CERTIFICATE OF COMPLIANCE

Certificate Number	20180821-E361424
Report Reference	E361424-20130726
Issue Date	2018-AUGUST-21
Issued to:	JINAN E-TECH SEMICONDUCTOR LTD 6 Taixing St. Jiyang County Jinan Shandong 251400 CHINA
This is to certify that representative samples of	COMPONENT - ISOLATED LOOP CIRCUIT PROTECTORS See Addendum
	Have been investigated by UL in accordance with the Standard(s) indicated on this Certificate.
Standard(s) for Safety:	UL 497B, Standard for Protectors for Data Communication and Fire-Alarm Circuits
Additional Information:	See the UL Online Certifications Directory at www.ul.com/database for additional information

Only those products bearing the UL Certification Mark should be considered as being covered by UL's Certification and Follow-Up Service.

The UL Recognized Component Mark generally consists of the manufacturer's identification and catalog number, model number or other product designation as specified under "Marking" for the particular Recognition as published in the appropriate UL Directory. As a supplementary means of identifying products that have been produced under UL's Component Recognition Program, UL's Recognized Component Mark: , may be used in conjunction with the required Recognized Marks. The Recognized Component Mark is required when specified in the UL Directory preceding the recognitions or under "Markings" for the individual recognitions.

Recognized components are incomplete in certain constructional features or restricted in performance capabilities and are intended for use as components of complete equipment submitted for investigation rather than for direct separate installation in the field. The final acceptance of the component is dependent upon its installation and use in complete equipment submitted to UL LLC.

Look for the UL Certification Mark on the product.

Bruce Mahrenholz, Director North American Certification Program

UL LLC

CERTIFICATE OF COMPLIANCE

Certificate Number	20180821-E361424
Report Reference	E361424-20130726
Issue Date	2018-AUGUST-21

This is to certify that representative samples of the product as specified on this certificate were tested according to the current UL requirements.

Transient Voltage Suppression Diodes, SMA6L (600W) Series; Part No. SMA6L followed by 5.0, 6.0, 6.5, 7.0, 7.5, 8.0, 8.5, 9.0, 10, 11, 12, 13, 14, 15, 16, 17, 18, 20, 22, 24, 26, 28, 30, 33, 36, 40, 43, 45, 48, 51, 54, 58, 60, 64, 70, 75, 78, or 85, followed by A.

Transient Voltage Suppression Diodes, SMF (200W) Series; Part No. SMF followed by 5.0, 6.0, 6.5, 7.0, 7.5, 8.0, 8.5, 9.0, 10, 11, 12, 13, 14, 15, 16, 17, 18, 20, 22, 24, 26, 28, 30, 33, 36, 40, 43, 45, 48, 51, or 54, followed by A.

Bruce Mahrenholz, Director North American Certification Program

UL LLC

Models	Section	Report Date
Transient Voltage Suppression Diodes, SMA6L (600W) Series; Part No. SMA6L followed by 5.0, 6.0, 6.5, 7.0, 7.5, 8.0, **8.5**, 9.0, 10, 11, 12, 13, 14, 15, 16, 17, 18, 20, 22, 24, 26, 28, 30, 33, 36, 40, 43, 45, 48, 51, 54, 58, 60, 64, 70, 75, 78, or 85, followed by A.	1	2013-07-26
Transient Voltage Suppression Diodes, SMF (200W) Series; Part No. SMF followed by 5.0, 6.0, 6.5, 7.0, 7.5, 8.0, 8.5, 9.0, 10, 11, 12, 13, 14, 15, 16, 17, 18, 20, 22, 24, 26, 28, 30, 33, 36, 40, 43, 45, 48, 51, or 54, followed by A.		

FOLLOW-UP SERVICE PROCEDURE
(TYPE R)

COMPONENT - ISOLATED LOOP CIRCUIT PROTECTORS
(QVGQ2)

Manufacturer: SEE ADDENDUM FOR MANUFACTURER LOCATIONS

656414 (Party Site)
Applicant: JINAN E-TECH SEMICONDUCTOR LTD
(100593-090) 6 Taixing St.
Jiyang County
Jinan
Shandong 251400 CHINA

656414 (Party Site)
Recognized Co.: SAME AS APPLICANT
(100593-090)

This Follow-Up Service Procedure authorizes the above Manufacturer(s) to use the marking specified by UL LLC, or any authorized licensee of UL LLC, including the UL Contracting Party, only on products when constructed, tested and found to be in compliance with the requirements of this Follow-Up Service Procedure and in accordance with the terms of the applicable service agreement with UL Contracting Party. The UL Contracting Party for Follow-Up Services is listed on addendum to this Follow-Up Service Procedure ("UL Contracting Party"). UL Contracting Party and UL LLC are referred to jointly herein as "UL."

UL further defines responsibilities, duties and requirements for both Manufacturers and UL representatives in the document titled, "UL Mark Surveillance Requirements" that can be located at the following web-site: http://www.ul.com/fus. Manufacturers without Internet access may obtain the current version of this document from their local UL customer service representative or UL field representative. For assistance, or to obtain a paper copy of this document or the Follow-Up Service Terms referenced below, please contact UL's Customer Service at http://www.ul.com/aboutul/locations/, select a location and enter your request, or call the number listed for that location.

The Applicant, the specified Manufacturer(s) and any Recognized Company in this Follow-Up Service Procedure must agree to receive Follow-Up Services from UL Contracting Party. If your applicable service agreement is a Global Services Agreement ("GSA"), the Applicant, the specified Manufacturer(s) and any Recognized Company will be bound to a Service Agreement for Follow-Up Services upon the earliest by any Subscriber of use of the prescribed UL Mark, acceptance of the factory inspection, or payment of the Follow-Up Service fees which will incorporate such GSA, this Follow-Up Service Procedure and the Follow-Up Service Terms which can be accessed by clicking here: http://services.ul.com/fus-service-terms. In all other events, Follow-Up Services will be governed by and incorporate the terms of your applicable service agreement and this Follow-Up Service Procedure.

It is the responsibility of the Recognized Company to make sure that only the products meeting the aforementioned requirements bear the authorized Marks of UL LLC, or any authorized licensee of UL LLC.

This Follow-Up Service Procedure contains information for the use of the above Manufacturer(s) and representatives of UL and is not to be used for any other purpose. It is provided to the Manufacturer with the understanding that it will be returned upon request and is not to be copied in whole or in part.

This Follow-Up Service Procedure, and any subsequent revisions, is the property of UL and is not transferable. This Follow-Up Service Procedure contains confidential information for use only by the above named Manufacturer(s) and representatives of UL and is not to be used for any other purpose. It is provided to the Subscribers with the understanding that it is not to be copied, either wholly or in part unless specifically allowed, and that it will be returned to UL, upon request.

Capitalized terms used but not defined herein have the meanings set forth in the GSA and the applicable Service Terms or any other applicable UL service agreement.

UL shall not incur any obligation or liability for any loss, expense or damages, including incidental, consequential or punitive damages arising out of or in connection with the use or reliance upon this Follow-Up Service Procedure to anyone other than the above Manufacturer(s) as provided in the agreement between UL LLC or an authorized licensee of UL LLC, including UL Contracting Party, and the Manufacturer(s).

UL LLC has signed below solely in its capacity as the accredited entity to indicate that this Follow-Up Service Procedure is in compliance with the accreditation requirements.

Bruce A. Mahrenholz
Director
Conformity Assessment Programs (CPO)
UL LLC

LOCATION

656414 (Party Site)
(100593-090) JINAN E-TECH SEMICONDUCTOR LTD
#6 Taixing St.
Jiyang County
Jinan
Shandong 251400 CHINA
Factory ID: None
UL Contracting Party for above site is: UL GmbH

File E361424
Project 13CA15858

July 26, 2013

REPORT

on

COMPONENT - ISOLATED LOOP CIRCUIT PROTECTORS

JINAN E-TECH SEMICONDUCTOR LTD
JINAN , SHANDONG, CHINA

DESCRIPTION

PRODUCT COVERED:

USR Transient Voltage Suppression Diodes, SMA6L (600W) Series; Part No. SMA6L followed by 5.0, 6.0, 6.5, 7.0, 7.5, 8.0, **8.5**, 9.0, 10, 11, 12, 13, 14, 15, 16, 17, 18, 20, 22, 24, 26, 28, 30, 33, 36, 40, 43, 45, 48, 51, 54, 58, 60, 64, 70, 75, 78, or 85, followed by A.

USR Transient Voltage Suppression Diodes, SMF (200W) Series; Part No. SMF followed by 5.0, 6.0, 6.5, 7.0, 7.5, 8.0, 8.5, 9.0, 10, 11, 12, 13, 14, 15, 16, 17, 18, 20, 22, 24, 26, 28, 30, 33, 36, 40, 43, 45, 48, 51, or 54, followed by A.

TECHNICAL CONSIDERATIONS:

General - The component suppressors described in this Report are intended for telecommunication, data transmission, and general applications where permanent damage could otherwise be caused to integrated circuits or voltage sensitive semiconductors and components by surges deriving from lightning, electrostatic discharges, inductive switching, etc. Under nonsurge conditions they exhibit a high impedance such that normal operation of the equipment is unaffected. In the presence of surges, however, they enter a clamping mode of operation so as to shunt the destructive energy of the surge away from the sensitive equipment.

The SMA6L Series has a DO-221AC physical package. The SMF Series has a SOO-123 physical package.

USR indicates evaluation to UL 497B, The Standard for Protectors for Data Communication and Fire-Alarm Circuits, 4th Edition, dated June 14th, 2004 including revisions through December 17th, 2012.

Installation - The surge suppressor covered by this Report is normally connected in parallel with the equipment it is intended to protect.

Component Servicing – These units should be returned to the manufacturer for replacement.

Ratings – See ILL. 1 and ILL. 2 for ratings of the SMA6L and SMF Series, respectively. The Voltage Breakdown Range is based on the 'Reverse Standoff Voltage, V_s' and 'Breakdown Voltage, $V_{BR\ (max)}$'columns.

Spacings - A minimum spacing of 0.022 in. (0.55 mm) through air and over surface shall be maintained between current carrying parts, such as the leads of the transient voltage surge suppressor.

CONDITIONS OF ACCEPTABILITY:

General - This device was tested under ordinary indoor locations and the acceptability of the combination for use in complete equipment is determined by Underwriters Laboratories Inc. Such conditions as circuit heating and circuit operating voltage should be taken into consideration when these devices are employed in the circuit. This device is intended for use on printed wiring boards which have a dielectric and temperature rating exceeding that of the device employed. The overvoltage testing per UL 60950-1 or the limited short circuit current testing per UL 497 have not been conducted on this device.

Certain components per Series may experience a short circuit condition or voltage breakdown levels outside of their rated range if the components are placed in a circuit that is exposed to lightning events having a peak current of 10A or greater (ie: 10 x 1000 us waveform, 10 A peak). These components include Part Nos. SMA6L36A through SMA6L85A and SMF15A through SMF54A.

CONSTRUCTION DETAILS:

General - The details of the construction are shown in the following photographs, associated descriptive pages, and drawings. The general design, shape and arrangement shall be as shown unless otherwise indicated.

MARKING:

General - Recognized Company name, Component Recognition Mark and Part No. designation shall be on the component or smallest shipping package.

TRANSIENT VOLTAGE SUPPRESSION DIODES,
SMA6L AND SMF SERIES - ILL. 1 & ILL. 2

General – Refer to ILL. 1 for the SMA6L Series and ILL. 2 for the SMF Series.

1. Body - R/C (QMFZ2) plastic and/or epoxy material rated min of V-0.

   Alternate – R/C (QMFZ2), Chang Chun Plastics Co LTD, type EME-E120G.

2. Leads - Constructed of a tin-plated copper material.

Multiple Recognition Correlation Sheet

ML FILE NO. E230531

Issued: 2013-10-15
Revised: 2019-10-17

MULTIPLE RECOGNITION
of
ISOLATED LOOP CIRCUIT PROTECTORS - COMPONENT
(QVGQ2)
for

[352640] LITTELFUSE INC

Basically Recognized for:

[656414] JINAN E-TECH SEMICONDUCTOR LTD

MARKING: Same as that described in Follow-Up Service Procedure and/or Report except for Multiple Listee's name, file number, Trademark / Tradename, Littelfuse, LF or IF, when applicable, and product designation.

LITERATURE: If literature is packaged with the Multiple Listed product(s) it shall be in compliance with the requirements outlined in the appropriate UL Standard(s).

Basically Recognized products covered by Procedure and/or Reports under File No. E361424, Volume 1

Products Covered	Report Date	Basic Applicant's (Supplier's) Product Designation	Multiple Listee's Product Designation
Transient Voltage Suppression Diodes	2013-07-26	SMF5.0A	SMF5.0A [+]
		SMF6.0A	SMF6.0A [+]
		SMF6.5A	SMF6.5A [+]
		SMF7.0A	SMF7.0A [+]
		SMF7.5A	SMF7.5A [+]
		SMF8.0A	SMF8.0A [+]
		SMF8.5A	SMF8.5A [+]
		SMF9.0A	SMF9.0A [+]
		SMF10A	SMF10A [+]
		SMF11A	SMF11A [+]
		SMF12A	SMF12A [+]
		SMF13A	SMF13A [+]
		SMF14A	SMF14A [+]
		SMF15A	SMF15A [+]
		SMF16A	SMF16A [+]
		SMF17A	SMF17A [+]
		SMF18A	SMF18A [+]

[+] May be followed by suffixes to denote packaging color code and customer requirements.

Multiple Recognition Correlation Sheet

Issued: 2013-10-15
Revised: 2019-10-17

M/L [352640] LITTELFUSE INC

AP [656414] JINAN E-TECH SEMICONDUCTOR LTD (NBK)

Products Covered	Report Date	Basic Applicant's (Supplier's) Product Designation	Multiple Listee's Product Designation
Transient Voltage Suppression Diodes	2013-07-26	**SMF20A**	**SMF20A [+]**
		SMF22A	**SMF22A [+]**
		SMF24A	SMF24A [+]
		SMF26A	SMF26A [+]
		SMF28A	SMF28A [+]
		SMF30A	SMF30A [+]
		SMF33A	SMF33A [+]
		SMF36A	SMF36A [+]
		SMF40A	SMF40A [+]
		SMF43A	SMF43A [+]
		SMF45A	SMF45A [+]
		SMF48A	SMF48A [+]
		SMF51A	SMF51A [+]
		SMF54A	SMF54A [+]
		SMA6L5.0A	SMA6L5.0A [+]
		SMA6L6.0A	SMA6L6.0A [+]
		SMA6L6.5A	SMA6L6.5A [+]
		SMA6L7.0A	SMA6L7.0A [+]
		SMA6L7.5A	SMA6L7.5A [+]
		SMA6L8.0A	SMA6L8.0A [+]
		SMA6L9.0A	SMA6L9.0A [+]
		SMA6L10A	SMA6L10A [+]
		SMA6L11A	SMA6L11A [+]
		SMA6L12A	SMA6L12A [+]
		SMA6L13A	SMA6L13A [+]
		SMA6L14A	SMA6L14A [+]
		SMA6L15A	SMA6L15A [+]
		SMA6L16A	SMA6L16A [+]
		SMA6L17A	SMA6L17A [+]
		SMA6L18A	SMA6L18A [+]

[+] May be followed by suffixes to denote packaging color code and customer requirements.

Multiple Recognition Correlation Sheet

Issued: 2013-10-15
Revised: 2019-10-17

M/L [352640] LITTELFUSE INC

AP [656414] JINAN E-TECH SEMICONDUCTOR LTD (NBK)

Products Covered	Report Date	Basic Applicant's (Supplier's) Product Designation	Multiple Listee's Product Designation
Transient Voltage Suppression Diodes	2013-07-26	SMA6L20A	SMA6L20A [+]
		SMA6L22A	SMA6L22A [+]
		SMA6L24A	SMA6L24A [+]
		SMA6L26A	SMA6L26A [+]
		SMA6L28A	SMA6L28A [+]
		SMA6L30A	SMA6L30A [+]
		SMA6L33A	SMA6L33A [+]
		SMA6L36A	SMA6L36A [+]
		SMA6L40A	SMA6L40A [+]
		SMA6L43A	SMA6L43A [+]
		SMA6L45A	SMA6L45A [+]
		SMA6L48A	SMA6L48A [+]
		SMA6L51A	SMA6L51A [+]
		SMA6L54A	SMA6L54A [+]
		SMA6L58A	SMA6L58A [+]
		SMA6L60A	SMA6L60A [+]
		SMA6L64A	SMA6L64A [+]
		SMA6L70A	SMA6L70A [+]
		SMA6L75A	SMA6L75A [+]
		SMA6L78A	SMA6L78A [+]
		SMA6L85A	SMA6L85A [+]

[+] May be followed by suffixes to denote packaging color code and customer requirements.

Multiple Recognition Correlation Sheet

Issued: 2013-10-15
Revised: 2019-10-17

M/L [352640] LITTELFUSE INC

AP [656414] JINAN E-TECH SEMICONDUCTOR LTD (NBK)

Products Covered	Report Date	Basic Applicant's (Supplier's) Product Designation	Multiple Listee's Product Designation
Transient Voltage Suppression Diodes	2013-07-26	SMA6L5.0A	TPSMA6L5.0A[+]
		SMA6L6.0A	TPSMA6L6.0A[+]
		SMA6L6.5A	TPSMA6L6.5A[+]
		SMA6L7.0A	TPSMA6L7.0A[+]
		SMA6L7.5A	TPSMA6L7.5A[+]
		SMA6L8.0A	TPSMA6L8.0A[+]
		SMA6L9.0A	TPSMA6L9.0A[+]
		SMA6L10A	TPSMA6L10A[+]
		SMA6L11A	TPSMA6L11A[+]
		SMA6L12A	TPSMA6L12A[+]
		SMA6L13A	TPSMA6L13A[+]
		SMA6L14A	TPSMA6L14A[+]
		SMA6L15A	TPSMA6L15A[+]
		SMA6L16A	TPSMA6L16A[+]
		SMA6L17A	TPSMA6L17A[+]
		SMA6L18A	TPSMA6L18A[+]
		SMA6L20A	TPSMA6L20A[+]
		SMA6L22A	TPSMA6L22A[+]
		SMA6L24A	TPSMA6L24A[+]
		SMA6L26A	TPSMA6L26A[+]
		SMA6L28A	TPSMA6L28A[+]
		SMA6L30A	TPSMA6L30A[+]
		SMA6L33A	TPSMA6L33A[+]
		SMA6L36A	TPSMA6L36A[+]
		SMA6L40A	TPSMA6L40A[+]
		SMA6L43A	TPSMA6L43A[+]
		SMA6L45A	TPSMA6L45A[+]
		SMA6L48A	TPSMA6L48A[+]
		SMA6L51A	TPSMA6L51A[+]

[+] May be followed by suffixes to denote packaging color code and customer requirements.

Multiple Recognition Correlation Sheet

Issued: 2013-10-15
Revised: 2019-10-17

M/L [352640] LITTELFUSE INC

AP [656414] JINAN E-TECH SEMICONDUCTOR LTD (NBK)

Products Covered	Report Date	Basic Applicant's (Supplier's) Product Designation	Multiple Listee's Product Designation
Transient Voltage Suppression Diodes	2013-07-26	SMA6L54A	TPSMA6L54A[+]
		SMA6L58A	TPSMA6L58A[+]
		SMA6L60A	TPSMA6L60A[+]
		SMA6L64A	TPSMA6L64A[+]
		SMA6L70A	TPSMA6L70A[+]
		SMA6L75A	TPSMA6L75A[+]
		SMA6L78A	TPSMA6L78A[+]
		SMA6L85A	TPSMA6L85A[+]
Transient voltage suppression diodes (600W)	2013-07-26	SMA6L8.5A	SMA6L8.5A [+]
		SMA6L8.5A	TPSMA8.5A [+]

[+] May be followed by suffixes to denote packaging color code and customer requirements.