

Control No. PCN-16011

January 26, 2016

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

An improved passivation at Lapis M3, Miyazaki, Japan, a wafer foundry for Power Integrations products.

REASON FOR CHANGE

As part of a continuous improvement, Power Integrations has been working to further increase the margin of HALT (highly accelerated life testing) beyond the minimum requirement of 1,000 hr. This improvement was achieved with a slight modification of the passivation process. HALT testing is done under 85°C/85% R.H., 560V dynamic condition.

PRODUCTS AFFECTED

Products affected by the change are listed in Appendix 1.

QUALIFICATION STATUS

Refer to Appendix 2 for the qualification data.

EFFECT ON CUSTOMER

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

EFFECTIVE DATE

April 26, 2016. 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 10 weeks from the date of request. Please send requests for samples within two weeks after receipt of this notification to the local Power Integrations sales office. For manufacturers that request samples, an accommodation will be made in order to allow time of customer's qualification in a case-specific manner

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Appendix 1

Product Family	Part Numbers
CAPZero™	CAP002DG, CAP003DG, CAP004DG, CAP005DG, CAP006DG, CAP007DG, CAP008DG, CAP009DG, CAP012DG, CAP013DG, CAP014DG, CAP015DG, CAP016DG, CAP017DG, CAP017DGAU, CAP017DG0166, CAP018DG, CAP019DG, CAP200DG , SC1143DG
ChiPhy™	CHY100D, CHY101D
DPA-Switch™	DPA423GN, DPA424GN, DPA425GN, DPA425GNAU, DPA425GN0004
	DPA423PN, DPA424PN, DPA425PN
	DPA423R, DPA424R, DPA425R, DPA426R
HiperLCS™	LCS700HG, LCS701HG, LCS702HG, LCS702HG0103, LCS703HG, LCS705HG, LCS708HG
	LCS700LG, LCS701LG, LCS702LG, LCS703LG
HiperPFS™	PFS703EG, PFS704EG, PFS706EG, PFS708EG, PFS710EG, PFS712EG, PFS713EG, PFS714EG, PFS716EG, PFS723EG, PFS724EG, PFS725EG, PFS726EG, PFS727EG, PFS728EG, PFS729EG
HiperPFS™-2	PFS7325H, PFS7326H, PFS7327H, PFS7328H, PFS7329H
	PFS7323L, PFS7324L, PFS7325L
HiperPFS™-3I	PFS7523H, PFS7524H, PFS7525H, PFS7526H, PFS7527H, PFS7528H, PFS7529H, PFS7533H, PFS7534H, PFS7535H, PFS7536H, PFS7537H, PFS7538H, PFS7539H
	PFS7523L, PFS7524L, PFS7525L
HiperTFS™	TFS757HG, TFS758HG, TFS759HG, TFS760HG, TFS761HG, TFS762HG, TFS763HG, TFS764HG, DPT108
HiperTFS™-2	TFS7701H, TFS7702H, TFS7703H, TFS7704H, TFS7705H, TFS7706H, TFS7707H, TFS7708H
InnoSwitch™	INN2003K, INN2023K, SC1205K, SC1205K1, SC1229K, SC1229K1, SC1251K, SC1252K0184, SC1253K
LinkSwitch™	LNK500GN, LNK501GN, LNK520GN
	LNK500PN, LNK501PN, LNK520PN
LinkZero™	LNK574DG, LNK576DG, LNK584DG, LNK585DG, LNK586DG, LNK586DGAU, LNK586DG0166, SPS1013P
	LNK584GG, LNK585GG, LNK586GG
LinkSwitch™-II	DAP021B1, LNK603DG, LNK603DGAU, LNK603DG0004, LNK604DG, LNK605DG, LNK606DG, LNK606DGAU, LNK606DG0004, LNK606DG0166, LNK613DG, LNK614DG, LNK614DGAU, LNK615DG, LNK616DG, LNK616DGAU, LNK632DG, LNK632DGAU, LNK632DG0004, LKN632DG0054, LNK632DG0104, LNK632DG0166
	SC1097D1, SC1097DG, SC1097D1AU, SC1097DGAU, SC1098DG, SC1099DG, SC1103DG, SC1103DGAU, SC1104D1, SC1104DG, SC1104DGAU, SC1106DG, SC1106DGAU, SC1107D1, SC1125DG, SC1125DGAU, SC1126DG, SC1126DGAU, SC1132DG, SC1135DG, SC1137DG, SC1139DG, SC1139DGAU, SC1139DG0105, SC1139DG0166
	LNK606GG, LNK616GG

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	LNK603PG, LNK603PGAU, LNK603PG0004, LNK604PG, LNK604PGAU, LNK604PG0004, LNK605PG, LNK605PGAU, LNK605PG0054, LNK606PG, LNK606PGAU, LNK613PG, LNK614PG, LNK615PG, LNK616PG, LNK616PGAU
LinkSwitch™-3	LNK625D1, LNK6404D, LNK6405D, LNK6406D, LNK6407D, LNK6407D0004, LNK6415D, LNK6416D, LNK6417D, LNK6424D, LNK6425D, LNK6426D, LNK6427D, LNK6436D, LNK6446D, SC1142D0, SC1142D1, SC1142D2, SC1142D3, SC1142D10077, SC1144D0, SC1144D1, SC1144D2, SC1144D3, SC1161D0, SC1161D1, SC1161D2, SC1161DZ, SC1170D4
	LNK6408E, LNK6418E, LNK6428E, LNK6428E0077, LNK6448E
	LNK6407K, LNK6408K, LNK6417K, LNK6418K, LNK6427K, LNK6428K, LNK6448K SC1161K0, SC1162K0, SC1161K1, SC1162K1, SC1161K1, SC1162K2, SC1161KZ, SC1162KZ
LinkSwitch™-CV	LNK625DG, LNK625DGAU, LNK625DG0055, LNK625DG0105, LNK625DG0176
	LNK625PG
LinkSwitch™-HF	LNK353GN, LNK354GN
	LNK353PN, LNK354PN
LinkSwitch™-HP	LNK6663E, LNK6664E, LNK6665E, LNK6666E, LNK6667E, LNK6763E, LNK6764E, LNK6765E, LNK6766E, LNK6766E0105, LNK6767E, LNK6773E, LNK6774E, LNK6775E, LNK6776E, LNK6777E, SC1166E
	LNK6663K, LNK6664K, LNK6664K1, LNK6665K, LNK6665K1, LNK6666K, LNK6667K, LNK6763K, LNK6764K, LNK6765K, LNK6766K, LNK6767K, LNK6773K, LNK6774K, LNK6775K, LNK6776K, LNK6777K
	LNK6663V, LNK6664V, LNK6665V, LNK6666V, LNK6667V, LNK6668V, LNK6669V, LNK6763V, LNK6764V, LNK6765V, LNK6766V, LNK6767V, LNK6768V, LNK6769V, LNK6773V, LNK6774V, LNK6775V, LNK6776V, LNK6777V, LNK6778V, LNK6779V
LinkSwitch™-LP	LNK562DG, LNK562DGAU, LNK562DN, LNK562DNAU, LNK563DG, LNK563DN, LNK564DG, LNK564DGAU, LNK564DN, LNK564DNAU, LNK564DN0167 SC1124DG, SC1146DG
	LNK562GN, LNK563GN, LNK564GN
	LNK562PG, LNK562PN, LNK562PNAU, LNK562PN0105, LNK563PG, LNK563PN, LNK564PG, LNK564PN, LNK564PNAU
LinkSwitch™-PH	LNK403EG, LNK403EGAU, LNK404EG, LNK405EG, LNK406EG, LNK406EG0162, LNK407EG, LNK408EG, LNK409EG, LNK410EG, LNK413EG, LNK414EG, LNK415EG, LNK416EG, LNK417EG, LNK418EG, LNK419EG, LNK420EG,
	LNK403LG, LNK404LG, LNK405LG, LNK406LG, LNK407LG, LNK408LG, LNK409LG, LNK410LG, LNK413LG, LNK414LG, LNK415LG, LNK416LG, LNK417LG, LNK418LG, LNK419LG, LNK420LG
LinkSwitch™-PL	LNK454DG, LNK456DG, LNK457DG
	LNK457KG, LNK458KG, LNK460KG
	LNK457VG, LNK458VG, LNK460VG
LinkSwitch™-TN	LNK302DG, LNK302DGAU, LNK302DG0004, LNK302DG0105, LNK302DG0166, LNK302DN,

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	LNK302DNAU, LNK302DN0005, LNK304DG, LNK304DG, LNK304DG0004, LNK304DG0105, LNK304DG0166, LNK304DN, LNK304DNAU, LNK304DN0054, LNK304DN0152, LNK304DN0166
	LNK302GN, LNK302GNAU, LNK302GN0004, LNK302GN0166, LNK304GN, LNK304GNAU, LNK304GN0004, LNK304GN0087, LNK304GN0166
	LNK302PG, LNK302PN, LNK302PNAU, LNK302PN0004, LNK302PN0105PN, LNK302PN0166, LNK304PG, LNK304PN, LNK304PNAU, LNK304PN0004, LNK304PN0105, LNK304PN0152, LNK304PN0166
LinkSwitch™-XT	LNK362DG, LNK362DG, LNK362DN, LNK362DNAU, LNK362DN0004, LNK364DG, LNK364DN, LNK364DNAU, LNK364DN0152, SC1108DG
	LNK362GN, LNK364GN, LNK364GNAU, LNK364GN0105, LNK364DN0152
	LNK362PG, LNK362PN, LNK362PNAU, LNK362PN0004, LNK364PG, LNK364PN, LNK364PNAU, LNK364PN0146
LYTSwitch™-0	LYT0002D, LYT0002D0105, LYT0004D, LYT0004D0105
	LYT0002P, LYT0004P
LYTSwitch™-2	LYT2002D, LYT2003D, LYT2004D
	LYT2004E, LYT2005E
	LYT2004K, LYT2005K
LYTSwitch™-4	LYT4211E2, LYT4212E2, LYT4213E2, LYT4214E2, LYT4215E2, LYT4216E2, LYT4217E2, LYT4218E2, LYT4221E3, LYT4222E3, LYT4223E3, LYT4224E3, LYT4225E3, LYT4226E3, LYT4227E3, LYT4228E3, LYT4311E2, LYT4312E2, LYT4313E2, LYT4314E2, LYT4315E2, LYT4316E2, LYT4317E2, LYT4318E2, LYT4321E3, LYT4321E4, LYT4322E3, LYT4333E3, LYT4324E3, LYT4325E3, LYT4326E3, LYT4327E3, LYT4328E3, SC1153EG
SENZero™	SEN012DG, SEN013DG
TinySwitch™-I	TNY253GN, TNY253GN0112, TNY254GN, TNY254GN0112, TNY255GN, TNY255GN0152
	TNY253PN, TNY253PN0112, TNY254PN, TNY254PNAU, TNY254PN0112, TNY254PN0152, TNY255PN, TNY255PNAU
TinySwitch™-III	TNY174DG, TNY275DG, TNY276DG, TNY176DG0166
	TNY274GN, TNY274GNAU, TNY274GN0004, TNY274GN0152, TNY275GN, TNY275GNAU, TNY278GN0054, TNY275GN0152, TNY276GN, TNY276GNAU, TNY276GN0004, TNY277GN, TNY277GNAU, TNY277GN0004, TNY277GN0152, TNY277GN0166, TNY278GN, TNY278GNAU, TNY278GN0054, TNY279GN, TNY279GNAU, TNY279GN0152, TNY280GN, TNY280GNAU, TNY280GN0105, TNY280GN0152
	TNY174PG, TNY174PN, TNY175PG, TNY175PN, TNY176PG, TNY176PN, TNY176PN0005, TNY177PG, TNY177PGAU, TNY177PN, TNY178PG, TNY178PN, TNY179PG, TNY179PN, TNY179PNAU, TNY180PG, TNY180PN, TNY180PNAU, TNY180PN0166, TNY274PG, TNY274PGAU, TNY274PN, TNY274PNAU, TNY274PN0166, TNY275PG, TNY275PN, TNY275PGAU, TNY275PG0152, TNY275PNAU, TNY275PN0004, TNY275PN0152, TNY276PG, TNY276PGAU, TNY276PN, TNY276PNAU, TNY276PN0054, TNY276PN0105, TNY276PN0152, TNY276PN0166, TNY277PG, TNY277PGAU, TNY277PN, TNY277PNAU, TNY277PN0164, TNY277PN0166, TNY277PN0190, TNY277PN0152, TNY278PG, TNY278PGAU, TNY278PN, TNY278PNAU, TNY278PN0004, TNY278PN0054, TNY278PN0152, TNY278PN0164, TNY279PG,

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	TNY279PGAU, TNY279PG0179, TNY279PN, TNY279PNAU, TNY279PN0004, TNY279PN0054, TNY279PN0152, TNY280PG, TNY280PGAU, TNY280PN, TNY280PNAU, TNY280PN0004, TNY280PN0105, TNY280PN0179, SC1128PG, SC1129PG
TinySwitch™-4	DAP021AG, TNY177DG, TNY278DG, TNY284DG, TNY285DG, TNY286DG, TNY287DG, TNY288DG, TNY285DG0152, SC1130DG
	TNY284KG, TNY285KG, TNY286KG, TNY287KG, TNY287KG0152, TNY288KG, TNY288KG0152, TNY289KG, TNY290KG, TNY290KG0105
	TNY284PG, TNY285PG, TNY285PG0004, TNY286PG, TNY287PG, TNY288PG, TNY288PG0004, TNY289PG, TNY290PG, TNY290PG0105
TinySwitch™-PK	TNY380GN, TNY380GNAU, TNY380GN0152
	TNY380PN, TNY38PGNAU, TNY380PN0152
TOPSwitch™-II	TOP221GN, TOP222GN, TOP223GN, TOP224GN
	TOP221PN, TOP222PN, TOP222PNAU, TOP223PN, TOP224PN
	TOP221YN, TOP222YN, TOP222YNAU, TOP223YN, TOP223YNAU, TOP224YN, TOP225YN, TOP226YN, TOP227YN
TOPSwitch™-HX	TOP252EG, TOP252EN, TOP252EAU, TOP252EN0004, TOP253EN, TOP253ENAU, TOP253EN0004, TOP253EN0105, TOP254EG, TOP254EGAU, TOP254EG0105, TOP254EN, TOP254ENAU, EOP254EN0105, TOP255EG, TOP255EN, TOP256EG, TOP256EN, TOP257EG, TOP257EN, TOP257ENAU, TOP257EN0004, TOP257EN0166, TOP258EG, TOP258EN, TOP258ENAU, TOP258EN0105, TOP259EG, TOP259EN, TOP260EG, TOP260EN, TOP260ENAU, TOP260EN0004, TOP261EG, TOP261EN, TOP262EN
	TOP252GN, TOP253GN, TOP254GN, TOP255GN, TOP256GN, TOP257GN, TOP257GNAU, TOP257GN0004, TOP257GN0166, TOP258GN
	TOP255LG, TOP255LN, TOP256LG, TOP256LN, TOP257LG, TOP257LN, TOP258LG, TOP258LN, TOP259LG, TOP259LN, TOP260LG, TOP260LN, TOP261LG, TOP261LN, TOP262LN
	TOP252MG, TOP252MN, TOP253MG, TOP253MN, TOP253MNAU, TOP253MN0004, TOP254MG, TOP254MN, TOP255MG, TOP255MN, TOP255MNAU, TOP255MN0105, TOP256MG, TOP256MN, TOP257MG, TOP257MN, TOP257MNAU, TOP257MN0004, TOP258MG, TOP258MN, TOP258MNAU, TOP258MN0105, TOP258MN0159
	TOP252PG, TOP252PN, TOP252PNAU, TOP252PN0004, TOP253PG, TOP253PN, TOP253PNAU, TOP253PN0004, TOP253PN0105, TOP253PN0152, TOP253PN0166, TOP254PG, TOP254PN, TOP254PN0105, TOP255PG, TOP255PN, TOP256PG, TOP256PN, TOP256PNAU, TOP256PN0004, TOP256PN0105, TOP257PG, TOP257PN, TOP258PG, TOP258PN, TOP258PNAU, TOP258PN0004
	TOP254YN, TOP255YN, TOP255YNAU, TOP256YN, TOP256YNAU, TOP256YN0143, TOP257YN, TOP257YNAU, TOP257YN0166, TOP258YN, TOP258YNAU, TOP258YN0143, TOP258YN0166, TOP259YN, TOP260YN, TOP261YN
TOPSwitch™-JX	TOP264EG, TOP265EG, TOP266EG, TOP266EGAU, TOP266EG0004, TOP267EG, TOP267EG0068, TOP268EG, TOP269EG, TOP270EG, TOP271EG
	TOP264KG, TOP265KG, TOP266KG, TOP267KG, TOP268KG, TOP269KG, TOP270KG, TOP271KG
	TOP264VG, TOP264VGAU, TOP265VG, TOP265VGAU, TOP265VG0166, TOP266VG, TOP266VGAU, TOP266VG0054, TOP267VG, TOP267VGAU, TOP267VG0054, TOP267VG0068, TOP268VG, TOP269VG, TOP270VG, TOP271VG

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Appendix 2
Reliability Engineering
Qualification Report

Qualification Project: E154001
Prepared By: Nick Stanco
Manager, Reliability Engineering

Project Title: Qualification of Improved Passivation Process for Lapis M3, Miyazaki, Japan Wafer Fab
Summary: Reliability testing was conducted to qualify an improved passivation process for Power Integration products fabricated in the Lapis M3, Miyazaki, Japan wafer fabrication facility. A minor passivation change was made to improve HALT performance. All required reliability stress tests were completed on three qualification lots with acceptable results. Yield and temperature characterization were completed with acceptable results for all affected products. Based on these qualification results, the improved passivation process is now approved for production.
Qualification Vehicles: TOP261EG, TOP261YN, TNY290PG

Reliability Test Descriptions and Conditions

Test Name	Conditions	Reference Specification
DOPL (Dynamic Operating Life Test)	Tj=125°C, Vd _(peak) = 560V for TOP261, Vd _(peak) = 580V for TNY290PG	EIA/JESD22-A108D
HTRB (High Temp Reverse Bias Test)	Ta=150°C, Vd=560V for TOP61, Vd=580V for TNY290PG, Vc/Vbp=5.8V	EIA/JESD22-A108D
THBT (Temperature Humidity Bias Test)	85°C, 85% RH, Vd=30V, Vc/Vbp=5.8V	EIA/JESD22-A101C
TMCL (Temperature Cycle, Air to Air)	-65°C to +150°C (PG package) -40°C to +125°C (EG & YN packages)	EIA/JESD22-A104D
HALT (Humidity Accelerated Life Test)	Ta=85°C, 85% RH, Tj=115°C, Vd _(peak) = 560V for TOP261 or Vd _(peak) = 560V for TNY290PG, in switching power supply	Internal Standard
HTSL (High Temperature Storage Life)	Ta=175°C, unbiased	EIA/JESD22-A103D

DOPL (Dynamic Operating Life)

Product	Lot Description	Lot No.	Test Duration	No. Failures/Sample Size
TOP261YN	Passivation "A" Qual Lot 1	4F978D	1000 hours	0/46 (1 unit lost)
TOP261EG	Passivation "A" Qual Lot 2	4F979B	1000 hours	0/47
TNY290PG	Passivation "A" Qual Lot 3	4F980B	1000 hours	0/47

HTRB (High Temperature Reverse Bias)

Product	Lot Description	Lot No.	Test Duration	No. Failures/Sample Size
TOP261YN	Passivation "A" Qual Lot 1	4F978D	1000 hours	0/47
TOP261EG	Passivation "A" Qual Lot 2	4F979B	1000 hours	0/47
TNY290PG	Passivation "A" Qual Lot 3	4F980B	1000 hours	0/47

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THBT (Temperature Humidity Bias)

Product	Lot Description	Lot No.	Test Duration	No. Failures/Sample Size
TOP261YN	Passivation "A" Qual Lot 1	4F978D	1000 hours	0/47
TOP261EG	Passivation "A" Qual Lot 2	4F979B	1000 hours	0/47
TNY290PG	Passivation "A" Qual Lot 3	4F980B	1000 hours	0/47

TMCL (Temperature Cycling)

Product	Lot Description	Lot No.	Test Duration	No. Failures/Sample Size
TOP261YN	Passivation "A" Qual Lot 1	4F978D	500 cycles	0/47
TOP261EG	Passivation "A" Qual Lot 2	4F979B	850 cycles	0/47
TNY290PG	Passivation "A" Qual Lot 3	4F980B	500 cycles	0/47

HALT (Humidity Accelerated Life Test)

Product	Lot Description	Lot No.	Test Duration	No. Failures/Sample Size
TOP261YN	Passivation "A" Qual Lot 1	4F978D	1000 hours	0/19 (see Note 1)
TOP261EG	Passivation "A" Qual Lot 2	4F979B	1000 hours	0/20
TNY290PG	Passivation "A" Qual Lot 3	4F980B	1000 hours	0/18 (see Note 1)

HTSL (High Temperature Storage Life)

Product	Lot Description	Lot No.	Test Duration	No. Failures/Sample Size
TOP261YN	Passivation "A" Qual Lot 1	4F978D	1000 hours	0/47
TOP261EG	Passivation "A" Qual Lot 2	4F979B	1000 hours	0/47
TNY290PG	Passivation "A" Qual Lot 3	4F980B	1000 hours	0/47

Note 1: One invalid EOS failure occurred on lot 4F978D and two occurred on lot 4F980B. These failures were caused by faulty test hardware and were not related to the the passivation change being qualified. The original 20 unit sample sizes were reduced accordingly.

Conclusion: Based on acceptable qualification results, the improved passivation process at Lapis M3 is now fully qualified and approved for production

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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

Please email this signed form to pcn@power.com specifying the PCN# in the subject.

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