdf

Customer Acknowledgement of Receipt:

Customer: _____

Name: _____

Title: _____

Date: _____

E-Mail: _____

Phone: _____

Fax: _____

☐ Approval for shipments prior to PCN effective date

Customer Comments (Optional): _____

Subject: PI5A121 Characterization Comparison Report

Introduction:
PI5A121 is a SPST normally open (NO) analog switch. CSMC-Wuxi and CSM-S Fab 1 product were compared side by side. The process, masks and equipment was sold and transferred to CSMC in Wuxi, China PRC after CSMS Fab 1 closed in early 2004.

Reference

Wafer Fab: **CSMC-Wuxi** Array: SSW-5A121
Process: 0.5µm SPDM CMOS
Lot #: EA4CVF1.4B
Date Code: 0513
Package: 5-pin SOT23 (T)

Wafer Fab: **CSM-S Fab 1** Array: SSW-5A121
Process: 0.5µm SPDM CMOS
Lot #: 109786
Date Code: ZFQF
Package: 5-pin SOT23 (T)

Equipment

HP power supply & DMM
HP4285 LCR Meter
HP4145B DC Analyzer
HP4156B DC Analyzer
TDS7404 Oscilloscope with TEK P7240 Probes
HP8082A Pulse Generator
HP4396B Network/Spectrum/Impedance Analyzer, HP11667A Power Splitter
Thermostream TP034000-A

Tables

Table 1: DC Characteristics

Parameter	Test Conditions	Vcc	CSMC-Wuxi			CSM-S Fab 1			Min Spec	Max Spec	Unit
			-40°C	25°C	90°C	-40°C	25°C	90°C			
VIH	Input High Voltage	3.0V	1.000	0.980	0.960	0.990	0.970	0.950	2.0		V
VIH	Input High Voltage	3.3V	1.050	1.030	1.010	1.040	1.020	1.000	2.0		V
VIH	Input High Voltage	3.6V	1.100	1.080	1.070	1.090	1.070	1.060	2.0		V
VIH	Input High Voltage	4.5V	1.240	1.230	1.230	1.230	1.220	1.220	2.0		V
VIH	Input High Voltage	5.0V	1.320	1.310	1.310	1.300	1.300	1.310	2.0		V
VIH	Input High Voltage	5.5V	1.400	1.390	1.400	1.380	1.380	1.390	2.0		V
VIL	Input Low Voltage	3.0V	0.990	0.970	0.950	0.980	0.960	0.940		0.8	V
VIL	Input Low Voltage	3.3V	1.040	1.020	1.000	1.030	1.010	0.990		0.8	V
VIL	Input Low Voltage	3.6V	1.090	1.070	1.060	1.080	1.060	1.050		0.8	V
VIL	Input Low Voltage	4.5V	1.230	1.220	1.220	1.220	1.210	1.210		0.8	V
VIL	Input Low Voltage	5.0V	1.310	1.300	1.300	1.290	1.290	1.300		0.8	V
VIL	Input Low Voltage	5.5V	1.390	1.380	1.390	1.370	1.370	1.380		0.8	V
INO(OFF)	VNO=0V	5.5V	-30p	-110p	-24p	-7.5p	-13.5p	-17.5p	-80	80	nA
INO(OFF)	VNO=4.5V	5.5V	57p	296p	7.39n	39p	195p	3.25n	-80	80	nA
ICOM(OFF)	VNO=0V	5.5V	-0.50p	-5.5p	-18p	3.5p	-10p	-30.5p	-80	80	nA
ICOM(OFF)	VNO=4.5V	5.5V	59.3p	341p	5.89n	44.5p	166p	3.0n	-80	80	nA
ICOM(ON)	NO-COM, VIN=0V	5.5V	-147p	-15.5p	-56.5p	-8.5p	-9.0p	-15p			
ICOM(ON)	NO-COM, VIN=4.5V	5.5V	43p	32.5p	2.16n	33.5p	93.5p	1.01n	-80	80	nA
IIL	Vin= 0 V	5.5 V	-100p	-31.0p	-9.0p	-10.5p	-21.0p	-16.5p	-1	1	us
IIH	Vin= VCC	5.5V	9.0p	27.0p	1.35n	32.5p	17.5p	1.86n	-1	1	us
ICCL	Vin=0V	3.6V	105p	151p	1.73n	274p	61.5p	1.43n		1	us
ICCH	Vin=3.6V	3.6V	52.0p	72p	1.29n	34.5p	19.5p	1.05n		1	us
ICCL	Vin=0 V	5.5 V	245p	127p	2.41n	457p	115p	1.21n		1	us
ICCH	Vin=5.5V	5.5 V	67.0p	46.0p	2.34n	137p	34.0p	1.19n		1	us

Table 2: Capacitance at 25C

Symbol	Description	Vcc	CSMC-Wuxi	CSM-S Fab 1	Typ	Units
Cin	S Pin Capacitance	5.5 V	2.30	2.51	NA	pF
Coff	NO, Switch Off	5.5 V	8.13	8.18	5.5	pF
Coff	Com, Switch Off	5.5 V	6.80	6.90	5.5	pF
Con	NO-Com Switch On	5.5 V	12.47	12.50	13	pF

Table 3: Ron Measurements, over temperature range

Parameter	Test Conditions	Vcc	CSMC-Wuxi			CSM-S Fab 1			Min Spec	Max Spec	Unit
			-40°C	25°C	90°C	-40°C	25°C	90°C			
RON	ICOM=-30mA, VNO=1.5V	3.0V	11.30	13.10	15.10	13.10	15.30	17.60		22	Ω
RON	ICOM=-30mA, VNO=0.8V	3.3V	9.47	11.50	13.90	10.70	12.90	15.50		NA	Ω
	ICOM=-30mA, VNO=2.5V	3.3V	12.50	14.60	16.30	14.30	16.70	18.60		NA	Ω
RFLAT(ON)	Max-Min RON	3.3V	3.03	3.10	2.40	3.60	3.809	3.10		5	Ω
RON	ICOM=-30mA, VNO=2.5V	4.5V	6.37	7.73	9.27	8.59	8.80	10.50		12	Ω
RON	ICOM=-30mA, VNO=1.0V	5.0V	7.40	8.55	10.10	8.50	9.90	11.60		NA	Ω
	ICOM=-30mA, VNO=2.5V	5.0V	5.70	6.86	8.30	6.37	7.80	9.40		NA	Ω
	ICOM=-30mA, VNO=4.0V	5.0V	8.47	9.80	11.30	9.23	11.00	12.60		NA	Ω
RFLAT(ON)	Max-Min Ron	5.0V	1.07	1.25	1.20	0.73	1.10	1.00		4	Ω

Table 4: Ron Distribution, Vcc=3.3V, Ion=-30mA, 25C

	NO-COM		
Vin, V	**CSMC-Wuxi**	**CSM-S Fab 1**	**Units**
0	9.31	10.40	Ω
0.25	9.88	11.10	Ω
0.50	10.50	11.80	Ω
0.75	11.40	12.70	Ω
1.00	11.90	13.50	Ω
1.25	11.60	13.50	Ω
1.50	11.20	13.00	Ω
1.75	11.20	13.00	Ω
2.00	12.00	13.70	Ω
2.25	13.40	15.30	Ω
2.50	14.60	16.70	Ω
2.75	13.80	15.90	Ω
3.00	12.60	14.40	Ω
3.30	11.60	13.10	Ω

Table 5: Ron Distribution, Vcc=5.0V, Ion=-30mA, 25C

	NO-COM		
Vin, V	**CSMC-Wuxi**	**CSM-S Fab 1**	**Units**
0	7.89	8.94	Ω
0.25	8.11	9.21	Ω
0.50	8.35	9.50	Ω
0.75	8.60	9.79	Ω
1.00	8.55	9.90	Ω
1.25	7.93	9.32	Ω
1.50	7.39	8.63	Ω
1.75	7.06	8.17	Ω
2.00	6.85	7.89	Ω
2.25	6.86	7.85	Ω
2.50	6.86	7.80	Ω
2.75	6.90	7.87	Ω
3.00	7.10	8.03	Ω
3.25	7.47	8.44	Ω
3.50	8.06	9.10	Ω
3.75	9.07	10.20	Ω
4.00	9.80	11.00	Ω
4.25	9.53	10.70	Ω
4.50	9.23	10.20	Ω
4.75	8.93	9.90	Ω
5.00	8.70	9.63	Ω

Table 6: AC Characteristics

Symbols	**VCC**	**Conditions**	**CSMC-Wuxi**			**CSM-S Fab 1**			**Max Spec**	**Units**
			-40°C	**25°C**	**90°C**	**-40°C**	**25°C**	**90°C**		
TON	3.3V	VNO=1.5V	11.72	12.22	12.63	13.82	15.14	15.72	40	ns
TOff	3.3V	VNO=1.5V	3.19	3.44	3.71	3.39	3.72	4.06	20	ns
TON	5.0V	VNO=1.5V	5.80	6.56	7.21	6.42	7.31	8.22	20	ns
TOff	5.0V	VNO=1.5V	2.96	3.04	3.24	3.02	3.26	3.45	10	ns
			25°C			**25°C**			**Typical**	
BW	5.0V	NO-COM	375			365			326	MHz
OIRR	5.0V	Frequency=10MHz	-37.80			-36.18			-43	dB

Table 7: Charge Injection Distribution @ 25C, CL=100pF, Vcc=3.3V, Output at NO

			CSMC-Wuxi				CSM-S Fab 1			
Vgen, V	**Vcc**	**Load**	**ΔVout**	**Units**	**Charge Injection (Q)**	**Units**	**ΔVout**	**Units**	**Charge Injection (Q)**	**Units**
0	3.3V	100pF	5.13	mV	0.513	pC	4.87	mV	0.487	pC
0.5	3.3V	100pF	94.6	mV	09.46	pC	91.9	mV	09.19	pC
1.0	3.3V	100pF	184	mV	18.40	pC	189	mV	18.90	pC
1.5	3.3V	100pF	276	mV	27.60	pC	284	mV	28.40	pC
2.0	3.3V	100pF	370	mV	37.00	pC	365	mV	36.50	pC
2.5	3.3V	100pF	460	mV	46.00	pC	473	mV	47.30	pC
3.0	3.3V	100pF	568	mV	56.80	pC	554	mV	55.40	pC
3.3	3.3V	100pF	608	mV	60.80	pC	622	mV	62.20	pC

Table 8: Charge Injection Distribution @ 25C, CL=100pF, Vcc=5.0V, Output at NO

			CSMC-Wuxi				CSM-S Fab 1			
Vgen, V	**Vcc**	**Load**	**ΔVout**	**Units**	**Charge Injection (Q)**	**Units**	**ΔVout**	**Units**	**Charge Injection (Q)**	**Units**
0	5V	100pF	7.30	mV	0.730	pC	811	mV	0.811	pC
0.5	5V	100pF	105	mV	10.50	pC	97.3	mV	09.73	pC
1.0	5V	100pF	187	mV	18.70	pC	187	mV	18.70	pC
1.5	5V	100pF	284	mV	28.40	pC	276	mV	27.60	pC
2.0	5V	100pF	373	mV	37.30	pC	362	mV	36.20	pC
2.5	5V	100pF	470	mV	47.00	pC	449	mV	44.90	pC
3.0	5V	100pF	551	mV	55.10	pC	543	mV	54.30	pC
3.5	5V	100pF	632	mV	63.20	pC	624	mV	62.40	pC
4.0	5V	100pF	730	mV	73.00	pC	714	mV	71.40	pC
4.5	5V	100pF	795	mV	79.50	pC	787	mV	78.70	pC
5.0	5V	100pF	856	mV	85.60	pC	843	mV	84.30	pC

Table 9: Off Isolation vs. Frequency, Vcc=5.0V, 25C

Frequency	**CSMC-Wuxi**	**units**	**CSM-S Fab 1**	**units**
100 kHz	-61.25	dB	-63.50	dB
500 kHz	-56.13	dB	-58.08	dB
1 MHz	-54.36	dB	-55.73	dB
2 MHz	-50.68	dB	-51.44	dB
5 MHz	-43.70	dB	-44.12	dB
10 MHz	-37.80	dB	-36.18	dB