



RoHS



FEATURES

- Universal 80 - 305VAC or 100 - 430VDC Input voltage
- Accepts AC or DC input (dual-use of same terminal)
- Operating ambient temperature range: -40°C to +85°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
- OVC III (meet EN62477)
- Operating altitude up to 5000m

LM50-23BxxR2 series is the ultra-small Mornsun second-generation new industrial standard enclosed power supply, which has innovated the industrial power supply standard from the aspect of dimension, performance, technology and structure. 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/EN/BS EN62368, EN60335, EN61558, EN62477, GB4943 standards and they are widely used in areas of industrial, 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.	Capacitive Load (uF) Max.
EN/CCC (Pending)	LM50-23B05R2	50	5V/10A	4.75-5.75	86	8500
	LM50-23B12R2	50.4	12V/4.2A	11.4-13.8	88	2000
	LM50-23B15R2	51	15V/3.4A	14.25-17.25	88	1500
	LM50-23B24R2	52.8	24V/2.2A	22.8-27.6	89.5	1000
	LM50-23B36R2	52.2	36V/1.45A	34.2-41.4	90	470
	LM50-23B48R2	52.8	48V/1.1A	43.2-52.8	90.5	220
	LM50-23B54R2	50	54V/0.925A	48.6-59.4	90.5	100

Note: *Use suffix "C" for terminal with protective cover, suffix "Q" for bottom conformal coating and "QQ" for both sides conformal coating.

Input Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Input Voltage Range	AC input		80	--	305	VAC
	DC input		100	--	430	VDC
Input Voltage Frequency			47	--	63	Hz
Input Current	115VAC		--	--	1.2	A
	230VAC		--	--	0.8	
Inrush Current	115VAC		--	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/54V	±1	--	
Line Regulation	Rated load		--	±0.5	--	
Load Regulation	0% - 100% load		5V	±1	--	
			12V/15V/24V/36V/48V/54V	±0.5	--	

Ripple & Noise*	230VAC, Rated load; 20MHz bandwidth (peak-to-peak value)	5V	--	65	150	mV
		12V/15V	--	65	150	
		24V	--	80	150	
		36V/48V/54V	--	120	240	
Temperature Coefficient			--	±0.03	--	%/°C
Minimum Load			0	--	--	%
Stand-by Power Consumption			--	--	0.5	W
Hold-up Time	115VAC		--	6	--	ms
	230VAC		--	30	--	
Short Circuit Protection	Recovery time <3s after the short circuit disappear.		Hiccup, continuous, self-recovery			
Over-current Protection	230VAC, Rated load		120% - 200% Io, hiccup, self-recovery			
Over-voltage Protection	5V		≤7.3VDC (Hiccup or clamp, self-recover)			
	12V		≤16.2VDC (Hiccup or clamp, self-recover)			
	15V		≤21.75VDC (Hiccup or clamp, self-recover)			
	24V		≤33.6VDC (Hiccup or clamp, self-recover)			
	36V		≤48.6VDC (Hiccup or clamp, self-recover)			
	48V		≤60.0VDC (Hiccup or clamp, self-recover)			
	54V		≤70.0VDC (Hiccup or clamp, self-recover)			
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	Input - ⊕	Electric strength test for 1min., leakage current <5mA	2000	--	--	VAC
	Input - output		4000	--	--	
	Output - ⊕		1250	--	--	
Insulation Resistance	Input - ⊕	At 500VDC	100	--	--	MΩ
	Input - output		100	--	--	
	Output - ⊕		100	--	--	
Operating Temperature			-40	--	+85	°C
Storage Temperature			-40	--	+85	
Operating Humidity	Non-condensing		20	--	90	%RH
Storage Humidity			--	--	95	
Switching Frequency			--	90	--	kHz
Power Derating	5V	-40°C to -30°C	5	--	--	% / °C
		+40°C to +70°C (85VAC - 165VAC)	1.33	--	--	
		+50°C to +70°C (165VAC - 305VAC)	2	--	--	
		+70°C to +85°C	2	--	--	
	Others	-40°C to -30°C	5	--	--	
		+50°C to +70°C	2	--	--	
		+70°C to +85°C	2	--	--	
	85VAC - 100VAC		1.25	--	--	% / VAC
	277VAC - 305VAC		0.71	--	--	
Safety Standard			Design refer to IEC/UL/EN/BS EN62368-1, EN60335-1/61558-1/62477-1, GB4943.1			

Safety Class	CLASS I
MTBF	MIL-HDBK-217F@25°C >300,000 h

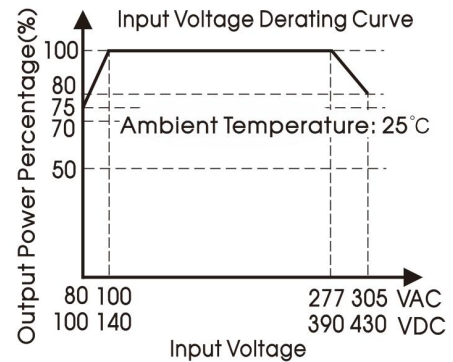
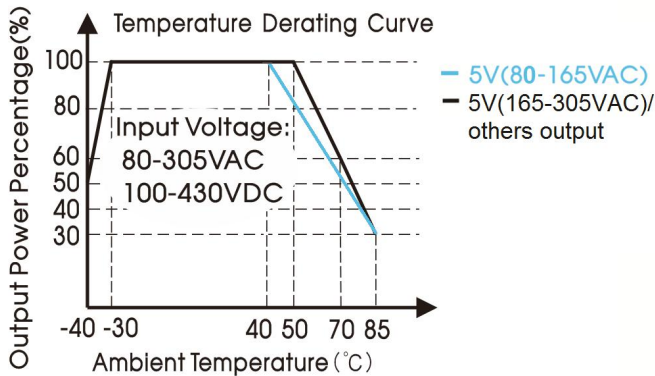
Mechanical Specifications

Case Material	Metal (AL5052, SGCC)
Dimensions	99.00 x 65.00 x 30.00 mm
Weight	150g (Typ.)
Cooling Method	Free air convection

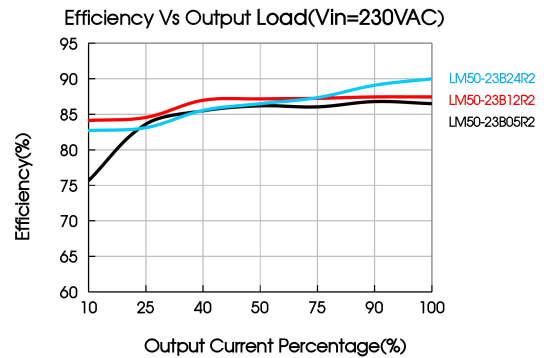
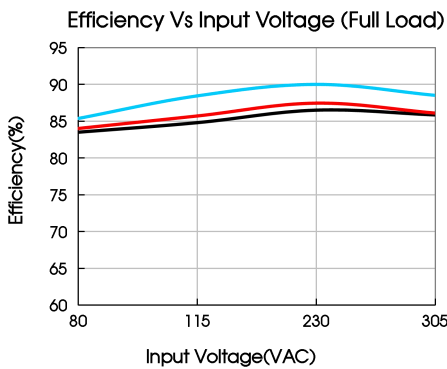
Electromagnetic Compatibility (EMC)

Emissions	CE	CISPR32/EN55032	CLASS B	
	RE	CISPR32/EN55032	CLASS B	
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	±4KV	perf. Criteria A
	Surge	IEC/EN 61000-4-5	line to line ±2KV/line to PE ±4KV	perf. Criteria A
	CS	IEC/EN61000-4-6	10 Vr.m.s	perf. Criteria A
	Voltage dip, short interruption and voltage variation	IEC/EN61000-4-11	0%, 70%	perf. Criteria B

Product Characteristic Curve

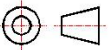


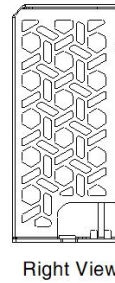
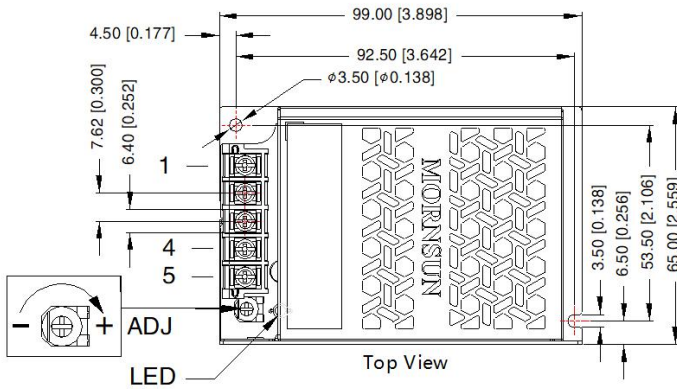
- Note: 1. With an AC input voltage between 80 -100VAC /277-305VAC and a DC input between 100 -140VDC /390-430VDC the output power must be derated as per the temperature derating curves;
2. This product is suitable for applications using natural air cooling; for applications in closed environment please consult Mornsun FAE.




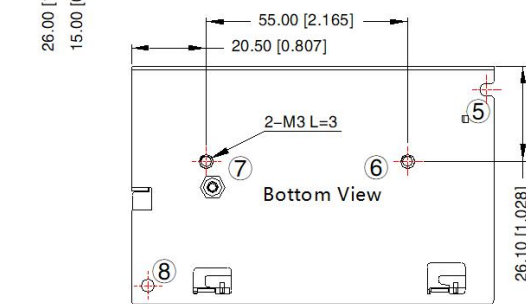
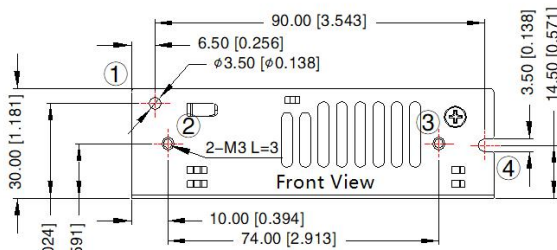
Dimensions and Recommended Layout

LM50-23BxxR2 (-Q, -QQ) Series


THIRD ANGLE PROJECTION 

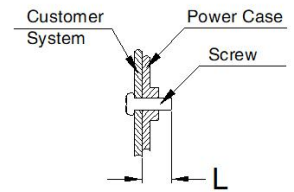


Pin-Out	
Pin	Function
1	AC(L)
2	AC(N)
3	
4	-Vo
5	+Vo



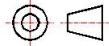
Position	Screw Spec.	L(max)	Torque(max)
② - ③	M3	3mm	0.4N · m
⑥ - ⑦			

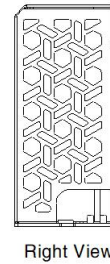
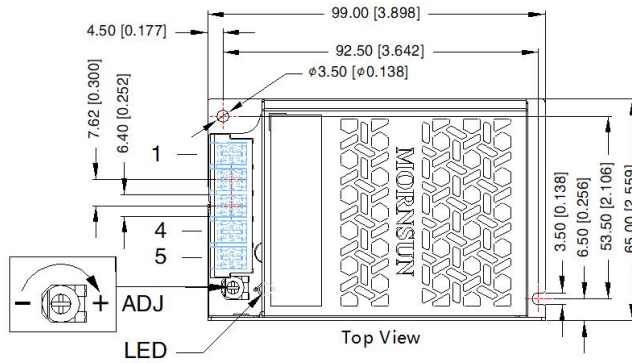
① - ⑧ any position must be connected to the earth()



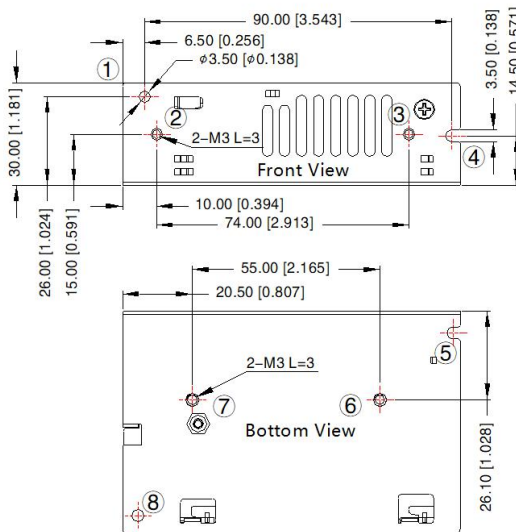
Note:
Unit: mm[inch]
ADJ: Output adjustable resistor
Wire range: 22-14AWG
Tightening torque: M3, 0.5N.m Max
General tolerances: ± 1.00 [± 0.039]

LM50-23Bxx-C (-CQ, -CQQ) Series

THIRD ANGLE PROJECTION 

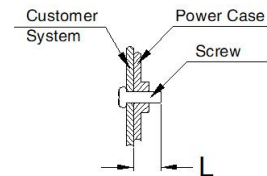


Pin-Out	
Pin	Function
1	AC(L)
2	AC(N)
3	\oplus
4	-Vo
5	+Vo



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

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



Note:
Unit: mm[inch]
ADJ: Output adjustable resistor
Wire range: 22-14AWG
Tightening torque: M3, 0.5N.m Max
General tolerances: $\pm 1.00[\pm 0.039]$

- Note:
- For additional information on Product Packaging please refer to www.mornsun-power.com. Packaging bag number: 58220267;
 - 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;
 - The room temperature derating of $5^\circ\text{C}/1000\text{m}$ is needed for operating altitude greater than 2000m;
 - All index testing methods in this datasheet are based on our company corporate standards;
 - 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;
 - We can provide product customization service, please contact our technicians directly for specific information;
 - Products are related to laws and regulations: see "Features" and "EMC";
 - The out case needs to be connected to the earth(\oplus) of system when the terminal equipment in operating;
 - The output voltage can be adjusted by the ADJ, clockwise to increase;
 - Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units;
 - The power supply is considered a component which will be installed into a final equipment. All EMC tests should be confirmed with the final equipment. Please consult our FAE for EMC test operation instructions.

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 www.mornsun-power.com