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Control No. PCN-18171 **May 12, 2018**

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

Copper wire is added as an alternative process to TOPSwitch-FX, TOPSwitch-GX and TOPSwitch-HX products assembled at Tongfu Microelectronics Company Limited (TFME), a qualified assembly and test site of Power Integrations. The same copper leadframe material with the same existing dimensions will be used but selective silver plating instead of stripe silver plating will be used.

REASON FOR CHANGE

Improvement in the manufacturing capacity and flexibility. The copper wire bonding process has been widely adopted by the IC packaging industry for many years and has been in high-volume production of other PI products. This change will provide Power Integrations access to additional bonding equipment at its contract manufacturing assembly facilities.

PRODUCTS AFFECTED

Product Family	Ordering Part Number	Package
TOPSwitch-FX	TOP232YN, TOP233YN, TOP234YN	TO-220-7B
TOPSwitch-GX	TOP242YN, TOP242YN0105, TOP243YN, TOP244YN, TOP244YN0004, TOP244YN0166, TOP245YN, TOP246YN, TOP246YN0190	TO-220-7C
	TOP243YN0057, TOP246YN0057	TO-220-LG
TOPSwitch-HX	SC1047YN, TOP254YN, TOP255YN, TOP256YN, TOP256YN0004, TOP256YN0143, TOP257YN, TOP257YN0004, TOP257YN0166	TO-220-7C

QUALIFICATION STATUS

Refer to Appendix 1 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

August 10, 2018

SAMPLE AVAILABILITY

Samples will be available 8 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.

Appendix 1
Reliability Engineering
Qualification Report

Qualification Project: E1731031

Project Title: TFME 7/6L and 7/5L TO-220 Packages Copper Bond Wire Qualification
Qual Summary: Reliability testing was performed on TOPSwitch-HX products to qualify select 7/6L and 7/5L TO-220 package products for copper bond wire assembly at TFME. All required reliability tests were completed on three qualification lots with passing results. Assembly-level bond pull, ball shear and cratering tests were completed with acceptable results. Yield analysis was complete on representative products with acceptable results. Based on these results, TFME is qualified for copper bond wire assembly of select TOPSwitch-FX, TOPSwitch-GX and TOPSwitch-HX products. Products approved for copper wire assembly at TFME are: TOP232-234YN, TOP242-246YN, TOP254-257YN and the SC1047YN.
Qualification Vehicles: TOP256YN, TOP257YN and TOP258YN

Reliability Test Descriptions and Conditions

Test Name	Conditions	Reference Specification
DOPL (Dynamic Operating Life Test)	Tj=125°C, $Vd_{(peak)}$=560V	EIA/JESD22-A108-D
HTRB (High Temperature Reverse Bias Test)	Ta=150°C; Vd=560V, Vbp = 6.2V	EIA/JESD22-A108-D
THBT (Temperature Humidity Bias Test)	85°C, 85% RH, Vd=30V, Vbp = 6.2V	EIA/JESD22-A101-C
TMCL (Temperature Cycle, Air to Air)	-65°C to +150°C, air to air, unbiased	EIA/JESD22-A104-E
HTSL (High Temperature Storage Life)	Ta=175°C, unbiased	EIA/JESD22-A103-D
HALT (Humidity Accelerated Life Test)	DOPL Tj=115°C, 85% RH, Vd(peak)=560V	Internal Standard

DOPL (Dynamic Operating Life)

Product	Lot #	Qualification Project	Test Duration	No. Failures/Sample Size
TOP258YN	6B147D	E173103	1000 hours	0/47
TOP258YN	6B367F	E173103	1000 hours	0/47
TOP256YN	6B540E	E173103	1000 hours	0/47

HTRB (High Temperature Reverse Bias)

Product	Lot #	Qualification Project	Test Duration	No. Failures/Sample Size
TOP258YN	6B147D	E173103	1000 hours	0/47
TOP258YN	6B367F	E173103	1000 hours	0/47
TOP256YN	6B540E	E173103	1000 hours	0/47

THBT (Temperature Humidity Bias)

Product	Lot #	Qualification Project	Test Duration	No. Failures/Sample Size
TOP258YN	6B147D	E173103	1000 hours	0/47
TOP258YN	6B367F	E173103	1000 hours	0/47
TOP256YN	6B540E	E173103	1000 hours	0/47

TMCL (Temperature Cycling)

Product	Lot #	Qualification Project	Test Duration	No. Failures/Sample Size
TOP257YN	6N600G	TFME Lab	1000 cycles	0/47
TOP257YN	6N600K	TFME Lab	1000 cycles	0/47
TOP257YN	6N600P	TFME Lab	1000 cycles	0/47

HTSL (High Temperature Storage Life)

Product	Lot #	Qualification Project	Test Duration	No. Failures/Sample Size
TOP258YN	6B147D	E173103	1000 hours	0/47
TOP258YN	6B367F	E173103	1000 hours	0/47
TOP256YN	6B540E	E173103	1000 hours	0/47

HALT (Humidity Accelerated Life Test)

Product	Lot #	Qualification Project	Test Duration	No. Failures/Sample Size
TOP258YN	6B147D	E173103	1000 hours	0/19 (Note 1)
TOP258YN	6B367F	E173103	1000 hours	0/20
TOP256YN	6B540E	E173103	1000 hours	0/20

Note 1: One unit from lot 6B147D failed due to EOS, this failure was unrelated to copper wire bonding and the sample size was reduced accordingly.

Conclusion: Based on these results, TFME is qualified for copper bond wire assembly of select TOPSwitch-FX, TOPSwitch-GX and TOPSwitch-HX products.

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 specifying the PCN# in the subject.