

# CERTIFICATE OF COMPLIANCE

**Certificate Number** 20130902-E135493  
**Report Reference** E135493-A20-UL  
**Issue Date** 2013-SEPTEMBER-02

**Issued to:** VICOR CORP  
25 FRONTAGE RD, ANDOVER MA 01810.

**This is to certify that  
representative samples of**



COMPONENT - POWER SUPPLIES, INFORMATION TECHNOLOGY  
EQUIPMENT INCLUDING ELECTRICAL BUSINESS EQUIPMENT  
DC/DC Converter - VI Chip High Voltage Panel Mold BCM,  
BCMbbbcdddeffxyz

Have been investigated by UL in accordance with the  
Standard(s) indicated on this Certificate.

**Standard(s) for Safety:** UL 60950-1, Information Technology Equipment - Safety -  
Part 1: General Requirements  
CSA C22.2 No. 60950-1-07, Information Technology  
Equipment - Safety - Part 1: General Requirements

**Additional Information:** See the UL Online Certifications Directory at  
[www.ul.com/database](http://www.ul.com/database) for additional information

Only those products bearing the UL Recognized Component Marks for the U.S. and Canada should be considered as being covered by UL's Recognition and Follow-Up Service and meeting the appropriate U.S. and Canadian requirements.

The UL Recognized Component Mark for the U.S. 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. The UL Recognized Component Mark for Canada consists of the UL Recognized Mark for Canada:  and 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.

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 Recognized Component Mark on the product.



William R. Carney, Director, North American Certification Programs

UL LLC

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## UL TEST REPORT AND PROCEDURE

<b>Standard:</b>	UL 60950-1, 2nd Edition, 2014-10-14 (Information Technology Equipment - Safety - Part 1: General Requirements) CAN/CSA C22.2 No. 60950-1-07, 2nd Edition, 2014-10 (Information Technology Equipment - Safety - Part 1: General Requirements)
<b>Certification Type:</b>	Component Recognition
<b>CCN:</b>	QQGQ2, QQGQ8 (Power Supplies for Information Technology Equipment Including Electrical Business Equipment)
<b>Product:</b>	DC/DC Converter
<b>Model:</b>	VI Chip High Voltage Panel Mold BCM  BCMbbbcddeffxyz
<b>Rating:</b>	See Miscellaneous Enclosure for model matrix Input: 380Vdc Output Voltage: 47.5Vdc max Output Power 1200W max  See Miscellaneous Enclosure for model details.
<b>Applicant Name and Address:</b>	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.

Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL.

Prepared by: Daniel Beckman

Reviewed by: Todd Bonfanti

### 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 VI Chip High Voltage Panel Mold BCMs are a family of isolated DC-DC converters that are designed for building-in. The output voltage is a fixed turn ratio of the input. The output is considered SELV.

### Model Differences

See Miscellaneous Enclosure for model nomenclature and derating curves.

### Technical Considerations

- Equipment mobility : for building-in
- Connection to the mains : not directly connected to the mains
- Operating condition : continuous
- Access location : building-in
- Over voltage category (OVC) : OVC II
- Mains supply tolerance (%) or absolute mains supply values : 200-410Vdc
- Tested for IT power systems : No
- IT testing, phase-phase voltage (V) : -
- Class of equipment : Class II (double insulated)
- Considered current rating of protective device as part of the building installation (A) : 10A
- Pollution degree (PD) : PD 2
- IP protection class : IP X0
- Altitude of operation (m) : Up to 5000 meters
- Altitude of test laboratory (m) : less than 2000 meters
- Mass of equipment (kg) : 0.38kg
- The product was submitted and evaluated for use at the maximum ambient temperature (T<sub>ma</sub>) permitted by the manufacturer's specification of: derating curve. See Misc Enclosure for details.

**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:

- See de-rating curves for maximum output power, case temperature, and input voltage.
- The output is separated from the input by reinforced insulation.
- The output is considered to be SELV.
- The BCMS were evaluated with a Bussmann 5A PC-Tron and a Littelfuse 487 series rated 8 A and a Littelfuse 505 rated 10A fuse.
- Outputs above 240W are considered to be at a hazardous energy level.
- The following Production-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: Primary-SELV: \_\_\_ Vrms, \_\_\_ Vpk
- The power supply terminals and/or connectors are: Not investigated for field wiring
- The investigated Pollution Degree is: 2
- The following end-product enclosures are required: Mechanical, Fire, Electrical

**Additional Information**

N/A

**Markings and instructions**

Clause Title	Marking or Instruction Details
1.7.1 Power rating - Company identification	Listee's or Recognized company's name, Trade Name, Trademark or File Number
1.7.1 Power rating - Model	Model Number

**Special Instructions to UL Representative**

N/A

2016-06-28

**VICHIP High Voltage Panel Mold BCM Model Matrix: BCMbbbcdddeffxyz**

Example: BCM380P475T1K2A30

BCM = Constant

BCM Family (Buss Converter Module)	
BCM	Standard version
MBCM	Military version

bbb = 380

Nominal Input Voltage (Input Voltage Range)			
270	270 (200-330)	384	384 (260-410)
380	380 (260-410)	400	400 (260-410)

c = P

Package Type and Lead designator	
P	Panel Mold Through-hole
N	Lead-less for VIA applications

ddd = 475

Output Voltage Designator, Nominal Vout = Designator / 10			
120	12.0V	475	47.5V
240	24.0V	500	50.0V
338	33.8V		

e = T

Product Grade	
T	-40 to 125C
M	-55 to 125C
C	0 to 85C

fff = 1K2

Output Power Designator, Non-inclusive list of examples below.			
800	800W	1K5	1500W
1K4	1400W	1K8	1750W
1K2	1200W		
See attached de-rating curves for corresponding maximum output current			

x = A

Revision (non-safety related)	
x	Any alphanumeric character

y = 3

Package Size Designator	
C	23 x 61 mm
3	61 x 23 mm

z = 0

Functionality (non-safety related), any alphanumeric character, non-inclusive list of examples	
0	Analog Control Interface
1	Digital Control Interface
R	Reversible Operation

**VICHIP High Voltage Panel Mold BCM Alternate Model Matrix:** BCM6123bccdwwxyzz

Example: BCM6123TD1E5126T01

BCM = Constant

Product Function	
BCM	Buss Converter Module

6123 = Constant

Package Size Designator (mm)	
6123	61 x 23 or 23 x 61

b = T

Lead Designator	
L	Leadless for adapter
T	Through-Hole

cc = D1

Maximum Input Voltage (Vin range)	
C3	330Vdc (200-330)
D1	410Vdc (260-410)

d = E

Range Ratio (Vin high / Vin low)	
E	1.6

ww = 51

Maximum Output Voltage (Nominal Output Voltage)			
13	13V (12.0V)	41	41V (33.8V)
26	26V (24.0V)	51	51V (47.5V)

xx = 26

Maximum Output Current							
17	17.5 A	32	32.0 A	62	62.5 A	A2	125 A
26	25.7 A	35	35.0 A	68	68.0 A		
See attached de-rating curves for corresponding maximum output power							

y = T

Product Grade		
C	-20 to 125°C	Commercial
T	-40 to 125°C	Industrial
M	-55 to 125°C	Military
E	0 to 125°C	Economy
S	-55 to 125°C	MilCOTS

zz = 01

Options (non-safety related), Any alphanumeric combination, non-inclusive list of examples below	
00	Analog Control Interface
01	Digital Control Interface
0R	Analog Control Interface with Reversible Operation
0P	Digital Control Interface with Reversible Operation

BCM6123 Series	
Product Ratings k = 1/8 1200W	
Vin = 380V (260-410)	Pout = 1200W max
Vout = 47.5V (32.5 – 51.3)	Iout = 25.7A max

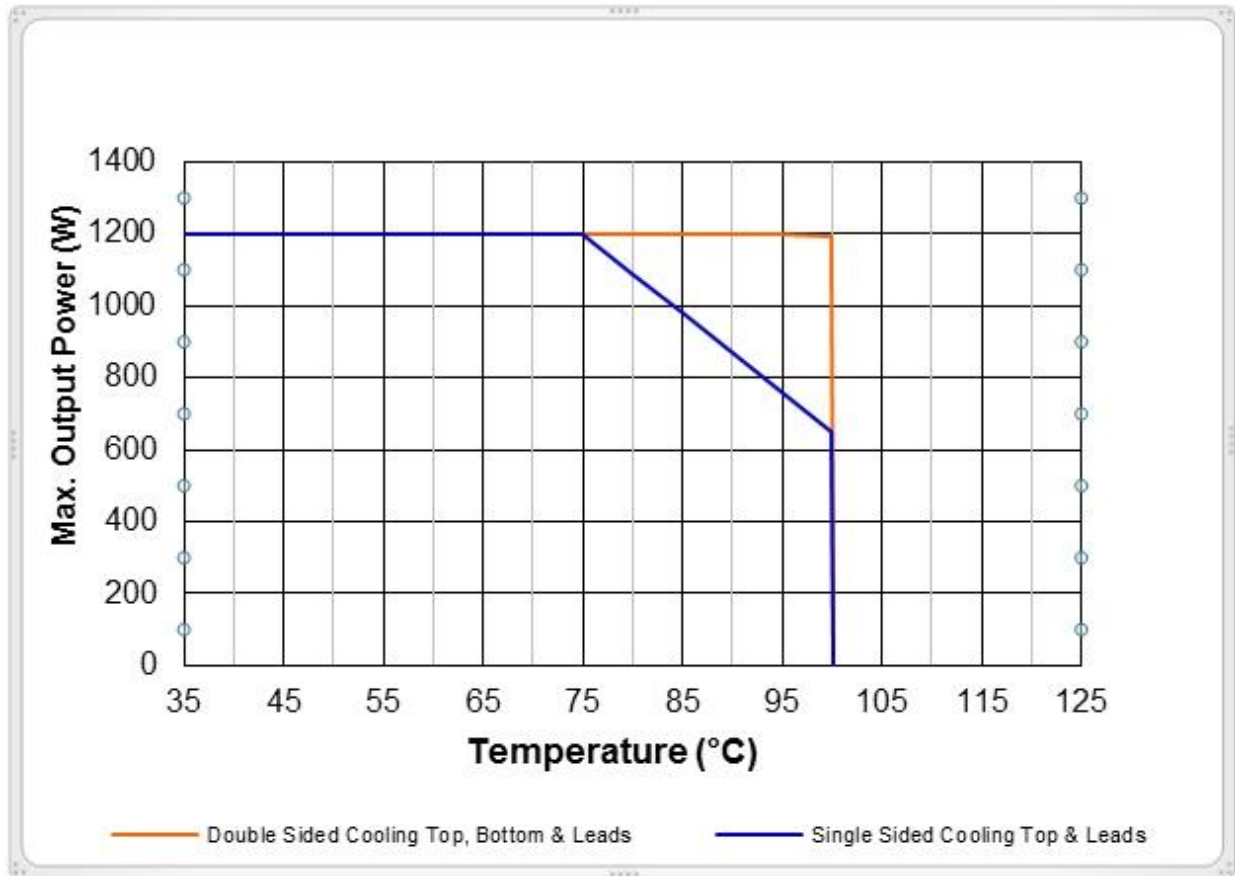
Model Number:	BCM380c475e1K2x3z
c = lead type, e = grade, x = revision, z = options	

Alternate Model Number:	BCM6123cD1E5126yzz
c = lead type, y = grade, zz = revision and options	

**Vout = Vin / 8**

**Pout = Vout x Iout**

**Maximum Pout not to exceed 1200W or 25.7A**



BCM6123 Series	
Product Ratings k = 1/32 1500W	
Vin = 384V (260-410)	Pout = 1500W max
Vout = 12.0V (8.1-12.8)	Iout = 125A max

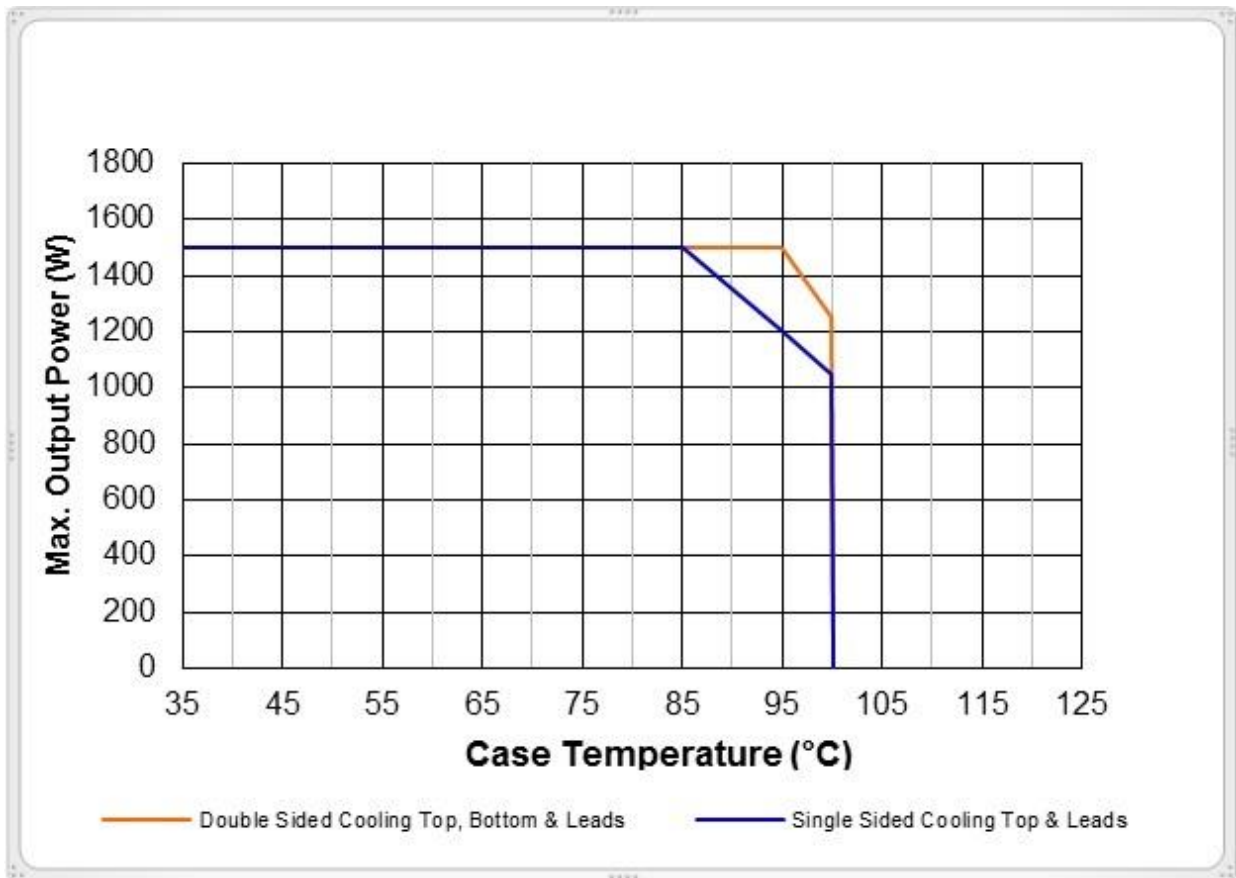
Model Number:	BCM384c120e1K5xCz
c = lead type, e = grade, x = revision, z = options	

Alternate Model Number:	BCM6123cD1E13A2yzz
c = lead type, y = grade, zz = revision and options	

**$V_{out} = V_{in} / 32$**

**$P_{out} = V_{out} \times I_{out}$**

**Maximum Pout not to exceed 1500W or 125A**



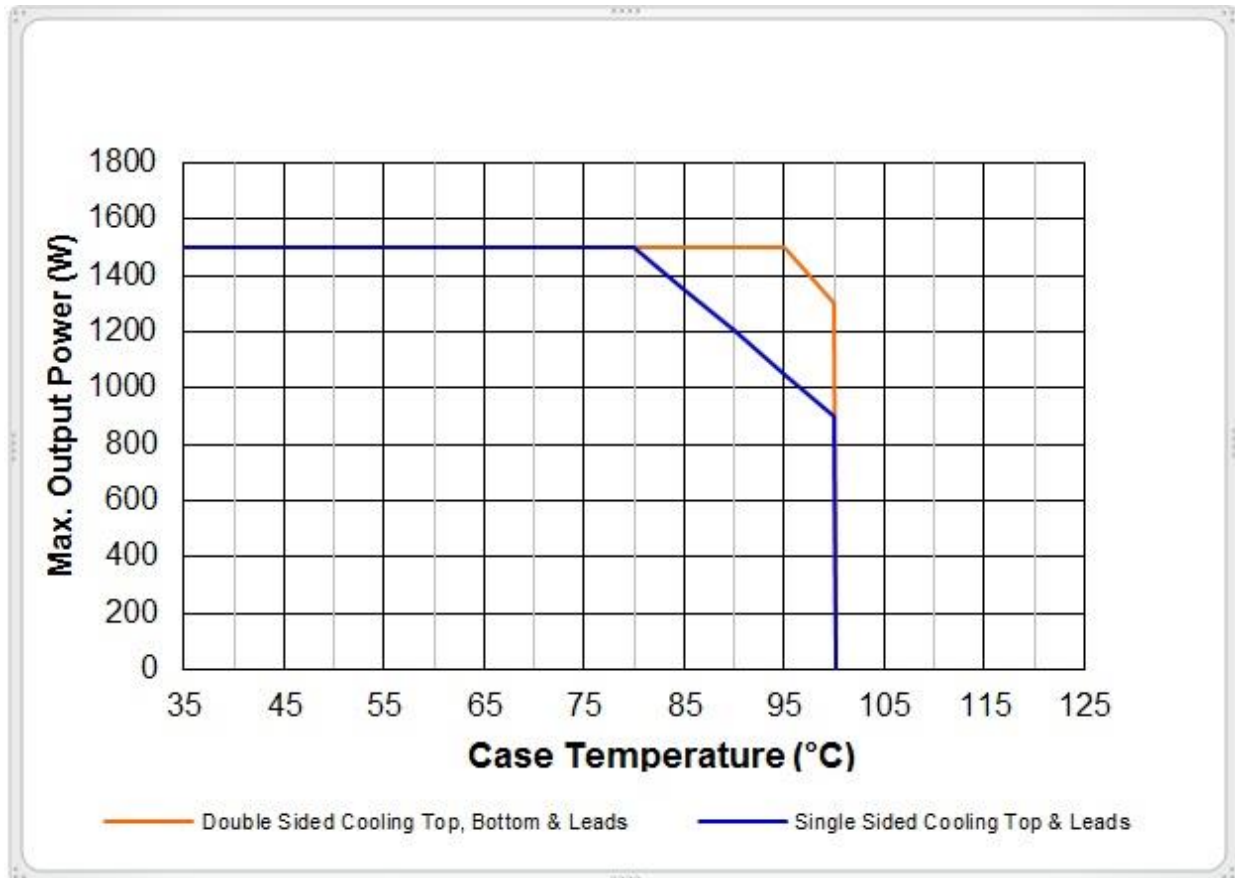


BCM6123 Series	
Product Ratings k = 1/16 1500W	
Vin = 384V (260-410)	Pout = 1500W max
Vout = 24.0V (16.3-25.6)	Iout = 62.5A max
<b>Model Number:</b>	<b>BCM384c240e1K5xCz</b>
c = lead type, e = grade, x = revision, z = options	
<b>Alternate Model Number:</b>	<b>BCM6123cD1E2662yzz</b>
c = lead type, y = grade, zz = revision and options	

**$V_{out} = V_{in} / 16$**

**$P_{out} = V_{out} \times I_{out}$**

**Maximum Pout not to exceed 1500W or 62.5A**



BCM6123 Series	
Product Ratings k = 1/8 1500W	
Vin = 380V (260-410)	Pout = 1500W max
Vout = 47.5V (32.5-51.3)	Iout = 32A max

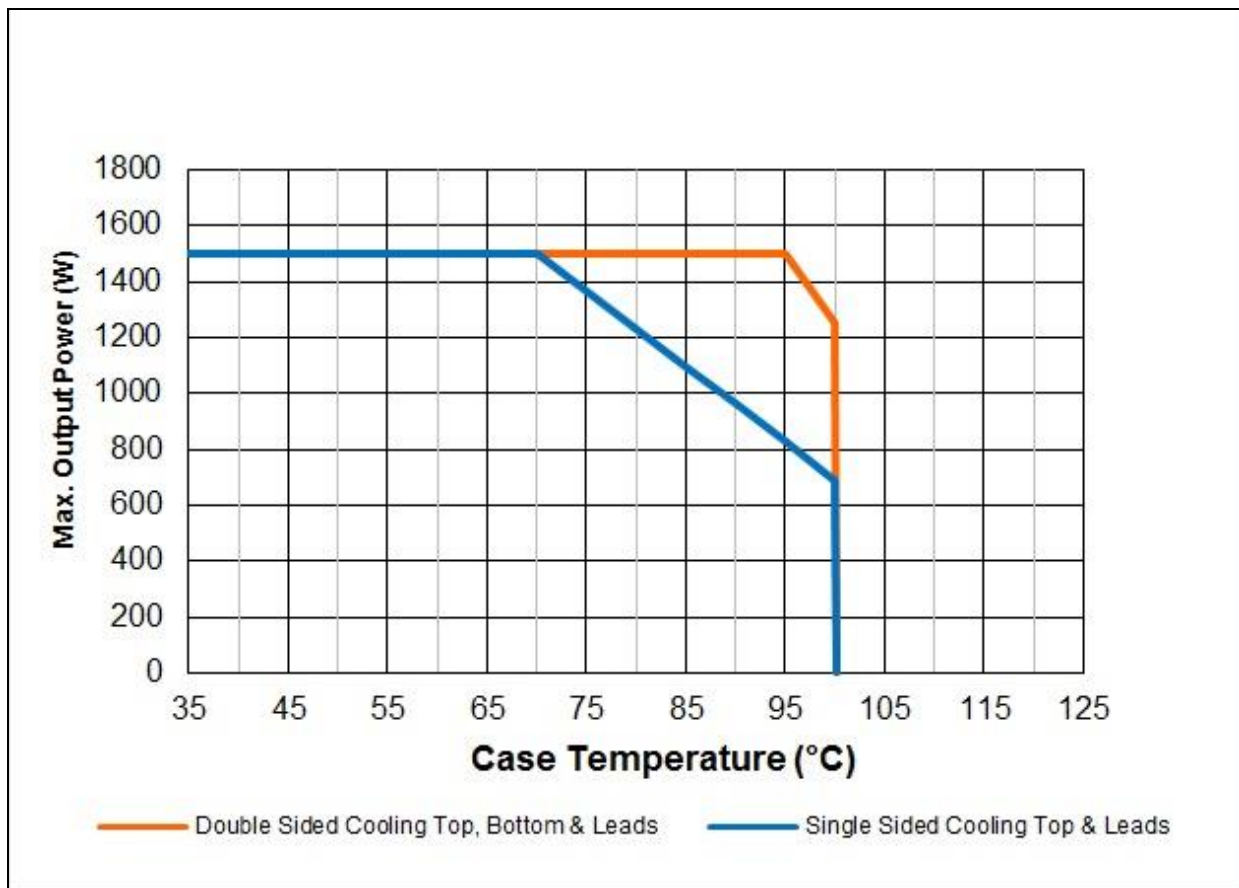
<b>Model Number:</b>	<b>BCM380c475e1K5x3z</b>
c = lead type, e = grade, x = revision, z = options	

<b>Alternate Model Number:</b>	<b>BCM6123cD1E5132yzz</b>
c = lead type, y = grade, zz = revision and options	

**$V_{out} = V_{in} / 8$**

**$P_{out} = V_{out} \times I_{out}$**

**Maximum Pout not to exceed 1500W or 32A**

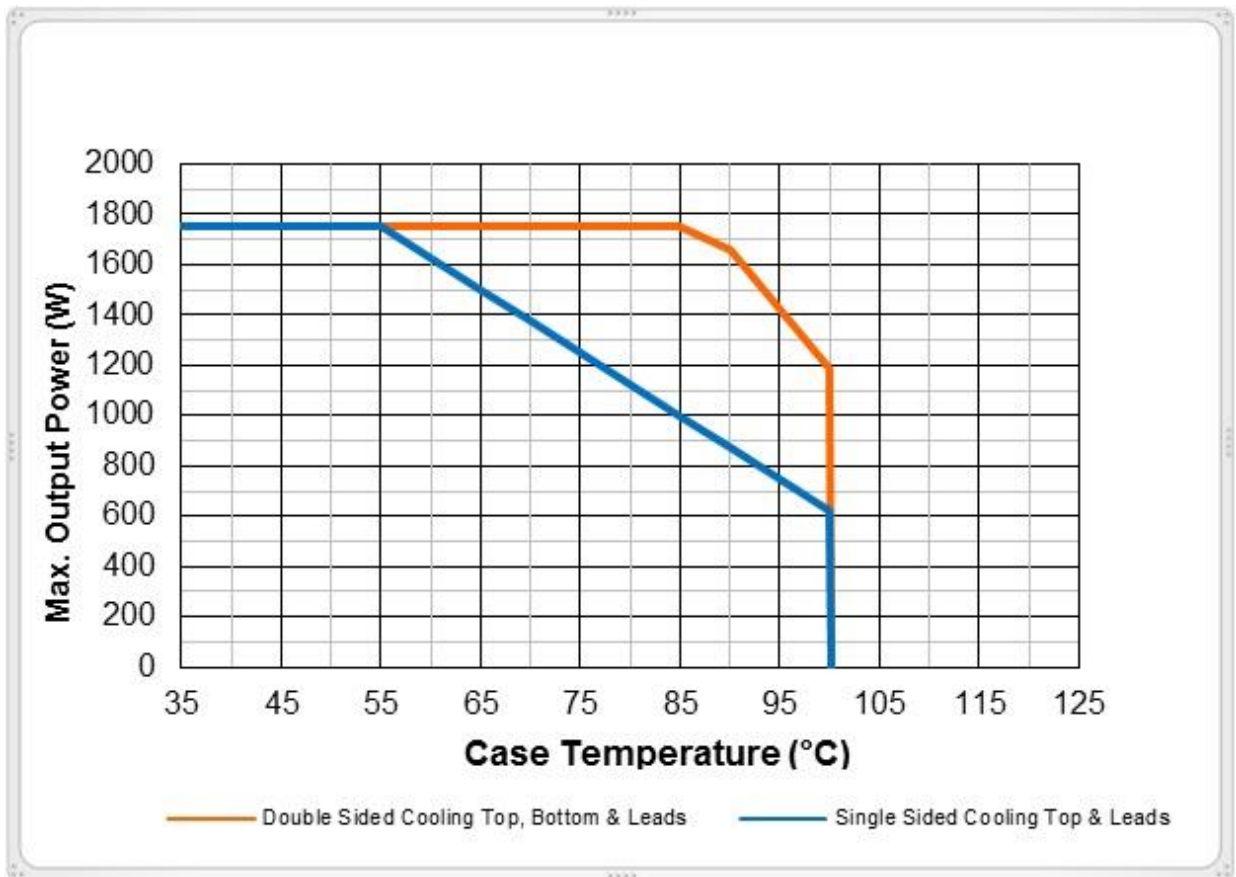


BCM6123 Series	
Product Ratings k = 1/8 1750W	
Vin = 400V (260-410)	Pout = 1750W max
Vout = 50.0V (32.5-51.3)	Iout = 35A max
<b>Model Number:</b>	<b>BCM400c500e1K8x3z</b>
c = lead type, e = grade, x = revision, z = options	
<b>Alternate Model Number:</b>	<b>BCM6123cD1E5135yzz</b>
c = lead type, y = grade, zz = revision and options	

**Vout = Vin / 8**

**Pout = Vout x Iout**

**Maximum Pout not to exceed 1750W or 35A**



BCM6123 Series	
Product Ratings k = 1/8 1400W	
Vin = 270 V (200-330)	Pout = 1400W max
Vout = 33.8V (25.0-41.3)	Iout = 35A max

Model Number:	BCM270c338e1K4x3z
c = lead type, e = grade, x = revision, z = options	

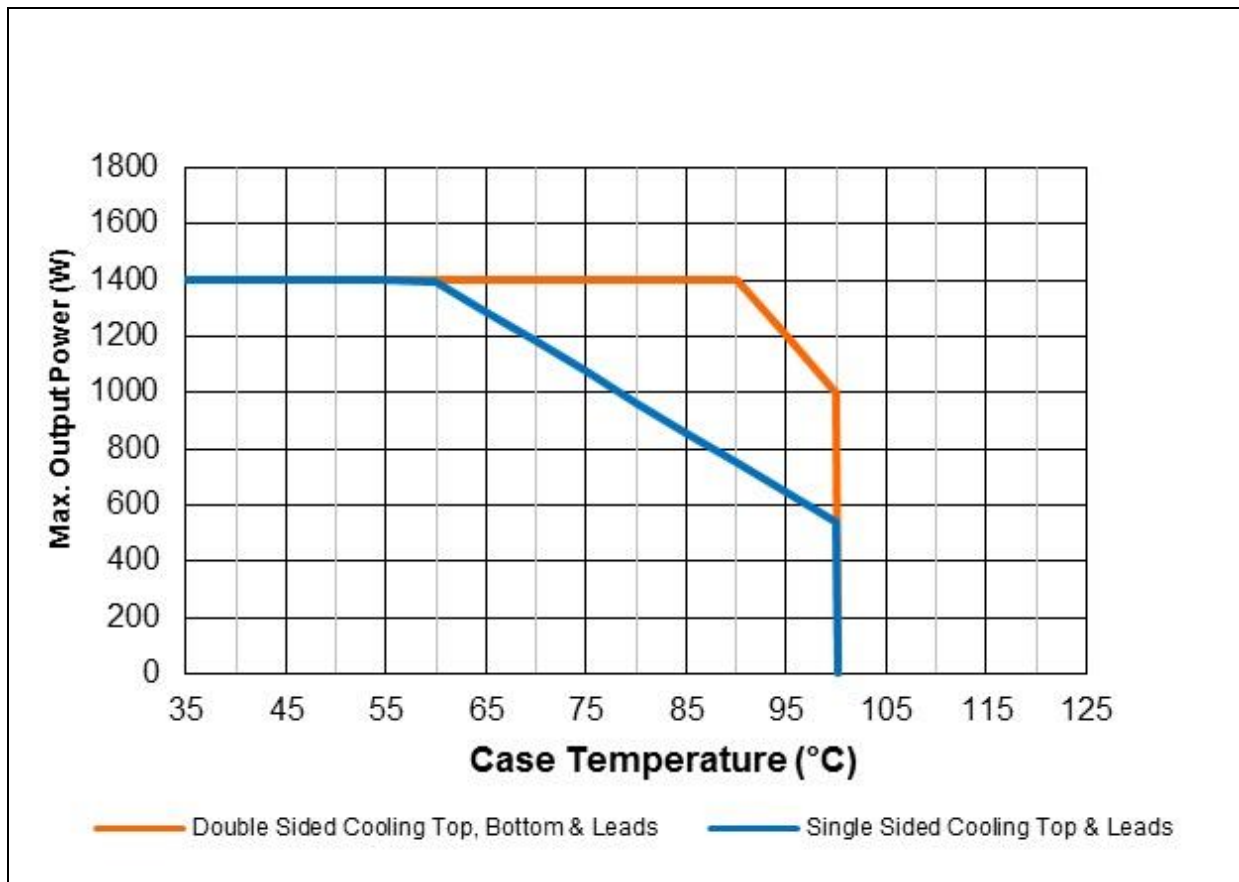
  

Alternate Model Number:	BCM6123cC3E4135yzz
c = lead type, y = grade, zz = revision and options	

**Vout = Vin / 8**

**Pout = Vout x Iout**

**Maximum Pout not to exceed 1400W or 35A**

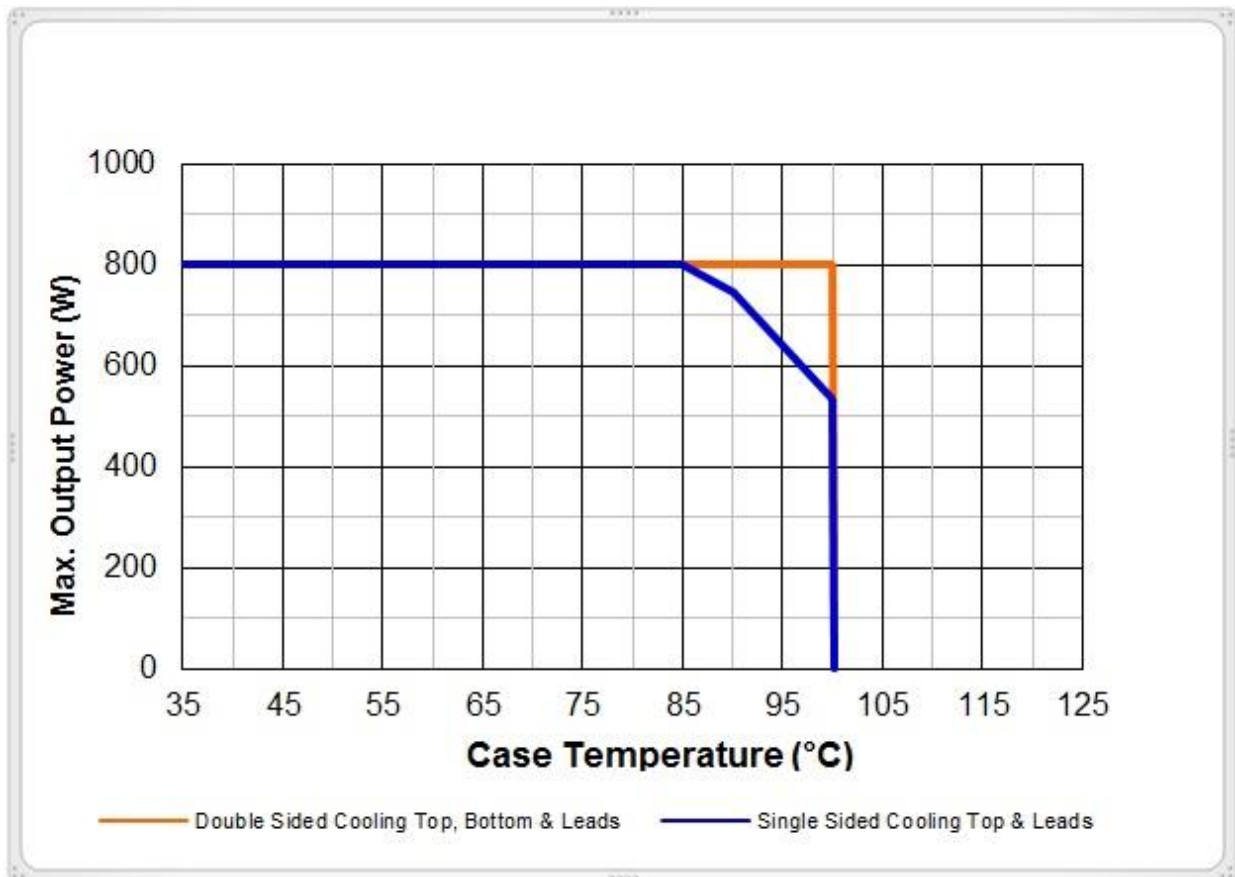


<b>BCM6123 Series</b>	
<b>Product Ratings k = 1/8 800W</b>	
Vin = 380V (260-410)	Pout = 800W max
Vout = 47.5V (32.5-51.3)	Iout = 17A max
<b>Model Number:</b>	<b>BCM380c475e800x3z</b>
c = lead type, e = grade, x = revision, z = options	
<b>Alternate Model Number:</b>	<b>BCM6123cD1E5117yz</b>
c = lead type, y = grade, zz = revision and options	

**Vout = Vin / 8**

**Pout = Vout x Iout**

**Maximum Pout not to exceed 800W or 17A**



<b>BCM6123 Series</b>	
<b>Product Ratings k = 1/32 800W</b>	
Vin = 384V (260-410)	Pout = 800W max
Vout = 12.0V (8.1-12.8)	Iout = 68A max
<b>Model Number:</b>	<b>BCM384c120e800xCz</b>
c = lead type, e = grade, x = revision, z = options	
<b>Alternate Model Number:</b>	<b>BCM6123cD1E1368yzz</b>
c = lead type, y = grade, zz = revision and options	

**$V_{out} = V_{in} / 32$**

**$P_{out} = V_{out} \times I_{out}$**

**Maximum Pout not to exceed 800W or 68A**

