



Expertise Applied | Answers Delivered

Mar. 10<sup>th</sup>, 2014

RE: LFPCN41207

To: Our Valued Customers

From: Littelfuse Product Management Team

Subject : LFPCN41207--Approve Wuxi/ Cirtek in Addition to Existing Fab and Assembly Site to Provide Capacity and Competitive Lead Time.

Littelfuse would like to notify you that Littelfuse Wuxi wafer Fab will be fully approved as an alternative FVSP Series SIDACTOR chip manufacturing site and Cirtek will be approved as an alternative assembly site. Please refer to table below for affected parts.

There will be no changes to fit, form, shape and function of the finished product in accordance with established performance and reliability qualification criteria.

Please see the attached documentation for change detail and affected part numbers.

**Form, fit, function changes:** None  
**Part number changes:** None  
**Effective date:** June 10<sup>th</sup>, 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 Meng Wang, Assistant Product Manager.

We value your business and look forward to assisting you

Best Regards,  
Meng Wang  
Assistant Product Marketing Manager,  
Tel: +86 510 85277701, extension 7955  
[Mwang3@littelfuse.com](mailto:Mwang3@littelfuse.com)

Affected Parts Are as Below.

<b>Part Number</b>
P0641DF-1E
P0721DF-1E
P0901DF-1E
P0991DF-1E
P1001DF-1E
P1101DF-1E
P1301DF-1E
P1701DF-1E
P816P1701DF-1E



800 E. Northwest Highway Des Plaines, IL 60016

## Product/Process Change Notice (PCN)

**PCN#:** LFPCN41207      **Date:** Mar 10<sup>th</sup> 2014

**Contact Information**

**Product Identification:**  
Littelfuse FVSP Series SIDACTOR  
**Implementation Date for Change:**  
June 01<sup>st</sup> 2014

**Name:** Meng Wang  
**Title:** Assistant Product Manager  
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**Category of Change:**

- Assembly Process
- Data Sheet
- Technology
- Discontinuance/Obsolescence
- Equipment
- Manufacturing Site
- Raw Material
- Testing
- Fabrication Process
- Other: \_\_\_\_\_

**Description of Change:**

Through this PCN, Littelfuse would seek approval from customer to qualify Littelfuse Wuxi as alternative FVSP series SIDACTOR chip manufacturing site and approval for Cirtek as an additional assembly site

**Important Dates:**

- Qualification Samples Available: Mar 10<sup>th</sup> 2014       Last Time Buy: N/A
- Final Qualification Data Available: Mar 10<sup>th</sup> 2014
- Date of Final Product Shipment: N/A

**Method of Distinguishing Changed Product**

- Product Mark,
- Date Code, 4FCxx
- Other,

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

N/A

**LF Qualification Plan/Results:**

available on Feb 7<sup>th</sup> 2014

**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.

## FVSP Product Validation & Reliability Summary

PRODUCT FAMILY: P0641DF-1E, P0721DF-1E, P0901DF-1E, P0991DF-1E, P1001DF-1E, P1101DF-1E, P1301DF-1E.

TABLE-A

Environmental Tests Validating Structural and Package Integrity for Conditions Most Likely to be Encountered in Actual Field Applications  
Test Standard Listed are per the Mil-Std-750 Unless Otherwise Stated

Test <sup>2</sup>	Standard	Test Condition <sup>1</sup>	Pass/Fail Verification Method	Pass Criteria	Test Result; Defects/Sample Size	Data Reference
Pre-conditioning Test	JESD22-A-113 Level 1	24hrs 125°C bake/ 168hrs 85%rh, 85°C sock/3 times	Interim & Post electrical test	Meets Catalog specification	0/120	ETR52066 ETR52067 ETR50102 ETR53360 ETR53359 ETR53363
Temperature Cycle	M-1051, Cond. F	-65°C to +150°C, 15minutes dwell, 100 cycles	Interim & Post electrical test	Meets Catalog specification	0/40	ETR52066 ETR52067 ETR50102 ETR53360 ETR53359 ETR53363
Autoclave	JESD22-A-102	T <sub>A</sub> =121°C, RH=100%, 15psig, 96hrs	Interim & Post electrical test	Meets Catalog specification	0/40	ETR52066 ETR52067 ETR50102 ETR53360 ETR53359 ETR53363
Temperature & Humidity with DC Bias (H3TRB)	JESD22-A101	T <sub>A</sub> =85°C, RH=85%, 52Vdc, 1008hrs	Interim & Post electrical test	Meets Catalog specification	0/40	ETR52066 ETR52067 ETR50102 ETR53360 ETR53359 ETR53363
Resistance to Solder Heat	MIL-STD-750	260°C, 10s	Interim & Post electrical test	Meets Catalog specification	0/10	ETR52066 ETR52067 ETR50102 ETR53360 ETR53359

### FVSP Product Validation & Reliability Summary

						ETR53363
High Temp Storage Life	JESD22-A-101	150°C for 1000hrs	Interim & Post electrical test	Meets Catalog specification	0/40	ETR52066 ETR52067 ETR50102 ETR53360 ETR53359 ETR53363
Moisture Sensitivity Level	JEDEC-J-STD-020 Level 1	85°C, 85%, 168hrs, 3 reflow	Interim & Post electrical test	Meets Catalog specification	0/10	ETR52066 ETR52067 ETR50102 ETR53360 ETR53359 ETR53363
Thermal shock	JESD22-A-106	0°C to 100°C, 5min Dwell, 10s, transfer, 10 cycles	Interim & Post electrical test	Meets Catalog specification	0/40	ETR52066 ETR52067 ETR50102 ETR53360 ETR53359 ETR53363
Solderability	JESD22-B102	Dip & Look, Category-2 (Steam Aging)	Visual examination	Meets Catalog specification	0/10	ETR52066 ETR52067 ETR50102 ETR53360 ETR53359 ETR53363

**TABLE-B**  
**Reliability Test: Device Performance at Catalog Stated Conditions**  
**All Test Standards Listed Are Per the Mil-Std-750 Unless Otherwise Stated**

Test <sup>3</sup>	Standard	Test Condition <sup>1</sup>	Pass/Fail Verification Method	Pass Criteria	Test Result; Defects/Sample Size	Data Reference <sup>2</sup>
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## FVSP Product Validation & Reliability Summary

High Temperature DC Blocking	JESD22-A-101	Rated 80%V <sub>drm</sub> @ TA=150°C for 1008hrs	Interim & Post electrical test	Meets Catalog specification	0/77	ETR52066 ETR52067 ETR50102 ETR53360 ETR53359 ETR53363
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**TABLE-C**

Estimate of Failure Rate, MTBF, FITS for a Given Operation Temperature (See note 4)

Temp C.	FR	MTBF (K)	FITS
30	0.000199	500463	2
60	0.00314	31754	31.49
85	0.022	4540	220.25
125	0.2799	335.87	2977.37
150	1.18	84.71	11805.44

<sup>3</sup>.The **Mean-Time-Between-Failure** (MTBF) in hours and the percent failure rate per 1000 hours (%FR/chr) are computed at a 60% confidence level using the chi square method and the Arrhenius derating model for various junction operating temperatures. For the calculations, a value of 1 eV was used for the activation energy.