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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,

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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

| SOT23-3L | Item | Original | Supplier F | Supplier V | Change or not |
|----------|---------------------|------------|-------------|------------------|---------------|
| | Lead frame | C194 | C194 | C194 | No |
| | Die Attach Material | 8008/2200D | 84-1LMISR4 | 84-1LMISR4 | Yes |
| | Wire | Gold | Gold | Gold | No |
| | Mold Compound | G600 | G600/E500DJ | G600/CEL8240HF10 | Yes |
| | Plating | Tin | Tin | Tin | No |

| SOT23-5L | Item | Original | Supplier V | Change or not |
|----------|---------------------|----------|-------------|---------------|
| | Lead frame | C194 | C194 | No |
| | Die Attach Material | 2200D | 84-1LMISR4 | Yes |
| | Wire | Gold | Gold | No |
| | Mold Compound | G600 | CEL8240HF10 | Yes |
| | Plating | Tin | Tin | No |



| | | | | |
|----------|---------------------|------------|-------------|---------------|
| SOT23-6L | Item | Original | Supplier V | Change or not |
| | Lead frame | C194 | C194 | No |
| | Die Attach Material | 84-1LMISR4 | 84-1LMISR4 | No |
| | Wire | Gold/Cu | Gold/Cu | No |
| | Mold Compound | G600 | CEL8240HF10 | Yes |
| | 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 | ETR103432 ETR103437 ETR103436 ETR104585 ETR104596 ETR104597 ETR104774 ETR104775 |
| DC Blocking(HTRB) | Bias = VRWM, Ta = 150°C Duration = 1008 Hours | 77 each lot | 0/616 | |
| Temperature Cycle | Ta = -55°C to +150°C Duration = 1000 Cycles | 77 each lot | 0/616 | |
| Temperature/Humidity | Ta = 85°C, 85% RH Duration = 1008 Hours | 77 each lot | 0/616 | |
| Autoclave | Ta = 121°C, 100%RH, 2ATM Duration = 96 Hours | 77 each lot | 0/616 | |
| Resistance to Solder Heat | 260°C,10 sec M-2031 | 10 each lot | 0/80 | |
| 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 | H | F, V(new) |
| SOT23-5/6L | Refer to 2.1 | H | V(new) |

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



Barcode Scanning Result

| | | |
|---|----------------------|----------------|
| (P)PART NO: PSPXXXX-XXXX | HF | Pb Pb- FREE |
| PART DESCRIPTION | CAT NO: * | |
| (Q)Q'TY: QXXXX | (K)PO NO: KXXXXXX | |
| (1T)LOT NO: TXXXXXX | | |
| (1T)LOT NO:(When necessary) TXXXXXX | | |
| COUNTRY OF ORIGIN" COUNTRY" DATE CODE(MM/DD/YY) | | |

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:

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