PERICOM Semiconductor Corporation

3545 North First Street • San Jose, CA 95134 • USA

PRODUCT/PROCESS CHANGE NOTICE (PCN)

PCN Number: **08-02**

Date Issued: **July 25, 2008**

Product(s) Affected: **PI5V330S (all package types)**

Manufacturing Location Affected: **N/A**

Date Effective: **October 25, 2008 – standard 90 day period (some customers may require longer timeframes)**

Means of Distinguishing Changed Devices:

☐ Product Mark:

☐ Back Mark

☒ Date Code: *

☐ Other

*** "A" (or "FB") prefix letter before datecode mark**

Contact: **Brian Conway**

Title: **Director, Quality Systems**

Phone: (**408) 435-0800, Ext. 314**

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

EMail: bconway@pericom.com

Attachment: ☒ Yes; ☐ No

See attached Characterization Comparison Data, which confirms the smaller die size has no significant performance differences compared to the previous version.

Samples: **Request from Pericom Sales Representatives**

Description and Purpose of Change:

The change represents a die layout optimization that reduces chip size by ≈ 25%, and moves the die fabrication from CSM to the same previously qualified process (CMOS 5V, 0.5um, 1P3M) at MagnaChip (previously known as Hynix). This product was part of a die array that featured multiple device types from this switch family that were created by metal mask options. The other device type options were removed in order to decrease die size and increase die per wafer for this high volume product. No circuitry or process changes were made to the PI5V330S product itself.

**** The letter "A" (or FB for early sample lots) is marked before the datecode on SOIC (W) packages, and on the backside for QSOP (Q) due to package size limitations.***

☐ Die Technology

☐ Wafer Fabrication

☐ Assembly Process

☐ Equipment

☐ Material

☐ Testing

☐ Manufacturing Site

☐ Data Sheet

☒ Other: **Die size shrink/optimization**

Reliability/Qualification Summary: **N/A – same process as previous (http://www.pericom.com/pdf/gen/rel_Hynix_%20PI5C3257.pdf)**

Customer Acknowledgement of Receipt:

Customer: _____

Name: _____

Title: _____

Date: _____

E-Mail: _____

Phone: _____

Fax: _____

☐ Approval for shipments prior to effective date

Customer Comments (Optional): _____

Subject: **PI5V330S Characterization Comparison Report**

Introduction:

The PI5V330S is a Low ON Resistance Wideband/Video Quad 2-Channel Mux/Demux with enhanced ESD protection.

Reference:

New Array:	U516
Process:	MagnaChip CMOS 5V, 0.5um, 1P3M
Package:	QSOP-16
Lot #:	ESHD2333.J
Date Code:	0815XG
Old Array:	5V16
Process:	CSM CMOS 5V, 0.5um, 1P3M
Package:	QSOP-16
Lot Number:	EA36366
Date Code:	0440

Datasheet

PS8759A (http://www.pericom.com/pdf/datasheets/PI5V330S.pdf). No change

Equipment:

HP power supply & DMM
HP 8903B Audio Analyzer
HP4145B DC Analyzer
HP8082A Pulse Generator
R&S SMY02 Signal Generator
TDS7404 Oscilloscope with P7240 SE probe
TDS694C Oscilloscope with P6249 SE probe
Thermostream TP04300A
HP 8753ES S-parameter Network Analyzer
HP4285 LCR Meter

Tables:

Table 1: DC Characteristics
Table 2: Ron, Vdd=4.75V
Table 3: Ron Measurement, all paths, Vcc=4.75V, 25C
Table 4: AC Characteristics,
Table 5: Dynamic ICC, Vcc=5.25V, 25C
Table 6: BW, Xtalk and OIRR, Vcc=5.25V, 25C
Table 7: Off Isolation vs Frequency, Vcc=5.25V, 25C
Table 8: Xtalk vs Frequency, Vcc=5.25V, 25C
Table 9: Capacitance, Vcc=4.75V, 25C

Table 1: DC Characteristics (New Die Array)

Parameters	Test Conditions	Pins	Vdd	-40C	25C	90C	Min Spec	Typ	Max Spec	Units
VIH	Input High Voltage	IN	4.75V	1.41	1.41	1.37	2.0		-	V
VIH	Input High Voltage		5.0V	1.45	1.45	1.41	2.0		-	V
VIH	Input High Voltage		5.25V	1.49	1.49	1.45	2.0		-	V
VIL	Input Low Voltage	IN	4.75V	1.52	1.52	1.48	-0.5		0.8	V
VIL	Input Low Voltage		5.0V	1.56	1.56	1.56	-0.5		0.8	V
VIL	Input Low Voltage		5.25V	1.60	1.60	1.60	-0.5		0.8	V
VH	Input Hysteresis	VIL -VIH	4.75V	0.11	0.11	0.11	-	150		mV
VH	Input Hysteresis		5.0V	0.11	0.11	0.15	-	150		mV
VH	Input Hysteresis		5.25V	0.11	0.11	0.15	-	150		mV
VIK	Iin=-18mA	IN	4.75V	-0.9321	-0.8644	-0.8313	-0.7	-1.2		V
VIK	Iin=-18mA	S1	4.75V	-0.8928	-0.8274	-0.7786	-0.7	-1.2		V
I_{INL}	Vin= 0V	IN	5.25V	14.30p	-34.35p	3.250p	-1		+1	uA
I_{INH}	Vin= 5.25V		5.25V	-18.34p	1.292p	3.429n	-1		+1	uA
IS1(OFF)	S1-D, VOff=0V	S1/S2	5.25V	-7.145n	6.900n	-3.425n	-1		+1	uA
IS1(OFF)	S1-D, VOff=5.25V		5.25V	4.415n	225.8p	17.31n	-1		+1	uA
IS2(OFF)	S2-D, VOff=0V		5.25V	5.610n	-2.305n	8.2470n	-1		+1	uA
IS2(OFF)	S2-D, VOff=5.25V		5.25V	3.617n	3.691n	17.23n	-1		+1	uA
ICCL	Vin=0V	IN	5.25V	54.56n	23.33n	15.02n	-	0.1	3.0	uA
ICCH	Vin=5.25V		5.25V	50.14n	44.21n	27.23n	-	0.1	3.0	uA
ΔICC	Vin=3.4V		5.25V	832.9u	819.u	812.1u	-		2.5	mA

Table 2: Ron, Vdd=4.75V (New Die Array)

Parameter	Test Conditions	Vcc	-40C	25C	90C	Min spec	Typ	Max Spec	Unit
Ron S1A-DA	Vin=1V, Iin=13mA	4.75 V	3.83	4.20	4.58		5	7	Ω
Ron S2A-DA	Vin=1V, Iin=13mA	4.75 V	3.88	4.19	4.64		5	7	Ω
Ron S1A-DA	Vin=2V, Iin=26mA	4.75 V	4.51	5.07	5.50		7	10	Ω
Ron S2A-DA	Vin=2V, Iin=26mA	4.75 V	4.57	5.06	4.67		7	10	Ω

Table3: Ron Measurement, all paths, Vcc=4.75V, 25C

	New Die Array		Old Die Array		
Channel	**Iin=13mA Vin=1.0V**	**Iin=26mA Vin=2.0V**	**Iin≈13mA Vin=1.0V**	**Iin≈26mA Vin=2.0V**	unit
S1A-DA	4.20	5.07	5.49	6.81	Ω
S2A-DA	4.19	5.06	5.5	6.81	Ω
S1B-DB	4.20	5.04	5.6	7.01	Ω
S2B-DB	4.19	5.03	5.5	6.89	Ω
S1C-DC	4.19	5.03	5.6	6.97	Ω
S2C-DC	4.18	5.03	5.5	6.89	Ω
S1D-DD	4.18	5.02	5.54	6.84	Ω
S2D-DD	4.19	5.03	5.52	6.84	Ω

Table 4: AC Characteristics

				New Die Array			Old Die Array					
Parameter	**Conditions**	**Pins**	**Vdd**	**-40C**	**25C**	**90C**	**-40C**	**25C**	**90C**	**Typ**	**Max spec**	**Units**
ton	Vs1=3V, S2=open	IN to D	4.75V	3.76	3.85	3.92	2.34	2.46	2.76	2.5	5	ns
ton	Vs2=3V, S1=open	IN to D	4.75V	1.66	1.73	1.83	-	-	-	2.5	5	ns
toff	Vs1=3V, S2=open	IN to D	4.75V	290p	140p	230p	0.78	0.78	0.87	1	5	ns
toff	Vs2=3V, S1=open	IN to D	4.75V	2.39	2.5	2.51	-	-	-	1	5	ns

Load: 20pF//75Ω
Ton/off is measured from 50% of input to 90% of output
1MHz square pulse is generated from R&S SMY02 and HP8082A with 4.75V swing as input source (i.e. .IN)

Table 5: Dynamic Icc, Vcc=5. 25V, 25C (New Die Array)

Frequency	IccD	Units
1MHZ	-0.85	mA
5MHZ	-0.39	mA
10MHZ	0.18	mA
20MHZ	1.32	mA
25MHZ	1.84	mA
50MHZ	4.50	mA
66MHZ	6.27	mA
75MHZ	6.93	mA
100MHZ	10.11	mA

Table 6: BW, Xtalk and OIRR, Vcc=4.75V, 25C

Symbol	Conditions	New Die Array	Old Die Array	Typ	Max Spec	Units
Xtalk	Vcc=4.75V, f=10MHz	-66.976	-82.3	-	-80	dB
Oirr	Vcc=4.75V, f=10MHz	-65.909	-49.7	-	-48	dB
BW	Vcc=4.75V, -3dB Bandwidth	469	574		570	MHz

Table 7: Off Isolation vs Frequency, Vcc=4.75V, 25C

Frequency	New Die Array	Old Die Array	
1 MHz	-90.656	-47.9	dB
5 MHz	-72.466	-48.8	dB
10 MHz	-65.909	-49.7	dB
20 MHz	-59.348	-46.5	dB
30 MHz	-55.874	-43.1	dB
40 MHz	-53.586	-40.7	dB
50 MHz	-51.735	-38.8	dB
60 MHz	-50.180	-37.3	dB
70 MHz	-48.927	-36.1	dB
80 MHz	-47.882	-35.0	dB
90 MHz	-47.053	-34.0	dB
100 MHz	-46.313	-33.2	dB

For ENG8-ENG, off isolation is between S1A and DA
For 5V16, this is the off isolation of S2B pin (Input Signal is applied at S1B, /EN=IN=L)

Table 8: Xtalk vs Frequency, Vcc=4.75V, 25C

Frequency	New Die Array	Old Die Array	
1 MHz	-107.87	-120.1	dB
5 MHz	-80.102	-88.8	dB
10 MHz	-66.976	-82.3	dB
20 MHz	-63.572	-76.6	dB
30 MHz	-60.633	-73.6	dB
40 MHz	-58.309	-71.2	dB
50 MHz	-56.793	-69.5	dB
60 MHz	-55.441	-68.1	dB
70 MHz	-54.226	-66.9	dB
80 MHz	-53.338	-65.7	dB
90 MHz	-52.633	-64.8	dB
100 MHz	-52.096	-63.6	dB

For ENG8-ENG, crosstalk is between S1A and S1B
For5V16, crosstalk is between channels Db and Dc.

Table 9: Capacitance, Vcc=4.75V, 25C

Symbol	Description	New Die Array	Old Die Array	Typical	units
Cin (S)	/EN Pin	2.3	3.5	6	pF
Cin (/EN)	IN Pin	2.2	3.5	6	pF
Con (S1A)	Switch On	7.2	7.8	9	pF
Con (S2A)	Switch On	7.1	7.5	9	pF
Coff (S1A)	Switch Off	2.6	2.5	6	pF
Coff (S2A)	Switch Off	2.5	2.4	6	pF
Coff (DA)	Switch Off	3.8	3.9	6	pF