

Product/Process Change (PCN) Notification

PCN Number: CO-20896 Date Issued: July 23 rd , 2018 PCN Effective Date: November 23 rd , 2018 Product(s) Affected: PE43704 Sample Availability: July 23 rd , 2018 Change Control Board Approval #: CO-20896	Contact: Elizabeth La Greca Title: Director, Sales Operations Phone: 1-858-795-0106 Email: pcn@psemi.com
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Change Category:

<input checked="" type="checkbox"/> Wafer Fabrication Process <input type="checkbox"/> Design/Mask Change <input type="checkbox"/> Singulation Process <input type="checkbox"/> Assembly Process <input type="checkbox"/> Electrical Test <input type="checkbox"/> Manufacturing Site	<input type="checkbox"/> Shipping/Labeling <input type="checkbox"/> Equipment <input type="checkbox"/> Material <input type="checkbox"/> Product Specification <input type="checkbox"/> Product End of Life <input checked="" type="checkbox"/> Other - Ordering codes change
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Purpose of Change:

To enable Lapis as the primary wafer fabrication site for the PE43704.

Description of Change:

MagnaChip closed their 150 mm wafer CMOS fab in South Korea at the end of 2015. To ensure there is no disruption to supply, we have been working to transfer products from MagnaChip fab to Lapis fab in Japan. Magnachip and Lapis are qualified Peregrine fabs.

Lapis PE43704 material has been qualified with no change to form, fit, function or reliability. Please refer to the datasheet for the updated specs (PCN# CO-20889).

Beginning November 23rd, 2018, the PE43704 shipped to customers will be supplied from either MagnaChip or Lapis wafers. Lapis will become the primary wafer fabrication site for the PE43704.

Ordering code changes:
 Original ordering codes (MagnaChip): PE43704MLCA-Z, EK43704-11
 New ordering codes (Lapis): PE43704B-Z, EK43704-12

pSemi manages inventory on a First-In First-Out (FIFO) basis. For the exact timing of the order code change, please contact your account rep. or accountrep@psemi.com.

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Customer Acknowledgement of Receipt:

<input type="checkbox"/> Change Denied <i>(Include explanation in comments section below)</i> <input type="checkbox"/> Change Approved	Name:	
	Title:	
	Company:	
	Date:	
	Signature:	
Customer Comments:		

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Appendix A – Reliability Qualification Summary



PE43704

Reliability Summary Report

Part Number(s):	PE43704	Product Family:	DSA
Package Type:	32L 5x5 QFN	MSL Rating:	MSL 1
Technology Platform:	ULTRACMOS [®] 5		
Reliability Summary:	Based on qualification by similarity and the results of reliability testing the PE43704 has met the reliability requirements for qualification.		

Table 1: Product Design Reliability Results

Test #	Test Performed	TEST METHOD/ Conditions	Duration	Req'd Sample Size ² (#LOT x SS)	Actual Sample Size ³ (#LOT x SS)	Result (REJ/SS)
1	HTOL	JESD22-A108 VDD= 5.7V; Vss = -3.0V T _A = T _J = 150 °C;	500 Hrs.	1 x 77 devices	1 x 85 Devices	<u>Passed</u> (0/85)
2	ESD HBM	JS-001 / MIL-STD-883 Model 3015.7 (All pins)	1.5kV	1 x 3 devices	1 x 3 devices	<u>Passed</u> (0/3)
3	ESD MM	JEDEC JESD22-A115	200V	1 x 3 devices	1 x 3 devices	<u>Passed</u> (0/3)
4	ESD CDM	JEDEC JESD22-C101	250 V	1 x 3 devices	1 x 3 devices	<u>Passed</u> (0/3)

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Reliability Summary Report

Table 2: Package Reliability Results

Test #	Test Performed	TEST METHOD/ Conditions	Duration	Req'd Sample Size ² (#LOT x SS)	Actual Sample Size ³ (#LOT x SS)	Result (REJ/SS)
5	HTOL	JESD22-A108 VDD= 5.5 V; Vcntl= 3.6V; T _A = T _J = 150°C	500 hrs.	3 x 77 Devices	3 x 77 Devices	<u>Passed</u> (0/231)
6	HTS	JESD22-A103 T _A = 150°C	1,000 hrs.	1 x 77 Devices	1 x 77 Devices	<u>Passed</u> (0/77)
7	HAST ¹	JESD22-A110 T _A = 130°C; RH= 85%; VDD= 3.5 V; Vcntl= 3.5V	96 hrs.	3 x 45 Devices	3 x 45 Devices	<u>Passed</u> (0/135)
8	TC ¹	JESD22-A104 T _A = -65°C to +150°C	500 cyc.	3 x 45 Devices	3 x 45 Devices	<u>Passed</u> (0/135)
9	TS ¹	JESD22—A105 T _a = -55°C to +125°C	100 cyc.	3 x 45 devices	3 x 45 devices	<u>Passed</u> (0/135)

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Reliability Summary Report

Table 3: Package Assembly Level Reliability Results

Test #	Test Performed	TEST METHOD/ Conditions	Duration	Req'd Sample Size ² (#LOT x	Actual Sample Size ³ (#LOT x	Result (REJ/SS)
10	WBP	JESD22-B115/ Subcon specs.	-	3 x 171 Wires	3 x 171 Wires	<u>Passed</u> (0/513)
11	Physical Dimensions	JESD22-B100	-	3 x 10 Devices	3 x 10 Devices	<u>Passed</u> (0/30)
12	Die Shear	Mil-Std-883 M2019.8	-	3 x 3 Devices	3 x 3 Devices	<u>Passed</u> (0/9)
13	Solderability	JESD22-B102	-	3 x 12 Devices	3 x 12 Devices	<u>Passed</u> (0/36)

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Reliability Summary Report

Table 4: Wafer Process Reliability Results

Test #	Test Performed	TEST METHOD/ Conditions	Duration	Req'd Sample Size ² (#LOT x SS)	Actual Sample Size ³ (#LOT x SS)	Result (REJ/SS)
14	HTOL	JESD22-A108 VDD= 4.8V; VCTL = 1.8V T _A = T _J = 150 °C;	500 hrs.	3 x 77 Devices	3 x 77 Devices	<u>Passed</u> (0/231)
15	HTS	JESD22-A103 T _a = 150°C	1,000 hrs.	1 x 77 Devices	3 x 77 Devices	<u>Passed</u> (0/231)
16	HAST ¹	JESD22-A110 T _a = 130°C; RH= 85%; P _v = 2.27 atm; biased	234 hrs.	3 x 45 Devices	3 x 45 Devices	<u>Passed</u> (0/135)
17	TC ¹	JESD22-A104 T _a = -55°C to +125°C	500 cyc.	3 x 45 Devices	3 x 45 Devices	<u>Passed</u> (0/135)
18	Electro- migration ⁴	JESD61A / Foundry Spec	>T50	1 x 1 wafer	1 x 1 wafer	<u>Passed</u> (0/1)
19	Passivation Integrity ⁴	Internal Specification DOC -00373 / Foundry Spec	-	1 x 1 wafer	1 x 1 wafer	<u>Passed</u> (0/1)
20	Destructive / Construction Analysis ⁴	Internal Specification DOC -00373 / Foundry Spec	N/A	1 x 1 wafer	1 x 1 wafer	<u>Passed</u> (0/1)
21	Hot Carrier ⁴	JESD28 / JESD60A Foundry Spec	>T50	1 x 1 wafer	1 x 2 wafer	<u>Passed</u> (0/2)
22	TDDB ⁴	JESD92 / Foundry Spec	>T50	3 x 2 wafer	3 x 2 wafer	<u>Passed</u> (0/6)

¹ J-STD-020, Level-1 pre-conditioning applied: Moisture Soak at 85°C/85% RH for 168 hours. Reflow at 260±0.5°C.

² Required sample size is based on Peregrine Semiconductor's internal Reliability qualification requirements.

³ Actual sample size may be more than the required sample size to maximize the use of Reliability hardware.

⁴ Actual sample size may be more depending on different Transistor type, structure, and stress conditions used as per PSC Internal spec