



FEATURES

- Universal 85 - 264VAC or 120 - 373VDC Input voltage
- Operating ambient temperature range: -30℃ to +70℃
- High efficiency, high reliability and long life
- LED indicator for power on
- Output short circuit, over-current, over-voltage protection
- Withstand 300VAC surge input for 5s
- High I/O isolation test voltage up to 3000VAC
- Safety according to IEC/EN/UL62368, EN60335, GB4943
- Emissions compliant to CISPR32/EN55032 CLASS B
- Withstand 5G vibration test
- Operating altitude up to 5000m

This LM50-10Cxx series of power converter design features 3 output versions, which can independently supply 3 different loads in the system. The products can be used in harsh working environments with an ambient temperature range from -30℃ to +70℃, without the need of a fan for further heat dissipation. In addition, the converters EMC immunity performance meets the requirements of IEC61000 standard and meet emission standard CISPR32/EN55032, class B without any external components, thus providing excellent EMC protection. The products also meet IEC/EN/UL62368, EN60335, GB4943 safety standards. The converters integrate a variety of protection features and offer a high-performance to low-cost ratio providing the best power solution for a variety of industries such as industrial control equipment, instrumentation and smart home and building equipment application.

Selection Guide

Certification	Part No.	Output Power	Nominal Output Voltage and Current (Vo/Io)			Working Current Range*			Efficiency at 230VAC (%) Typ.	Max. Capacitive Load (μF)		
			Vo1/Io1	Vo2/Io2	Vo3/Io3	Io1	Io2	Io3		Vo1	Vo2	Vo3
CE	LM50-10C051212-20	50W	+5V/4.0A	+12V/2.0A	-12V/0.5A	0.4-5.0A	0.2-2.5A	0.1-1.0A	81	4000	2000	470
	LM50-10C051515-15	50W	+5V/4.0A	+15V/1.5A	-15V/0.5A	0.4-5.0A	0.15-2.0A	0.1-1.0A	83	4000	1500	470
	LM50-10C052412-10	51W	+5V/3.0A	+24V/1.0A	+12V/1.0A	0.3-5.0A	0.1-1.5A	0.1-1.5A	85	3000	1000	1000

Note: 1.* Working current range: If any one of the 3 outputs arrive at the maximum current, the total output power cannot exceed the rated power and working time < 3s.
2.* Use suffix "Q" for conformal coating.

Input Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Input Voltage Range	AC Input		85	--	264	VAC
	DC Input		120	--	373	VDC
Input Frequency			47	--	63	Hz
Input Current	115VAC		--	--	1.3	A
	230VAC		--	--	0.8	
Inrush Current	115VAC	Cold start	--	30	--	
	230VAC		--	50	--	
Leakage Current	240VAC		<2.0mA			
Hot Plug			Unavailable			

Output Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Output Voltage Accuracy	Full load range	Vo1	--	±2.0	--	%
		Vo2	-4.0	±6.0	--	
				--	+8.0	
				--	+8.0	
		Vo3	--	±3.0	±5.0	
				±3.0	±5.0	
				±6.0	--	

AC/DC 50W Enclosed Switching Power Supply

LM50-10Cxx, LM50-10Cxx-Q Series

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


Line Regulation	Full load	Vo1		--	±0.5	--	%
		Vo2	LM50-10C051212-20	--	±1.5	--	
			LM50-10C051515-15	--	±1.5	--	
			LM50-10C052412-10	--	±2.0	--	
		Vo3	LM50-10C051212-20	--	±0.5	--	
			LM50-10C051515-15	--	±0.5	--	
			LM50-10C052412-10	--	±2.0	--	
Load Regulation	10% - 100% load (Balanced load)	Vo1		--	±1.0	--	%
		Vo2	LM50-10C051212-20	--	±3.0	±5.0	
			LM50-10C051515-15	--	±3.0	±5.0	
			LM50-10C052412-10	--	±3.0	±5.0	
		Vo3	LM50-10C051212-20	--	±1.0	--	
			LM50-10C051515-15	--	±1.0	--	
			LM50-10C052412-10	--	±4.0	--	
Ripple & Noise*	20MHz bandwidth (peak-peak value)	Vo1		--	80	--	mV
		Vo2	LM50-10C051212-20	--	120	--	
			LM50-10C051515-15	--	120	--	
			LM50-10C052412-10	--	150	--	
		Vo3	LM50-10C051212-20	--	120	--	
			LM50-10C051515-15	--	120	--	
			LM50-10C052412-10	--	120	--	
Temperature Coefficient	Vo1			--	±0.03	--	%/°C
Voltage Adjustable Range*	Rated input voltage			4.75	--	5.50	VDC
Switching Delay Time	Rated input voltage			--	--	3.0	s
Output Voltage Rise Time	115/230VAC			--	--	30	ms
Hold-up Time	115VAC			5	--	--	
	230VAC			30	--	--	
Min. Load				Refer to the working current range			
Short Circuit Protection*	Recovery time <5s after the short circuit disappear			Hiccup, continuous, self-recovery			
Over-current Protection	3 outputs with equal-scale load			110% - 230% Io, self-recovery			
Over-voltage Protection				5.75VDC ≤ Vo1 ≤ 6.75VDC, Clamp			

Note: 1.*The "Tip and barrel method" is used for ripple and noise test, (47uF electrolytic capacitor and 104 ceramic capacitor) please refer to AC-DC Converter Application Notes for specific information.

2.*When Vo1 working in the adjustable range, the output power please refer to power derating curve and should not be exceed the rated output power.

3.*Vo3 cannot stay in short circuit for long time.

General Specifications

Item		Operating Conditions		Min.	Typ.	Max.	Unit
Isolation Voltage	Input - output	Electric Strength Test for 1min, leakage current <10mA		3000	--	--	VAC
	Input - 			2000	--	--	
	Output - 			500	--	--	
Insulation Resistance	Input - Output	At 500VDC		100	--	--	M Ω
	Input - 			100	--	--	
	Output - 			100	--	--	
Operating Temperature		Refer to derating curve		-30	--	+70	℃
Storage Temperature				-40	--	+85	
Storage Humidity		Non-condensing		--	--	95	%RH
Power Derating	Input voltage derating	85VAC - 115VAC	0.66	--	--	%VAC	
		115VAC - 264VAC	0	--	--		
		120VDC - 160VDC	0.5	--	--	%VDC	
		160VDC - 373VDC	0	--	--		
	Operating temperature derating	-30℃ to + 50℃	--	--	--	% /℃	
		+50℃ to +70℃	2.5	--	--		
Safety Standard				Meet IEC/EN/UL62368/EN60335/GB4943			
Safety Class				CLASS I			
MTBF		MIL-HDBK-217F@25℃		>300,000 h			

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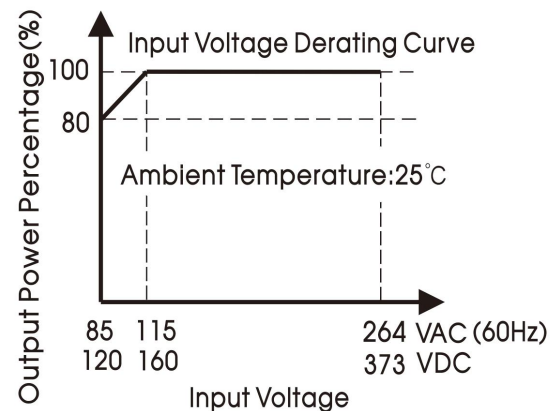
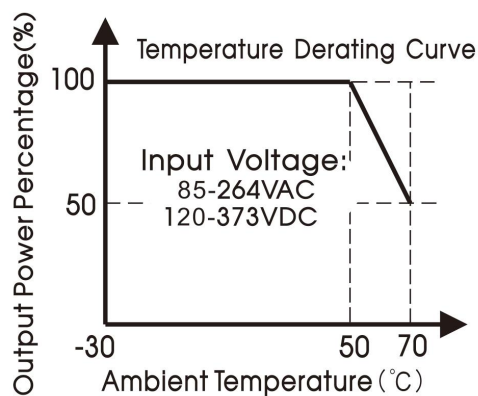
Physical Specifications

Case Material	Metal (AL1100, SGCC)
Dimension	99.00 x 97.00 x 30.00 mm
Weight	240g (Typ.)
Cooling Method	Free air convection

EMC Specifications

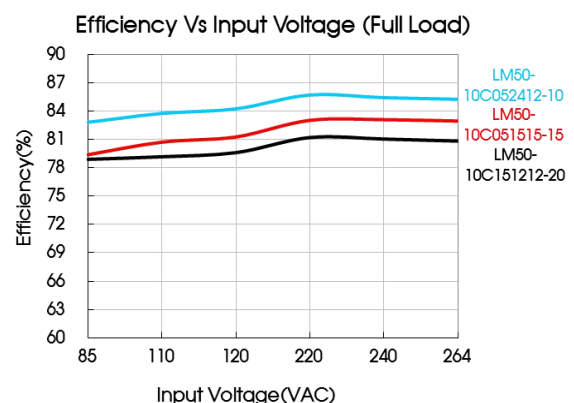
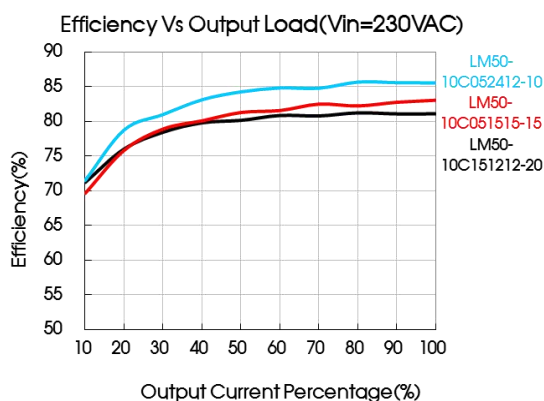
Emissions	CE	CISPR32/EN55032 CLASS B		
	RE	CISPR32/EN55032 CLASS B		
	Harmonic current	IEC/EN61000-3-2 CLASS A		
Immunity	ESD	IEC/EN61000-4-2	Contact ±6KV /Air ±8KV	Perf. Criteria A
	RS	IEC/EN61000-4-3	10V/m	perf. Criteria A
	EFT	IEC/EN61000-4-4	±4KV	perf. Criteria A
	Surge	IEC/EN 61000-4-5	Line to Line ±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	IEC/EN61000-4-11	0%,70%	perf. Criteria B

Product Characteristic Curve

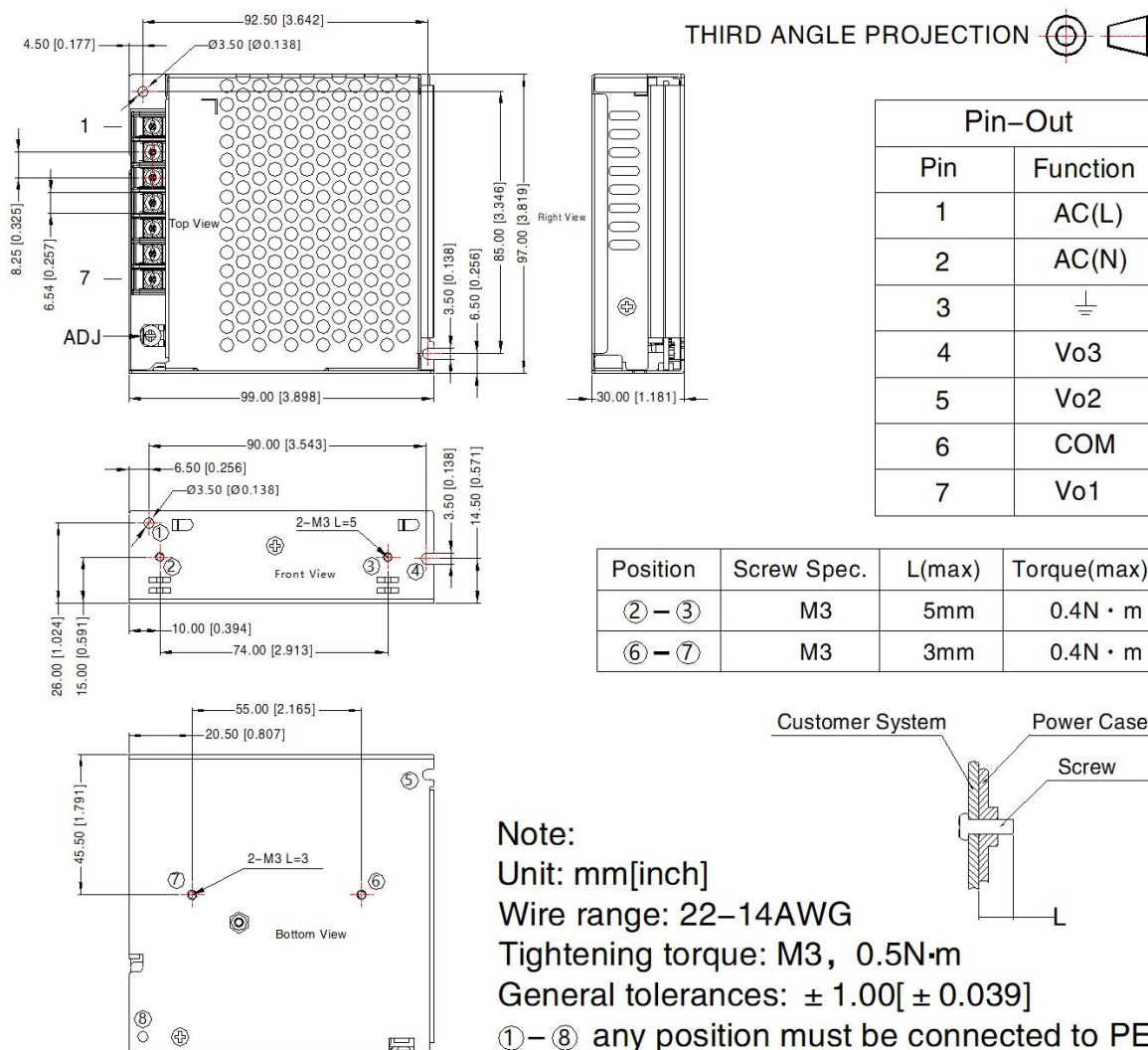


Note: ① With an input voltage between 85 -115VAC and a DC input between 120-160VDC the output power must be derated as per the temperature derating curves;

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



Dimensions and Recommended Layout



Note:

- For additional information on Product Packaging please refer to www.mornsun-power.com. Packaging bag number: 58220066;
- 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 ambient 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 PE(⏏) 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;
- 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.

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