

AC/DC 50W Enclosed Switching Power Supply **MORNSUN**[®]

LM50-22Bxx, LM50-22Bxx-C, LM50-22Bxx-Q Series



RoHS



UL62368-1



EN62368-1
EN60335-1
EN61558-1



GB4943.1



IEC62368-1



BS EN 62368-1



IEC 60060-1 2006



IEC 60335-1 2006

FEATURES

- 165 - 264VAC or 180 - 370VDC input voltage
- Accepts AC or DC input (dual-use of same terminal)
- Operating ambient temperature range: -30°C to +70°C
- Low standby power consumption, high efficiency
- High I/O isolation test voltage up to 4000VAC
- Low ripple & noise
- Output short circuit, over-current, over-voltage protection
- Over-voltage class III (designed to meet EN61558)
- Operating altitude up to 5000m

LM50-22Bxx series is one of Mornsun's enclosed AC-DC switching power supply. It features AC input and at the same time accepts DC input voltage, cost-effective, low no load power consumption, high efficiency, high reliability and double or reinforced insulation. These converters offer excellent EMC performance and meet IEC/EN61000-4, CISPR32/EN55032, IEC/UL/EN62368, IEC/EN60335, GB4943, IEC/EN61558 standards and they are widely used in areas of industrial, LED, street light control, electricity, security, telecommunications, smart home etc.

Selection Guide

Certification	Part No.*	Output Power (W)	Nominal Output Voltage and Current (Vo/Io)	Output Voltage Adjustable Range(V)	Efficiency at 230VAC (%) Typ.	Max. Capacitive Load (μF)
UL/EN/IEC/CCC /BIS/BS	LM50-22B05	50	5V/10A	4.5-5.5	86	8500
	LM50-22B12	50.4	12V/4.2A	10.2-13.8	87	2000
	LM50-22B15	51	15V/3.4A	13.5-18	88	1500
	LM50-22B24	52.8	24V/2.2A	21.6-28.8	89	1000
	LM50-22B36	52.2	36V/1.45A	32.4-39.6	89	800
	LM50-22B48	52.8	48V/1.1A	43.2-52.8	90	680

Note: *Use suffix "C" for terminal with protective cover, suffix "Q" for conformal coating.

Input Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Input Voltage Range	AC input		165	--	264	VAC
	DC input		180	--	370	VDC
Input Voltage Frequency			47	--	63	Hz
Input Current	230VAC		--	--	0.8	A
Inrush Current	230VAC	Cold start	--	45	--	
Leakage Current	240VAC		<0.75mA			
Hot Plug			Unavailable			

Output Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Output Voltage Accuracy	Full load range	5V	--	±2	--	%
		12V/15V/24V/36V/48V	--	±1	--	
Line Regulation	Rated load		--	±0.5	--	
Load Regulation	0% - 100% load	5V	--	±1	--	
		12V/15V/24V/36V/48V	--	±0.5	--	
Ripple & Noise*	20MHz bandwidth (peak-to-peak value)	5V	--	80	--	mV
		12V/15V	--	120	--	
		24V	--	150	--	

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		36V/48V	--	200	--	
Temperature Coefficient			--	±0.03	--	%/℃
Minimum Load			0	--	--	%
Stand-by Power Consumption			--	--	0.3	W
Hold-up Time	230VAC		30	--	--	ms
Short Circuit Protection	Recovery time <5s after the short circuit disappear.		Hiccup, continuous, self-recovery			
Over-current Protection			110%-200% Io, self-recovery			
Over-voltage Protection	5V	≤6.3VDC (Output voltage clamp or hiccup)				
	12V	≤16.2VDC (Output voltage clamp or hiccup)				
	15V	≤21.75VDC (Output voltage clamp or hiccup)				
	24V	≤33.6VDC (Output voltage clamp or hiccup)				
	36V	≤48.6VDC (Output voltage clamp or hiccup)				
	48V	≤60.0VDC (Output voltage clamp or hiccup)				
Note: *The “Tip and barrel method” is used for ripple and noise test, output parallel 47uF electrolytic capacitor and 0.1uF ceramic capacitor, please refer to Enclosed Switching Power Supply Application Notes for specific information.						

General Specifications

Item		Operating Conditions		Min.	Typ.	Max.	Unit
Isolation Test	Input - 	Electric strength test for 1min., leakage current <10mA		2000	--	--	VAC
	Input - output			4000	--	--	
	Output - 			1250	--	--	
Insulation Resistance	Input - 	At 500VDC		100	--	--	M Ω
	Input - output			100	--	--	
	Output - 			100	--	--	
Operating Temperature				-30	--	+70	℃
Storage Temperature				-40	--	+85	
Storage Humidity		Non-condensing		--	--	95	%RH
Operating Humidity				20	--	90	
Switching Frequency				--	65	--	kHz
Power Derating		Operating temperature derating	+50℃ to +70℃	2	--	--	%/℃
		Input voltage derating	180VDC - 200VDC	1	--	--	%/VDC
Safety Standard				IEC/UL62368-1, GB4943.1, IS13252 (Part1) safety approved & EN62368-1, EN60335-1, EN61558-1, BS EN 62368-1 (Report) Design refer to IEC60335-1, IEC61558-1			
Safety Class				CLASS I			
MTBF		MIL-HDBK-217F@25℃		>300,000 h			

Mechanical Specifications

Case Material	Metal (AL1100, SGCC)
Dimensions	99.00 x 82.00 x 30.00 mm
Weight	180g (Typ.)
Cooling Method	Free air convection

Electromagnetic Compatibility (EMC)

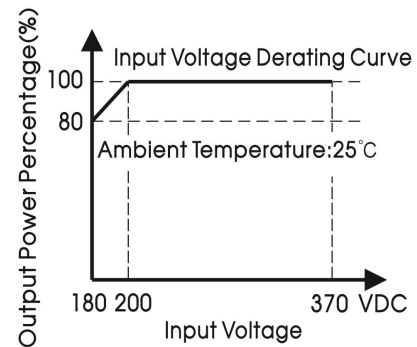
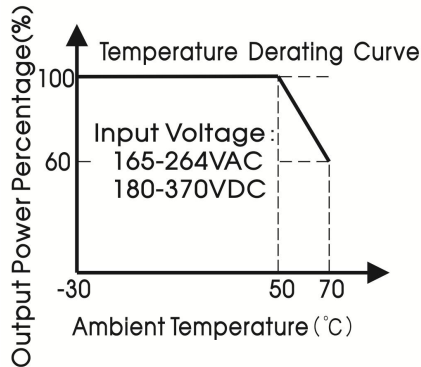
Emissions	CE	CISPR32/EN55032 CLASS B
	RE	CISPR32/EN55032 CLASS B
	Harmonic current	IEC/EN61000-3-2 CLASS A

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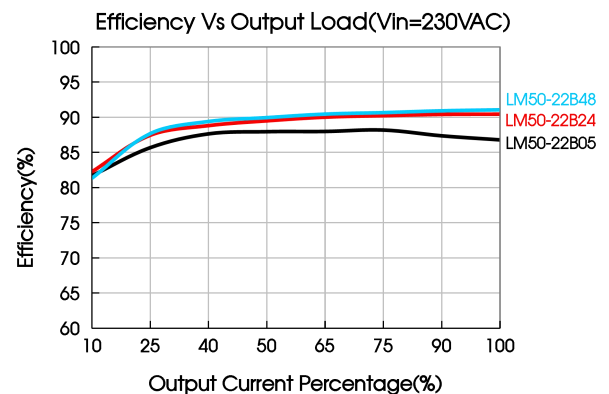
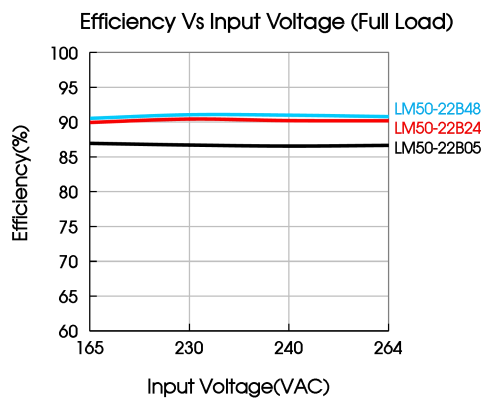
Immunity	ESD	IEC/EN 61000-4-2	Contact $\pm 6\text{KV}$ /Air $\pm 8\text{KV}$	perf. Criteria A
	RS	IEC/EN 61000-4-3	10V/m	perf. Criteria A
	EFT	IEC/EN 61000-4-4	$\pm 2\text{KV}$	perf. Criteria A
	Surge	IEC/EN 61000-4-5	line to line $\pm 2\text{KV}$ /line to ground $\pm 4\text{KV}$	perf. Criteria A
	CS	IEC/EN 61000-4-6	10 Vr.m.s	perf. Criteria A
	Voltage dip, short interruption and voltage variation	IEC/EN 61000-4-11	0%, 70%	perf. Criteria B

Product Characteristic Curve



Note: 1. For input voltage of 180 - 200VDC, input voltage derating is required based on temperature derating;

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

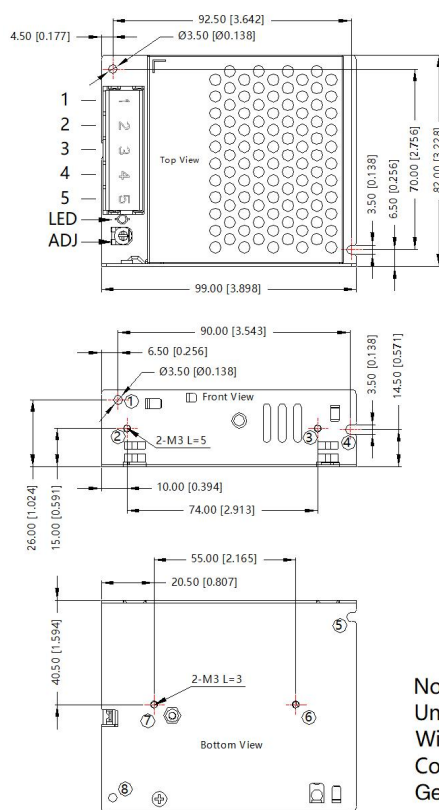


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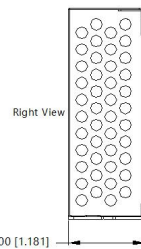
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Dimensions and Recommended Layout

LM50-22Bxx, LM50-22Bxx-Q Series



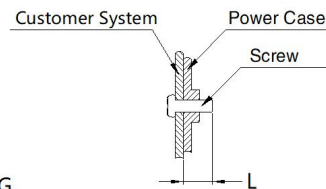
THIRD ANGLE PROJECTION



Pin-Out	
Pin	Function
1	AC(L)
2	AC(N)
3	⏏
4	-Vo
5	+Vo

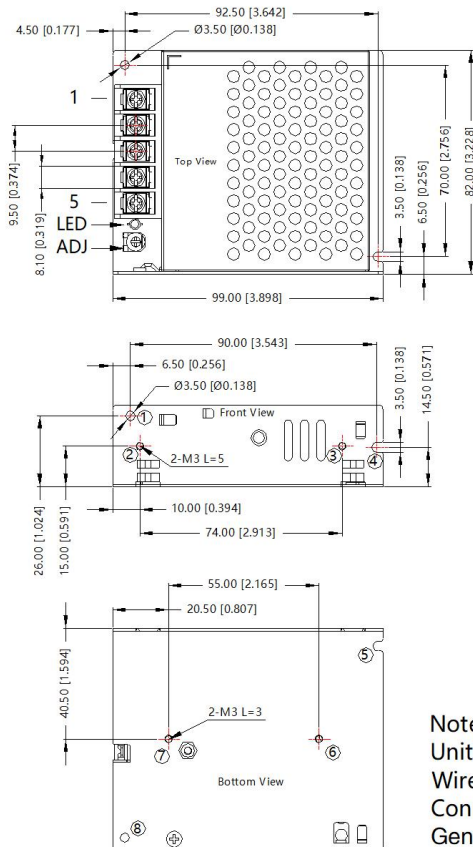
①-⑧ any position must be connected to the earth (⏏)

Position	Screw Spec.	L(max)	Torque(max)
② - ③	M3	5mm	0.4N·m
⑥ - ⑦	M3	3mm	0.4N·m

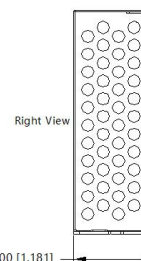


Note:
Unit: mm[inch]
Wire range: 22-12AWG
Connector tightening torque: M3.5, 0.8N·m
General tolerances: ± 1.00[± 0.039]

LM50-22Bxx-C Series



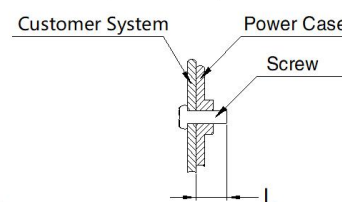
THIRD ANGLE PROJECTION



Pin-Out	
Pin	Function
1	AC(L)
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3	⏏
4	-Vo
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Note:
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Wire range: 22-12AWG
Connector tightening torque: M3.5, 0.8N·m
General tolerances: ± 1.00[± 0.039]

Note:

1. For additional information on Product Packaging please refer to www.mornsun-power.com. Packaging bag number: 58220118;
2. Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta=25℃, humidity<75% RH with nominal input voltage and rated output load;
3. The room temperature derating of 5℃/1000m is needed for operating altitude greater than 2000m;
4. All index testing methods in this datasheet are based on our company corporate standards;
5. In order to improve the efficiency at high input voltage, there will be audible noise generated, but it does not affect product performance and reliability;
6. We can provide product customization service, please contact our technicians directly for specific information;
7. Products are related to laws and regulations: see "Features" and "EMC";
8. The out case needs to be connected to the earth of system when the terminal equipment in operating;
9. 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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