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

Nov 28th, 2024

RE: PCN # ESU270-98- New Wafer Foundry and Additional Backend Location Approval for SP1005-01ETG & SP1007-01ETG & SP1007-01ETG-1

To our valued customer,

Littelfuse would like to notify you that we are going to change wafer foundry location and add an additional backend location for SP1005-01ETG & SP1007-01ETG & SP1007-01ETG-1 TVS Diode Array (SPA® Diodes) products. The target foundry & backend sites are existing suppliers to Littelfuse, and the affected products are incremental to other Littelfuse products at the site. There are no changes to fit, form, and function of finished products.

The affected products will be fully qualified in accordance with established performance and reliability criteria. Samples would be provided upon your request.

Products Affected:

Affected Part Numbers
SP1005-01ETG
SP1007-01ETG
SP1007-01ETG-1

Form, fit, function changes: None
Part number changes: None
Effective date: Feb 28th, 2025 or sooner
Replacement products: N/A
Last time buy: N/A

This PCN is for your information and acknowledgement. If you have any other questions or concerns, please contact your local sales team or product team below for further assistance.

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

Best Regards,

Sophia Hu
TVS Diode Array Assistant Product Manager
Semiconductor Business Unit, Wuxi, China
+86 510 85277701 - 7653
shu@littelfuse.com

800 E. Northwest Highway Des Plaines, IL 60016

Product/Process Change Notice (PCN)

PCN# :

ESU270-98 Date: Nov 28th, 2024

Product Identification:

New Wafer Foundry and Additional Backend Location Approval for SP1005-01ETG & SP1007-01ETG & SP1007-01ETG-1

Implementation Date for Change:

Feb 28th, 2025 or sooner

Contact Information

Name : Sophia Hu

Title : Assistant Product Marketing Manager

Phone # : +86 13771377277

Fax# : N/A

E-mail : shu@littelfuse.com

Category of Change:

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

Description of Change:

New Wafer Foundry and Additional Backend Location Approval for SP1005-01ETG & SP1007-01ETG & SP1007-01ETG-1 SPA™ TVS Diode Arrays products. There are no changes to fit, form, function of the finished product.

Important Dates:

- ☒ Qualification Samples Available: Upon request
- ☐ Last Time Buy:
- ☒ Final Qualification Data Available: Upon request
- ☐ Date of Final Product Shipment:

Method of Distinguishing Changed Product

- ☐ Product Mark,
- ☒ Date Code,
- ☐ Other, Littelfuse internal work order documentation

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

N/A

LF Qualification Plan/Results:

Yes

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 i 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 : Wayne Wang- Sr.Product Engineer,
Toby Chung -Product Engineer, Sophia Hu- Assistant Product Manager
Date : 2024/11/19
Device : Please refer to 2.1.
Revision : A

1.0 Objective:

The purpose of this project is to qualify alternative wafer foundry and assembly for TVS Diode Array products. Following pages summarize the physical, electrical and reliability test performance in qualification lots.

2.0 Applicable Devices:

2.1 Product name:

Affected Part Numbers
SP1005-01ETG
SP1007-01ETG
SP1007-01ETG-1

3.0 Assembly, Process & Material Differences/Changes:

3.1 Assembly Changes:

No change of assemble method.

3.2 Process Changes:

No change of process method.

3.3 Material Change:

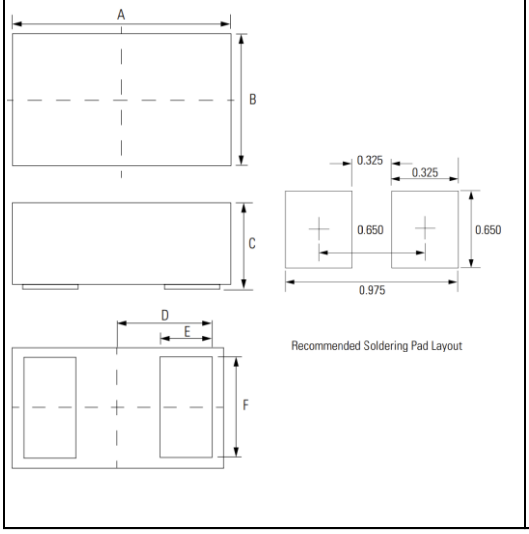
Wafer change

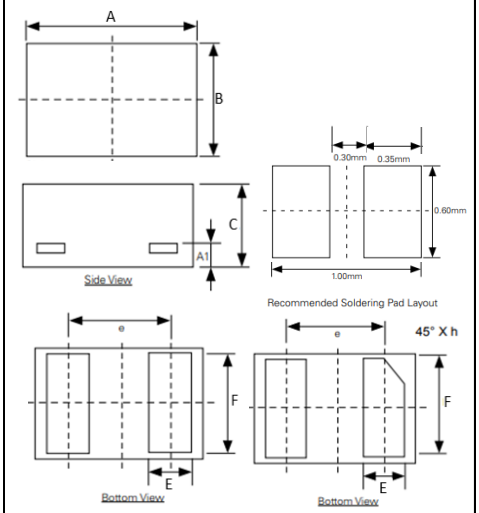
4.0 Packing Method

Category		Before	After
Reel	Reel size	7"	7"
	Qty per reel	10000	10000
	Reel per inner box	1	1
	Reel per outer box	30	30 & 20
	Reel color	Black	Black & Blue

5.0 Physical Differences/Changes:

Before				After		
Symbol	Min	Nor.	Max	Min	Nor.	Max
A	0.95	1.00	1.05	0.93	1	1.07
A1				0.125/0.150 (REF)		
B	0.55	0.60	0.65	0.53	0.6	0.67
C	0.40	0.50	0.60	0.36	0.45	0.55
D		0.45				
E	0.20	0.25	0.30	0.2	0.25	0.3
e				0.65BSC		
F	0.45	0.50	0.55	0.45	0.5	0.55
h				0.07	0.12	0.17





6.0 Reliability Test Results Summary:

6.1 Reliability for alternative wafer foundry/ assembly

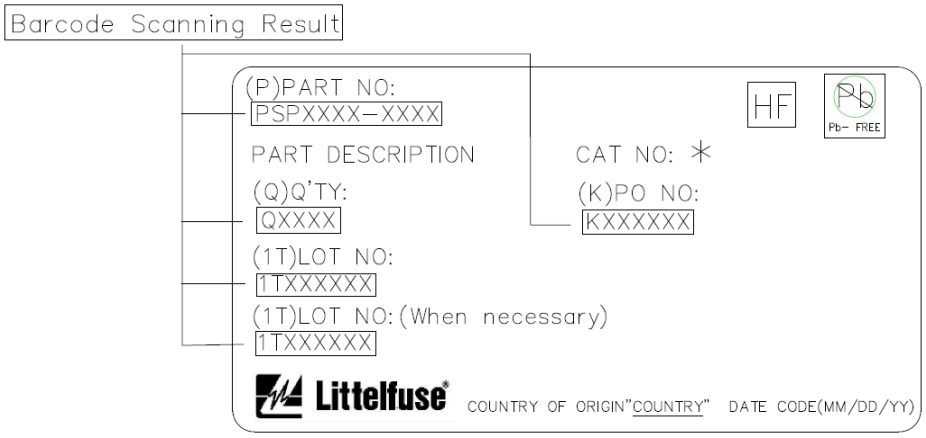
Test Items	Condition	S/S	Results	ETR #
Pre-conditioning (PC)	JESD22-A113	308 each lot	0/924	TR24-11-012447
DC Blocking (HTRB)	Bias = VRWM, Ta = 150°C, Duration = 1008 Hours	77 each lot	0/231	
Temperature Cycle (TC)	Ta = -55°C to 150°C, Duration = 1000 Cycles	77 each lot	0/231	
Temperature/Humidity (H3TRB)	Ta = 85°C, 85% RH, Bias = VRWM, Duration = 1008 Hours	77 each lot	0/231	
Unbiased HAST (UHAST)	Ta = 130°C, 85%RH, Duration = 96 Hours	77 each lot	0/231	
Resistance to Solder Heat (RSH)	260°C, 10 sec, M-2031	30each lot	0/90	
Moisture Sensitivity Level (MSL)	Per Jedec J-STD-020D Level 1	11 each lot	0/33	
Solderability (SD)	J-STD-002	22each lot	0/66	

7.0 Electrical Characteristic Summary:

Electrical performances were comparable and characterization data is available upon request.

8.0 <u>Changed Part Identification:</u>

Both suppliers were qualified by Littelfuse and product can be identified by CAT NO on the label.



9.0 Approvals:

Sophia Hu SPA Assistant Product Manager Littelfuse, Wuxi	Wayne Wang Sr. SPA Product Engineer Littelfuse, Wuxi	Emily Chen SPA Product Engineer Littelfuse, HsinChu