



RoHS



## FEATURES

- Input voltage range: 85 - 264VAC/120 - 370VDC
- Compact size: 4" x 2" x 1"
- Operating ambient temperature range: -40℃ to +70℃
- Active PFC
- High I/O isolation test voltage up to 4000VAC
- Operating altitude up to 5000m
- Very low leakage current <0.1mA
- No-load power consumption <0.3W
- The base plate with conformal coating
- Output short circuit, over-current, over-voltage, over-temperature protection
- Installing in system of Safety Class I/II is available
- Safety according to IEC/EN/UL62368, IEC/EN60335, IEC/EN61558, GB4943, IEC/EN/ES60601

LOF225-20Bxx series is one of Mornsun's AC-DC miniaturize open frame power supply. It features universal AC input and at the same time accepts DC input voltage, cost-effective, high efficiency, high reliability and double or reinforced insulation. These converters offer excellent EMC and safety performance, which meet IEC/EN/UL62368, GB4943, IEC/EN60335, IEC/EN61558, IEC/EN/ES60601 standards and they are widely used in areas of industrial, LED, street light control, electricity, security, telecommunications, smart home, medical, etc.

## Selection Guide

Certification	Part No.	Cool Mode	Output Power (W)	Nominal Output Voltage and Current (Vo/Io)	Output adj. Range (V)	Efficiency at 230VAC (%) Typ.	Max. Capacitive Load (μF)
UL/CE (Pending)	LOF225-20B12	Air cooling	140	12V/11.67A	11.8-12.6	93	6000
		13CFM	225	12V/18.75A			
	LOF225-20B15	Air cooling	140	15V/9.33A	14.7-15.8	93	5000
		13CFM	225	15V/15A			
	LOF225-20B24	Air cooling	140	24V/5.83A	23.5-25.2	94	3200
		13CFM	225	24V/9.4A			
	LOF225-20B27	Air cooling	130	27V/4.81A	26.5-28.4	94	2400
		13CFM	225	27V/8.35A			
	LOF225-20B48	Air cooling	140	48V/2.91A	47.1-50.4	94	1600
		13CFM	225	48V/4.7A			

Notes: Under any conditions, the total power of the product should not exceed the rated power of 225w and the output current should not exceed the rated output current.

## Input Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Input Voltage Range	AC input		85	--	264	VAC
	DC input		120	--	370	VDC
Input Frequency			47	--	63	Hz
Input Current	115VAC		--	--	3	A
	230VAC		--	--	2	
Inrush Current	115VAC	Cold start	--	40	--	
	230VAC		--	75	--	
Power Factor	115VAC	Full load	0.99	--	--	--
	230VAC		0.95	--	--	
Leakage Current	240VAC		<0.1mA; Single failure<0.5mA			
Hot Plug			Unavailable			

### Output Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Output Voltage Accuracy*	Full load range		--	±1	--	%
Line Regulation	Rated load		--	±0.5	--	
Load Regulation	0%-100% load		--	±0.5	--	
Ripple & Noise*	20MHz bandwidth (peak-to-peak value)	12V	--	--	60	mV
		15V/24V/27V/48V	--	--	100	
Temperature Coefficient			--	±0.03	--	%/°C
Minimum Load			0	--	--	%
Hold-up Time	230VAC	140W	--	16	--	ms
		225W	--	12	--	
Stand-by Power Consumption			--	--	0.3	W
Short Circuit Protection	Recovery time <3s after the short circuit disappear.		Hiccup, continuous, self-recovery			
Over-current Protection			≥110%Io, self-recovery			
Over-voltage Protection	12V		≤16VDC (Output voltage turn off, re-power on for recover)			
	15V		≤20VDC (Output voltage turn off, re-power on for recover)			
	24V		≤32VDC (Output voltage turn off, re-power on for recover)			
	27V		≤35VDC (Output voltage turn off, re-power on for recover)			
	48V		≤60VDC (Output voltage turn off, re-power on for recover)			
Over-temperature Protection			Output voltage turn off, re-power on to recovery after abnormal removed			
Fan power	15V		Offer output power of 24V/0.25A with output voltage accuracy ±15%			
	12V/24V/27V/48V		Offer output power of 12V/0.5A with output voltage accuracy ±15%			





Notes: 1. \*Output voltage accuracy: including the setting error, line regulation, load regulation.



2. \*The "Tip and barrel method" is used for ripple and noise test, output parallel 10uF electrolytic capacitor and 0.1uF ceramic capacitor, please refer to AC-DC Converter Application Notes for specific information.

3. \*When the product works at light load (≤15% IO), in order to improve the efficiency to reach at green working mode, the value of ripple and noise will be double.

4. \*For all the above test items, please refer to our company standard "AC-DC Black Box Test Specification" for specific test specifications and methods.

### General Specifications

Item		Operating Conditions		Min.	Typ.	Max.	Unit	
Isolation Test	Input - output	Electric strength test for 1min., leakage current <10mA		4000	--	--	VAC	
	Input - 			1500	--	--		
	Output - 			500	--	--		
Insulation Resistance	Input - 	Ambient temperature: 25 ± 5℃ Relative humidity: < 95%RH, no condensation Test voltage: 500VDC		50	--	--	M Ω	
	Input - output			50	--	--		
	Output - 			50	--	--		
Operating Temperature				-40	--	+70	℃	
Storage Temperature				-40	--	+85		
Storage Humidity		No condensation		10	--	95	%RH	
Operating Humidity				20	--	90		
Switching Frequency				--	--	--	KHz	
Power Derating		Operating temperature derating	Air cooling	+45℃ to +70℃	2.0	--	--	% /℃
			13CFM	+50℃ to +70℃	2.5	--	--	
			225W	-40℃ to -30℃	2	--	--	
		Input voltage derating		85VAC-115VAC		1	--	--
Safety Standard				Meet IEC/EN/UL62368/EN60335/EN61558 /GB4943/EN60601				

Safety Certification		IEC/EN/UL/CB62368 (Pending)
Safety Class		CLASS I
Isolation level	Input - output	2 x MOPP
	Input - 	1 x MOPP
	Output - 	1 x MOPP
MTBF	MIL-HDBK-217F@25℃	≥300,000 h
Warranty	Ambient temperature: <50℃	5 years

Mechanical Specifications

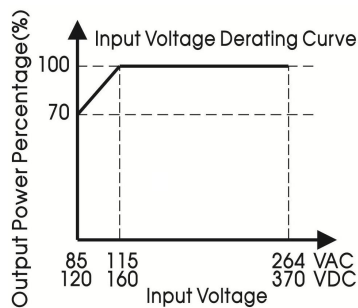
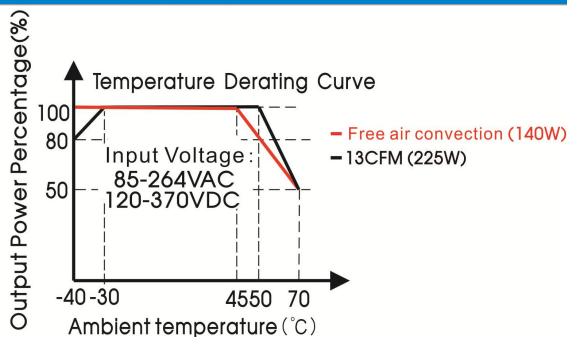
Case Material	Open frame
Dimension	101.6 x 50.8 x 25.4 mm
Weight	175g (Typ.)
Cooling Method*	Air convection (140W) / 13CFM (225W)

Note: \*Cooling method and power derating refer to typical characteristic curves.

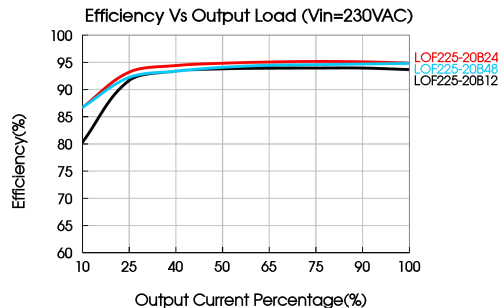
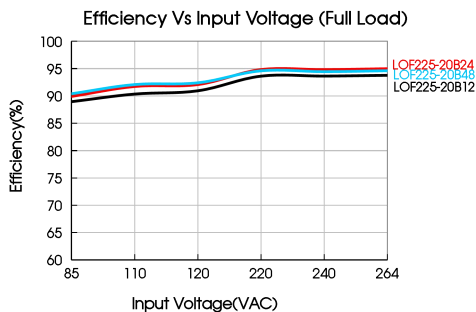
Electromagnetic Compatibility (EMC)

Emissions*	CE	CISPR32/EN55032 CLASS B		
	RE	CISPR32/EN55032 (Category I, CLASS B; Category II, CLASS A)		
	Harmonic current	IEC/EN61000-3-2 CLASS D		
Immunity	ESD	IEC/EN 61000-4-2	Contact ±8KV/Air ±15KV	Perf. Criteria A
	RS	IEC/EN 61000-4-3	10V/m	perf. Criteria A
	EFT	IEC/EN 61000-4-4	±4KV	perf. Criteria A
	Surge	IEC/EN 61000-4-5	±2KV/±4KV	perf. Criteria A
	CS	IEC/EN61000-4-6	10 Vr.m.s	perf. Criteria A
	Voltage dips, short interruptions and voltage variations immunity	IEC/EN61000-4-11	0%, 70%	perf. Criteria B
Note: 1.*The power supply should be considered as a part of the components in the system. All EMC performance are been tested on a metal plate with a thickness of 1mm and a length of 360mm x 360mm. The power supply must be combined with the terminal equipment for electromagnetic compatibility confirmation.				
2.*Category I products with PE, category II products without PE.				

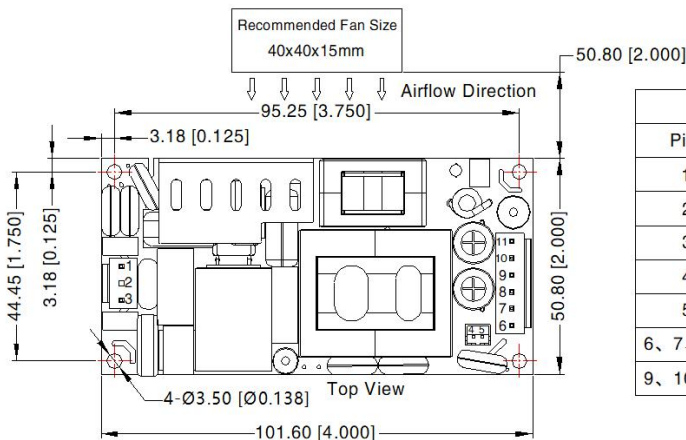
Product Characteristic Curve



Note: With an AC input voltage between 85 -115VAC and a DC input between 120-160VDC the output power must be derated as per the temperature derating curves.

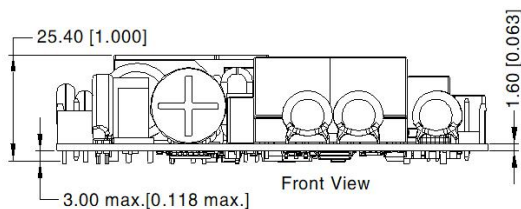


Dimensions and Recommended Layout



THIRD ANGLE PROJECTION

Pin-Out			
Pin	Function	Product Connector	Customer Connector
1	AC(N)/DC-	JST B3P-VH or equivalent	Housing:JST VHR Terminal:JST SVH-21T-P1.1 or equivalent
2	NC		
3	AC(L)/DC+		
4	Fan-	JST B2B-PH-K-S or equivalent	Housing:JST PHR-2 Terminal:JST SPH-002T-P0.56 or equivalent
5	Fan+		
6、7、8	-Vo	JST B6P-VH or equivalent	Housing:JST VHR Terminal:JST SVH-21T-P1.1 or equivalent
9、10、11	+Vo		



- Note:
1. Unit: mm[inch]
  2. General tolerances:  $\pm 1.00[\pm 0.039]$
  3. Do not use fan power to power other devices
  4. The layout of the device is for reference only, please refer to the actual product

- Note:
1. For additional information on Product Packaging please refer to [www.mornsun-power.com](http://www.mornsun-power.com). Packaging bag number: 58220137;
  2. 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;
  3. All index testing methods in this datasheet are based on our company corporate standards;
  4. We can provide product customization service, please contact our technicians directly for specific information;
  5. Products are related to laws and regulations: see "Features" and "EMC";
  6. Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units.

Mornsun Guangzhou Science & Technology Co., Ltd.

Address: No. 5, Kehui St. 1, Kehui Development Center, Science Ave., Guangzhou Science City, Huangpu District, Guangzhou, P. R. China  
Tel: 86-20-38601850 Fax: 86-20-38601272 E-mail: [info@mornsun.cn](mailto:info@mornsun.cn) [www.mornsun-power.com](http://www.mornsun-power.com)