

EMC Filter



RoHS



FEATURES

- Ultra-wide input voltage range: 85-305VAC
- Input current range: Steady state 15A
- Ultrathin volume: 63 x 60 x 14.5 mm
- Operating ambient temperature range: -40°C to +100°C
- Meet IEC/EN61000-4 series and CISPR32/EN55032 standards
- No-load power consumption: 1W(MAX)@230VAC (room temperature)
- Isolation Voltage: L/N-PE,2500VAC(leakage current<5mA)
- Compliance with safety standards IEC62368(5000m)

The model FC-L15HB developed for the first time belongs to EMC auxiliary device supporting AC brick power supply of our company. The maximum input voltage of the AC brick power supply should not be greater than the maximum working voltage of this product, and the maximum input current should be less than the maximum working current of this product.

Selection Guide

Model	Operating Voltage(VAC)		Operating Current(A)	Surge Performance	Certification
	Typ. (Range)	Max*	Max		
FC-L15HB	115/230V (85-305)	305	15.0	Line-Line ±2kV Line-PE ±4kV	--

Note: 1.* The input voltage must not exceed this value, otherwise permanent and unrecoverable damage may be caused;

General Specifications

Item	Test Conditions	Min.	Typ.	Max.	Unit
Operating Temperature		-40	--	+100	°C
Storage Temperature		-40	--	+100	
Storage Humidity	Non-condensing	5	--	95	%RH
Isolation Voltage	IN(L)~PE , IN(N)~PE , electric strength test for 1 minute with a leakage current of 5mA max	--	2500	--	VAC
No-Load Power Consumption	Ordinary Temperature, 230VAC, 0%Io	--	--	1	W
Insertion Loss (CM/DM)	150kHz~1MHz	-	20	-	dB
	1MHz~10MHz	-	20	-	dB
	10MHz~30MHz	-	15	-	dB
MTBF		MIL-HDBK-217F@25°C≥1000,000 h			
Impact and Vibration Test		10-55Hz, 5G, 30 Min. along X, Y and Z			
Altitude	80-110kPa	≤5000m			
Warranty		3 years			

Mechanical Specifications

Case Material	Black plastic, flame-retardant and heat-resistant (UL94 V-0)
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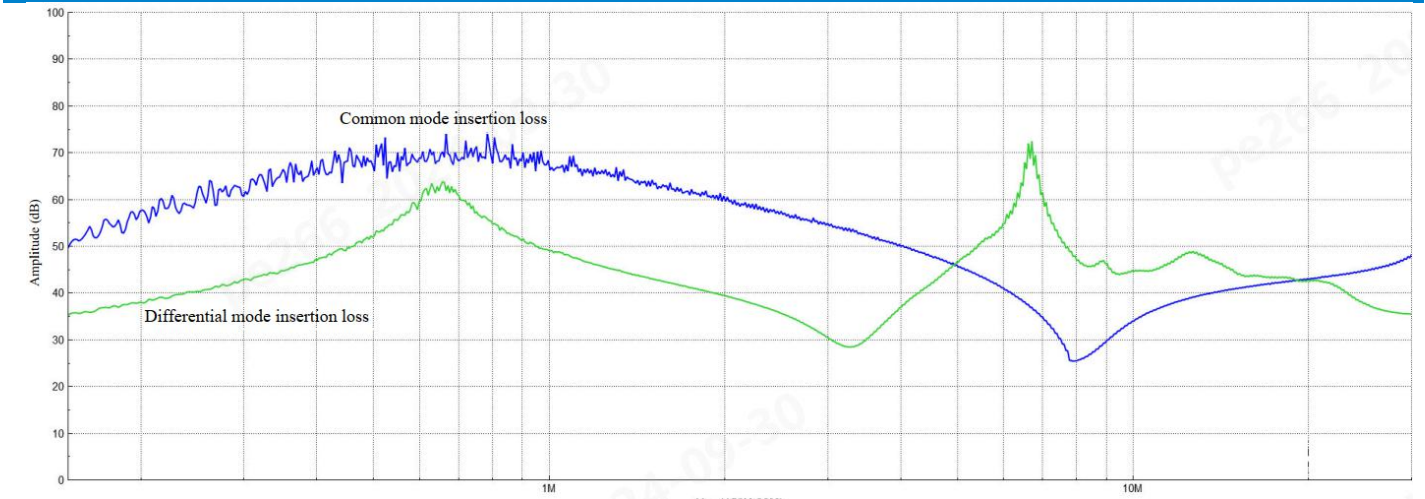
Dimension	63.00 mm x 60.00 mm x 14.50 mm
Weight	95g(Typ.)
Cooling Method	Free air convection

Electromagnetic Compatibility (EMC)

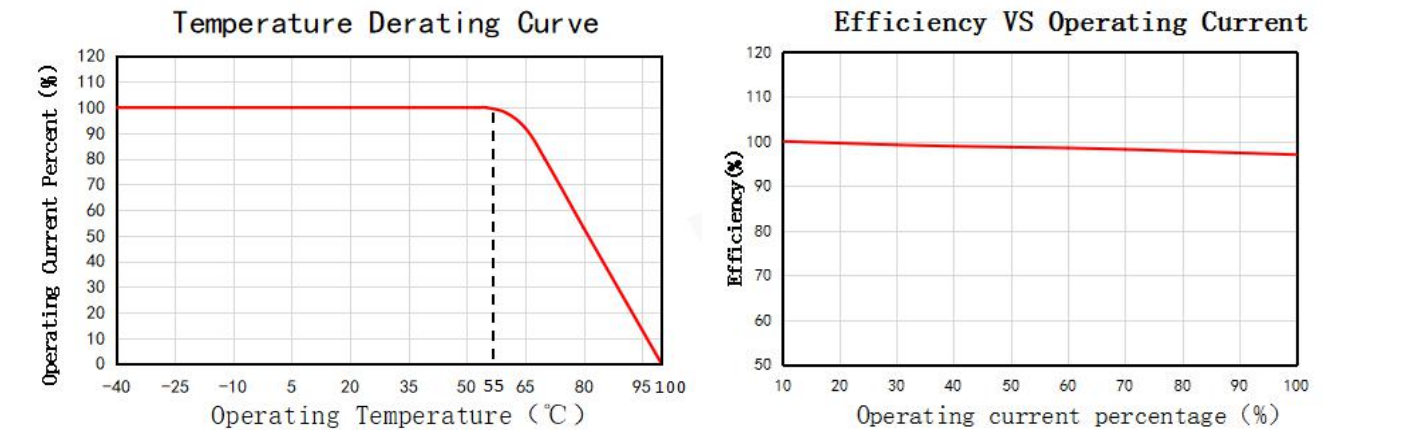
EMI	CE	CISPR32/EN55032	CLASS A	
	RE	CISPR32/EN55032	CLASS A	
EMS	ESD	IEC/EN61000-4-2	Contact ±8kV , Air ±15kV	perf. Criteria A
	RS	IEC/EN61000-4-3	10V/m	perf. Criteria A
	EFT	IEC/EN61000-4-4	±4kV	perf. Criteria B
	Surge	IEC/EN61000-4-5	Line-Line ±2kV , Line-PE ±4kV	perf. Criteria A
	CS	IEC/EN61000-4-6	10V r.m.s	perf. Criteria A
	PFMF	IEC/EN61000-4-8	50/60Hz 30A/m	perf. Criteria A

Note: Matching FC-L15HB to the front end of LBF750-13Bxx/LBF1000-13B28-NS/LBF1500-13B28G power supply series can make the power module meet above EMC characteristics.

Insertion Loss Specifications



Product Typical Curve



Note: This product is suitable for applications using natural air cooling; for applications in closed environment please consult factory or one of our FAE.

Design Reference

Typical application

Note: It is recommended to match the Mornsun LBF750-13Bxx(Figure 1)/LBF1000-13B28-NS (Figure 2) //LBF1500-13B28G (Figure 3) of AC brick power supply.

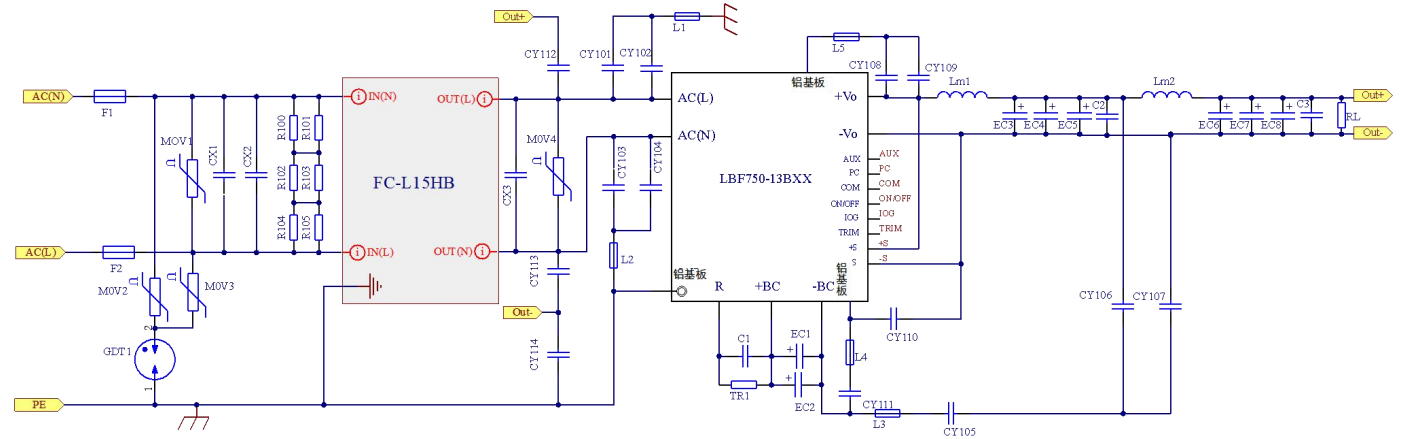


Figure 1

Device	Value	
F1、F2	300VAC/15A/Slow Break Type	
MOV1、MOV2、MOV3、MOV4	561K/6000A/14D/KP=7.5	
GDT1	600V/3KA	
CX1、CX2、CX3	225K/310VAC	
R100、R101、R102、R103、R104、R105	560KΩ/1/4W/1206	
CY101、CY102、CY103、CY104、CY105、CY106、CY107、CY110、CY111、CY112、CY113	Y1/222M/400VAC	
CY108、CY109	Y1/472M/400VAC	
CY114	Y1/102M/400VAC	
C1	683K/630V	
TR1	12-51Ω/10W Cement Resistor	
EC1、EC2	470uF/450V	
L1、L2、L3、L4、L5	High frequency patch magnetic bead /47Ω /DCR 0.60Ω Max(TD403025RH-470K)	
Lm1	12V	0.33uH/0.35mΩ Max/80A (RKR0415-R39M)
	24V/28V/48V/54V	Short circuit
Lm2	48V	0.55uH/0.65mΩ Max/52A (RKR0620-R55M)
	12V/24V/28V/54V	Short circuit
EC3/EC4/EC5/EC6/EC7/EC8	12V	1000uF/16V/5600mA
	24V/28V	680uF/35V/2900mA
	48V	330uF/63V/1200mA
	54V	330uF/100V/930mA
C2、C3	12V/24V/28V	106K/50V/1206
	48V/54V	225K/100V/1206
RL	12V	150Ω/3W (Multiple parallel)
	24V/28V	0.5KΩ/3W (Multiple

		parallel)
	48V/54V	2KΩ/3W (Multiple parallel)
Note: 1.For better EMC performance, high-frequency magnetic beads can be suppressed in series in the connection between the aluminum substrate and the earth PE. 2.For details about the peripheral parameters of the power supply, see the LBF750-13Bxx series technical manual.		

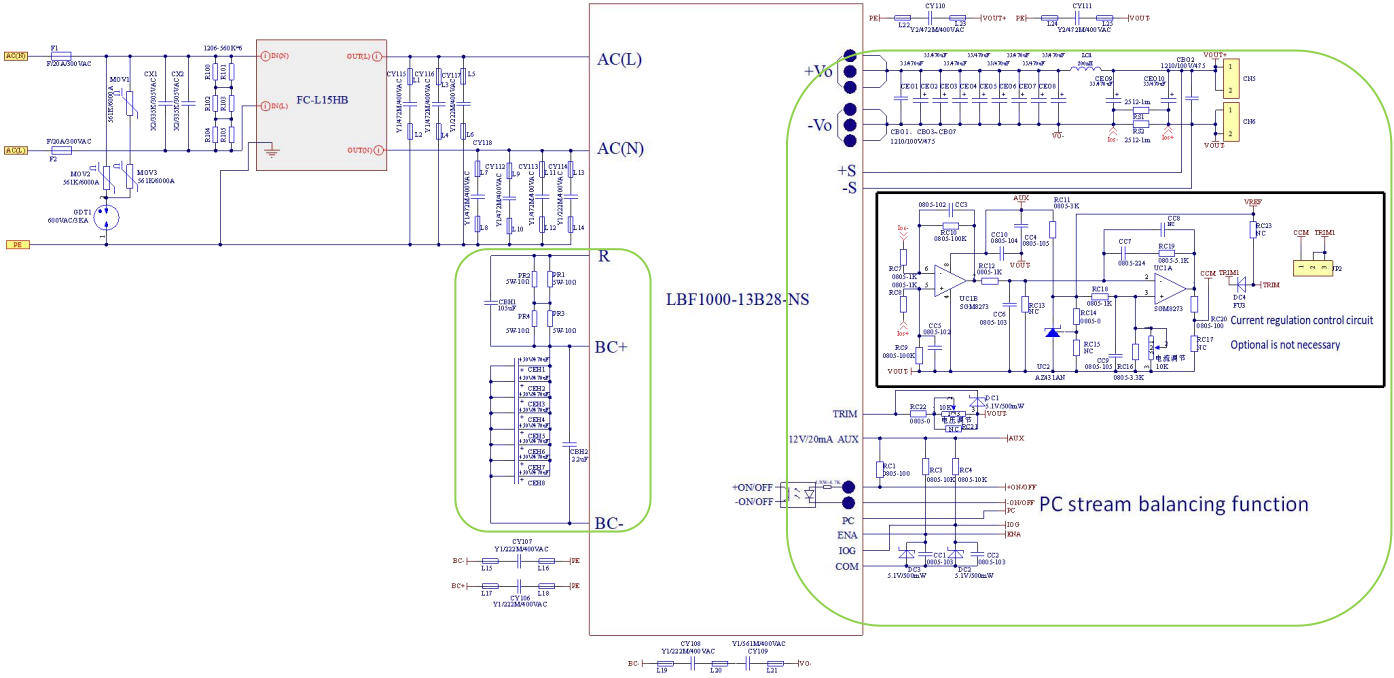


Figure 2

Device	Value
F1, F2	Fuse, 300VAC/20A/Slow Break Type
MOV1, MOV2, MOV3	561K/6000A/14D
GDT1	600V/3KA
CX1, CX2	335K/310VAC/X2
R100/R101/R102/R103/R104/R105	560KΩ/1206
CY110, CY111, CY112, CY113, CY115, CY116, CY118	Y1/472M/400VAC
CY106, CY107, CY108, CY114, CY117	Y1/222M/400VAC
CY109	Y1/561M/400VAC
L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, L15, L16, L17, L18, L19, L20, L21, L22, L23, L25, L25	High Frequency Magnetic Bead/100Ω /DCR 0.02Ω Max (HCFM453215U-101Y)

Note: For details on the decomposition figure in the green box and device parameters, refer to LBF1000-13B28-NS technical manual recommended peripheral circuits

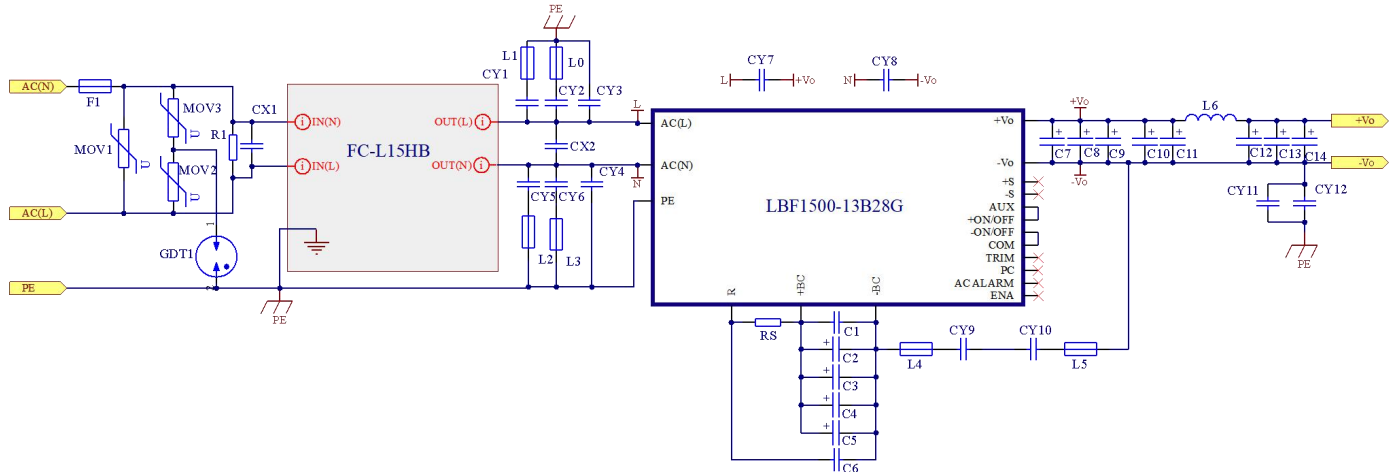


Figure 3

Device	Value
F1、F2	Fuse, 250VAC/16A/Slow break type
MOV1	561K/6000A/14D
MOV2、MOV3	471K/6000A/14D
GDT1	600V/5KA
CX1、CX2	335K/310VAC/X2
R1	1MΩ /500V/1206/1/4W (Multiple parallel)
CY1、CY5	Y1/472M/400VAC
CY2、CY6、CY11、CY12	Y1/222M/400VAC
CY3、CY4、CY7、CY8、CY9、CY10	Y1/561K/400VAC
RS	8.2Ω /40W Cement Resistor
C1	1uF/450V Film Capacitor
C2、C3、C4、C5	330uF/450V Aluminum Electrolytic Capacitor
C6	1uF/630V Film Capacitor
C7、C8、C9、C10、C11、C12、C13、C14	680uF/50V Aluminum Electrolytic Capacitor
L0、L1、L2、L3、L4、L5	High Frequency Magnetic Bead/100Ω /DCR 0.02Ω Max (HCFM453215U-101Y)
L6	0.55uH / 0.65mΩMax / 52A (RKR0620-R55M)

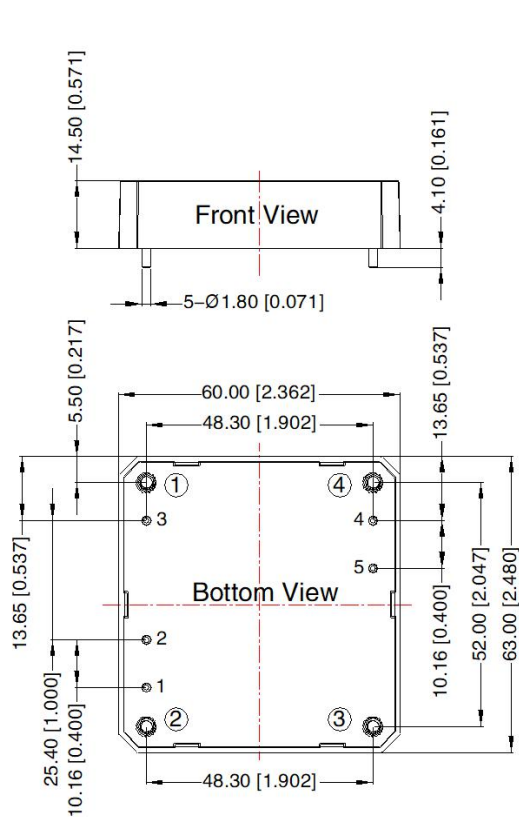
Note: 1. The periphery is suitable for EMC characteristic test.

2. When applied in low-temperature -40°C environment, the capacity of bus capacitor (C1~C4) can be appropriately increased to improve the ripple at low temperature (total capacitance value does not exceed 1800uF).

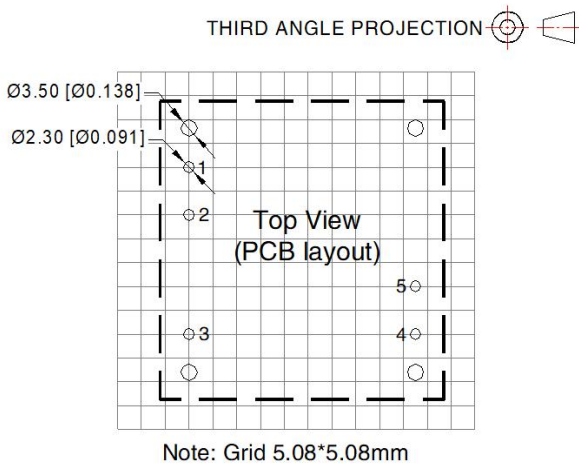
3. C1 should be as close as possible to the pin, C5 is used to filter the booster circuit peak, as close as possible to the pin, do not connect will cause damage to the power module.

4. For peripheral parameters of the power supply, refer to the LBF1500-13B28G technical manual.

Dimensions and Recommended Layout



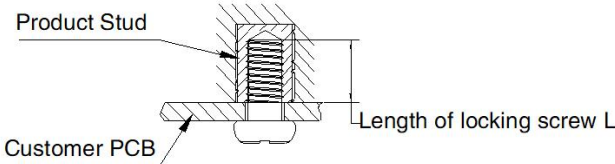
Note:
Unit: mm[inch]
Pin diameter tolerances: $\pm 0.10[\pm 0.004]$
General tolerances: $\pm 0.50[\pm 0.020]$



Pin-Out					
Pin	1	2	3	4	5
Mark	IN(N)	IN(L)	$\pm$	OUT(N)	OUT(L)

When the ambient vibration conditions of the product exceed the standard of the technical manual's general characteristic shock and vibration test conditions, screws must be added to fix it

Position	Screw Spec.	Length of locking screw L(max)	Torque(max)
①—④	M3	4mm	0.4N · m



- Note:
1. For additional information on Product Packaging please refer to www.mornsun-power.com. Packaging bag number: 58210191;
 2. Unless otherwise specified, data in this datasheet should be tested under the conditions of $T_a=25^{\circ}\text{C}$, humidity<75%RH with nominal input voltage and rated 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;

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