

CERTIFICATE OF COMPLIANCE

Certificate Number 20190726-E135493
Report Reference E135493-A6002-UL
Issue Date 2019-JULY-26

Issued to: VICOR CORP
25 FRONTAGE RD
ANDOVER MA 01810-5424

**This certificate confirms that
representative samples of**

COMPONENT - POWER SUPPLIES FOR USE WITH
AUDIO/VIDEO, INFORMATION AND COMMUNICATION
TECHNOLOGY EQUIPMENT

See AddendumPage

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 62368-1, (Audio/video, information and communication technology equipment Part 1: Safety requirements)
CAN/CSA C22.2 No. 62368-1-14, (Audio/video, information and communication technology equipment Part 1: Safety requirements)


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

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

DC-DC Converter
Isolated SM-ChiP VTM , Voltage Transformation Module Series
Isolated SM-ChiP BCM, Bus Converter Module Series

See Miscellaneous Enclosure for model details.



Bruce Mahrenholz, Director North American Certification Program

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UL TEST REPORT AND PROCEDURE

Standard:	UL 62368-1, 2nd Ed, 2014-12-01 (Audio/video, information and communication technology equipment Part 1: Safety requirements) CAN/CSA C22.2 No. 62368-1-14, 2nd Ed (Audio/video, information and communication technology equipment Part 1: Safety requirements)
Certification Type:	Component Recognition
CCN:	QQJQ2, QQJQ8 (Power Supplies for Use in Audio/Video, Information and Communication Technology Equipment)
Complementary CCN:	N/A
Product:	DC-DC Converter
Model:	Isolated SM-ChiP VTM , Voltage Transformation Module Series Isolated SM-ChiP BCM, Bus Converter Module Series See Miscellaneous Enclosure for model details.
Rating:	Input Voltage: 60Vdc Max Output Voltage: 15Vdc Max Output current: 25A Max
Applicant Name and Address:	VICOR CORP 25 FRONTAGE RD ANDOVER MA 01810-5424 UNITED STATES

This is to certify that representative samples of the products covered by this Test Report have been investigated in accordance with the above referenced Standards. The products have been found to comply with the requirements covering the category and the products are judged to be eligible for Follow-Up Service under the indicated Test Procedure. The manufacturer is authorized to use the UL Mark on such products which comply with this Test Report and any other applicable requirements of UL LLC ('UL') in accordance with the Follow-Up Service Agreement. Only those products which properly bear the UL Mark are considered as being covered by UL's Follow-Up Service under the indicated Test Procedure.

The applicant is authorized to reproduce the referenced Test Report provided it is reproduced in its entirety.

UL authorizes the applicant to reproduce the latest pages of the referenced Test Report consisting of the first page of the Specific Technical Criteria through to the end of the Conditions of Acceptability.

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Prepared By:

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Reviewed By:

Lesley Green / Lead Project
Engineer

Supporting Documentation

The following documents located at the beginning of this Procedure supplement the requirements of this Test Report:

- A. Authorization - The Authorization page may include additional Factory Identification Code markings.
- B. Generic Inspection Instructions -
 - i. Part AC details important information which may be applicable to products covered by this Procedure. Products described in this Test Report must comply with any applicable items listed unless otherwise stated in the body of this Test Report.
 - ii. Part AE details any requirements which may be applicable to all products covered by this Procedure. Products described in this Test Report must comply with any applicable items listed unless otherwise stated in the body of each Test Report.
 - iii. Part AF details the requirements for the UL Certification Mark which is not controlled by the technical standard used to investigate these products. Products are permitted to bear only the Certification Mark(s) corresponding to the countries for which it is certified, as indicated in each Test Report.

Product Description

The SM-ChiP VTM/BCM series of isolating surface mount DC-DC converters are designed for building in.

Model Differences

See Miscellaneous Enclosure for model details

Test Item Particulars

Classification of use by	Ordinary person
Supply Connection	External Circuit - not Mains connected
Supply % Tolerance	None
Supply Connection – Type	Not directly connected to the mains
Considered current rating of protective device as part of building or equipment installation	15 A; equipment
Equipment mobility	for building-in
Over voltage category (OVC)	other: No direct connection to mains
Class of equipment	Not classified
Access location	For building in
Pollution degree (PD)	PD 2
Manufacturer’s specified maximum operating ambient	40
IP protection class	IPX0
Power Systems	N/A
Altitude during operation (m)	up to 5000 m
Altitude of test laboratory (m)	2000 m or less
Mass of equipment (kg)	0.00356

Technical Considerations

- The product was submitted and evaluated for use at the maximum ambient temperature (T_{ma}) permitted by the manufacturer's specification of : 40°C
- The product is intended for use on the following power systems : No direct connection
- Considered current rating of protective device as part of the building installation (A) : 15
- Mains supply tolerance (%) or absolute mains supply values : No direct connection
- The equipment disconnect device is considered to be : N/A

Engineering Conditions of Acceptability

For use only in or with complete equipment where the acceptability of the combination is determined by UL LLC. When installed in an end-product, consideration must be given to the following:

- The following product-line tests are conducted for this product : Electric Strength
- The end-product Electric Strength Test is to be based upon a maximum working voltage of : Input to Output: 60Vdc
- The following output circuits are at ES1 energy levels : External Terminals are ES1
- The following output circuits are at ES2 energy levels : Internal energy levels ES2
- The following output circuits are at PS3 energy levels : All Circuits
- The investigated Pollution Degree is : 2
- The following end-product enclosures are required : Electrical, Fire, Mechanical
- The power supply was evaluated to be used at altitudes up to : "5,000 m"
- 1.23 Maximum Case Temperature is 100°C
- 1.24 Component Fault testing was performed with Littelfuse451 series fuse rated 15A
- 1.25 Maximum Transient Voltage is 800V
- 1.26 SM-ChiP to be mounted on minimum V-1 rated PCB

Additional Information

Special consideration - The following items are consideration that were used when evaluating these products:

- 1) VTM and BCM series are designed for building in.
- 2) The case temperature of both VTM and BCM series is 100C
- 3) VTM and BCM series provide Basic Insulation.

Marking label provided is representative of all models.

Additional Standards

The product fulfills the requirements of: CSA CAN/CSA-C22.2 NO. 62368-1 2nd Ed, Issued December 1, 2014

VICOR SM-ChiP VTM and BCM Model Matrix: AAAbbbbScddeewwxzz

Examples: VTM2308S60Z0825TZ0 or BCM2308S60E0825T00

AAA = VTM

Product Function	
VTM	Voltage Transformation Module
BCM	Bus Converter Module

bbbb = 2308

Package Size Designator (mm)	
2308	23 x 08

S = Constant

Lead Designator	
S	Surface Mount

cc = 60

Input Voltage designator, Max (range)			
VTM		BCM	
60	60 Vdc (26-60)	60	60Vdc (36-60)

d = Z

Voltage Range Ratio	
VTM	Z
BCM	E

ee = 08

Output Voltage Designator: Nominal (range)	
08	5 Vdc (4.5-7.5)
15	12 Vdc (9.0-15.0)

ww = 25

Output Current Designator	
13	12.5 A
25	25.0 A

x = T

Product Grade (max internal temperature)	
C	0.0 to 125°C
T	-40 to 125°C
M	-55 to 125°C

zz = Z0

Options, any alphanumeric combination, non-inclusive list Z = Constant for VTM and designates isolation. VTM customer special model number zz = 00 also designates isolation.			
BCM		VTM	
00	Analog Ctrl	Z0	Analog Ctrl
01	PMBus Ctrl	Z1	PMBus Ctrl
0R	Reversable Analog Ctrl	ZR	Reversable Analog Ctrl
0P	Reversable PMBus Ctrl	ZP	Reversable PMBus Ctrl
		00	Customer Special