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PRODUCT/PROCESS CHANGE NOTICE (PCN)

PCN Number: **05-20**
Date Issued: **December 1, 2005**
Product(s) Affected: **PI3USB10 (all package types)**
Manufacturing Location Affected: **N/A**
Date Effective: **March 1, 2006 – standard 90 day waiting period (some customers may require longer timeframes)**

Means of Distinguishing Changed Devices:
 Product Mark:
 Back Mark
 Date Code: *
 Other
* "C" prefix letter before the datecode mark

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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 \approx 40%, while using the same MagnaChip 0.5- μ m wafer fab process and design rules. The new die size is now 1.16 x 0.71 mm, compared to the previous version's 2.87 x 1.69 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): _____

Date: November 22, 2005

Subject: PI3USB10 – Characterization Comparison Report

Introduction

The PI3USB10 is a 3.3V, Wide Bandwidth, 2-Channel, 2:1 Mux/DeMux USB 2.0 Switch with Single Enable. This report compares the original die array against the new die shrink array.

Reference

*New Die Array: 6W12
Lot Number: ESHD0475.A
Date Code: 0545ZG
Package: TDFN-12 (ZEE)*

*Old Die Array: 6V48
Lot No: 261846.1
Date Code: 0429OG
Package: TDFN-12 (ZEE)*

Equipment

HP power supply & DMM
HP4285 LCR Meter
HP4156B DC Analyzer
TDS8000 Oscilloscope with TEK P6209 Probes
HP8082A Pulse Generator
HP4396B Network/Spectrum/Impedance Analyzer, HP11667A Power Splitter
Thermostream TP04300-A

Tables

Table 1: DC Characteristics
Table 2: RON Measurement, All Channels, Vcc=3.0V, Ion=-40mA, 25C
Table 3: Capacitance
Table 4: AC Characteristics
Table 5: BW, XTALK & OIRR

Conclusion

Both new and old die arrays meet all data sheet specifications.

Table 1. DC Characteristics

Param.	Test Conditions	Vcc	New Part (6W12 Array)			Old Part (6V48 Array)			Min	Max	Units
			-40C	25C	90C	-40C	25C	90C			
VIH	Input High Voltage	3.0 V	1.295	1.300	1.315	1.335	1.345	1.360	2.0		V
VIH	Input High Voltage	3.3 V	1.400	1.400	1.425	1.450	1.460	1.475	2.0		V
VIH	Input High Voltage	3.6 V	1.500	1.505	1.535	1.565	1.585	1.595	2.0		V
VIL	Input Low Voltage	3.0 V	1.290	1.295	1.310	1.330	1.340	1.355		0.8	V
VIL	Input Low Voltage	3.3 V	1.395	1.395	1.420	1.445	1.455	1.470		0.8	V
VIL	Input Low Voltage	3.6 V	1.495	1.500	1.530	1.560	1.580	1.590		0.8	V
VIK	Iin=-18mA, SEL	3.0 V	-0.89	-0.84	-0.80	-0.96	-0.88	-0.80		-1.2	V
VIK	Iin=-18mA, A/B	3.0 V	-0.78	-0.71	-0.67	-0.90	-0.83	-0.72		-1.2	V
IIL	Vin=0V	3.6 V	-29p	-127p	429p	4.2 n	84 p	7.9 n		± 5	µA
IIH	Vin=3.6V	3.6 V	-268p	384p	-260p	2.6 n	26 p	4.3 n		± 5	µA
IIH	Vin=5.5V	3.6 V	-6p	-239p	-68p	-1.4 n	-47 p	-2.4 n		± 5	µA
IOZL	Voz=0V	3.6 V	-112p	-626p	-390p	44 p	10 p	7 p		± 5	µA
IOZH	Voz=3.6V	3.6 V	89p	-372p	-466p	35 p	-18 p	4 p		± 5	µA
IOZH	Voz=5.5V	3.6 V	130p	-332p	72p	-36 p	-31 p	-16 p		± 5	µA
RON	Vin=1.25V, Iin=-40mA	3.0V	3.26	3.70	4.28	3.80	4.41	5.09		8	Ω
ICC	Vin=Gnd	3.6 V	375 u	342 u	329 u	375 u	340 u	310 u		800	µA
ICC	Vin=VCC	3.6 V	379 u	340 u	327 u	375 u	360 u	310 u		800	µA

Table 2. Ron Measurement, all Channels Iin=-40mA, Vcc=3.0V, 25C

Channel	6W12 Array		6V48 Array		Units
	Vin=1.5V	Vin=3.0V	Vin=1.5V	Vin=3.0V	
Y0-0I0	3.75	4.43	4.39	4.97	Ω
Y1-1I0	3.77	4.44	4.30	4.87	Ω
Y0-0I1	3.77	4.45	4.27	4.85	Ω
Y1-1I1	3.76	4.44	4.17	4.75	Ω
MIN	3.75	4.43	4.17	4.75	Ω
MAX	3.77	4.45	4.39	4.97	Ω

Table 3: Capacitance @ 25C

Symbol	Description	Vcc	6W12 Array	6V48 Array	Typ	Max	Units
Cin	SEL pin	3.3V	1.5	2.5	2	3.6	pF
Coff	Port 0I0 Capacitance, Switch Off	3.3V	2.4	3.0	4	6.0	pF
Coff	Port 0I1 Capacitance, Switch Off	3.3V	2.4	3.1	4	6.0	pF
Con	Y0-0I0 Switch On	3.3V	7.7	9.5	6	10	pF

Table 4. AC Characteristics

Symbol	Vcc	Load	6W12 Array			6V48 Array			Max	Units
			-40C	25C	90C	-40C	25C	90C		
tpZH	3.0V	Load A	3.24	3.55	3.88	4.91	5.44	6.67	15	ns
tpHZ	3.0V	Load A	1.43	1.55	1.69	2.19	2.36	2.52	9	ns
tpZL	3.0V	Load B	3.06	3.28	3.61	4.42	4.78	5.26	15	ns
tpLZ	3.0V	Load B	2.10	2.23	2.43	3.04	3.24	3.55	9	ns

Load A: 10pF//200Ω//200Ω

Load B: 10pF//200Ω, 200Ω to 6V

Table 5: BW, Xtalk and OIRR @ 25C

Symbol	Description	Vcc	6W12 Array	6V48 Array	Typ	Units
Xtalk	Freq=250MHz	3.3V	-28.4	-27.6	-27	dB
OIRR	Freq=250MHz	3.3V	-37.8	-32.4	-32	dB
-3dB BW	Y0-0I0	3.3V	684	591	500	MHz