



FEATURES

- Universal 85 - 305VAC or 120 - 430VDC 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
- Safety according to IEC/EN/UL62368, EN60335, EN61558, GB4943
- Over-voltage class III (designed to meet EN61558)
- Operating altitude up to 5000m

LM50-23Bxx series is one of Mornsun's enclosed AC-DC switching power supply. It features universal 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, EN60335, EN61558, GB4943 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/CE/CCC	LM50-23B05	50	5V/10A	4.5-5.5	83	8500
	LM50-23B12	50.4	12V/4.2A	10.2-13.8	86	2000
	LM50-23B15	51	15V/3.4A	13.5-18	87	1500
	LM50-23B24	52.8	24V/2.2A	21.6-28.8	88	1000
	LM50-23B36	52.2	36V/1.45A	32.4 - 39.6	89	470
	LM50-23B48	52.8	48V/1.1A	43.2-52.8	90	220

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

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Voltage Range	AC input	85	--	305	VAC
	DC input	120	--	430	VDC
Input Voltage Frequency		47	--	63	Hz
Input Current	115VAC	--	--	1.2	A
	230VAC	--	--	0.8	
Inrush Current	115VAC	Cold start	--	30	--
	230VAC		--	60	--
Leakage Current	277VAC	<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	--	
		36V/48V	--	240	--	
Temperature Coefficient			--	±0.03	--	%/°C
Minimum Load			0	--	--	%
Stand-by Power Consumption			--	--	0.5	W
Hold-up Time	115VAC		--	8	--	ms
	230VAC		--	30	--	
Short Circuit Protection	Recovery time <5s after the short circuit disappear.		Hiccup, continuous, self-recovery			
Over-current Protection	230VAC, Rated load	Normal temperature, High temperature	110%-200% Io, self-recovery			
		Low temperature	≥110% Io, self-recovery			
Over-voltage Protection	5V		≤6.3VDC (Clamp, self-recovery)			
	12V		≤16.2VDC (Hiccup, self-recovery)			
	15V		≤21.75VDC (Hiccup, self-recovery)			
	24V		≤33.6VDC (Hiccup, self-recovery)			
	36V		≤49VDC (Hiccup, self-recovery)			
	48V		≤60VDC (Hiccup, self-recovery)			
Note: *The "Tip and barrel method" is used for ripple and noise test, output parallel 47μF electrolytic capacitor and 0.1μF 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	--	--	MΩ		
	Input - output		100	--	--			
	Output - ⊕		100	--	--			
Operating Temperature			-30	--	+70	°C		
Storage Temperature			-40	--	+85			
Operating Humidity	Non-condensing		20	--	90	%RH		
Storage Humidity			--	--	95			
Switching Frequency			--	65	--	kHz		
Power Derating	Operating temperature derating	85VAC-100VAC	-30°C to -25°C	5	--	--	% / °C	
		5V output	85VAC-165VAC	+40°C to +70°C	1.33	--		--
			165VAC-305VAC	+50°C to +70°C	2	--		--
	Input voltage derating	85VAC-100VAC		1.33	--	--	% / VAC	
		277VAC-305VAC		0.71	--	--		
Safety Standard			Meet IEC/EN/UL62368/EN60335/EN61558/GB4943					
Safety Certification			IEC/EN/UL62368/EN60335/EN61558/GB4943					
Safety Class			CLASS I					
MTBF	MIL-HDBK-217F@25°C		>300,000 h					

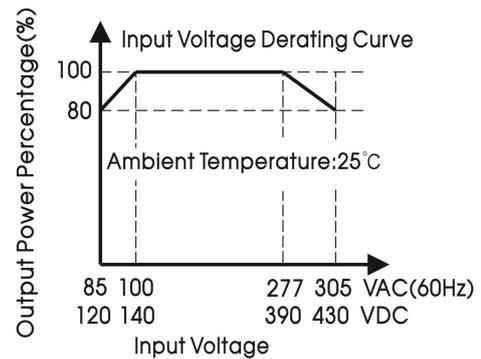
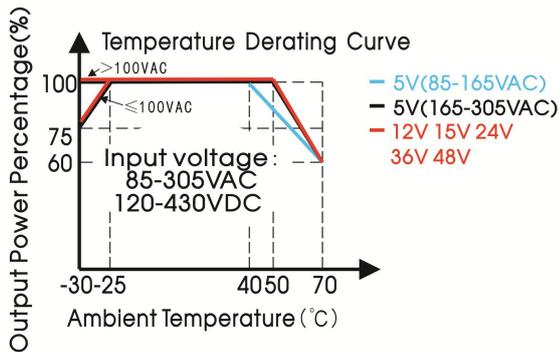
Mechanical Specifications

Case Material	Metal (AL1100, SGCC)
Dimensions	99.00 x 82.00 x 30.00 mm
Weight	190g (Typ.)
Cooling Method	Free air convection

Electromagnetic Compatibility (EMC)

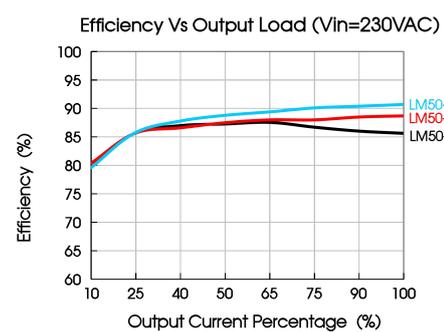
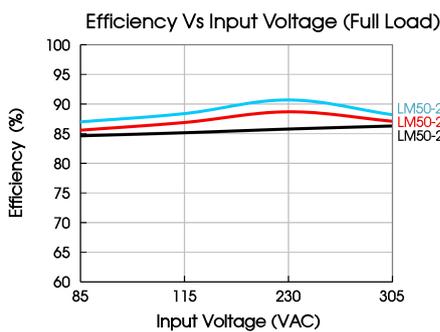
Emissions	CE	CISPR32/EN55032 CLASS B	
	RE	CISPR32/EN55032 CLASS B	
	Harmonic current	IEC/EN61000-3-2 CLASS A	
Immunity	ESD	IEC/EN 61000-4-2 Contact ±6KV/Air ±8KV	Perf. Criteria A
	RS	IEC/EN 61000-4-3 10V/m	perf. Criteria A
	EFT	IEC/EN 61000-4-4 ±2KV	perf. Criteria A
	Surge	IEC/EN 61000-4-5 line to line ±2KV/line to ground ±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

Product Characteristic Curve



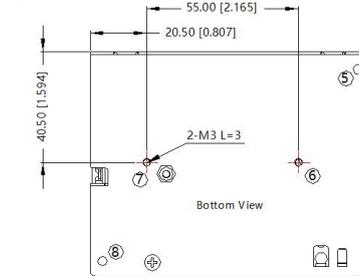
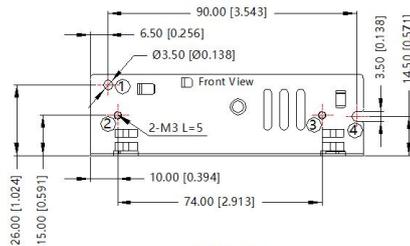
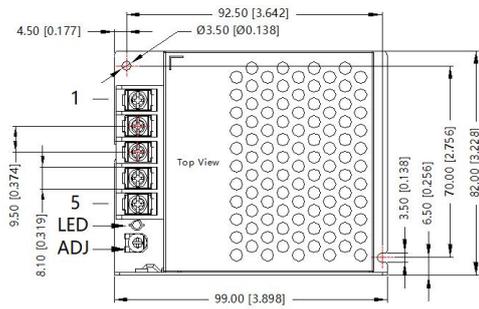
Note: 1. With an AC input voltage between 85 -100VAC and a DC input between 120 -140VDC the output power must be derated as per the temperature derating curves;

2. This product is suitable for applications using natural air cooling; for applications in closed environment please consult Mornsun FAE.



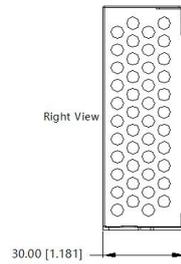
Dimensions and Recommended Layout

LM50-23Bxx, LM50-23Bxx-Q Series



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

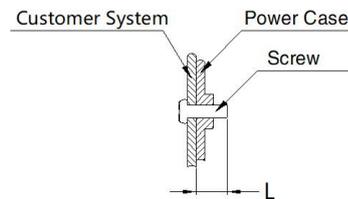
THIRD ANGLE PROJECTION



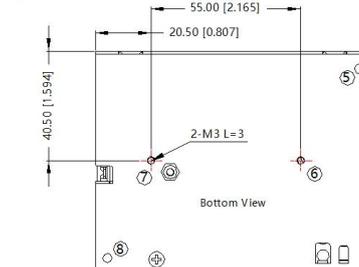
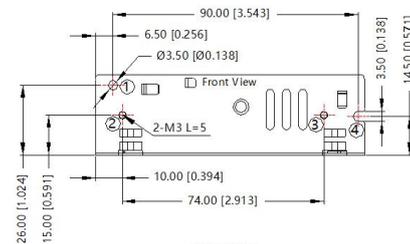
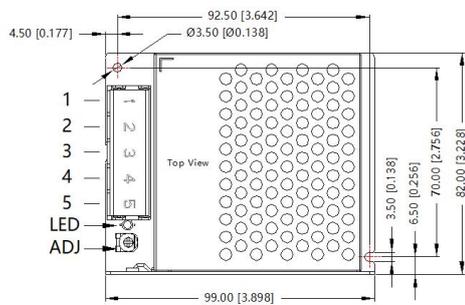
Pin-Out	
Pin	Function
1	AC(L)
2	AC(N)
3	⊕
4	-Vo
5	+Vo

①-⑧any 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

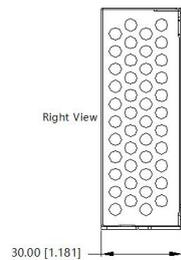


LM50-23Bxx-C Series



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

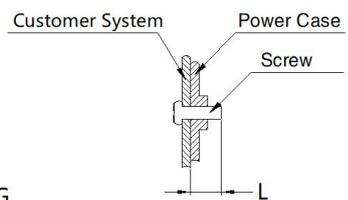
THIRD ANGLE PROJECTION



Pin-Out	
Pin	Function
1	AC(L)
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①-⑧any 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:

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 $T_a=25^{\circ}\text{C}$, humidity<75%RH with nominal input voltage and rated output load;
3. The room temperature derating of $5^{\circ}\text{C}/1000\text{m}$ 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 (\oplus) 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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