CERTIFICATE OF COMPLIANCE

Certificate Number	UL-US-2155900-1
Report Reference	E136766-20211202
Date	20-Jan-2022
Issued to:	VISHAY GENERAL SEMICONDUCTOR L L C 233 Pao Chiao Rd Hsin Tien Taipei 231 Taiwan
This is to certify that representative samples of	QVGQ2 - Isolated Loop Circuit Protectors - Component See Addendum Page for Product Designation(s).
	Have been investigated by UL in accordance with the component requirements in the Standard(s) indicated on this Certificate. UL Recognized components are incomplete in certain constructional features or restricted in performance capabilities and are intended for installation in complete equipment submitted for investigation to UL LLC.
Standard(s) for Safety:	UL 497B, 4th Ed., Issue Date: 2004-06-14, Revision Date: 2017-02-10
Additional Information:	See the UL Online Certifications Directory at https://iq.ulprospector.com for additional information

This *Certificate of Compliance* does not provide authorization to apply the UL Recognized Component Mark. Only the UL Follow-Up Services Procedure provides authorization to apply the UL Mark.

Only those products bearing the UL Recognized Component Mark should be considered as being UL Certified and covered under UL's Follow-Up Services.

Look for the UL Recognized Component Mark on the product.

Bruce Mahrenholz, Director North American Certification Program

UL LLC

CERTIFICATE OF COMPLIANCE

Certificate Number UL-US-2155900-1
Report Reference E136766-20211202
Date 20-Jan-2022

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

Model	Category Description
Surface Mount TransZorb, SMC3K, followed by 10, 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, 85, 90, 100, 110, or 120, followed by CA, may be followed by additional alphanumeric characters to represent noncritical details such as environmental code or packaging.	Transient Voltage Suppressors
Surface Mount TransZorb, SMC5K, followed by 10, 12, 13, 14, 15, 16, 17, 18, 20, 22, 24, 26, 28, 30, 33, 36, 40, 43, 45, 48, 51, 54, 58, 60,41, 70, 75, 78, or 85, followed by A or CA, may be followed by additional alphanumeric characters to represent noncritical details such as environmental code or packaging.	Transient Voltage Suppressors
Surface Mount XClampR, XMC7K, followed by 24, followed by CA, may be followed by additional alphanumeric characters to represent noncritical details such as environmental code or packaging.	Transient Voltage Suppressors

Bruce Mahrenholz, Director North American Certification Program

UL LLC

FOLLOW-UP SERVICE PROCEDURE
(TYPE R)

COMPONENT - ISOLATED LOOP CIRCUIT PROTECTORS
(QVGQ2)

Manufacturer: SEE ADDENDUM FOR MANUFACTURER LOCATIONS

616050 (Party Site)
Applicant: VISHAY GENERAL SEMICONDUCTOR L L C
(134196-001) 233 Pao Chiao Rd
Hsin Tien
Taipei
231 TAIWAN

668406 (Party Site)
Recognized Co.: VISHAY GENERAL SEMICONDUCTOR
(134202-001) 233 Pao Chiao Rd
Tsin Tien
Taipei
23145 TAIWAN

Use of the Mark

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 in the addendum to this Follow-Up Service Procedure ("UL Contracting Party"). UL Contracting Party and UL LLC are referred to jointly herein as "UL."

It is the responsibility of the Applicant, Manufacturer(s), and 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.

Additional Responsibilities

Additional responsibilities, duties and requirements for the Applicant and Manufacturers are defined under Additional Resources at the following web-site: #http://www.ul.com/fus#. Manufacturers without Internet access may obtain the current version of these documents from their local UL customer service representative or UL field representative. For assistance, or to obtain a paper copy of these documents 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.

Acceptance of Follow-Up Services

The Applicant and 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 a) use of the prescribed UL Mark, b) acceptance of the factory inspection, or c) payment of the Follow-Up Service fees. The Service Agreement incorporates such GSA, this Follow-Up Service Procedure and the Follow-Up Service Terms which can be accessed by clicking the following link: #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.

Use and Ownership of the Follow-Up Service Procedure

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 Applicant, the specified 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.

Definition of Terms

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.

No Third Party Liability

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).

Certification Body

UL LLC has signed below solely in its capacity as the certification body to indicate that this Follow-Up Service Procedure fulfills the requirements for certification documentation issued by the certification body.

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: E-Tech
UL Contracting Party for above site is: UL GmbH

638905 (Party Site)
(179927-001) VISHAY GENERAL SEMICONDUCTOR CHINA CO LTD
Taifeng Industrial Park
88 6Th Ave
Teda
Tianjin
300457 CHINA
Factory ID: A
UL Contracting Party for above site is: UL GmbH

549518 (Party Site)
(333662-001) VISHAY SEMICONDUCTOR SHANGHAI CO LTD
501 JIANG CHANG XI RD
SHANGHAI
200436 CHINA
Factory ID: V
UL Contracting Party for above site is: UL GmbH

2377748 (Party Site)
() Vishay General Semiconductor Taiwan Ltd Nanzi Branch
40 Zhongyang Rd
Nanzi District
Kaohsiung
811 TAIWAN
Factory ID: HN
UL Contracting Party for above site is: UL GmbH

Models	Section	Report Date
Transient voltage surge suppressors, Models P6KE Series Transient voltage surge suppressors, Models 1.5KE Series Transient voltage surge suppressors, low capacitance type, Models LCE Series **(retained for reference only)** Transient voltage surge suppressors, surface mount types, Models SMB Series and SMC Series Transient voltage surge suppressors, surface mount types, Models SMBJ Series Transient voltage suppressors, surface mount types, Models P4SMA Transient voltage suppressors, surface mount types, Models SMAJxxA (or CA) Transient voltage suppressors, surface mount types, Models SMAJxxD (or CD)	1	1991-03-01
*Surface Mount TransZorb, Transient Voltage Suppressors, SMC3K Series Surface Mount TransZorb, Transient Voltage Suppressors, SMC5K Series Surface Mount XClampR, Transient Voltage Suppressors, **XMC7K** Series	2	2021-12-02

File E136766
Project SR 5534030

December 2, 2021

REPORT

on

COMPONENT - ISOLATED LOOP CIRCUIT PROTECTORS

Vishay General Semiconductor L L C
Taipei, TAIWAN

DESCRIPTION

PRODUCT COVERED:

USR - Surface Mount TransZorb, Transient Voltage Suppressors, SMC3K Series; Part No. SMC3K, followed by 10, 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, 85, 90, 100, 110, or 120, followed by **CA**, **may be followed by additional alphanumeric characters to represent noncritical details such as environmental code or packaging.**

USR - Surface Mount TransZorb, Transient Voltage Suppressors, SMC5K Series; Part No. SMC5K followed by 10, 12, 13, 14, 15, 16, 17, 18, 20, 22, 24, 26, 28, 30, 33, 36, 40, 43, 45, 48, 51, 54, 58, 60,41, 70, 75, 78, or 85, followed by A or **CA, may be followed by additional alphanumeric characters to represent noncritical details such as environmental code or packaging.**

* USR - Surface Mount XClampR, Transient Voltage Suppressors, **XMC7K** Series; Part No. SMC7K24CA, **may be followed by additional alphanumeric characters to represent noncritical details such as environmental code or packaging.**

GENERAL:

General - The transient voltage 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.

TECHNICAL CONSIDERATIONS:

USR indicates evaluation using US requirements as noted in the Test Record.

CONDITIONS OF ACCEPTABILITY:

These devices were 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. These devices are intended for use on printed wiring boards which have a dielectric and temperature rating exceeding that of the device employed. These components have not been evaluated for the Overvoltage Test per UL 1459/UL 60950-1 or the Limited Short-Circuit Test per UL 497.

Installation - The surge suppressors covered by this Report are normally connected in parallel with the equipment they are intended to protect. 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. They are intended to be installed in accordance with the appliance requirements of the National Electrical Code and the local authorities having jurisdiction.

RATINGS:

The ratings of each series can be found in the following Illustrations. The lower limit is defined by the 'Stand-off Voltage' column and the upper limit is defined by the 'Maximum Clamping Voltage at I_{PPM} V_C(V)' column

Series	Illustration Reference	Voltage Breakdown Range, 100 V/s		Impulse rating, 100 V/µs
		Lower Limit	Upper Limit	
SMC3K	ILL. 1	Stand-Off Voltage V_{WM} (V)	Breakdown Voltage V_{BR} (V) at I_T - MAX	<1000
SMC5K	ILL. 2, ILL. 2A	Stand-Off Voltage V_{WM} (V)	Breakdown Voltage V_{BR} (V) at I_T - MAX	<1000
***XMC7K**	ILL. 3	Stand-Off Voltage V_{WM} (V)	Breakdown Voltage V_{BR} (V) at I_T - MAX	<1000

CONSTRUCTION DETAILS:

General - The details of 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.

Spacings - A minimum spacing of 1/4 in. through air and over surface shall be maintained between uninsulated live metal parts of opposite polarity.

MARKING:

Recognized Company name or logo, Component Recognition Mark and Part No. on product or smallest shipping package.

Transient Voltage Suppressors, SMC3K Series – ILL. 1

General – See ILL. 1 for details on the SMC3K Series, including dimensinos and ratings.

1. **Body - R/C (QMFZ2) plastic or epoxy material, rated V-0 minimum at thickness employed.**

2. **Leads - Constructed of plated copper alloy.**

Transient Voltage Suppressors, SMC5K Series – ILL. 2

General – See ILL. 2 and ILL. 2A for details on the SMC5K Series, including dimensions and ratings.

1. **Body - R/C (QMFZ2) plastic or epoxy material, rated V-0 minimum at thickness employed.**

2. **Leads - Constructed of plated copper alloy.**

Transient Voltage Suppressors, XMC7K Series – ILL. 3

General – See ILL. 3 for details on the XMC7K Series, including dimensions and ratings.

1. **Body - R/C (QMFZ2) plastic or epoxy material, rated V-0 minimum at thickness employed.**

2. **Leads - Constructed of plated copper alloy.**

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