

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

Jan 18th, 2018

RE: PCN # ESU270-41 - SOT23 package additional, alternative backend location approval

To our valued customers.

Littelfuse would like to notify you of two newly approved backend locations for SOT23 package TVS Diode Array (SPA® Diodes) products. One new backend factory in Malaysia and the other in 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: Apr 18st, 2018 or sooner

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
TVS Diode Array 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#: ESU270-41 Date: Jan 18, 201	8 Contact Information			
Product Identification:	Name: Jia Zhu			
SOT23 additional, alternate	Title: Product Marketing Manager			
backend location approval	Phone #: +86 13913131571			
Implementation Date for Change:	Fax#: N/A			
Apr 18, 2018 or sooner	E-mail: jzhu3@littelfuse.com			
Category of Change:	Description of Change:			
☐ Assembly Process	Approve two alternate backend assembly, test, and packing locations for			
☐ Data Sheet	SOT23 package.			
☐ Technology	There are no changes to fit, form & function of the finished product. The			
☐ Discontinuance/Obsolescence	affected products have been fully qualified in accordance with all established			
☐ Equipment	criteria for performance and reliability			
	All relevant detail is included in the supplemental pages.			
□ Raw Material	All relevant detail is included in the supplemental pages.			
☐ Testing				
☐ Fabrication Process				
☐ Other:				
Important Dates:				
☑ Qualification Samples Available: Jan	18,2018			
	n 18, 2018			
☐ Date of Final Product Shipment:				
Method of Distinguishing Changed Pro	oduct			
$\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ $	eding 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,

Raider Chen-SPA Product Engineer,

Date : 01/18/2018

Device : SOT23-3/5/6L products

Revision : A

1.0 Objective:

The purpose of this project is to qualify two alternative assembly suppliers for SOT23-3/5/6L package products. Succeeding pages summarize the physical, electrical and reliability test performed in qualification lots.

2.0 Applicable Devices:

2.1 SOT23-3/5/6L product list

SOT23-3L Part Numbers	SOT23-5L Part Number	SOT23-6L Part Number
SLVU2.8HTG	SP0504BAHTG	SP3051-04HTG
SM05-02HTG		SP0505BAHTG
SM12-02HTG		SP0504SHTG
SM15-02HTG		SP3002-04HTG
SM24-02HTG		SRV05-4HTG
SM36-02HTG		SP3012-04HTG
SP0502BAHTG		SP3050-04HTG

3.0 Assembly, Process & Material Differences/Changes:

3.1 Assembly Changes

No change of assemble process.

3.2 Process Changes

No change of process method.

3.3 Material Change

	Item	Original	Supplier F	Supplier V	Change or not
31	Lead frame	C194	C194	C194	No
8	Die Attach Material	8008/2200D	84-1LMISR4	84-1LMISR4	Yes
T2	Wire	Gold	Gold	Gold	No
\mathbf{S}	Mold Compound	G600	G600/E500DJ	G600/CEL8240HF10	Yes
9 1	Plating	Tin	Tin	Tin	No

	Item	Original	Supplier V	Change or not
51	Lead frame	C194	C194	No
23-	Die Attach Material	2200D	84-1LMISR4	Yes
Ţ	Wire	Gold	Gold	No
SO	Mold Compound	G600	CEL8240HF10	Yes
	Plating	Tin	Tin	No



,	Item	Original	Supplier V	Change or not
19	Lead frame	C194	C194	No
23-	Die Attach Material	84-1LMISR4	84-1LMISR4	No
T	Wire	Gold/Cu	Gold/Cu	No
SO	Mold Compound	G600	CEL8240HF10	Yes
9 1	Plating	Tin	Tin	No

Added new assembly sites and material will follow their own qualified materials to mass production.

4.0 Packing Method

No change of 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 SOT23-3/5/6L products summary report:

Test Items	Condition	S/S	Results	ETR#
Pre-conditioning	JESD22-A113	308 each lot	0/2464	
DC Blocking(HTRB)	Bias = VRWM, Ta = 150°C Duration = 1008 Hours	77 each lot	0/616	ETR103432
Temperature Cycle	Ta = -55°C to $+150$ °C Duration = 1000 Cycles	77 each lot	0/616	ETR103437 ETR103436
Temperature/Humidity	Ta = 85°C, 85% RH Duration = 1008 Hours	77 each lot	0/616	ETR104585 ETR104596
Autoclave	Ta = 121°C, 100%RH, 2ATM Duration = 96 Hours	77 each lot	0/616	ETR104597
Resistance to Solder Heat	260°C,10 sec M-2031	10 each lot	0/80	ETR104774 ETR104775
Moisture Sensitivity Level (MSL)	Per Jedec J-STD-020D Level 1	308 each lot	0/2464	
Solderability	ANSI-J-STD-002	10 each lot	0/80	

7.0 Electrical Characteristic Summary:

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

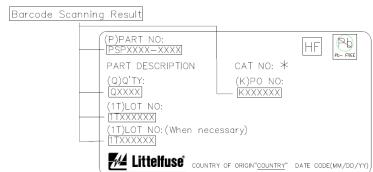
8.0 Changed Part Identification:

There are qualified suppliers, detail please refer to below table

Package Type	Part Number	Original	New added
SOT23-3L	Refer to 2.1	Н	F, V(new)
SOT23-5/6L	Refer to 2.1	Н	V(new)

And it can be identified by code of CAT NO on the label.





9.0 Recommendations & Conclusions:

Based on the test results, it is determined that the alternative assembly supplier for SOT23-3/5/6L products are qualified and certified for production of all Littelfuse datasheet.

10.0 Approvals:

<u>Jia Zhu</u>	<u>Jordan Hsieh</u>	Raider Chen
SPA Product Manager	SPA Product Engineering Manager	SPA Product Engineer
Littelfuse, Wuxi	Littelfuse, HsinChu	Littelfuse, HsinChu