

IEC SYSTEM FOR MUTUAL RECOGNITION OF TEST CERTIFICATES FOR ELECTRICAL EQUIPMENT  
(IECEE) CB SCHEME

## CB TEST CERTIFICATE

Product	Information Technology Equipment DC-DC Converter
Name and address of the applicant	<b>Vicor Corporation</b> 25 Frontage Road Andover MA 01810 USA
Name and address of the manufacturer	Vicor Corporation 25 Frontage Road, Andover MA 01810, USA
Name and address of the factory	Vicor Inc. 400 Federal Street, Andover MA 01810, USA
Ratings and principal characteristics	Rated Input Voltage: 40 VDC (26-55) Rated Output Voltage: 1.0 V DC Rated Output Current: 150 A max Protection Class: III Degree of Protection: IPX0
Trade mark (if any)	V.I CHIP FACTORIZED POWER
Customer's Testing Facility (CTF) Stage used	CTF STAGE 3
Model/type Ref.	<b>High Current VTM / VIV0005TFJ</b> (see page 2- 5 for additional model and rating information)
Additional information (if necessary)	Certificate DE 3 - 503296 issued 2019-05-16 is replaced by this version due to non-technical changes
A sample of the product was tested and found to be in conformity with	IEC 60950-1:2005 IEC 60950-1:2005/AMD1:2009 IEC 60950-1:2005/AMD2:2013
as shown in the Test Report Ref. No. which forms part of this certificate	72109789A-000

This CB Test Certificate is issued by the National Certification Body

CB 021433 0588 Rev. 01

Date, 2019-08-01



( William J. Stinson )

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TÜV SÜD Product Service GmbH • Certification Body • Ridlerstraße 65 • 80339 Munich • Germany



Product Service

**VICHIP High Current VTM1 series of DC-DC Converters Model Matrix: VIV00wwxFy**

V1 =	Constant, VI Chip
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V =	VTM (Voltage Transformation Module)
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00 =	Constant
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ww = defines electrical ratings			
Model	Vin Nom (range)	Vout (Nom)	Iout
05	40 (26-55)	1.0	130A / 150A*
07	48 (26-55)	1.5	115A / 130A*
* Special cooling required. See license conditions.			

x =	Product Grade	Temp Range
T	Telecom	-40 to 125 C

F =	Constant, Full VIC Package Size
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y =	Output Lead Designator
J	J-Lead
T	Through-Hole

**Customer Special Model Numbers**

Customer Special Model Numbers	Equivalent Standard Model Number
VIZ0026, VIZ0026x	VIV0005TFJ
VIZ0027, VIZ0027x	VIV0007TFJ
VIZ0037, VIB0037x	VIV0005TFJ
VIZ0038, VIZ0038x	VIV0007TFJ
VIZ0056, VIZ0056x	VIV0005TFJ
VIZ0057, VIZ0057x	VIV0007TFJ
VIZ0059, VIZ0059x	VIV0005TFJ
VIZ0060, VIZ0060x	VIV0007TFJ
VIZ0063, VIZ0063x	VIV0005TFJ
VIZ0064, VIZ0064x	VIV0007TFJ
x = revision, any letter A through Z, non-safety related	

**Example part numbers:**

VIV0005TFJ, VIV0007TFJ, VIZ0026, VIZ0027, VIZ0037, VIZ0038, VIZ0056, VIZ0057, VIZ0059, VIZ0060, VIZ0063, VIZ0064

VICHIP High Current VTM2 series of DC-DC Converters Model Matrix: VTMbbbcddeffxzz

Example: VTM48EF015T115A00

VTM = Constant

VTM series Voltage Transformation Module	
VTM	Standard version
MVTM	MIL-COTS version

bbb = 48E

Input Voltage	Nominal (range)
48E	48 Vdc (26-55)

c = F

Package Size / Lead Designator	
F	Full VI Chip J-Lead
T	Full VI Chip Through-hole

ddd = 015

Output Voltage Designator			
010	1.0 Vdc	013	1.3 Vdc
011	1.1 Vdc	014	1.4 Vdc
012	1.2 Vdc	015	1.5 Vdc

e = T

Product Grade	
T	-40 to 125C
M	-55 to 125C

fff = 115

Output Current Designator	
115	115A / 130A*
130	130A / 150A*

\* Special cooling required. See license conditions.

x = A

Revision (non-safety related)	
x	Any alphanumeric character

zz = 00

Customer reference (non-safety related)	
zz	Any alphanumeric character



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VICHIP High Current VTM3 series of DC-DC Converters Model Matix: VTMbbbcdddefffxyz

Example: VTM48KP020T088AA1

VTM = Constant

VTM Family (Voltage Transformation Module)	
VTM	Standard version
MVTM	Mil-COTS version

bbb = 48K

Input Voltage	Nominal (range) (Type)
48R	48 Vdc (0-52)
48K	48 Vdc (0-55)
48M	48 Vdc (0-60)
48L	48 Vdc (26-60)

c = P

Package Type and Lead designator	
P	Panel Mold Through-hole
N / L	No Leads / Lead-less

ddd = 020

Output Voltage Designator			
010	0.88 Vdc (0.40-1.25)	015	1.5 Vdc (0.71-1.64)
012	1.2 Vdc (0.65-1.5)	020	1.8 Vdc (1.0-2.3)

e = T

Product Grade					
T	-40 to 125°C	C	0 to 100°C	M	-55 to 125°C

fff = 088

Output Current Designator (Any 3 digit number up to 135, non-exclusive list of examples below)					
050	50 A	095	95 A	107	107A*
076	76 A	100	100 A	130	130A
088	88 A	105	105 A	135	135A
*See attached de-rating curve					

x = A

Revision (non-safety related)	
x	Any alphanumeric character

y = A

Package Size					
A	1323 / 2313	B	0623 / 2306	G	0823 / 2308

z = 0

Functionality (non-safety related), any alphanumeric character non-inclusive list of examples	
0	No communication
1	Communication enabled
R	Reversible

Customer Special Part Number:

VTM2313T55Z02A3T0z is equivalent to VTM48KP020T130AAz where z = functionality (non-safety related)

**Special Considerations** – The following items are considerations that were used when evaluating these products.

The VICHIP High Current VTM series of DC-DC converters is designed for building-in.

**Conditions of Acceptability** – When installed in the end use equipment, the following are among considerations to be made:

1. **Input Voltage:** Both a nominal input voltage and an input voltage range are specified. Operation over the entire range was evaluated
2. **Max Temperature:** See de-rating curve for the 1323 VTM3 rated 107A. All other VTM3s are rated full current at 100C case. For VTM1 and VTM2, keep the maximum semiconductor junction temperature of the VI Chip at 125°C or less. There are 3 methods to achieve this condition:

**Method 1: Monitor Case Temp.**

Keep  $T_{casemax}$  100°C or below.  $T_{casemax}$  is the maximum case temperature of the VI Chip

**Method 2: Calculate**

Keep  $T_{casemax}$  equal to or below:

$125^{\circ}\text{C} - (P_{dissmax} \times 1.5)$  under all conditions where  $P_{dissmax} = P_{Input\_max} - P_{Output\_max}$ .

$P_{dissmax}$  is the amount of power in Watts dissipated within the device. The thermal resistance of the VI Chip from the internal semiconductor junction to the case is 1.5 °C/W

**Method 3: Cold plate application**

Keep  $T_{casemax}$  50°C or below.  $T_{casemax}$  is the maximum case temperature of the VI Chip

3. The High Current VTM model numbers VIZ0026x, VIZ0027x, VIZ0056x, VIZ0057x, VIZ0063x, VIZ0064x and VTM3 converters provide Functional Insulation from Input to Output. The output can be considered SELV if the input is SELV.
4. The High Current VTM model numbers VIZ0037x, VIZ0038x, VIZ0059x, VIZ0060x, VIV0005xFy, VIV0007xFy and VTM2 models provide Basic Insulation from Input to Output with 1500 Vdc of dielectric withstand.
5. All VTM1 and VTM2 models provide Basic Insulation and 2250 Vdc of dielectric withstand from Input/Output to the Case. VTM3s do not provide any dielectric withstand capability.
6. **Fusing Requirements:** The High Current VTM1 and VTM2 series of DC-DC converters were evaluated with Littelfuse Nano<sup>2</sup> SMD fuse rated 10A / 125Vdc. The fuse may be replaced by an external current limiting circuit to be evaluated in the end product. VTM3 overcurrent protection to be evaluated in the end product. The VIZ0026x, VIZ0027x, VIZ0056x, VIZ0057x, VIZ0063x, and VIZ0064x, include a current limiting circuit on the interposer assembly, external to the VI Chip, and so it does not require any external fusing.
7. The converters must be mounted on minimum V-1 rated PCB

