

AC/DC 150W Enclosed Switching Power Supply

LM150-23BxxR2(-C, -Q, -CQ, -QQ, -CQQ) Series

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RoHS



UL62368-1



EN62368-1
EN60335-1
EN61558-1
EN61558-2-16



IEC62368-1



GB4943.1



BS EN62368-1



IEC 60335-1

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, small size
- High I/O isolation voltage up to 4000VAC
- Output short circuit, over-current, over-voltage, over-temperature protection
- Operating altitude up to 5000m
- OVC III (designed to meet EN62477)
- Safety according to IEC60335

LM150-23BxxR2 series is the ultra-small second-generation new industrial standard mental case-type power supply that Mornsun has innovated the industrial chassis power supply standard from the dimensions of size, 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 design refer to EC/EN61000-4, CISPR32/EN55032, IEC60335, EN62477 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 ADJ (V)	Efficiency at 230VAC (%) Typ.	Capacitive Load (μF) Max.
UL/EN/IEC/CQC/BIS	LM150-23B12R2	150.0	12V/12.5A	11.4 - 13.8	91.5	10000
	LM150-23B15R2	150.0	15V/10.0A	14.2 - 17.3	91.5	6000
	LM150-23B24R2	156.0	24V/6.5A	22.8 - 27.6	91.5	2400
	LM150-23B36R2	154.8	36V/4.3A	34.2 - 41.4	91.5	1200
	LM150-23B48R2	158.4	48V/3.3A	43.2 - 52.8	92.0	600
UL/EN/IEC/CQC	LM150-23B54R2	151.2	54V/2.8A	51.3 - 56.7	92.0	600

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		--	--	4	A
	230VAC		--	--	2	
Inrush Current	115VAC	Cold start	--	30	--	
	230VAC		--	60	--	
Leakage Current	277VAC		<0.5mA RMS			
Hot Plug			Unavailable			

Output Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Output Voltage Accuracy	Full load range		--	--	±1.0	%
Line Regulation	Rated load		--	--	±0.5	
Load Regulation	230VAC		--	--	±0.5	

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Ripple & Noise*	20MHz bandwidth (peak-to-peak value)	12V/15V	--	--	150	mV
		24V/36V/48V/54V	--	--	200	
Temperature Coefficient			--	±0.03	--	%/°C
Minimum Load			0	--	--	%
Stand-by Power Consumption	Room temperature, 230VAC		--	0.3	0.5	W
Hold-up Time	115VAC		--	8	--	ms
	230VAC		--	40	--	
Short Circuit Protection			Hiccup, continuous, self-recovery			
Over-current Protection			≥120% Io, hiccup, self-recover			
Over-voltage Protection	12V		≤16.00V	Output voltage clamp or hiccup, self-recover		
	15V		≤21.75V			
	24V		≤33.60V			
	36V		≤48.60V			
	48V		≤60.00V			
	54V		≤63.00V			
Over-temperature Protection			Output voltage turn off, self-recovery			
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	Input - output	Electric strength test for 1min., leakage current <5mA		4000	--	--	VAC
	Input - \oplus			2000	--	--	
	Output - \oplus			1250	--	--	
Insulation Resistance	Input - output	Testing voltage: 500VDC		100	--	--	M Ω
	Input - \oplus						
	Output - \oplus						
Operating Temperature				-40	--	+85	°C
Storage Temperature				-40	--	+85	
Storage Humidity		Non-condensing		--	--	95	%RH
Operating Humidity				--	--	95	
Power Derating	Operating temperature derating	-40°C to -25°C		3.33	--	--	% / °C
		+50°C to +70°C		2.50	--	--	
		+70°C to +85°C		1.33	--	--	
	Input voltage derating	85VAC - 120VAC		0.57	--	--	% / VAC
		80VAC - 85VAC		2.00	--	--	
Switching Frequency				--	90	--	kHz
Safety Standard		LM150-23B12/15/24/36/48R2		UL62368-1, IS13252 (Part1), GB4943.1 safety approved & EN60335-1, EN62368-1, EN61558-1/-2-16, BS EN62368-1, IEC62368-1 (Report) Design refer to IEC60335-1, EN62477			
		LM150-23B54R2		UL62368-1, GB4943.1 safety approved & EN60335-1, EN62368-1, EN61558-1/-2-16, BS EN62368-1, IEC62368-1 (Report) Design refer to IEC60335-1, IS13252 (Part1), EN62477			
Safety Class				CLASS I			
MTBF		MIL-HDBK-217F@25°C		> 300,000 h			

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Mechanical Specifications

Case Material	Metal (AL5052, SGCC)
Dimensions	99.00 x 97.00 x 30.00 mm
Weight	270g (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 $\pm 6\text{KV}$ / 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	$\pm 4\text{KV}$	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	10Vr.m.s	Perf. Criteria A
	PFMF	IEC/EN 61000-4-8	30A/m	Perf. Criteria A
	Voltage Variations*	IEC/EN 61000-4-11	0% U_n , 0.5 cycle; 0° / 45° / 90° / 135° / 180° / 225° / 270° / 315° 0% U_n , 1 cycle; 70% U_n , 25/30 cycle (50/60Hz); Monophase: 0	Perf. Criteria B
	Short interruptions*	IEC61000-4-11	0% U_n , 250/300 cycle (50/60Hz)	Perf. Criteria C

Note: * U_n Maximum input nominal voltage.

Remark:

1. This power supply does not meet the harmonic current requirements specified in EN61000-3-2.

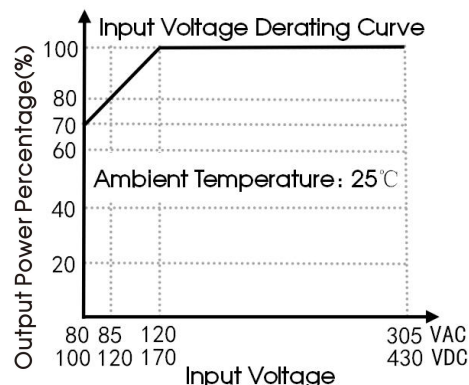
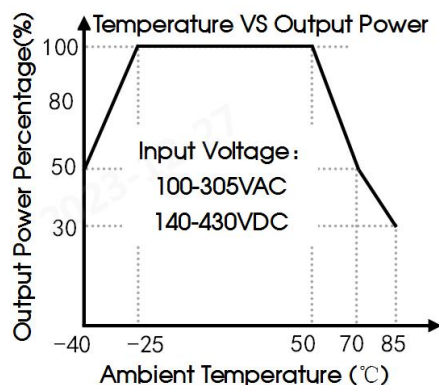
Please do not use this power supply under the following conditions:

- 1) The terminal equipment is used in the European Union.
- 2) Supporting terminals are connected to a public power grid with 220VAC or a higher voltage that comply with the requirements of EN61000-3-2.
- 3) The power supply is installed in terminal equipment with average or continuous input power greater than 75W.
- 4) The power supply belong to a part of lighting system.

Exception: The power supply used in the following terminal equipment does not need to meet EN61000-3-2.

- 1) Professional equipment with a total rated input power greater than 1000W.
- 2) Symmetrically controlled heating element with a rated power less than or equal to 200W.
2. If no harmonic current is required or customers can solve harmonic current problems by themselves, this product can be used.
3. Unless otherwise specified, all specifications are tested under the input of 230VAC, rated load, and 25°C ambient temperature.

Product Characteristic Curve



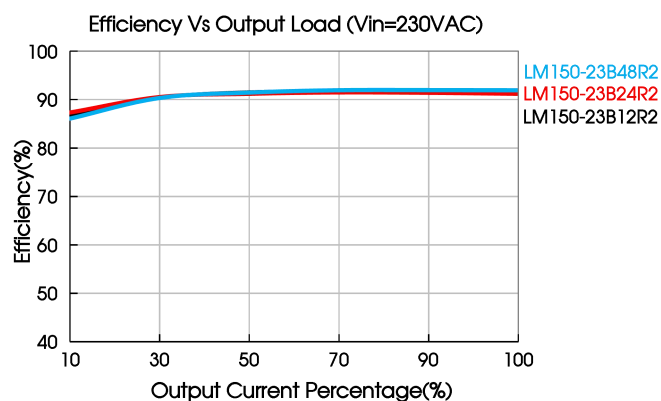
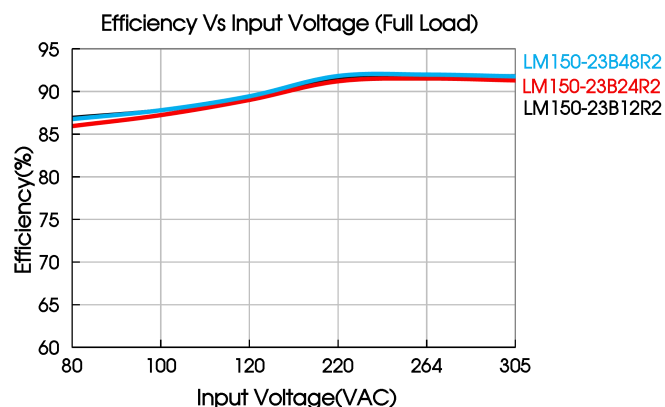
Note: ① With an AC input between 80-120VAC and a DC input between 100-170VDC, in addition to the voltage drop, temperature derating is also required. If it is used in a low temperature environment, please consult Mornsun FAE.

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

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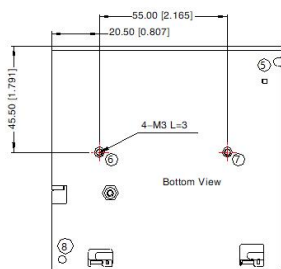
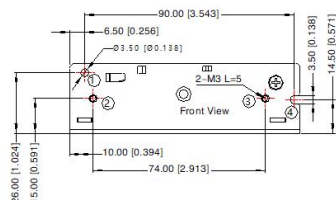
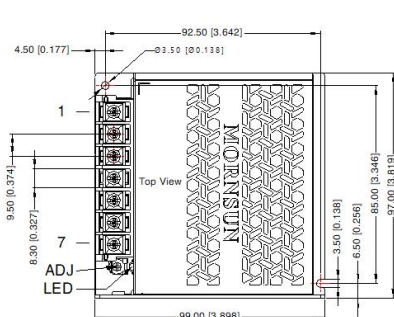
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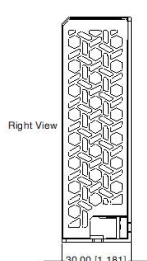


Dimensions and Recommended Layout

LM150-23BxxR2, LM150-23BxxR2-Q, LM150-23BxxR2-QQ Series



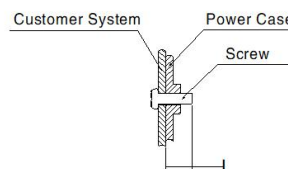
THIRD ANGLE PROJECTION



Pin-Out	
Pin	Function
1	AC(L)
2	AC(N)
3	\oplus
4	$-V_o$
5	$-V_o$
6	$+V_o$
7	$+V_o$

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

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]

ADJ: Output adjustable resistor

Wire range: Input: 20-10AWG(16-10AWG for pin3)

Output: 12V, 15V: 14-10AWG

24V, 36V: 18-10AWG

48V, 54V: 20-10AWG

Connector tightening torque: M3.5, 0.8N · m max.

General tolerances: $\pm 1.00[\pm 0.039]$

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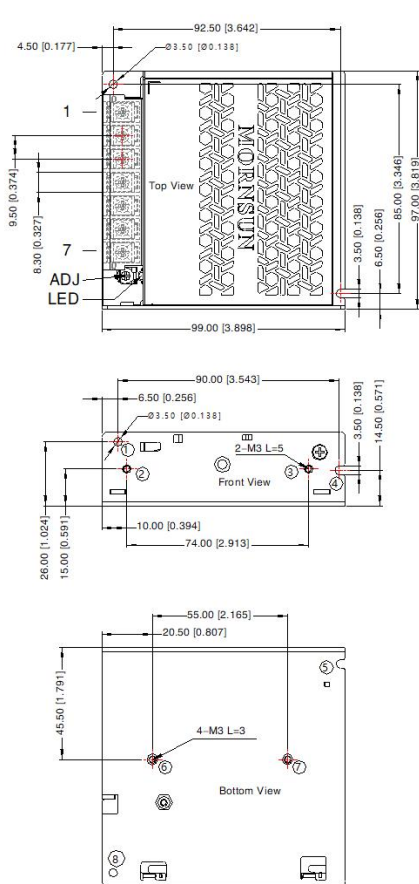
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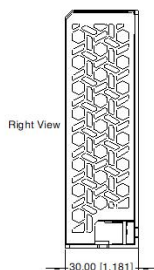
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LM150-23BxxR2-C, LM150-23BxxR2-CQ, LM150-23BxxR2-CQQ Series



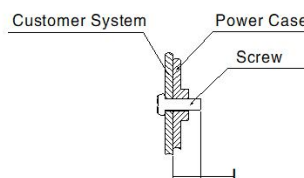
THIRD ANGLE PROJECTION



Pin-Out	
Pin	Function
1	AC(L)
2	AC(N)
3	⊕
4	-Vo
5	-Vo
6	+Vo
7	+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:

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48V, 54V: 20-10AWG

Connector tightening torque: M3.5, 0.8N · m max.

General tolerances: ± 1.00[± 0.039]

Note:

- For additional information on Product Packaging please refer to www.mornsun-power.com. Packaging bag number: 58220269;
- 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 (⊕) of system when the terminal equipment in operating;
- 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

www.mornsun-power.com

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