TDK-Lambda

CHVM3 Series   SPECIFICATIONS

1. Scope of application

    This specification applies to DC input, medium to high voltage output DC/DC converter CHVM3 Series.

2. Model Name and Rated

Model Name	Rated Input Voltage	Rated Output
CHVM2R7-12-0180PW		+180V , 15mA (Load resistance 12kΩ min)
CHVM2R7-12-0180NW		-180V , 15mA (Load resistance 12kΩ min)
CHVM3-12-0300PW	DC 12V	+300V , 10mA (Load resistance 30kΩ min)
CHVM3-12-0300NW		-300V , 10mA (Load resistance 30kΩ min)
CHVM2R5-12-0350PW		+350V , 7mA (Load resistance 50kΩ min)
CHVM2R5-12-0350NW		-350V , 7mA (Load resistance 50kΩ min)

    Unless otherwise specified in this specification, the input is the rated input, the output is the rated output, and the ambient temperature is 25± 5°C. This product is RoHS compliant.

3. Environmental conditions.

    3-1. Temperature Range

        Operating Temperature Range   -10°C ～ +60°C
                                               (Derating required for temp.50deg or higher)
        Storage Temperature Range   -25°C ～ +85°C

    3-2. Humidity Range

        Operating Humidity Range   20 ～ 95%RH
        Storage Humidity Range   (However, maximum wet bulb temperature 35°C,no condensation.)

4. Specifications/Standards

Model Name	Output Voltage	Output Current
CHVM2R7-12-0180PW	0 ～ +180V	0 ～15mA(Load resistance 12kΩ min)
CHVM2R7-12-0180NW	0 ～ -180V	
CHVM3-12-0300PW	0 ～ +300V	0 ～10mA(Load resistance 30kΩ min)
CHVM3-12-0300NW	0 ～ -300V	
CHVM2R5-12-0350PW	0 ～ +350V	0 ～7mA(Load resistance 50kΩ min)
CHVM2R5-12-0350NW	0 ～ -350V	

    The residual voltage at Vcont voltage = 0V is within 0.5% of the rated output voltage at rated input and rated load.

4-1. Input Conditions

Model Name	Input Voltage	Input Current
CHVM2R7-12-0180PW		350mA typ
CHVM2R7-12-0180NW		350mA typ
CHVM3-12-0300PW	DC 10.8 ～ 13.2V	395mA typ
CHVM3-12-0300NW	(Rated:DC 12.0V)	395mA typ
CHVM2R5-12-0350PW		330mA typ
CHVM2R5-12-0350NW		330mA typ

4-2. Output characteristics and attached functions

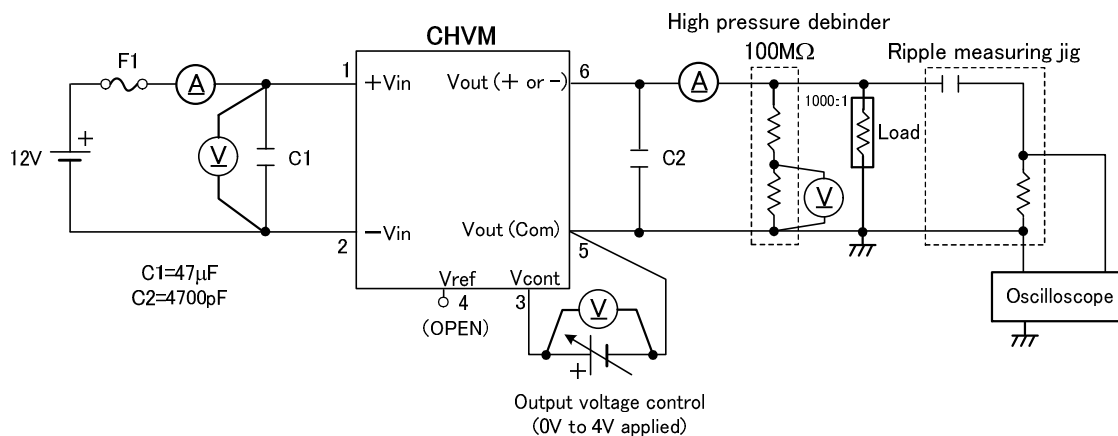| Function		Specification	Condition
Output Voltage Setting Accuracy		±5%(max)	External Voltage : 4.0V
Constant Voltage Accuracy	Line Regulation	0.02%(typ)/0.06%(max)	Input Voltage Range : 10.8～13.2V
	Road Regulation	180V Type 0.5%(typ)/1.5%(max) 300～350V Type 0.2%(typ)/0.6%(max)	Load Range : 0 ～ 100%
	Temperature Regulation	±0.01%/°C(typ)	Temp. Range : -10～+50°C
Ripple/Noise		30mVp-p(typ) 100mVp-p(max)	BW=20MHz
Over Current Protection		Hold back characteristic auto resist circuit operates at 105% or more	Constant Voltage Accuracy
Over Voltage Protection		Impossible	
ON/OFF Control		Impossible	

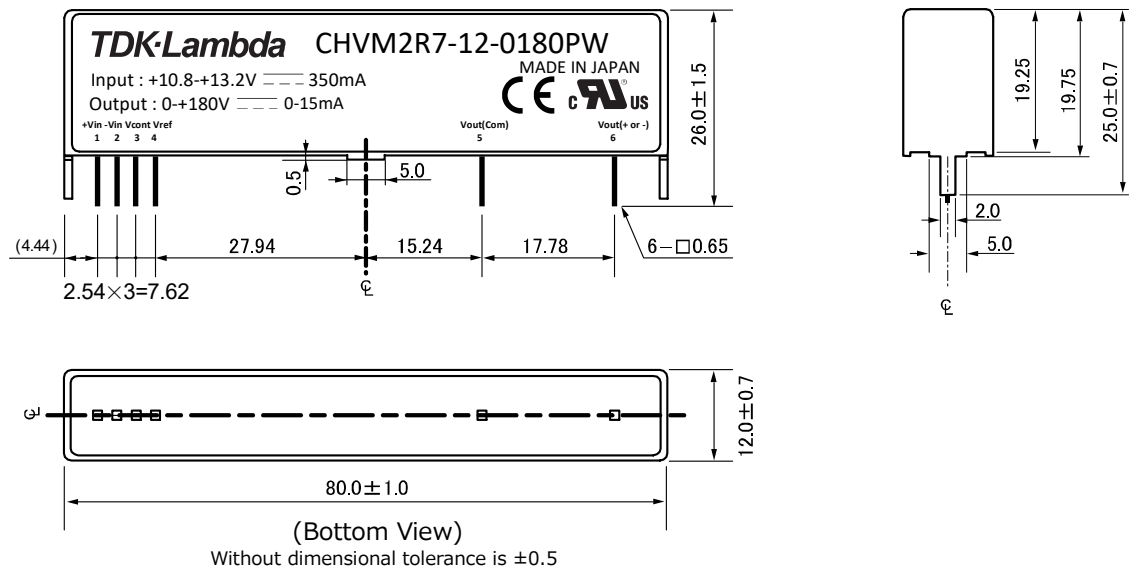※4-4. Refer to Test Circuit and Conditions

4-3. Output Voltage Control Conditions

External Voltage Control and Volume Control

	CHVM3 Series
External Voltage Control	Range : DC 0～4.0V
External Volume Control	5.0kΩ Variable Resistor

4-4. Test circuit and conditions

5. External dimensions,Terminal description and Lot notation

CHVM2R7-12-0180PW

Input : +10.8-+13.2V — 350mA
Output : 0-+180V — 0-15mA

MADE IN JAPAN

+Vin -Vin Vcont Vref
1   2   3   4

Vout(Com)
5

Vout(+ or -)
6

26.0±1.5

0.5

5.0

(4.44) 27.94 15.24 17.78

2.54×3=7.62

6－□0.65

19.25 19.75 25.0±0.7

2.0

5.0

80.0±1.0

12.0±0.7

(Bottom View)
Without dimensional tolerance is ±0.5

Pin No	Terminal Pin Name	Function
1	+Vin	Input
2	-Vin	
3	Vcont	Output Voltage Control
4	Vref	Reference Voltage
5	Vout(Com)	Output
6	Vout(+ or -)	

1）5-sided coating Nickel case

2）–Vin , Vout(Com) and Case are internally connected
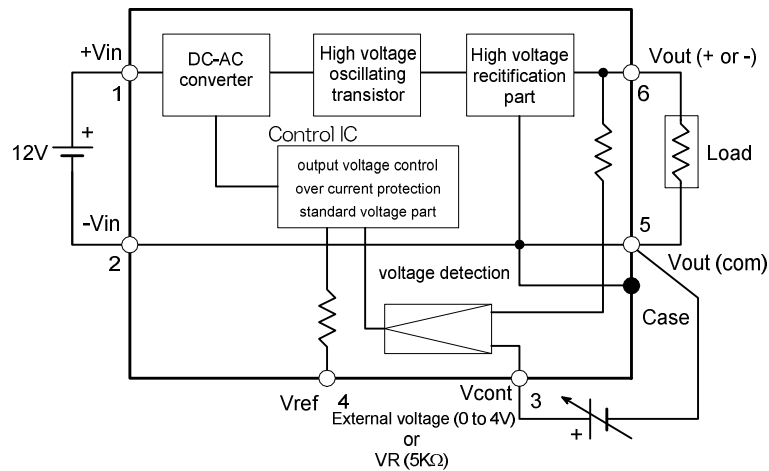
3）Lot notation

Serial label notation: 7 digits

Y:Manufacturing year notation
(Last two digits of the year)
S:Serial number
(Management number 5 digits)

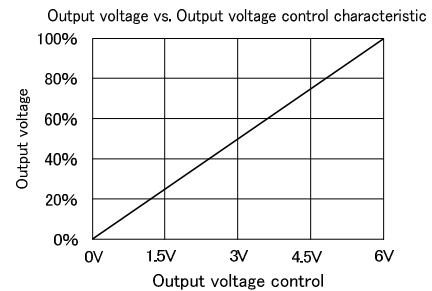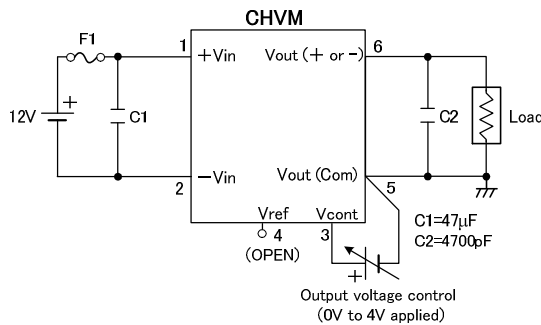18 02110 (2018 serial number 2110 product)
Y   S

Ex.
1900123 (2019 serial number 123 product)
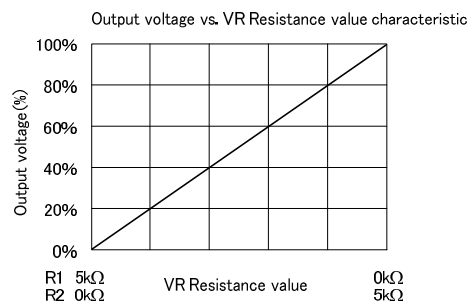2000012 (2020 serial number 12 product)

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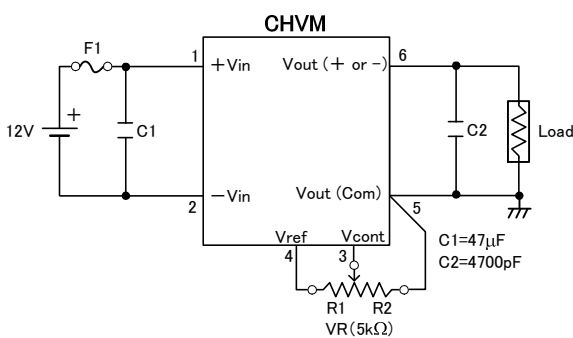## 6. Block diagram

7. How to use

7-1. Output voltage control by external voltage

Output voltage vs. Output voltage control characteristic

Do not apply more than 6V + 3% to the voltage applied to Vcont.

7-2. Output voltage control with variable resistor

Output voltage vs. VR Resistance value characteristic

In the output voltage vs. VR resistance value characteristic graph, the resistance values of R1 and R2 are reference values. When setting the output voltage to a fixed output with a fixed resistor, first decide R1 and R2 with the variable resistor. Use a variable resistor with good temperature characteristics.

The resistance value of the variable resistor is 5.0kΩ, 4.0V is applied to the Vcont terminal, and the output voltage is set to 100%. When controlling the output voltage with a variable resistor, the tolerance of this resistance value has a large effect on the output voltage, so set the resistance value to 5.0 kΩ ± 5%.

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8. Temperature Derating

Though the system may start, reliability is not guranteed.
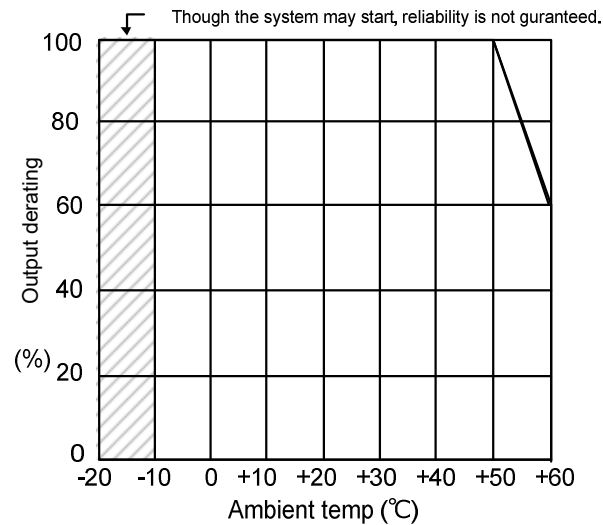
9. Over current protection

An over current protection circuit is internal as protection against overloads and load shorts.

If the overload or output is short-circuited, the output voltage will drop.

The output voltage will be automatically restored if the cause is removed.

The over current characteristic is a fold back characteristic. As the output voltage setting value decreases, the over current operation point also decreases, so be careful of the load resistance.
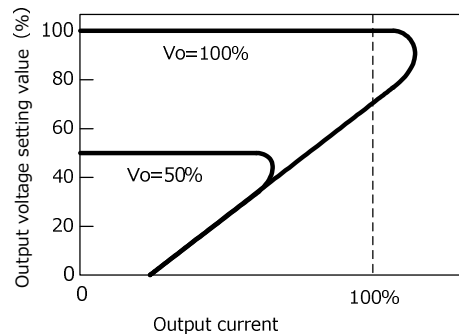
10. Soldering conditions

Perform the soldering conditions for each part within the following conditions.

1）Soldering iron   340～360deg   5sec

2）Solder dip   230～260deg   10sec

11. About cleaning

This converter cannot be washed as a whole. For unavoidable cleaning, use IPA to wash only the solder side with a hand brush.

12. Warranty

The warranty period is one year, and if the product is liable for any failure during the warranty period, we will repair or replace it free of charge.

13. Other matters
    13-1. If any doubt arises in this specification, it will be decided after consultation.
    13-2. The test report is not attached.
    13-3. Precautions for use
        1）The output of this product cannot be used in series or in parallel.
        2）Please avoid using the product under overload condition or short-circuiting output for a long time as it may cause malfunction.
        3）The output voltage is controlled by the external control voltage (Vcont terminal). Consider the fluctuation rate and ripple noise of the Vcont pin as they are reflected in the output voltage.
        4）Since high voltage is generated in this converter, consider the high voltage output and the creepage and clearance of the case and low voltage part when mounting.
        5）Be careful of the input reverse connection.
            Reverse connection of input voltage may damage the converter. If there is a possibility of reverse connection, connect a fuse and diode to the input terminal as shown below.
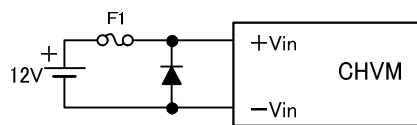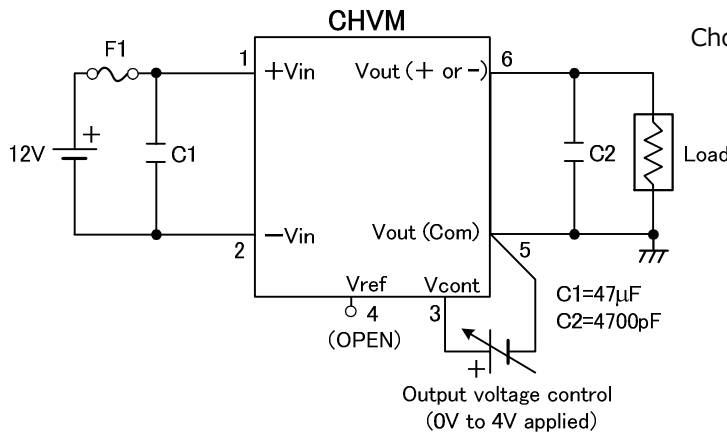

        6）The CHVM series does not have a built-in fuse.
            Be sure to attach externally to improve safety.
            Please use a fuse.

14. Safety standard
    The CHVM series has attained the UL60950-1, CSA60950-1 certification and CE marked.
    When using the CHVM series as a Recognized certified product please mount an input fuse as shown below.
    CE marking (low voltage directive, RoHS directive)

Choose a fuse(F1) from below:
    ・UL Listed products
    ・DC250V, Rated current 2A type

C1=47μF
C2=4700pF

Output voltage control
(0V to 4V applied)