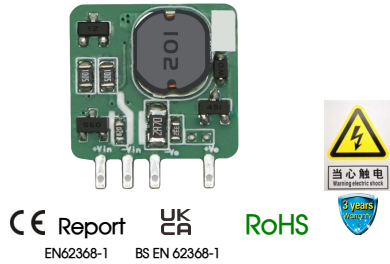


1W, Single-wire converter



## FEATURES

- Ultra-wide input voltage range: 85-264VAC/8(15/35)-380VDC
- Operating ambient temperature range: -25°C to +85°C
- Ultra-low static current
- Compact size
- Safety according to UL62368

LSF01-K5BxxSS series is regulated single-wire converters with an ultra-low DC input of 85-264VAC/8(15/35)-380VDC. The products feature high reliability. It can be widely used in areas of single-wire smart home with extremely demanding on power consumption requirements, non-isolated power supply products, and replace low-efficiency resistance-capacitance step-down power supply circuits (such as white goods, smart meters, automation instrument power), and standby power for appliances with low power consumption requirements (such as ultra-low power standby power for green and energy-saving appliances), etc. The converters provide stable operating voltage for the load. For extremely harsh EMC environment, we recommend using the application circuit show in Design Reference of this datasheet.

## Selection Guide

Certification	Model	Output Power	Nominal Output Voltage and Current (Vo/Io)	Efficiency at 230VAC (%) Typ.
EN/UKCA	LSF01-K5B05SS	0.625W	5.5V/114mA	50
	LSF01-K5B12SS	1W	12.5V/83mA	58
EN	LSF01-K5B24SS	1W	24.5V/42mA	60

Caution: this series is non-isolated power supply and there is no insulation protection at the input and output, please beware of electric shock!

## Input Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Input Voltage Range	AC input	LSF01-K5BxxSS	85	--	264	VAC
		LSF01-K5B05SS	8	--	380	VDC
	DC input	LSF01-K5B12SS	15	--	380	
		LSF01-K5B24SS	35	--	380	
Input Current	115VAC		--	--	0.10	A
	230VAC		--	--	0.05	
Input Frequency			50	--	60	Hz
External Input Fuse			1A/250V, slow-blow, required			
Hot Plug			Unavailable			

## Output Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Output Voltage Accuracy	Vo	LSF01-K5B05SS	4.9	--	6.5	V
	Vo	LSF01-K5B12SS	11.5	--	13.5	
	Vo	LSF01-K5B24SS	22.0	--	28.0	
Stand-by Power Consumption	230VAC		--	--	5.2	mW
Minimum Load			0	--	--	%

## General Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Operating Temperature			-25	--	+85	°C
Storage Temperature			-40	--	+85	
Soldering Temperature	Wave-soldering		260 ± 5°C; time: 5 - 10s			
	Manual-welding		360 ± 10°C; time: 3 - 5s			

Power Derating	-25°C to -10°C	LSF01-K5B05SS	3.33	--	--	% / °C
	+70°C to +85°C		3.33	--	--	
	-25°C to -10°C	LSF01-K5B12SS	1.00	--	--	
	+70°C to +85°C		3.33	--	--	
	-25°C to -10°C	LSF01-K5B24SS	0	--	--	
	+70°C to +85°C		3.33	--	--	
	85-264VAC	LSF01-K5B05SS	0	--	--	%/VAC
	30-80VDC		1.36	--	--	%/VDC
	10-30VDC		0	--	--	
	8-10VDC		25	--	--	
	85-264VAC	LSF01-K5B12SS	0	--	--	%/VAC
	15-30VDC		4	--	--	%/VDC
	85-264VAC	LSF01-K5B24SS	0	--	--	%/VAC
	35-380VDC		0	--	--	%/VDC
Safety Standard	LSF01-K5B05/12SS		EN62368-1, BS EN 62368-1 (Report); Design refer to UL62368-1			
	LSF01-K5B24SS		EN62368-1 (Report); Design refer to UL62368-1, BS EN 62368-1			
MTBF			MIL-HDBK-217F@25°C ≥ 300,000 h			

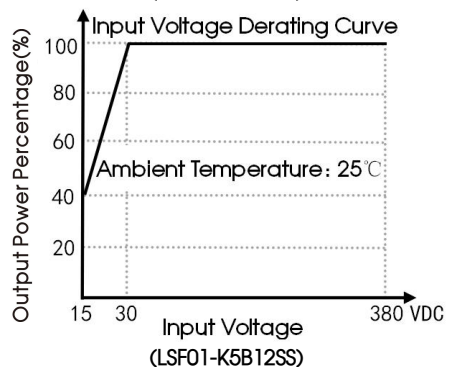
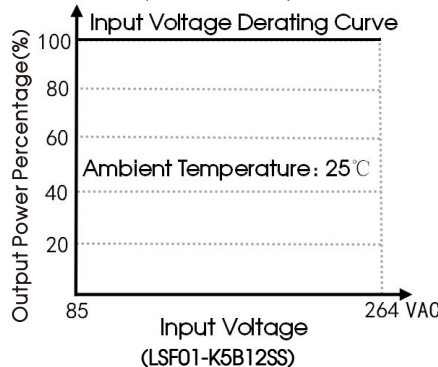
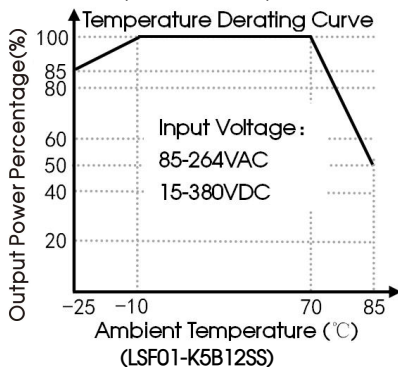
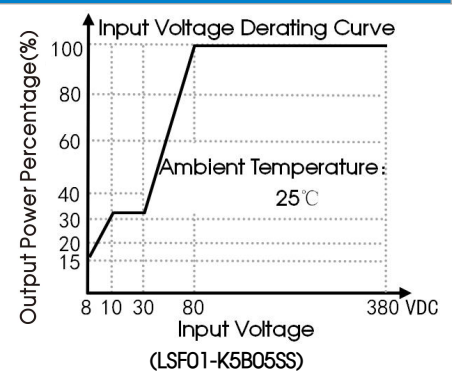
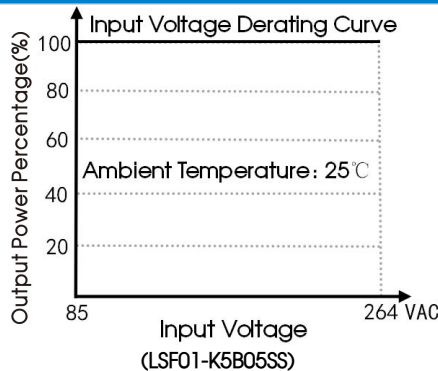
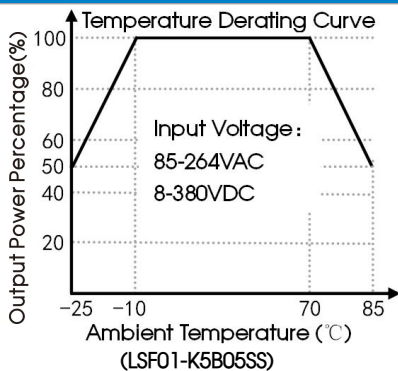
### Mechanical Specifications

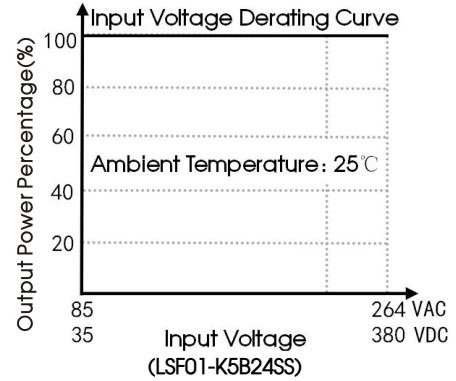
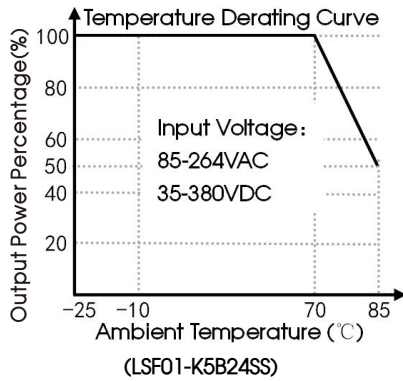
Package Dimensions	15.70 x 9.00 x 14.50mm
Weight	1.90g (Typ.)
Cooling method	Free air convection

### Electromagnetic Compatibility (EMC)

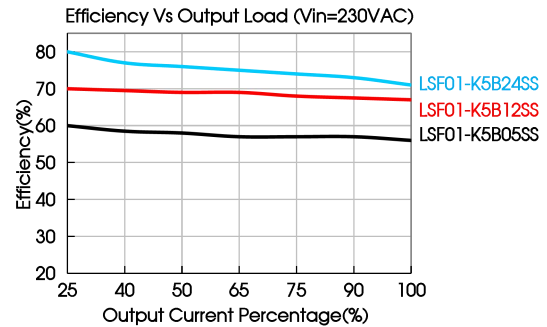
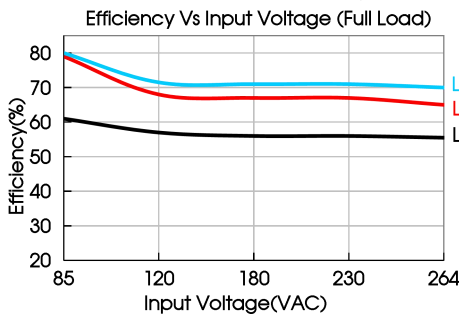
Emissions	CE	CISPR32/EN55032 CLASS B (See Fig. 1 for typical application circuit)		
	RE	CISPR32/EN55032 CLASS B (See Fig. 1 for typical application circuit)		
Immunity	Surge	IEC/EN61000-4-5 line to line ±1KV (See Fig. 1 for typical application circuit)		Perf. Criteria B

### Product Characteristic Curve





Note:  
① With a DC input between 8-80VDC (LSF01-K5B05SS)/15 - 30VDC (LSF01-K5B12SS), the output power must be derated as per temperature derating curves;  
② This product is suitable for applications using natural air cooling; for applications in closed environment please consult Mornsun FAE.



## Design Reference

### 1. Typical application circuit

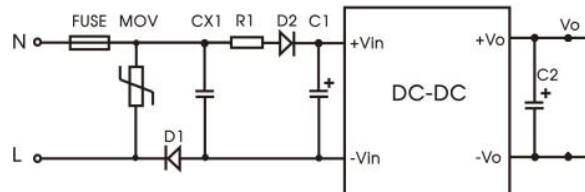


Fig. 1

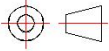
Components	Recommend
FUSE	1A/250VAC, required
D1、D2	1A/1000V
MOV	S10K300
CX1	474K/275VAC
R1	8-120VDC: 24 Ω (LSF01-K5B05SS) 15-120VDC: 12 Ω (LSF01-K5B12SS) 35-120VDC: 12 Ω (LSF01-K5B24SS) 85-264VAC/120-380VDC: 240 Ω
C1	450V/10uF
C2	35V/220uF

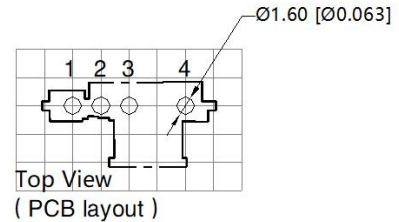
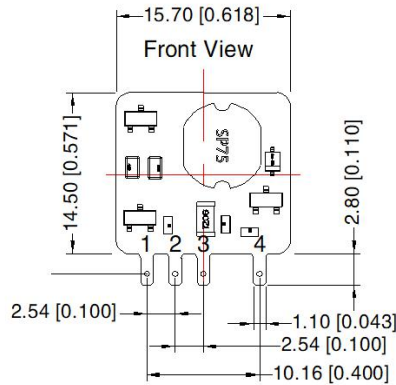
#### Output Filter Components:

1. CX1 is not necessary if no requirement for emissions, and MOV is not necessary if no requirement for immunity;
2. R1: current-limiting resistor (required), rated power  $\geq 3W$ , which depends on the input voltage range;
3. C1: Input capacitor for rectifying and filtering, the smaller capacitor value can be selected according to actual load requirements;
4. C2: output filter capacitor, 16V/220uF can be selected for LSF01-K5B05SS, LSF01-K5B12SS ;
5. Above for typical application reference. For more applications and materials (relay solutions), please contact MORNSUN FAE;

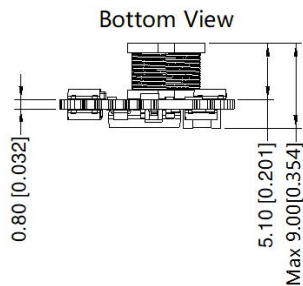
2. For more information Please find the application notes on [www.mornsun-power.com](http://www.mornsun-power.com), or contact our technicians to obtain.

Dimensions and Recommended Layout

THIRD ANGLE PROJECTION 



Note: Grid 2.54\*2.54mm



Pin-Out	
Pin	Mark
1	+Vin
2	-Vin
3	-Vo
4	+Vo

Note:  
Unit: mm[inch]  
Pin section tolerances:  $\pm 0.10[\pm 0.004]$   
General tolerances:  $\pm 0.50[\pm 0.020]$   
The layout of the device is for reference only, please refer to the actual product

- Note:
- For additional information on Product Packaging please refer to [www.mornsun-power.com](http://www.mornsun-power.com). Packaging bag number: 58220098;
  - Unless otherwise specified, parameters in this datasheet were measured under the conditions of  $T_a=25^\circ\text{C}$ , humidity<75% with nominal input voltage and rated output load; (See Fig. 1/ Fig. 2 for typical application circuit)
  - All index testing methods in this data sheet are based on our company corporate standards;
  - The above are the performance indicators of the product models listed in this datasheet. Some indicators of non-standard models will exceed the above requirements. For details, please contact our technical staff.
  - We can provide product customization service;
  - Specifications of this product are subject to changes without prior notice;
  - Products are related to laws and regulations: see "Features" and "EMC";
  - Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units.

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