

Control No. PCN-18172

May 11, 2018

**PRODUCT/PROCESS CHANGE NOTIFICATION**

**TYPE OF CHANGE:**       Design                       Manufacturing                       Other

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

**DESCRIPTION OF CHANGE**

Lapis Japan, a qualified wafer fab site of Power Integration products, is adding an alternative qualified production line for the TinySwitch-4 product Family (refer to the “Products Affected” section for details).

**REASON FOR CHANGE**

Addition of an alternative production line for increased manufacturing capacity and flexibility.

**PRODUCTS AFFECTED**

Part Numbers	Package
TNY284PG, TNY285PG, TNY285PG0004, TNY286PG, TNY287PG, TNY288PG, TNY288PG0004, TNY288PG0164, TNY289PG, TNY290PG, TNY290PG0105	DIP-8C
TNY284KG, TNY285KG, TNY285KG0152, TNY286KG, TNY287KG, TNY287KG0152, TNY288KG, TNY288KG0152, TNY289KG, TNY290KG, TNY290KG0105	eSOP-12B
DAP021AG, SC1130DG, SC1152DG, TNY177DG, TNY178DG, TNY284DG, TNY285DG, TNY285DG0152, TNY286DG, TNY286DG0152, TNY287DG, TNY287DG0105, TNY288DG, TNY288DG0152, TNY288DG0202	SO-8C

**QUALIFICATION STATUS**

Refer to Appendix 1 for the qualification data.

**EFFECT ON CUSTOMER**

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

**EFFECTIVE DATE**

August 13, 2018. This date is subject to change. Products assembled at the current wafer fab site will continue to be shipped after implementation of the above change.

**SAMPLE AVAILABILITY**

Samples will be available 12 weeks from the date of request.

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Appendix 2  
Reliability Engineering  
Qualification Report

Qualification Project: E140603

**Project Title: TinySwitch-4 Lapis-S2 Fab Transfer Qualification**
**Qual Summary:**

Reliability testing was performed on TinySwitch-4 products to qualify wafer fabrication of these products in the Lapis-S2 wafer fab. Lapis-S2 was previously qualified for this wafer fabrication process and has been in high volume production since 2014. All required reliability tests were completed on three qualification lots with passing results. Additional supporting data on InnoSwitch products fabricated at Lapis-S2 is included. Yield analysis and assembly-level testing were completed with acceptable results. Based on these results, Lapis-S2 is qualified for wafer fabrication of all TinySwitch-4 products.

Qualification Vehicles: TNY290PG

**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> =580V	EIA/JESD22-A108-D
HTRB (High Temperature Reverse Bias Test)	T <sub>a</sub> =150°C; V <sub>d</sub> =580V, V <sub>bp</sub> = 5.8V	EIA/JESD22-A108-D
THBT (Temperature Humidity Bias Test)	85°C, 85% RH, V <sub>d</sub> =30V, V <sub>bp</sub> = 5.8V	EIA/JESD22-A101-C
TMCL (Temperature Cycle, Air to Air)	P Pkg: -65°C to +150°C, air to air K Pkg: -40°C to +125°C, air to air	EIA/JESD22-A104-E
HALT (Humidity Accelerated Life Test)	DOPL T <sub>j</sub> =115°C, 85% RH, V <sub>d(peak)</sub> =580V	Internal Standard
MSL3 Preconditioning	24-hr 150C bake → 192-hr 30°C, 60% RH soak → 3 passes 260C solder reflow	IPC/JEDEC J-STD-020E

**DOPL (Dynamic Operating Life)**

Product	Lot #	Qualification Project	Test Duration	No. Failures/Sample Size
TNY290PG	3E056B	E140603	1000 hours	0/20
TNY290PG	3E057A	E140904	1000 hours	0/20
TNY290PG	3E057B	E140904	1000 hours	0/20
INN2103K	M4W915A	E162601	MSL3 + 1000 hours	0/47
INN2214K	M4X871B	E162601	MSL3 + 1000 hours	0/47
INN2214K	M4X871A	E162601	MSL3 + 1000 hours	0/47

**HTRB (High Temperature Reverse Bias)**

Product	Lot #	Qualification Project	Test Duration	No. Failures/Sample Size
TNY290PG	3E057A	E140904	1000 hours	0/47
TNY290PG	3E057B	E140904	1000 hours	0/47
TNY290PG	3K522M	E144103	1000 hours	0/47
INN2103K	M4W915A	E162601	MSL3 + 1000 hours	0/47
INN2214K	M4X871B	E162601	MSL3 + 1000 hours	0/47
INN2214K	M4X871A	E162601	MSL3 + 1000 hours	0/47

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**THBT (Temperature Humidity Bias)**

Product	Lot #	Qualification Project	Test Duration	No. Failures/Sample Size
TNY290PG	3E056B	E140603	1000 hours	0/20
TNY290PG	3E057A	E140904	1000 hours	0/20
TNY290PG	3E057B	E140904	1000 hours	0/20
INN2103K	M4W915A	E162601	MSL3 + 1000 hours	0/47
INN2214K	M4X871B	E162601	MSL3 + 1000 hours	0/47
INN2214K	M4X871A	E162601	MSL3 + 1000 hours	0/47

**TMCL (Temperature Cycling)**

Product	Lot #	Qualification Project	Test Duration	No. Failures/Sample Size
TNY290PG	3E056B	E140603	1000 cycles	0/47
TNY290PG	3E057A	E140904	1000 cycles	0/47
INN2103K	M4W915A	E162601	MSL3 + 1700 cycles	0/47
INN2214K	M4X871B	E162601	MSL3 + 1700 cycles	0/47
INN2214K	M4X871A	E162601	MSL3 + 1700 cycles	0/47

**HALT (Humidity Accelerated Life Test)**

Product	Lot #	Qualification Project	Test Duration	No. Failures/Sample Size
TNY290PG	3E056B	E140603	1000 hours	0/20
TNY290PG	3E057A	E140904	1000 hours	0/20
TNY290PG	3E057B	E140904	1000 hours	0/20
INN2214K	M5W739A	E171905	MSL3 + 1000 hours	0/20
INN2214K	M5W649A	E171905	MSL3 + 1000 hours	0/20
INN2215K	M5W105C	E171905	MSL3 + 1000 hours	0/20

**Conclusion:** Based on acceptable results, TinySwitch-4 products are qualified for wafer fabrication at Lapis-S2.

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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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