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

Apr 28th, 2017

RE: PCN # ESU270-39 -- SOD323 & uDFN6 package additional, alternative backend location approval

To our valued customers,

Littelfuse would like to notify you of 1) two newly approved backend locations for SOD323 and uDFN6 package TVS Diode Array (SPA® Diodes) products. Both two new backend factories in China are fully approved for all assembly, test, and packing operations. 2) A new molding compound for SOD323 package is approved. There are no changes to fit, form, and 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: Apr 28st, 2017
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 Jia Zhu, Product Manager.

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

Best Regards,

Jia Zhu
Diode Arrays Product Manager
Semiconductor Business Unit, Wuxi, China
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800 E. Northwest Highway Des Plaines, IL 60016

Product/Process Change Notice (PCN)

PCN#: ESU270-39 Date: Apr 28, 2017

Product Identification:

SOD323 and uDFN6 additional, alternate backend location approval

Implementation Date for Change:

July 28, 2017 or sooner

Contact Information

Name: Jia Zhu

Title: Product Marketing Manager

Phone #: +86 13913131571

Fax#: N/A

E-mail: jzhu3@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 two alternate backend assembly, test, and packing locations for SOD323 and uDFN6 package .

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: Apr 28,2017
- ☐ Last Time Buy:
- ☒ Final Qualification Data Available: Apr 28, 2017
- ☐ Date of Final Product Shipment:

Method of Distinguishing Changed Product

- ☒ Product Mark, See (8.0) in the succeeding PCN report for details
- ☒ Date Code,
- ☐ Other,

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

N/A

LF Qualification Plan/Results:

N/A

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 : Jia Zhu-SPA Product Manager, Jordan Hsieh-SPA Product Engineering Manager, Light Hsieh-SPA Product Engineer,
Date : 04/19/2017
Device : SOD323 (SD & SP402X) and uDFN-6 Product
Revision : A

1.0 Objective:

The purpose of this project is to qualify an alternative assembly supplier for SD series and u-DFN6 package products and a new molding compound for SOD323 package (both SD and SP402X series) products. Succeeding pages summarize the physical, electrical and reliability test performed in qualification lots.

2.0 Applicable Devices:

2.1 SOD323 package type

SD Series Part Numbers	SP402X Series Part Numbers
SD05-01FTG	SP4020-01FTG
SD05C-01FTG	SP4020-01FTG-C
SD12-01FTG	SP4021-01FTG
SD12C-01FTG	SP4021-01FTG-C
SD15-01FTG	SP4022-01FTG
SD15C-01FTG	SP4022-01FTG-C
SD24-01FTG	SP4023-01FTG
SD24C-01FTG	SP4023-01FTG-C
SD36-01FTG	SP4024-01FTG
SD36C-01FTG	SP4024-01FTG-C
SD40C-01FTG	

2.2 u-DFN6 package type

Part Numbers
SP3003-02UTG
SP3014-02UTG

3.0 Assembly, Process & Material Differences/Changes:

3.1 Assembly Changes➔ See section 8

3.2 Process Changes

There are no changes in the process method

3.3 Material Change

3.2.1 To change one material as molding compound, detail refer to below table

Material	SOD323 package type products				
	Original		New		Changed?
	Material Name	Supplier	Material Name	Supplier	
Molding compound	EMG600-55M	HHCK	EME-E500DJ	Sumitomo	Yes

4.0 Packing Method

No changes in the packing method.

5.0 Physical Differences/Changes:

No change in mechanical specification or package outline dimension (POD).

6.0 Reliability Test Results Summary:

6.1 SD (Including SP402X) series products summary report:

Test Items	Condition	S/S	Results	ETR #
Pre-conditioning	JESD22-A113	308 each	0/1232	ETR87757 ETR92579 ETR92321 ETR92580
DC Blocking(HTRB)	Bias = VRWM,Ta = 150°C Duration = 1008 Hours	77 each	0/308	
Temperature Cycle	Ta = -55°C to +150°C Duration = 1000 Cycles	77 each	0/308	
Temperature/Humidity	Ta = 85°C, 85% RH Duration = 1008 Hours	77 each	0/308	
Autoclave	Ta = 121°C, 100%RH, 2ATM Duration = 96 Hours	77 each	0/308	
Resistance to Solder Heat	260°C,10 sec M-2031	10 each	0/40	
Moisture Sensitivity Level(MSL)	Per Jedec J-STD-020D Level 1	308 each	0/1232	
Solderability	ANSI-J-STD-002	10 each	0/40	

6.2 uDFN-6 series products summary report:

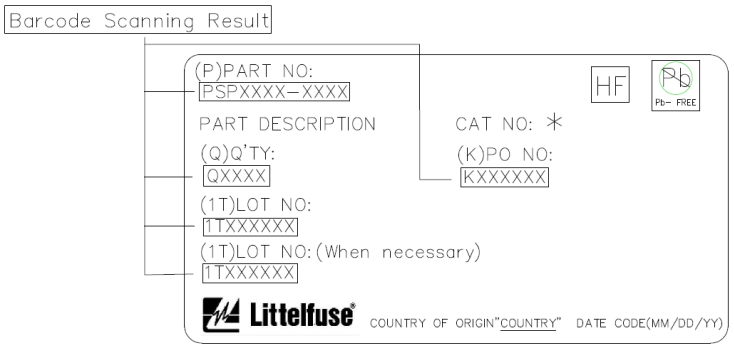
Test Items	Condition	S/S	Results	ETR #
Pre-conditioning	JESD22-A113	308 each	0/616	ETR94695 ETR94696
DC Blocking(HTRB)	Bias = 5V,Ta = 150°C Duration = 1008 Hours	77 each	0/154	
Temperature Cycle	Ta = -55°C to +150°C Duration = 1000 Cycles	77 each	0/154	
Temperature/Humidity	Ta = 85°C, 85% RH Duration = 1008 Hours	77 each	0/154	
Autoclave	Ta = 121°C, 100%RH, 2ATM Duration = 96 Hours	77 each	0/154	
Resistance to Solder Heat	260°C,10 sec M-2031	10 each	0/20	
Moisture Sensitivity Level(MSL)	Per Jedec J-STD-020D Level 1	308 each	0/616	
Solderability	ANSI-J-STD-002	10 each	0/20	

7.0 Electrical Characteristic Summary:

No change in electrical characteristics. Characterization data is available upon request.

8.0 Changed Part Identification:

Assy change can be identified by code of CAT NO on the label.



Package Type	Part Number	Original CAT NO	Currently CAT NO
SOD323	SDxx Series	S, C	S, C, F(new)
uDFN-6	Refer to 2.2	H	H, K(new)

9.0 Recommendations & Conclusions:

Based on the test results, it is determined that the alternative assembly supplier for SOD-323 and u-DFN6 products and a new molding compound of SOD323 package products are qualified and certified for production of all Littelfuse datasheet.

10.0 Approvals:

Jia Zhu	**Jordan Hsieh**	**Light Hsieh**
SPA Product Manager	**SPA Product Engineering Manager**	**SPA Product Engineer**
Littelfuse, Wuxi	**Littelfuse, HsinChu**	**Littelfuse, HsinChu**