

## FHS15 Series High-temperature DC-DC Modules

### Features:

- : High operating temperature (ambient temperature:  $-55^{\circ}\text{C} \sim +175^{\circ}\text{C}$  and shell temperature:  $+185^{\circ}\text{C}$ )
- : Forward synchronous rectification for low-voltage high-current (2V/3A, 2.5V/3A, 3.3V/3A, 5V/3A)
- : Low-voltage high-conversion efficiency (2V up to 69%, 3.3V up to 82%, 5V up to 84%)
- : Small volume (L: 50.5×W: 25.5×H: 9.5MM)
- : Adjustable output voltage ( $\pm 10\%$ )
- : External turn-off function
- : Sealed metal casting (impact and moist resistance and electromagnetic radiation protection)
- : Wide input range (18~36V, 36~75V)
- : Multi-output approach (one-way, two-way, 2V, 2.5V, 3.3V, 5V, 9V, 12V, 15V)
- : High operating frequency (2685KHZ)
- : Integrated LC EMI filter
- : Providing rated power without deduction under the temperature of  $175^{\circ}\text{C}$  (shell); providing 50% of rated power under the temperature of  $185^{\circ}\text{C}$  (shell)
- : Over-temperature protection under the temperature of  $190^{\circ}\text{C}$
- : Output short circuit and overload protection
- : Input undervoltage protection



### Description:

FHS15 Series high temperature DC-DC power module is specially designed for electronic equipment operating under the harsh environment. It adopts single end normal shock synchronous rectification technology and is particularly suitable for the output of low voltage high-current. When the outputting is 2V/3A, its efficiency reaches 69%, 3.3V/3A for 82%, and 5V/3A for 84%. The FHS15 series can work for 1000 hours in the shell temperature of  $150^{\circ}\text{C}$ , for 400 hours in the shell temperature of  $175^{\circ}\text{C}$  and for 100 hours in the shell temperature of  $185^{\circ}\text{C}$ . With features of being resistant to high temperature, impact and humidity, it is a power supply system especially applicable to petroleum survey logging tool, petroleum drilling instrument, geophysical detecting instrument, vehicles, telecommunication, network infrastructures, enterprise and high-performance calculation. It can provide fixed-voltage output in the mode of single-way, double-way and within the entire operating temperature range and under the condition change of full-load and no-load, the output voltage fluctuation is less than 0.20V. However, the output precision of 3.3V voltage is even less than 0.10V.

FHS15 Series contains an in-built LC network, which can effectively reduce the fluctuations of the input current and the output voltage.

FHS15 series has over-voltage and under-voltage shutdown functions, which can enable the module to stop working beyond the range of the input voltage to protect the module.

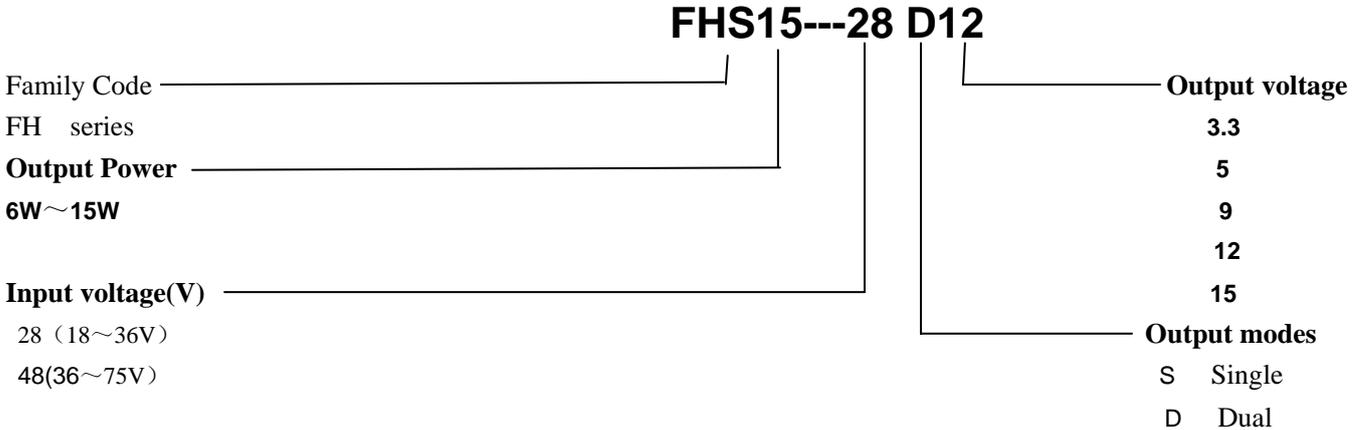
The adjustable output voltage range of FHS15 series is  $\pm 10\%$ , which facilitates the use of its users.

The operating frequency of FHS15 series is up to 265KHZ, which provides a good filtering condition. Its output voltage ripple is less than 100MV without any additional filtering conditions.

FHS15 series components completely pass the in-factory test in strict accordance with the enterprise standards and GJB,

which includes 24 ~ 72-hour live aging and screening under the temperature of +175 °C. All finished products have experienced 8-hour full-load operation under the temperature of +175 °C before delivery so as to fully expose the damage to the components during the production process and hence ensure the reliability of products.

**Rules of product name:**



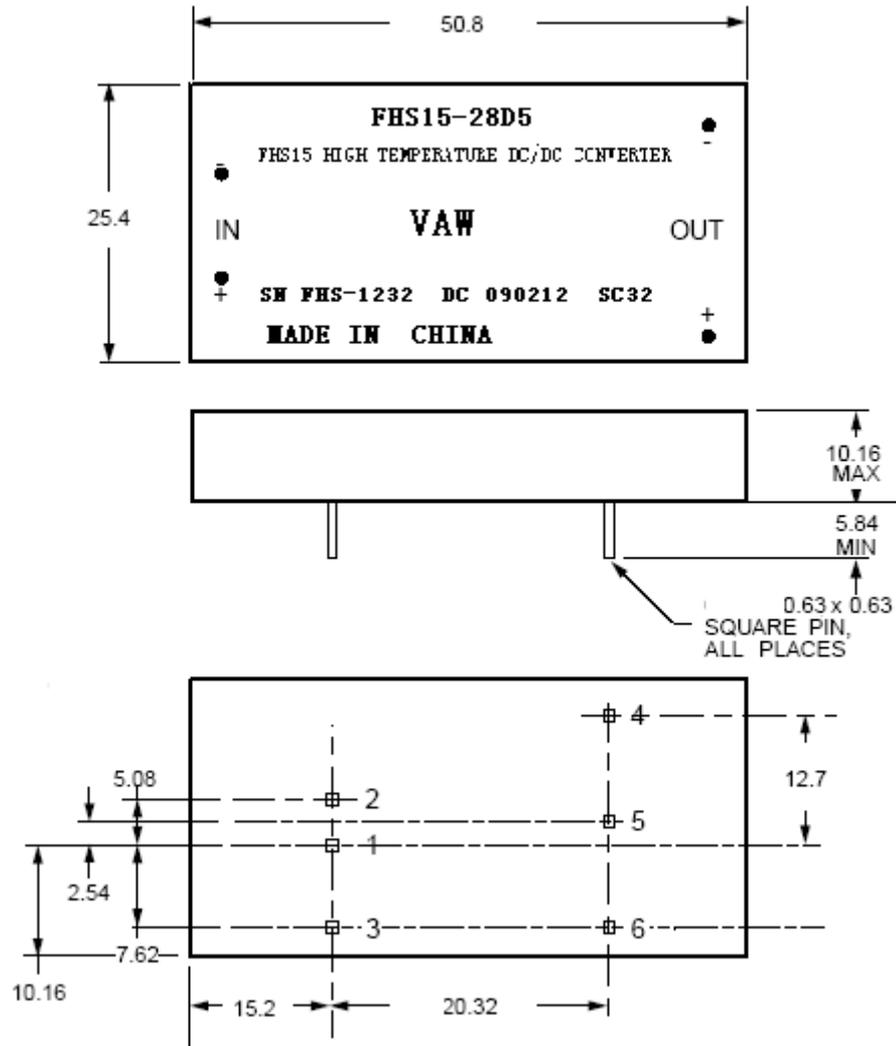
**Main technical parameters:**

- (一) Operating temperature: -55 °C ~ +175 °C Maximum shell temperature: +185 °C
- (二) Input voltage: 18 ~ 36V, 36 ~ 75V
- (三) Output voltage: 2.0V, 2.5V, 3.3V, 5V, 9V, 12V, 15V
- (四) Output ripple: 100mVp-p ( typical 30mVp-p)
- (五) Output power: 6W~15W
- (六) Output accuracy: less than 3%
- (七) Load regulation: less than 3%
- (八) Temperature Stability: less than ±2.5% (typical ±1%)
- (九) Line regulation: ±0.1% (10% linear change)
- (十) Earthquake resistance: 25G, 0 ~ 300Hz
- (十一) Conversion efficiency: 69% ~90%
- (十二) Static power consumption: maximum 0.5W
- (十三) Isolation voltage between input and output or between the outputs: 1500V

**Service Requirements:**

As the modules have nearly 2W of power consumption under the condition of full-load operation and their sizes are small, good medium need to be added between the shell of the power supply and the radiator so as to ensure the temperature of the module case will be less than 185 °C.

**Outline Sketch Map**



**Definition of Pin:**

in	Definition of Single-output	Definition of Duplicate-output
1	Negative input	Negative input
2	Positive input	Positive input
3	Deenergize or synchronizing	Deenergize or synchronizing
4	Positive output	Positive output
5	Conditioning	DAC
6	Negative output	Negative output