

PRODUCT/PROCESS CHANGE NOTICE (PCN)

PCN Number: **06-06**
 Date Issued: **September 15, 2006**
 Product(s) Affected: **PI3A125**
 Manufacturing Location Affected: **CSMC-Tech (Wuxi, China, PRC)**
 Date Effective: **December 15, 2006.**
Note: Current CSMS-Fab 1 product may no longer be available.

Means of Distinguishing Changed Devices:
 Product Mark:
 Back Mark
 Date Code: *0520 and later
 Other
** The SOT-23 and SC-70 package types are too small to fit the wafer fab ID letter code*

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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 0.5- μ m, 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_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): _____

Subject: PI3A125 Characterization Report

Introduction

PI3A125 is a high-speed CMOS SPST switch that can be used in Analog or low-delay Bus Switch applications. CSMC and CSM-S Fab 1 were compared side by side.

Reference

Wafer Fab: CSMC

Die Array: ASW6
Process: 0.5- μ m, 1P2M CMOS
Lot #: EA471F1.5C
Date Code: 0520Z
Package: 5-pin SOT-23(T)

Wafer Fab: CSM-S

Die Array: ASW6
Process: 0.5- μ m, 1P2M CMOS
Lot #: 201012
Date Code: 0247Z
Package: 5-pin SOT-23(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

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Table 1: DC Characteristics

Parameter	Test Conditions	Vcc	CSMC			CSM-S			Min Spec	Max Spec	Unit
			-40°C	25°C	90°C	-40°C	25°C	90°C			
VIH	Input High Voltage	2.3V	0.890	0.865	0.835	0.775	0.750	0.720	2.0		V
VIH	Input High Voltage	2.5V	0.930	0.905	0.875	0.815	0.785	0.755	2.0		V
VIH	Input High Voltage	2.7V	0.965	0.940	0.915	0.845	0.815	0.790	2.0		V
VIH	Input High Voltage	3.0V	1.020	0.995	0.970	0.885	0.865	0.840	2.0		V
VIH	Input High Voltage	3.3V	1.070	1.045	1.020	0.930	0.910	0.890	2.0		V
VIH	Input High Voltage	3.6V	1.115	1.095	1.075	0.975	0.955	0.935	2.0		V
VIL	Input Low Voltage	2.3V	0.885	0.860	0.830	0.770	0.745	0.715		0.8	V
VIL	Input Low Voltage	2.5V	0.925	0.900	0.870	0.805	0.780	0.750		0.8	V
VIL	Input Low Voltage	2.7V	0.960	0.935	0.910	0.840	0.820	0.785		0.8	V
VIL	Input Low Voltage	3.0V	1.015	0.990	0.965	0.890	0.860	0.835		0.8	V
VIL	Input Low Voltage	3.3V	1.065	1.040	1.015	0.935	0.905	0.880		0.8	V
VIL	Input Low Voltage	3.6V	1.110	1.090	1.070	0.980	0.950	0.925		0.8	V
IOFF	B, Voff=0V	2.7V	-594p	-470p	-248p	-349p	-535p	-398p		50	uA
IOFF	B, Voff=2.7V	2.7V	640p	-518p	1.01n	850p	194p	-24p		50	uA
IOFF	B, Voff=0V	3.6V	-244p	352p	143p	-776p	458p	-595p		50	uA
IOFF	B, Voff=3.6V	3.6V	441p	-419p	1.13n	159p	201p	1.14n		50	uA
IA(On)	A On, VIN=0V	2.7V	-950p	506p	-94p	507p	-591p	-848p		NA	uA
IA(On)	A On, VIN=2.7V	2.7V	-2.57n	382p	-53p	1.41n	615p	1.63n		NA	uA
IA(On)	A On, VIN=0V	3.6V	-2.40n	-481p	806p	254p	-606p	-865p		NA	uA
IA(On)	A On, VIN=3.6V	3.6V	2.68n	-312p	1.29n	305p	523p	1.74n		NA	uA
III	Vin= 0 V	2.7V	-587p	564p	38p	-1.13n	233p	-253p		1	uA
III	Vin= VCC	2.7V	251p	473p	760p	24p	580p	1.22n		1	uA
III	Vin= 0 V	3.6V	-.296n	567p	-176p	-1.97n	316p	219p		1	uA
III	Vin= VCC	3.6V	446p	685p	951p	2.19n	753p	-123p		1	uA
ICCL	Vin=0V	3.6V	3.02n	119p	940p	2.09n	1.85n	2.26n		1	uA
ICCH	Vin=3.6V	3.6V	2.97n	111p	947p	1.91n	1.58n	618p		1	uA

Table 2: Capacitance at 25C

Symbol	Description	Vcc	CSMC	CSM-S	Typ	Units
Cin	OE\ Pin Capacitance	3.6 V	3.08	2.30	2.5	pF
Coff	A, Switch Off	3.6 V	6.70	6.22	7	pF
Coff	B, Switch Off	3.6 V	5.27	4.72	7	pF
Con	A-B, Switch On	3.6 V	13.80	13.47	16	pF

Table 3: Ron Measurements, over temperature range

Parameter	Test Conditions	Vcc	CSMC			CSM-S			Max Spec	Unit
			-40°C	25°C	90°C	-40°C	25°C	90°C		
RON A-B	IA=64mA, VB=0V	2.3V	3.93	4.58	6.30	4.50	5.64	6.85	9	Ω
	IA=24mA, VB=0V	2.3V	3.71	4.94	5.70	4.24	5.20	6.17	9	Ω
	IA=15mA, VB=1.7V	2.3V	9.84	11.70	13.20	11.60	13.60	15.40	22	Ω
RON A-B	IA=64mA, VB=0V	3.0V	3.19	3.83	4.98	3.75	4.59	5.43	6	Ω
	IA=24mA, VB=0V	3.0V	3.11	3.97	4.75	3.65	4.41	5.18	6	Ω
	IA=15mA, VB=2.4V	3.0V	6.80	8.20	9.60	7.73	9.40	10.90	13	Ω

Table 4: Ron Distribution, Vcc=2.3V, Ion=-15mA, 25C

Vin, V	A-B		Units
	CSMC	CSM-S	
0	4.61	4.95	Ω
0.25	5.28	5.63	Ω
0.50	6.38	6.70	Ω
0.75	8.33	8.77	Ω
1.00	12.00	12.70	Ω
1.25	17.00	19.90	Ω
1.50	13.60	16.10	Ω
1.75	11.30	13.20	Ω
2.00	10.00	11.40	Ω
2.30	8.54	9.73	Ω

Table 5: Ron Distribution, Vcc=3.0V, Ion=-15mA, 25C

Vin, V	A-B		Units
	CSMC	CSM-S	
0	3.83	4.21	Ω
0.25	4.15	4.53	Ω
0.50	4.55	4.93	Ω
0.75	5.02	5.46	Ω
1.00	5.22	5.79	Ω
1.25	5.57	6.15	Ω
1.50	6.53	7.07	Ω
1.75	9.38	9.90	Ω
2.00	9.94	11.40	Ω
2.25	8.73	10.00	Ω
2.50	8.00	9.00	Ω
2.75	7.47	8.40	Ω
3.00	7.00	7.80	Ω

Table 6. AC Characteristics, Vcc=2.3V

Symb.	Direction	Vcc	Load	CSMC			CSM-S			Max	Units
				-40°C	25°C	90°C	-40°C	25°C	90°C		
tpZH	/OE-B	2.3V	Load A	2.85	3.04	3.19	2.95	3.16	3.35	5	nS
tpHZ	/OE-B	2.3V	Load A	2.46	2.81	3.28	2.45	2.98	3.33	5	nS
tpZL	/OE-B	2.3V	Load B	2.78	2.96	3.15	2.91	3.11	3.32	5	nS
tpLZ	/OE-B	2.3V	Load B	1.69	1.79	1.92	1.65	1.76	1.88	5	nS

Load A: 30pF// 500Ω to Gnd

Load B: 30pF// 500Ω to Gnd, 500Ω to 4.6V

Table 7. AC Characteristics, Vcc=3.0V

Symb.	Direction	Vcc	Load	CSMC			CSM-S			Max	Units
				-40°C	25°C	90°C	-40°C	25°C	90°C		
tpZH	/OE-B	3.0 V	Load A	2.61	2.73	2.91	2.70	2.88	3.05	4.5	nS
tpHZ	/OE-B	3.0 V	Load A	4.49	4.78	4.87	4.70	4.89	4.88	4.1	nS
tpZL	/OE-B	3.0 V	Load B	2.31	2.57	2.73	2.50	2.67	2.86	4.5	nS
tpLZ	/OE-B	3.0 V	Load B	1.91	2.05	2.10	1.90	2.01	2.15	4.1	nS

Load A: 50pF// 500Ω to Gnd

Load B: 50pF// 500Ω to Gnd, 500Ω to 6V

Table 8. Bandwidth and Off Isolation, 25C

Symbol	Parameter	Vcc	CSMC	CSM-S	Typ	unit
OIRR	Off Isolation, 1Mhz	3.3 V	-52.14	-48.95	-65	dB
BW	-3dB Bandwidth	3.3V	370.48	360.04	TBD	Mhz

Table 9: Charge Injection Distribution @ 25C, CL=1nF, Vcc=3.3V, Output at B

Vgen, V	Vcc	Load	CSMC				CSM-S			
			ΔV_{out}	Units	Charge Injection (Q)	Units	ΔV_{out}	Units	Charge Injection (Q)	Units
0	3.3V	1nF	3.24	mV	3.24	pC	2.43	mV	2.43	pC
0.5	3.3V	1nF	11.35	mV	11.35	pC	8.65	mV	8.65	pC
1.0	3.3V	1nF	19.46	mV	19.46	pC	19.73	mV	19.73	pC
1.5	3.3V	1nF	30.81	mV	30.81	pC	30.27	mV	30.27	pC
2.0	3.3V	1nF	42.70	mV	42.70	pC	42.16	mV	42.16	pC
2.5	3.3V	1nF	54.05	mV	54.05	pC	54.05	mV	54.05	pC
3.0	3.3V	1nF	67.57	mV	67.57	pC	65.41	mV	65.41	pC
3.3	3.3V	1nF	72.97	mV	72.97	pC	71.51	mV	71.51	pC

Table 10: Off Isolation vs Frequency, Vcc=3.3V, 25C

Frequency	CSMC	units	CSM-S	units
100 kHz	-56.73	dB	-53.22	dB
500 kHz	-52.07	dB	-48.85	dB
1 MHz	-52.14	dB	-48.95	dB