pSemi Corporation
9369 Carroll Park Drive, San Diego, CA. 92121

Product / Process Change (PCN) Notification

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

Change Category:

☒ Wafer Fabrication Process	☐ Shipping/Labeling
☐ Design/Mask Change	☐ Equipment
☐ Singulation Process	☐ Material
☐ Assembly Process	☐ Product Specification
☐ Electrical Test	☐ Product End of Life
☐ Manufacturing Site	☒ Other - Ordering codes change

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:

☐ Change Denied *(Include explanation in comments section below)* ☐ Change Approved	**Name:**	
	Title:	
	Company:	
	Date:	
	Signature:	
Customer Comments:		

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Appendix A – Reliability Qualification Summary

Peregrine Semiconductor

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	Passed (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	Passed (0/3)
3	ESD MM	JEDEC JESD22-A115	200V	1 x 3 devices	1 x 3 devices	Passed (0/3)
4	ESD CDM	JEDEC JESD22-C101	250 V	1 x 3 devices	1 x 3 devices	Passed (0/3)

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Peregrine Semiconductor

PE43704

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	Passed (0/231)
6	HTS	JESD22-A103 T_A= 150°C	1,000 hrs.	1 x 77 Devices	1 x 77 Devices	Passed (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	Passed (0/135)
8	TC[1]	JESD22-A104 T_A= -65°C to +150°C	500 cyc.	3 x 45 Devices	3 x 45 Devices	Passed (0/135)
9	TS[1]	JESD22—A105 T_a = -55°C to +125°C	100 cyc.	3 x 45 devices	3 x 45 devices	Passed (0/135)

Product / Process Change (PCN) Notification

Peregrine Semiconductor

PE43704

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	Passed (0/513)
11	Physical Dimensions	JESD22-B100	-	3 x 10 Devices	3 x 10 Devices	Passed (0/30)
12	Die Shear	Mil-Std-883 M2019.8	-	3 x 3 Devices	3 x 3 Devices	Passed (0/9)
13	Solderability	JESD22-B102	-	3 x 12 Devices	3 x 12 Devices	Passed (0/36)

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Peregrine Semiconductor

PE43704

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	Passed (0/231)
15	HTS	JESD22-A103 T_a= 150°C	1,000 hrs.	1 x 77 Devices	3 x 77 Devices	Passed (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	Passed (0/135)
17	TC[1]	JESD22-A104 T_a= -55°C to +125°C	500 cyc.	3 x 45 Devices	3 x 45 Devices	Passed (0/135)
18	Electro-migration[4]	JESD61A / Foundry Spec	>T50	1 x 1 wafer	1 x 1 wafer	Passed (0/1)
19	Passivation Integrity[4]	Internal Specification DOC -00373 / Foundry Spec	-	1 x 1 wafer	1 x 1 wafer	Passed (0/1)
20	Destructive / Construction Analysis[4]	Internal Specification DOC -00373 / Foundry Spec	N/A	1 x 1 wafer	1 x 1 wafer	Passed (0/1)
21	Hot Carrier[4]	JESD28 / JESD60A Foundry Spec	>T50	1 x 1 wafer	1 x 2 wafer	Passed (0/2)
22	TDDB[4]	JESD92 / Foundry Spec	>T50	3 x 2 wafer	3 x 2 wafer	Passed (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