

75W, specific power supply for power grid



FEATURES

- Specific power supply designing for smart grid
- Ultra wide input voltage range: 176-576VAC
- Operating ambient temperature range -40℃ to +85℃
- High I/O isolation voltage up to 4000VAC
- High efficiency, high reliability
- Regulated output, low ripple & noise
- Immunity, EFT/Surge: ±4KV perf. Criteria A
- Impulse withstand voltage 1.2/50us 5KV
- Output short circuit, over-current, over-voltage protections
- Safety according to UL/EN/IEC62368

LO75-26Bxx series is a three-phase four-wire power supply design for the smart grid industry that meets the power industry standards. It features wide operating temperature range, high EMS level, high reliability, and high isolation. EMC and safety specifications meet IEC/EN61000-4, CISPR32/EN55032, UL/EN/IEC62368 standards. It is a design solution for electric-meter application sourced from a three-phase AC supply with the requirement of high isolation voltage and rigorous EMC. For extremely harsh EMC environment, we recommend using the application circuit show in Design Reference of this datasheet.

Selection Guide

Certification	Part No.	Output Power	Nominal Output Voltage and Current (Vo/Io)	Output Voltage Adjustable Range ADJ (V)	Efficiency at 220VAC (%) Typ.	Capacitive Load (μF) Max.
/	LO75-26B12	75W	12V/6.250A	10.8-13.2	85	5400
	LO75-26B24		24V/3.125A	21.6-26.4	87	4400
	LO75-26B48		48V/1.562A	43.2-52.8	88	680

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Voltage Range	AC Input	176	--	576	VAC
Input Frequency		47	--	63	Hz
Input Current	176VAC	--	--	1.1	A
	528VAC	--	--	0.5	
Inrush Current	220VAC	--	45	--	
Leakage Current	480VAC	2mA RMS max.			
Required External Input Fuse		3.15A/600VAC, slow-blow, required			
Hot Plug		Unavailable			

Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Output Voltage Accuracy	All load range	--	±2	--	%
Line Regulation	Rated load	--	±1	--	
Load Regulation	220VAC	--	±1	--	
Ripple & Noise*	20MHz bandwidth (peak-to-peak value)	--	100	200	mV
Temperature Coefficient		--	±0.02	--	%/°C
Short Circuit Protection		Hiccup, continuous, self-recovery			
Over-voltage Protection	12V output	≤20V	Output voltage hiccup		
	24V output	≤35V			
	48V output	≤60V			
Over-current Protection		≥130%Io, self-recovery			
Minimum Load		0	--	--	%
Hold-up Time	220VAC input	--	12	--	

Note: *The "Tip and barrel method" is used for ripple and noise test, output parallel 100uF electrolytic capacitor and 0.1uF ceramic capacitor, please refer to AC-DC Converter Application Notes for specific information.

General Specifications

Item		Operating Conditions	Min.	Typ.	Max.	Unit
Isolation	Input - output	Electric Strength Test for 1min., (leakage current<5mA)	4000	--	--	VAC
	Input - PE		2000	--	--	
Insulation Resistance	Input - output	500VDC	50	--	--	MΩ
	Input - PE					
Impulse withstand voltage	Input - output	5KV, 1.2/50us Impulse voltage				
	Input - PE					
Operating Temperature			-40	--	+85	℃
Storage Temperature			-40	--	+85	
Storage Humidity			--	--	95	%RH
Altitude			--	--	2000	m
Soldering Temperature		Wave-soldering	260 ± 5℃; time: 5 - 10s			
		Manual-welding	360 ± 10℃; time: 3 - 5s			
Power Derating		-40℃ to -25℃	2.00	--	--	% /℃
		+50℃ to +85℃	1.71	--	--	
		528VAC - 576VAC	0.625	--	--	%/VAC
Safety Standard			Design refer to UL/EN/IEC62368-1			
Safety Class			CLASS I			
MTBF			MIL-HDBK-217F@25℃≥300,000 h			

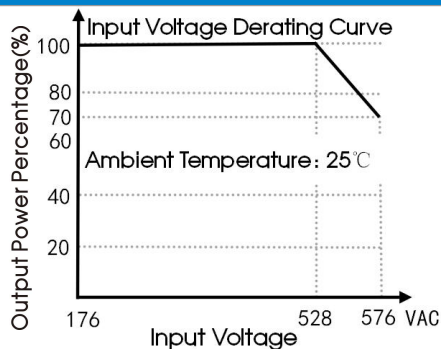
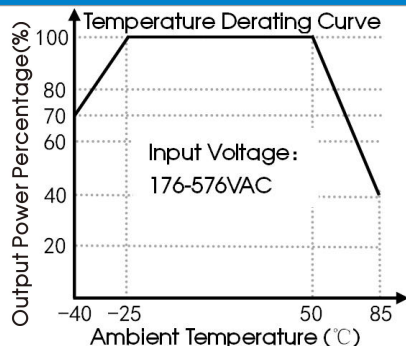
Mechanical Specifications

Dimension	127.00 x 76.19 x 38.60mm
Weight	200g (Typ.)
Cooling Method	Free air convection

Electromagnetic Compatibility (EMC)

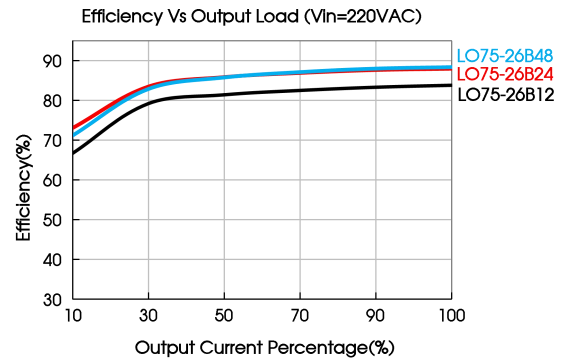
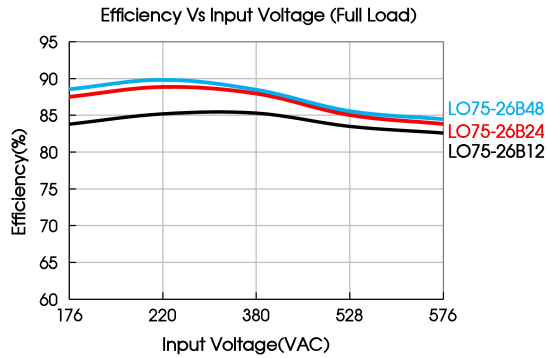
Emissions	CE	CISPR32/EN55032	CLASS A	
	RE	CISPR32/EN55032	CLASS A	
	Harmonic current	IEC/EN6100-3-2	CLASS A	
Immunity	ESD	IEC/EN61000-4-2	Contact ±6KV/Air ±8KV	Perf. Criteria A
	RS	IEC/EN61000-4-3	10V/m	Perf. Criteria A
	EFT	IEC/EN61000-4-4	±4KV	Perf. Criteria A
	Surge	IEC/EN61000-4-5	Line to line ±2KV/ line to ground ±4KV	Perf. Criteria A
	CS	IEC/EN61000-4-6	10Vr.m.s	Perf. Criteria A
	Voltage dips, short interruptions and voltage variations immunity	IEC/EN61000-4-11	100% dip 1 periods, 30% dip 25 periods, 100% interruptions 250 periods	Perf. Criteria B

Product Characteristic Curve



Note:

- ① With a AC input between 528-576VAC, 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. Application circuit

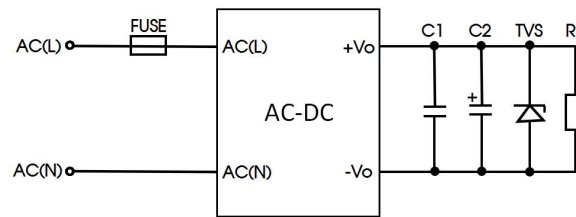


Fig. 1

Part No.	FUSE	C1 (uF)	C2 (uF)	TVS
LO75-26B12	3.15A/600VAC, slow-blow, required	1	220	SMBJ20A
LO75-26B24				SMBJ30A
LO75-26B48				SMBJ64A

Output Filter Components:

We recommend using an electrolytic capacitor with high frequency, and low ESR rating for C2 (refer to manufacture's datasheet). Choose a capacitor voltage rating with at least 20% margin, in other words not exceeding 80%. C1 is a ceramic capacitor used for filtering high-frequency noise and TVS is a recommended suppressor diode to protect the application in case of a converter failure.

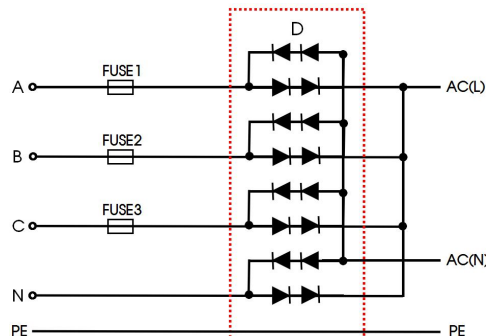


Fig.2 for recommended circuit, full-wave rectification

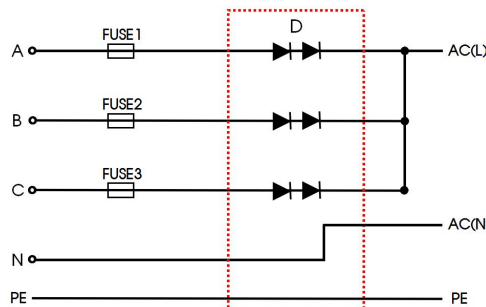


Fig.3 for recommended circuit, half-wave rectification

Model	Recommended value
FUSE1, FUSE2, FUSE3	3.15A/600VAC (three-phase four-wire input), slow-blow, required
D	3A/1000V

2. For additional information please refer to application notes on www.mornsun-power.com.

Top View

25.50 [1.004]
42.00 [1.654]
4.54 [0.179]

121.10 [4.768]
127.00 [5.000]

3.04 [0.120]

16.08 [0.633]

45.00 [1.772]
11.00 [0.433]
76.19 [3.000]

6-Ø2.00 [Ø0.079]

6
5
4
3
2
1

Top View
(PCB Layout)

Note: Grid 5.08*5.08mm

Pin-Out			
Pin	Function	Pin	Function
1	PE	4	-V _o
2	AC(N)	5	+V _o
3	AC(L)	6	NC

Note:
Unit: mm[inch]
Connect pin size: Ø1.50[0.059]
Pin dia 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

1. For additional information on Product Packaging please refer to www.mornsun-power.com. Packaging bag number: 58220181;
2. If the product is not operated within the required load range, the product performance cannot be guaranteed to comply with all parameters in the datasheet;
3. Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta=25 °C, humidity<75% with nominal input voltage and rated output load;
4. All index testing methods in this datasheet are based on our company corporate standards;
5. The performance parameters of the product models listed in this manual are as above, but some parameters of non-standard model products may exceed the requirements mentioned above. Please contact our technicians directly for specific information;
6. We can provide product customization service;
7. Products are related to laws and regulations: see "Features" and "EMC";
8. 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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