



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

April 24th, 2014

RE: PCN # ESU270-24 -- SP3012-04UTG / SP0524PUTG Alternate location Approval for Backend Assembly, Test and Packing

To our valued customers,

Littelfuse would like to notify you of two newly approved backend locations for the SP3012-04UTG / SP0524PUTG of our TVS Diode Array (SPA[®] Diodes) products. The new backend factories in India and China are fully approved for all assembly, test, and packing operations. 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: April 24th, 2014
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,

A handwritten signature in black ink that reads "Chad Marak". The signature is written in a cursive, flowing style.

Chad Marak
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800 E. Northwest Highway Des Plaines, IL 60016

Product/Process Change Notice (PCN)

PCN#: ESU270-24 **Date:** 04/24/2014

Product Identification:

SP3012-04UTG / SP0524PUTG of TVS

Diode Array Products

Implementation Date for Change:

04/24/2014

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 two alternate backend assembly, test, and packing locations for SP3012-04UTG / SP0524PUTG products.

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: 04/24/2014 Last Time Buy:
- Final Qualification Data Available: 04/24/2014
- Date of Final Product Shipment:

Method of Distinguishing Changed Product

- Product Mark, VE4: new India site; VG4: new China site
- Date Code,
- Other,

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

N/A

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 : Jordan Hsieh-SPA Product Engineering Manager,
 : Light Hsieh-SPA Product Engineer
Date : Apr/23/2014
Device : SP3012-04UTG / SP0524PUTG
Revision : A

1.0 Objective:

The purpose of this project is to qualify alternate backend locations for the SP3012-04UTG / SP0524PUTG products. Succeeding pages summarize the physical, electrical and reliability test performed in qualification lots.

2.0 Applicable Devices:

Part Numbers	Part Numbers
SP3012-04UTG	SP0524PUTG

3.0 Assembly, Process & Material Differences/Changes:

3.1 Assembly and Process Changes

There are no changes in the assembly and process method.

3.2 Material Changes

New India Supplier:

Material	Original		New		Changed ?
	Material Name	Supplier	Material Name	Supplier	
Leadframe	F10L COL ETCH MATRIX PPF	ASM	NiPdAu	QPL	Yes
Die Attach Material	8006NS	HENKEL	8006NS	HENKEL	No
Au Wire	0.8mil	TANAKA	0.8 mil	HERAEUS	Yes
Molding Compound	CEL9220HF13H	HITACHI	CEL-9220ZHF10L	HITACHI	Yes

New China Supplier:

Material	Original		New		Changed ?
	Material Name	Supplier	Material Name	Supplier	
Leadframe	F10L COL ETCH MATRIX	ASM	Efect64T- NiPdAu	DCI	Yes



	PPF				
Die Attach Material	8006NS	HENKEL	8006NS	Henkel	No
Au Wire	0.8mil	TANAKA	HA0.8MIL	Heraeus	Yes
Molding Compound	CEL9220HF13H	HITACHI	G770HCD	SUMITO	Yes

4.0 Packing Method

There is no change 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:

Test Items	Condition	S/S	Results	ETR #
Precondition	(1) Bake 24hr @ 150°C (2) 168hrs @ 85% RH and 85°C (3) IR Reflow, 3 reflows, Peak Temperature of 260°C	308	0/308	ETR 50027 ETR 55594
DC Blocking(HTRB)	Bias = Rated Voltage Ta = 125°C Duration = 168 Hours	77	0/77	
Temperature Cycle	Ta = -55°C to +150°C Duration = 200 Cycles	77	0/77	
Temperature/Humidity (H ³ TRB)	Ta = 85°C, 85% RH Duration = 168 Hours	77	0/77	
Autoclave	Ta = 121°C, 100%RH, 15psi Duration = 168 Hours	77	0/77	
Parametric & Capacitance Test	VRWM=1μA , Ir=5V ; Cd at Vr=0V1Mhz Duration = 168 Hours	30	0/30	
Moisture Sensitivity Level(MSL)	Refer to Precondition Test	80	0/80	
Solderability	Refer to Precondition Test	10	0/10	
Resistance to Solder Heat	Ta = 260°C Duration = 10s	30	0/30	

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 SP3012-04UTG / SP0524PUTG products manufactured by the alternate locations.

9.0 Recommendations & Conclusions:

Based on the test results, it is determined that the alternate backend locations are qualified and certified for production of all Littelfuse SP3012-04UTG / SP0524PUTG products.

10.0 Approvals:

Jordan Hsieh
SPA Product Engineering Manager
Littelfuse, Hsinchu