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Control No. PCN-15171

June 23, 2015

## PRODUCT/PROCESS CHANGE NOTIFICATION

TYPE OF CHANGE:  Design  Manufacturing  Other

This notification is provided in accordance with Power Integrations policy of major change notification. If you have any questions or need further assistance, please contact your regional Power Integrations sales office.

### DESCRIPTION OF CHANGE

An improved passivation at Renesas Semiconductor, Japan, a wafer foundry for Power Integrations products.

### REASON FOR CHANGE

Continual process improvement.

### PRODUCTS AFFECTED

Product Family	Part Numbers	Package Options
LinkSwitch™-TN	LNK302, LNK304, LNK306 SC1145	DG, DN, GN, PG, PN DG
TinySwitch™-III	TNY274, TNY275, TNY276, TNY277, TNY278, TNY279, TNY280 SC1128, SC1129	GN, PG, PN PG
TOPSwitch™-HX	TOP253, TOP256, TOP258	GN, PG, PN

### QUALIFICATION STATUS

Refer to Appendix 1 for the qualification data.

#### CONFIDENTIAL

The information in this report contains confidential and proprietary information of Power Integrations and its manufacturing partners. By receiving this report, the customer agrees to use this information for the sole purpose of addressing the issues reviewed in this report and to keep the contents confidential. If it becomes necessary for the customer to disclose this information to a third party, a non-disclosure agreement, which provides reasonable and customary protection for the disclosed information, must be executed.

**EFFECT ON CUSTOMER**

No adverse impact is expected in manufacturers' applications. The product will be guaranteed to meet the datasheet limits.

**EFFECTIVE DATE**

September 23, 2015. This date is subject to change. Products assembled with the wafers from the current fab will continue to be shipped after implementation of the above change.

**SAMPLE AVAILABILITY**

Samples will be available within 10 weeks from the date of request. Please send requests for samples within two weeks after receipt of this notification or by the deadline indicated below to the local Power Integrations sales office. For manufacturers that request samples, an accommodation will be made in order to allow time for manufacturer's qualification in a case-specific manner.

**SAMPLE REQUEST DEADLINE**

August 24, 2015

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**CUSTOMER ACKNOWLEDGEMENT**

Power Integrations requests you acknowledge the receipt of the above-mentioned PCN. If no acknowledgment is received within 30 days of this notification, Power Integrations will assume the change is acceptable. Lack of any additional response within 90 days of this notification further constitutes acceptance of the change.

Power Integrations reserves the right to ship either version manufactured after the effective date until the inventory of the earlier version has been depleted.

If you have any questions or need further assistance, please contact your regional Power Integrations sales office. Otherwise, please check the box below, acknowledging the receipt of the PCN.

**The indicated Product/Process Change Notification was received by the undersigned authority.**

Name/Title: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Email  
Address/Phone#: \_\_\_\_\_

Company/Location: \_\_\_\_\_

**CUSTOMER COMMENTS**

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Please email this signed form to [pcn@power.com](mailto:pcn@power.com) specifying the PCN# in the subject.

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<b>Project Title:</b> Qualification of Improved Passivation Process for Renesas Semiconductor Wafer Fab
<b>Summary:</b>  Reliability testing was performed to qualify an improved passivation process for the Renesas Semiconductor wafer fab that provides improved performance in high humidity environments and to qualify TOPSwitch-HX products for wafer fabrication in this fab. Three lots of TOPSwitch-HX products fabricated at Renesas Semiconductor using the new passivation process were subjected to a full suite of reliability stress tests with passing results for all tests. The passivation process change is global and affects all products fabricated in the Renesas Semiconductor wafer fab. Yield and temperature characterization was completed with acceptable results for all affected product families.  Based on these qualification results, the improved passivation process is approved for the Renesas Semiconductor wafer fab.
Qualification Vehicles: TOP258PG and TOP261EG

#### Reliability Test Descriptions and Conditions

Test Name	Conditions	Reference Specification
DOPL (Dynamic Operating Life Test)	T <sub>j</sub> =125°C, V <sub>d(peak)</sub> = 560V	EIA/JESD22-A108-C
HTRB (High Temp Reverse Bias Test)	T <sub>a</sub> =150°C, V <sub>d</sub> =560V, V <sub>c</sub> =6.2V	EIA/JESD22-A108-C
THBT (Temperature Humidity Bias Test)	85°C, 85% RH, V <sub>d</sub> =30V, V <sub>c</sub> =6.2V	EIA/JESD22-A101-B
TMCL (Temperature Cycle, Air to Air)	PG Package: -65°C to +150°C, 500 cycles EG Package: -40°C to +125°C, 850 cycles	EIA/JESD22-A104-A
HALT (Humidity Accelerated Life Test)	T <sub>a</sub> =85°C, 85% RH, T <sub>j</sub> =120°C, V <sub>d(peak)</sub> = 560V in switching power supply	Internal Standard

#### DOPL (Dynamic Operating Life)

Product	Lot No.	Test Duration	No. Failures/Sample Size
TOP258PG	3J951F	1000 hours	0/47
TOP258PG	3J952F	1000 hours	0/47
TOP261EG	3J967F	1000 hours	0/47

#### HTRB (High Temperature Reverse Bias)

Product	Lot #	Test Duration	No. Failures/Sample Size
TOP258PG	3J951F	1000 hours	0/47
TOP258PG	3J952F	1000 hours	0/47
TOP261EG	3J967F	1000 hours	0/47

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**THBT (Temperature Humidity Bias)**

Product	Lot #	Test Duration	No. Failures/Sample Size
TOP258PG	3J951F	1000 hours	0/47
TOP258PG	3J952F	1000 hours	0/47
TOP261EG	3J967F	1000 hours	0/47

**TMCL (Temperature Cycling)**

Product	Lot #	*Test Duration	No. Failures/Sample Size
TOP258PG	3J951F	500 cycles	0/47
TOP258PG	3J952F	500 cycles	0/47
TOP261EG	3J967F	850 cycles	0/47

\*Refer to Reliability Test Descriptions and Conditions Table for details

**HALT (Humidity Accelerated Life Test)**

Product	Lot #	Test Duration	No. Failures/Sample Size
TOP258PG	3J951F	1000 hours	0/20
TOP258PG	3J952F	1000 hours	0/20 (See Note 1)
TOP261EG	3J967F	1000 hours	0/20 (See Note 2)

Note 1: 4 were invalid failures (EOS)

Note 2: 6 were invalid failures (EOS)

**Conclusion:** Based on acceptable qualification results, the improved passivation process is approved for the Renesas wafer fab. The process change applies to all products fabricated at Renesas Semiconductor including all LinkSwitch™-TN and TinySwitch™-III and TOPSwitch™-HX products.

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