

## Product/Process Change (PCN) Notification

PCN Number: CO-16311 Date Issued: February 15th, 2017 PCN Effective Date: March 1st, 2017 Product(s) Affected: PE42540 Sample Availability: February 15th, 2017 Change Control Board Approval #: CO-16311	Contact: Elizabeth La Greca Title: Director, Sales Operations Phone: 1-858-795-0106 Fax: 1-858-731-9499 Email: pcn@psemi.com
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**Change Category:**

<input type="checkbox"/> Wafer Fabrication Process <input type="checkbox"/> Design/Mask Change <input type="checkbox"/> Singulation Process <input checked="" type="checkbox"/> Assembly Process - New package laminate <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:**

Transition to an improved laminate package material for the PE42540.

**Description of Change:**

Assembly supplier discontinuing current production process (electroless NiAu - ENIG) laminate plating finish and transitioning to (electroless NiPdAu - ENEPIG), an industry standard. Peregrine is taking the opportunity to make this transition in order to assure ongoing laminate supply with improved solderability, reliability and performance.

Reliability, form, fit or function is not affected by this change.

Beginning March 1<sup>st</sup>, 2017, all parts shipped to the customers will be manufactured in the ENEPIG plating finish.

Ordering code changes:  
 Original ordering codes (ENIG plating finish): PE42540LGBD-Z, EK42540-04  
 New ordering codes (ENEPIG plating finish): PE42540D-Z, EK42540-05

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**Qualification Summary:**

<b>Package Laminate Comparison</b>		
	<b>Old Laminate</b>	<b>New Laminate</b>
<b>Surface Plating</b>	ENIG	ENEPIG
<b>Material</b>	Nickel, Gold	Nickel, Palladium, Gold
<b>Nickel (Ni) Thickness</b>	0.005 mm min.	0.003-0.007 mm
<b>Palladium (Pd) Thickness</b>	NA	0.00005-0.0003 mm
<b>Gold (Au) Thickness</b>	0.00003-0.00015 mm	0.00003 mm min.

Product reliability qualification passed. See customer qualification report (Appendix A).

**Customer Acknowledgement of Receipt:**

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

## Product/Process Change (PCN) Notification

### Appendix A – Reliability Qualification Summary


**PE42540**

### Reliability Summary Report

Part Number(s):	PE42540	Product Family:	Switch
Package Type:	32L 5x5 FCLGA	MSL Rating:	3
Technology Platform:	ULTRACMOS <sup>®</sup> 5		
Reliability Summary:	Based on the results of reliability testing, the PE42540 has met the reliability requirements for production.		

**Table 1: Product Design Reliability Results**

Test #	Test Performed	TEST METHOD/ Conditions	Duration	Sample Size (#LOT x SS)	Result
1	High Temperature Operating Life (HTOL)	JESD22-A108; VDD= 3.6 V; VCTL= 3.6 V; T <sub>A</sub> = T <sub>J</sub> = 150 °C;	500 hrs.	1 x 77	Pass
2	ESD Human Body Model (HBM)	JS-001 / MIL-STD-883 Model 3015.7 (All pins)	1kV	1 x 3	Pass
		JS-001 / MIL-STD-883 Model 3015.7 (RF Pins Only)	2kV	1 x 3	Pass
3	ESD Machine Model (MM)	JEDEC JESD22-A115	100V	1 x 3	Pass
4	ESD Charged Device Model (CDM)	JEDEC JESD22-C101	1kV	1 x 3	Pass

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**PE42540**

### Reliability Summary Report

**Table 2: Package Reliability Results**

Test	Test Performed	TEST METHOD/ Conditions	Duration	Sample Size (#LOT x SS)	Result
5	High Temperature Operating Life (HTOL)	JESD22-A108; VDD= 3.6V; VCTL= 3.6V; T <sub>j</sub> = 150°C	500 hrs.	3 x 77	Pass
6	High Temperature Storage Life (HTSL)	JESD22-A103; T <sub>A</sub> = 150°C	1,000 hrs.	1 x 77	Pass
7	Moisture Sensitivity Level (MSL3)	JESD22-A113/J-STD-020 Moisture Soak at 30°C/ 60% RH. Reflow at 260°C.	192 hrs. 3x Reflow	3 x 15	Pass
8	Highly Accelerated Stress Test (HAST)	JESD22-A110; T <sub>A</sub> = 110°C; RH= 85%; VDD= 3.55 V	264 hrs.	3 x 45	Pass
9	Temperature Cycling (TC)	JESD22-A104; T <sub>A</sub> = -55°C to +125°C	1,000 cyc.	3 x 45	Pass
10	Physical Dimensions	JESD22-B100 / Subcon specs.	-	3 x 3	Pass
11	Die Peel	Mil-Std-883 M2019.8 / Subcon specs.	-	3 x 2	Pass
12	Solderability	JESD22-B102 / Subcon specs.	-	3 x 3	Pass

Bump Process Qualification Report: DOC-82625  
 Technology Process Qualification Report: DOC-82626