8755 W. Higgins Road
Suite 500
Chicago, Illinois USA 60631

July 5, 2012

RE: PCN # ESU270-16 – Alternate Wafer Foundry Location Approval for SP10xx & SP05 Series

To our valued customers,

Littelfuse would like to notify you of a newly approved wafer foundry location for the SP10xx and SP05 TVS Diode Array (SPA™ Family) products. The new wafer foundry in Taiwan is fully approved. There are no changes to fit, form, function of the finished product.

Qualification efforts are complete and the new factory is online for immediate shipments. Please see the attached documentation for change detail and affected part numbers.

All affected products have been fully qualified in accordance with established performance and reliability criteria. The attached pages summarize the qualification results. Full qualification data and/or samples will be available upon request.

Form, fit, function changes: None
Part number changes: None
Effective date: July 5, 2012
Replacement products: N/A
Last time buy: N/A

This notification is for your information and acknowledgement. If you have any other questions or concerns, please contact Chad Marak, Product Manager.

We value your business and look forward to assisting you whenever possible.

Best Regards,

Chad Marak
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Chicago, Illinois USA 60631
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cmarak@littelfuse.com

800 E. Northwest Highway Des Plaines, IL 60016

Product/Process Change Notice (PCN)

PCN#: ESU270-16 Date: 07/05/2012

Product Identification:

SP10xx and SP05 Series

Implementation Date for Change:

07/05/2012

Contact Information

Name: Chad Marak

Title: Product Marketing Manager

Phone #: +1 408 886 1600

Fax#: N/A

E-mail: cmarak@littelfuse.com

Category of Change:

- ☐ Assembly Process
- ☐ Data Sheet
- ☐ Technology
- ☐ Discontinuance/Obsolescence
- ☐ Equipment
- ☒ Manufacturing Site
- ☐ Raw Material
- ☐ Testing
- ☐ Fabrication Process
- ☐ Other: _____

Description of Change:

Approve an alternate wafer foundry location for SP10xx and SP05 Series.

There are no changes to fit, form & function of the finished product. The affected products have been fully qualified in accordance with all established criteria for performance and reliability.

All relevant detail is included in the supplemental pages..

Important Dates:

- ☐ Qualification Samples Available: available upon request
- ☐ Last Time Buy:
- ☒ Final Qualification Data Available: 07/05/2012
- ☐ Date of Final Product Shipment:

Method of Distinguishing Changed Product

- ☐ Product Mark,
- ☒ Date Code,
- ☐ Other,

Demonstrated or Anticipated Impact on Form, Fit, Function or Reliability:

None

LF Qualification Plan/Results:

Attached.Full detail available upon request.

Customer Acknowledgement of Receipt: Littelfuse requests you acknowledge receipt of this PCN. In your acknowledgement, you can grant approval or request additional information. Littelfuse will assume the change is acceptable if no acknowledgement is received within 30 days of this notice. Lack of any additional response within 90 days of PCN issuance further constitutes acceptance of the change.

PCN Report
ETR # Various

Prepared By : Patrick Lee-SPA Projcet Manager, JC Chuang-SPA Package Design Engineer, Jordan Hsieh-SPA Product Engineer,
Date : 07/02/2012
Device : SP05, SP10xx series wafer
Revision : A

1.0 Objective:

The purpose of this project is to qualify a second / alternate location for SP10xx and SP05 series wafer supplier. Succeeding pages summarize the physical, electrical and reliability test performed in qualification lots.

2.0 Applicable Devices:

Part Numbers	Part Numbers
SP0502BAJTG	SP1001-02JTG
SP0504BAJTG	SP1001-02XTG
SP0505BAJTG	SP1001-04JTG
SP0502BAHTG	SP1001-04XTG
SP0503BAHTG	SP1001-05JTG
SP0504BAHTG	SP1001-05XTG
SP0505BAHTG	SP1002-01JTG
SP0506BAATG	SP1002-02JTG
	SP1004-04VTG
	SP1005-01WTG
	SP1007-01WTG

3.0 Assembly, Process & Material Differences/Changes:

There are no changes in the assembly and process method.

4.0 Packing Method

There will be no changes in the packing method.

5.0 Physical Differences/Changes:

There is no change in mechanical specification or package outline dimension (POD).

6.0 Reliability Test Results Summary:

6.1 SP05 product summary report

Test Items	Condition	S/S	Results	ETR #
Pre-conditioning	JESD22-A113	400	0/400	ETR37085
DC Blocking(HTRB)	Bias = 5V,Ta = 125 ℃ Duration = 1008 Hours	80	0/80	
Temperature Cycle	Ta = -65 ℃ to +150 ℃ Duration = 200 Cycles	80	0/80	
Temperature/Humidity	Ta = 85 ℃, 85% RH Duration = 168 Hours	80	0/80	

Autoclave	Ta = 121 ℃, 100%RH, 2ATM Duration = 168 Hours	80	0/80	ETR37085
High Temperature Storage	Ta = 150 ℃ Duration = 1008 Hours	80	0/80	
Resistance to Solder Heat	260 ℃,10 sec M-2031	400	0/400	
Moisture Sensitivity Level(MSL)	Per Jedec J-STD-020D Level 1	400	0/400	
Solderability	ANSI-J-STD-002	400	0/400	

6.2 SP10xx product summary report

Test Items	Condition	S/S	Results	ETR #
Pre-conditioning	JESD22-A113	2000	0/2000	ETR38415 ETR38720
DC Blocking(HTRB)	Bias = 5V,Ta = 125 ℃ Duration = 1008 Hours	400	0/400	
Temperature Cycle	Ta = -65 ℃ to +150 ℃ Duration = 200 Cycles	400	0/400	
Autoclave	Ta = 121 ℃, 100%RH, 2ATM Duration = 168 Hours	400	0/400	
High Temperature Storage	Ta = 150 ℃ Duration = 1008 Hours	400	0/400	
Resistance to Solder Heat	260 ℃,10 sec M-2031	2000	0/2000	
Moisture Sensitivity Level(MSL)	Per Jedec J-STD-020D Level 1	2000	0/2000	
Solderability	ANSI-J-STD-002	2000	0/2000	

7.0 Electrical Characteristic Summary:

There is no change in electrical characteristics. Characterization data is available upon request.

8.0 Changed Part Identification:

There is no change in the SP05 and SP10xx products manufactured by the alternate location.

9.0 Recommendations & Conclusions:

Based on the test results, it is determined that the second/alternative backend location is qualified and certified for production of Littelfuse SP05 and SP10xx products.

10.0 Approvals:

Patrick Lee
SPA Project Manager
Littelfuse, HsinChu

JC Chuang
Design Engineer
Littelfuse, HsinChu

Jordan Hsieh
SPA Product Engineer
Littelfuse, HsinChu