PERICOM Semiconductor Corporation

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

PRODUCT/PROCESS CHANGE NOTICE (PCN)

PCN Number: **05-22**

Date Issued: **December 21, 2005**

Product(s) Affected: **PI3V512 (all package types)**

Manufacturing Location Affected: **N/A**

Date Effective: **March 21, 2006 – standard 90 day waiting period (some customers may require longer timeframes)**

Means of Distinguishing Changed Devices:

☐ Product Mark:

☐ Back Mark

☒ Date Code: *

☐ Other

*** "A" prefix letter before the datecode mark**

Contact: **Ed Mello**

Title: **Director, Quality Systems**

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

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

EMail: emello@pericom.com

Attachment: ☒ Yes; ☐ No

See attached Characterization Comparison Data. Data confirms that the smaller die size has no significant performance differences than 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 ≈ 27%, while using the same MagnaChip 0.5-µm wafer fab process and design rules. The new die size is now 2.4 x 1.0 mm, compared to the previous version's 2.9 x 1.2 mm. This revised product uses the same process and design rules as for the PI3L301D that was covered by PCN 05-16.

☐ 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 previously used (**http://www.pericom.com/pdf/gen/rel_PI3L301D.pdf**)**

Customer Acknowledgement of Receipt:

Customer: _____

Name: _____

Title: _____

Date: _____

E-Mail: _____

Phone: _____

Fax: _____

☐ Approval for shipments prior to effective date

Customer Comments (Optional): _____

Confidential/For Customer Use Only

Date: December 19, 2005

Subject: PI3V512 Characterization Report

Introduction:

PI3V512 is a Low ON-Resistance, 3.3V, Wideband/Video Switch 5-Port 2:1 Mux/DeMux .
The new die shrink array and the old array were compared side by side for this report.

Reference:

Process: MagnaChip - 0.5µm, CMOS, 1P3M
New Array: A648
Lot Number: ESHD0434.A
Date Code: AAB0545XG

Process: MagnaChip - 0.5µm, CMOS, 1P3M
Old Array: 6V48
Lot No: 261846.1
Date Code: 0429OG

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
Thermo-stream TP034000-A

Tables:

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Figure 18-19: BW

Conclusion:

1. Both old and new versions meet all the specs requirements.
2. Ron for both arrays types are comparable.

Table 1. DC Characteristics

Param.	Test Conditions	Vcc	New Array			Old Array			Min	Max	Units
			-40°C	25°C	90°C	-40°C	25°C	90°C			
VIH	Input High Voltage	3.0 V	1.355	1.355	1.360	1.330	1.340	1.355	2.0		V
VIH	Input High Voltage	3.3 V	1.465	1.470	1.475	1.445	1.455	1.470	2.0		V
VIH	Input High Voltage	3.6 V	1.580	1.580	1.590	1.560	1.580	1.590	2.0		V
VIL	Input Low Voltage	3.0 V	1.350	1.350	1.355	1.335	1.345	1.360		0.8	V
VIL	Input Low Voltage	3.3 V	1.460	1.460	1.470	1.450	1.460	1.475		0.8	V
VIL	Input Low Voltage	3.6 V	1.570	1.575	1.580	1.565	1.585	1.595		0.8	V
IIL	Vin=0V	3.6V	-1.47n	477p	-11.51n	-1.4n	-47p	-2.4n		± 5	µA
IIH	Vin=3.6V	3.6 V	623p	49.5p	14.71n	2.6n	26p	4.3n		± 5	µA
IOff	Vout=0V	0 V	215p	51.0p	13.0p	-36p	-31p	-16p		± 5	µA
IOff	Vout=3.6V	0 V	10.0n	395p	733p	35p	-18p	4p		± 5	µA
VIK	Iin=-18mA, SEL	3.0 V	-0.959	-0.863	-0.774	-0.96	-0.88	-0.80		-1.2	V
VIK	Iin=-18mA, A/B	3.0 V	-0.911	-0.813	-0.715	-0.90	-0.83	-0.72		-1.2	V
ICC	Vin=Gnd	3.6 V	445u	385u	340u	375u	340u	310u		800	µA
ICC	Vin=VCC	3.6 V	440u	390u	345u	375u	360u	310u		800	µA

Table 2. Ron Measurements, Over Temperature Range, Vcc=3.0V

Para-meter	Test Conditions	New Array			Old Array				
		-40°C	25°C	90°C	-40°C	25°C	90°C	Max Spec	Unit
Ron	Vin=1.5, Iin=-40mA	3.81	4.28	4.94	3.85	4.39	5.15	8	Ω
Ron	Vin=3.0, Iin=-40mA	4.36	4.84	5.59	4.35	4.97	5.83	8	Ω
Ron	Vin=1.25V, Iin=-10mA	3.66	4.18	4.88	3.86	4.48	5.14	8	Ω
Ron	Vin=3.0, Iin=-10mA	4.24	4.83	5.63	4.30	5.10	5.80	8	Ω
Ron	Vin=1.25V, Iin=-30mA	3.68	4.21	4.87	3.80	4.41	5.09	8	Ω
Ron	Vin=3.0, Iin=-30mA	4.24	4.84	5.60	4.33	4.97	5.83	8	Ω
Rflat	Vin=1.5 & 3.0V, Iin=-40mA	0.55	0.56	0.65	0.50	0.58	0.68	1(typ)	Ω
Rflat	Vin=1.25 & 3.0V, Iin=-10mA	0.58	0.65	0.75	0.44	0.62	0.66	1(typ)	Ω
Rflat	Vin=1.25 & 3.0V, Iin=-30mA	0.56	0.63	0.73	0.53	0.56	0.74	1(typ)	Ω

Table 3: New Array - Ron Measurement, all paths at 25C

	Iin=-40mA		Iin=-10mA		Iin=-30mA		Units
Channel	Vin=1.5V	Vin= 3.0V	Vin=1.25V	Vin= 3.0V	Vin=1.25V	Vin= 3.0V	
A0-0B1	4.04	4.58	3.95	4.57	3.96	4.56	Ω
A0-0B2	4.28	4.84	4.18	4.83	4.21	4.84	Ω
A1-1B1	4.21	4.77	4.12	4.73	4.15	4.75	Ω
A1-1B2	4.24	4.82	4.19	4.85	4.20	4.83	Ω
A2-2B1	4.35	4.92	4.26	4.92	4.27	4.90	Ω
A2-2B2	4.29	4.87	4.19	4.84	4.20	4.84	Ω
A3-3B1	4.32	4.88	4.26	4.90	4.25	4.89	Ω
A3-3B2	4.22	4.80	4.16	4.82	4.18	4.81	Ω
A4-4B1	4.30	4.88	4.24	4.89	4.23	4.88	Ω
A4-4B2	4.26	4.84	4.19	4.85	4.20	4.84	Ω
A5-5B1	4.29	4.86	4.21	4.87	4.23	4.87	Ω
A5-5B2	4.19	4.77	4.12	4.77	4.14	4.77	Ω
A6-6B1	4.32	4.91	4.30	4.96	4.26	4.90	Ω
A6-6B2	4.27	4.84	4.21	4.85	4.21	4.83	Ω
A7-7B1	4.34	4.91	4.28	4.93	4.28	4.92	Ω
A7-7B2	4.11	4.67	4.04	4.68	4.05	4.67	Ω
Min	**4.04**	**4.58**	**3.95**	**4.57**	**3.96**	**4.56**	Ω
Max	**4.35**	**4.92**	**4.30**	**4.96**	**4.28**	**4.92**	Ω

Table 4: Old Array - Ron Measurement, all paths at 25C

	Iin=-40mA		Iin=-10mA		Iin=-30mA		units
Channel	Vin=1.5V	Vin= 3.0V	Vin=1.25V	Vin= 3.0V	Vin=1.25V	Vin= 3.0V	
A0-0B1	3.96	4.53	3.98	4.60	3.92	4.53	Ω
A0-0B2	4.16	4.75	4.17	4.70	4.11	4.73	Ω
A1-1B1	4.17	4.72	4.21	4.70	4.14	4.73	Ω
A1-1B2	4.21	4.80	4.25	4.80	4.19	4.80	Ω
A2-2B1	4.39	4.97	4.48	5.10	4.41	4.97	Ω
A2-2B2	4.30	4.87	4.36	4.90	4.28	4.90	Ω
A3-3B1	4.27	4.85	4.30	4.90	4.25	4.87	Ω
A3-3B2	4.17	4.75	4.19	4.70	4.13	4.77	Ω
A4-4B1	4.26	4.85	4.28	4.80	4.22	4.83	Ω
A4-4B2	4.28	4.87	4.31	4.80	4.25	4.87	Ω
A5-5B1	4.18	4.85	4.27	4.80	4.21	4.83	Ω
A5-5B2	4.21	4.80	4.21	4.80	4.15	4.80	Ω
A6-6B1	4.16	4.75	4.18	4.70	4.12	4.77	Ω
A6-6B2	4.14	4.70	4.18	4.70	4.11	4.74	Ω
A7-7B1	4.10	4.68	4.11	4.70	4.04	4.60	Ω
A7-7B2	3.98	4.53	4.00	4.50	3.93	4.57	Ω
Min	**3.96**	**4.53**	**3.98**	**4.50**	**3.92**	**4.53**	Ω
Max	**4.39**	**4.97**	**4.48**	**5.10**	**4.41**	**4.97**	Ω

Table 5. Capacitance @ 25C

Symbol	Description	Vcc	New Array	Old Array	Typ	Max	Units
Cin	SEL pin	3.0V	2.8	2.50	2	3	PF
Coff	Port B Capacitance, Switch Off	3.0V	2.3	3.10	4	6	pF
Con	A0-0B1 Switch On	3.0V	7.6	8.70	6	10	pF

Table 6. AC Characteristics

Symbol	Vcc	Load	New Array			Old Array			Typical	Units
			-40°C	25°C	90°C	-40°C	25°C	90°C		
tpZH	2.5V	Load A	9.41	10.23	11.45	4.91	5.44	6.67	15	ns
tpHZ	2.5V	Load A	2.63	2.75	2.92	2.19	2.36	2.52	9	ns
tpZL	2.5V	Load B	5.14	5.51	5.93	4.42	4.78	5.26	15	ns
tpLZ	2.5V	Load B	2.84	3.03	3.27	3.04	3.24	3.55	9	ns

Load A: 10pF//200Ω//200Ω
Load B: 10pF//200Ω, 200Ω to 6V

Table 7. Dynamic Electrical Characteristics @ 25C

Symbol	Description	Vcc	New Array	Old Array	Typ	Units
Xtalk	F=200MHz	3.0V	-43.5	-39.9	-65	dB
OIRR	F=200MHz	3.0V	-41.7	-37.2	-70	dB
BW	A7-7B2, -3dB	3.0V	710	591	600	MHz

Table 8. Crosstalk vs. Frequency, Vcc=3.0V, 25C

Frequency	Crosstalk		Unit
	New Array	Old Array	
100 MHz	-49.7	-46.8	dB
200 MHz	-43.5	-39.9	dB
500 MHz	-36.2	-32.7	dB
1000 MHz	-33.9	-32.0	dB

Table 9. Off Isolation vs. Frequency, Vcc=3.0V, 25C

Frequency	Off Isolation		Unit
	New Array	Old Array	
100 MHz	-49.0	-47.0	dB
200 MHz	-41.7	-37.2	dB
500 MHz	-30.7	-25.6	dB
1000 MHz	-24.9	-22.6	dB