

PRODUCT/PROCESS CHANGE NOTICE (PCN)

PCN Number: 07-01 Date Issued: May 17, 2007 Product(s) Affected: PI3DBV10 (all package types) Manufacturing Location Affected: N/A Date Effective: August 16, 2007 – standard 90 day waiting period (some customers may require longer timeframes)	Means of Distinguishing Changed Devices: <input type="checkbox"/> Product Mark: <input type="checkbox"/> Back Mark <input checked="" type="checkbox"/> Date Code: * <input type="checkbox"/> 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: <input checked="" type="checkbox"/> Yes; <input type="checkbox"/> No See attached Characterization Comparison Data. Data confirms that 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 \approx 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 and PI3V512 products that were covered by PCN 05-16 and 05-22.	<input type="checkbox"/> Die Technology <input type="checkbox"/> Wafer Fabrication <input type="checkbox"/> Assembly Process <input type="checkbox"/> Equipment <input type="checkbox"/> Material <input type="checkbox"/> Testing <input type="checkbox"/> Manufacturing Site <input type="checkbox"/> Data Sheet <input checked="" type="checkbox"/> 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: <hr style="border-top: 1px dashed black;"/> Customer: _____ Name: _____ Title: _____ Date: _____ E-Mail: _____ Phone: _____ Fax: _____ <input type="checkbox"/> Approval for shipments prior to effective date Customer Comments (Optional): _____	

Subject: PI3DBV10 Characterization Report

Introduction:

The PI3DBV10 is a 3.3 volt Wide Bandwidth, 1-Channel, 2:1 Mux/DeMux Video Switch w/ Single Enable. The new die shrink array and the old_array were compared side by side for this report.

Reference:

Process: MagnaChip - 0.5 μ m, CMOS, 1P3M
New Array: A648

Process: MagnaChip - 0.5 μ m, CMOS, 1P3M
Old Array: 6V48

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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Conclusion:

1. Both old and new versions meet all the specs requirements.
2. Ron for both array 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

Parameter	Test Conditions	New Array			Old Array			Max Spec	Unit
		-40°C	25°C	90°C	-40°C	25°C	90°C		
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

Channel	Iin=-40mA		Iin=-10mA		Iin=-30mA		Units
	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

Channel	Iin=-40mA		Iin=-10mA		Iin=-30mA		units
	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