



### VSF01 Series

1 Watts

1W SINGLE AND DUAL OUTPUT  
 ISOLATED & UNREGULATED INPUT  
 1.5K VDC ISOLATION VOLTAGE  
 UTRALMINIATURE SIP PACKAGE  
 Remote On/Off control  
 LOW COST

- High Efficiency up to 81%
- Small Footprint
- SIP Package Styles
- Industry Standard Pin Configuration
- No Heatsink Required
- UL94-V0 Package
- High Power Density
- Temperature Range: -40°C --+85°C
- RoHS Compliance

### APPLICATIONS

The VSF01 series are specially designed for applications where a high isolation voltage power supplies. These products apply to:

- 1) Where the input voltage is 2:1 input range.
- 2) Where isolation voltage is necessary between input and output less than 1.5K VDC.
- 3) Where the regulation of the output voltage and the lower output ripple noise are demanded.

### Requirement on Output Load

To ensure this module operate efficiently and reliably, a minimum load is specified for this kind of DC/DC converter in addition to a maximum load (full load). During operation, make sure the specified range of input voltage is not exceeded, the minimum output load is not less than **5%** of the full load, and that this product should never be operated under no load! If the actual load is less below the specified minimum load, the output ripple of this type of DC/DC converter will increase drastically and at the same time efficiency & reliability of the circuit will decrease deeply. If the actual output power from the load in your circuit is very small, please connect a resistor with proper resistance at the output end to in parallel to increase the load, or use our company's other products with a lower rated output power.

### Product Program

Part Number	Input Voltage (VDC)		Output Voltage (VDC)	Output Current (mA)		Efficiency (% Typ)	Package Style
	Nominal	Range		Max	Min		
VSF01-05S03	5	4.5~9	3.3	303	15	71	SIP
VSF01-05S05	5	4.5~9	5	200	10	72	SIP
VSF01-05S12	5	4.5~9	12	83	4	76	SIP
VSF01-05S15	5	4.5~9	15	67	3	75	SIP
VSF01-05S24	5	4.5~9	24	42	2	73	SIP
VSF01-12S03	12	9~18	3.3	303	15	75	SIP
VSF01-12S05	12	9~18	5	200	10	77	SIP
VSF01-12S09	12	9~18	9	111	6	79	SIP
VSF01-12S12	12	9~18	12	83	4	79	SIP
VSF01-12S15	12	9~18	15	67	3	80	SIP
VSF01-12S24	12	9~18	24	42	2	76	SIP
VSF01-24S33	24	18~36	3.3	303	15	75	SIP
VSF01-24S05	24	18~36	5	200	10	77	SIP
VSF01-24S12	24	18~36	12	83	4	78	SIP
VSF01-24S15	24	18~36	15	67	3	78	SIP
VSF01-24S24	24	18~36	24	42	2	77	SIP
VSF01-48S03	48	36~75	3.3	303	15	75	SIP
VSF01-48S05	48	36~75	5	200	10	76	SIP
VSF01-48S12	48	36~75	12	83	4	80	SIP
VSF01-48S15	48	36~75	15	67	3	79	SIP
VSF01-05D05	5	4.5~9	±5	±100	±5	73	SIP
VSF01-05D12	5	4.5~9	±12	±42	±2	76	SIP
VSF01-05D15	5	4.5~9	±15	±33	±2	75	SIP
VSF01-12D05	12	9~18	±5	±100	±5	78	SIP

VSF01-12D12	12	9~18	±12	±42	±2	81	SIP
VSF01-12D15	12	9~18	±15	±33	±2	78	SIP
VSF01-24D05	24	18~36	±5	±100	±5	79	SIP
VSF01-24D12	24	18~36	±12	±42	±2	79	SIP
VSF01-24D15	24	18~36	±15	±33	±2	79	SIP
VSF01-48D05	48	36~75	±5	±100	±5	76	SIP
VSF01-48D12	48	36~75	±12	±42	±2	78	SIP
VSF01-48D15	48	36~75	±15	±33	±2	80	SIP

### ISOLATION SPECIFICATIONS

Item	Test conditions	Min	Typ	Max	Units
Isolation voltage	Tested for 1 minute	1500			VDC
Isolation resistance	Test at 500VDC	1000			MΩ

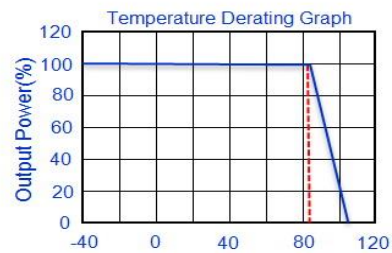
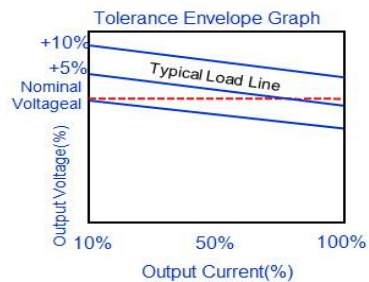
### COMMON SPECIFICATION

Transient recovery time	2 ms
Temperature rise at full load	25°C MAX, 15°C TYP
Cooling	Free air convection
Operating temperature range	-40°C~+85°C
Storage temperature range	-55°C ~+125°C
Lead temperature	300°C (1.5mm from case for 10 seconds)
Storage humidity range(RH)	≤ 95%
Case material	Plastic (UL94-V0)
MTBF	1,000,000 hours
Dimension	22.00x9.5x12.00mm
Wight	4.9g

### Output SPECIFICATION

Item	Test conditions	MIN	TYP	MAX	Units
Output voltage accuracy	5% to 100% load		±1	±3	W
Line regulation			±0.2	±0.5	%
Load regulation	5% to 100% load		±0.4	±0.75	%
Output ripple			30	50	mVp-p
Output noise	20MHz Bandwidth		55	75	mVp-p
Temperature coefficient	100% load		±0.02	±0.03	% / °C
Remote control	On	control pin open			
	Off	contact	high volt	5-10	mA
Switching frequency	Full load, nominal input		200		KHz

### TYPICAL CHARECTERISTICS



## RECOMMENDED CIRCUIT

### Extra Comments

For VSF01 series, to properly increase the input and output of external capacitors for decreasing the input and output ripple is required (see Figure 1).  
The short circuit protection is continuous, self-recovery.

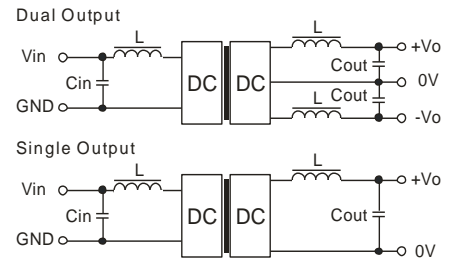
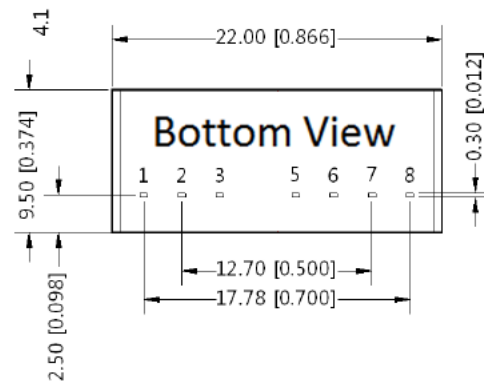
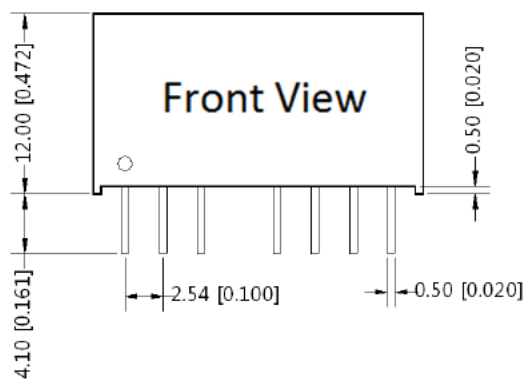


Figure 1

## FOOTPRINT DETAILS

PIN	1	2	3	5	6	7	8
SINGLE	-Vin	+Vin	CTL(Optional)	NC	+Vout	COMMON	CS
DUAL	-Vin	+Vin	CTL(Optional)	NC	+Vout	COMMON	-Vout

## OUTLINE DIMENSIONS & RECOMMENDED FOOTPRINT



Dimensions: mm (Inch)  
Pin tolerance:  $\pm 0.10$  [ $\pm 0.004$ ]  
Pin pitch tolerance:  $\pm 0.25$  [ $\pm 0.01$ ]