



FEATURES

- Universal 85 - 264VAC or 120 - 373VDC Input voltage
- Operating ambient temperature range: -30°C to +70°C
- 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°C to +70°C, 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	--	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	LM50-10C051212-20	--	±6.0		--
			LM50-10C051515-15	-4.0	--		+8.0
			LM50-10C052412-10	-4.0	--		+8.0
		Vo3	LM50-10C051212-20	--	±3.0		±5.0
			LM50-10C051515-15	--	±3.0		±5.0
LM50-10C052412-10	--		±6.0	--			

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	3000	--	--	VAC	
	Input - 	2000	--	--		
	Output - 	500	--	--		
Insulation Resistance	Input - Output	100	--	--	MΩ	
	Input - 	100	--	--		
	Output - 	100	--	--		
Operating Temperature	Refer to derating curve	-30	--	+70	°C	
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
	Operating temperature derating	160VDC - 373VDC	0	--	--	
		-30°C to +50°C	--	--	--	%/°C
	+50°C to +70°C	2.5	--	--		
Safety Standard		Meet IEC/EN/UL62368/EN60335/GB4943				
Safety Class		CLASS I				
MTBF	MIL-HDBK-217F@25°C	>300,000 h				

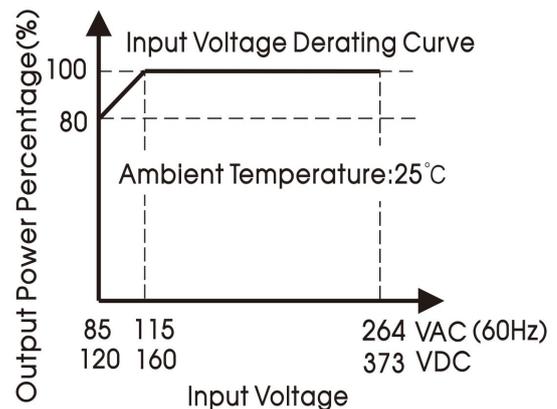
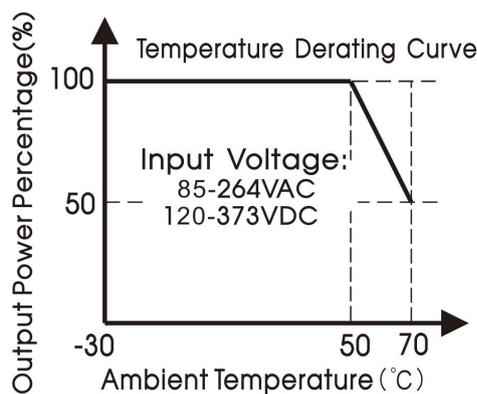
Physical Specifications

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

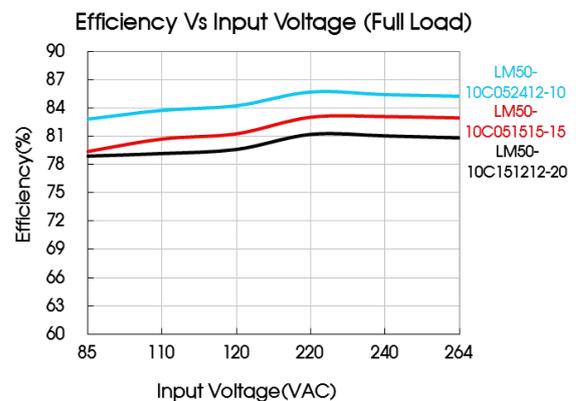
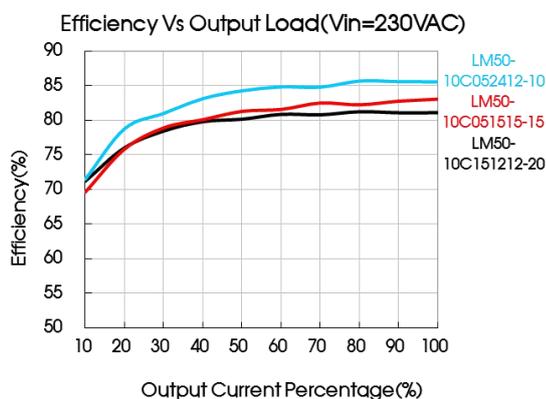
Emissions	CE	CISPR32/EN55032 CLASS B		
	RE	CISPR32/EN55032 CLASS B		
	Harmonic current	IEC/EN61000-3-2 CLASS A		
Immunity	ESD	IEC/EN61000-4-2	Contact ±6KV /Air ±8KV	Perf. Criteria A
	RS	IEC/EN61000-4-3	10V/m	perf. Criteria A
	EFT	IEC/EN61000-4-4	±4KV	perf. Criteria A
	Surge	IEC/EN 61000-4-5	Line to Line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

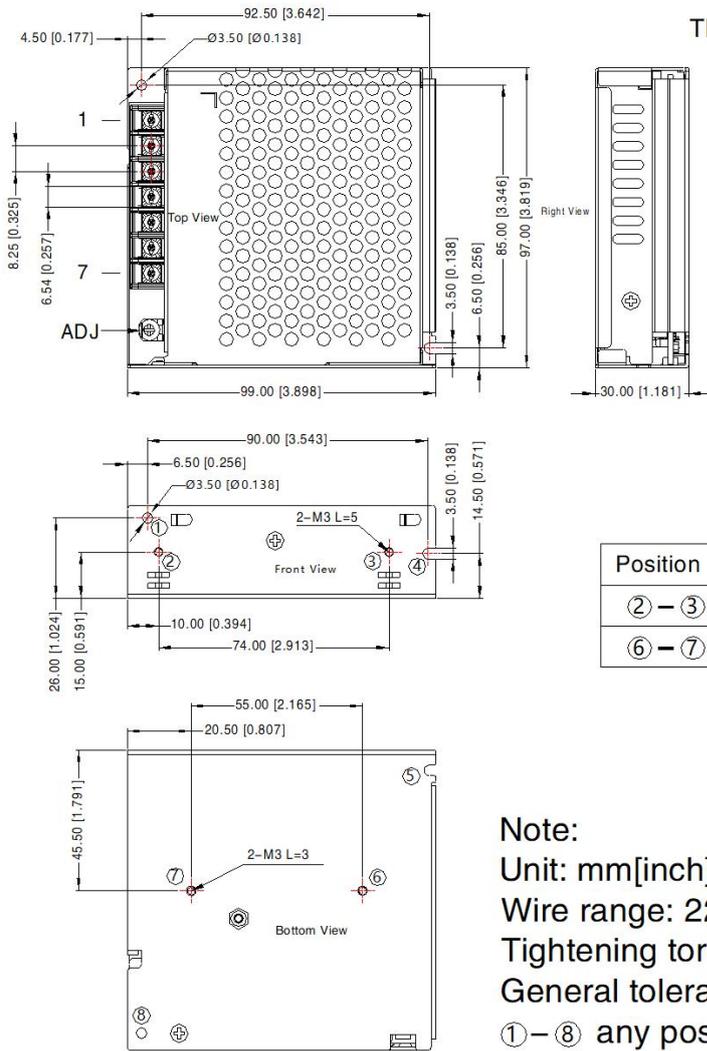


Note: ① With an input voltage between 85 -115VAC and a DC input between 120-160VDC the output power must be derated as per the temperature derating curves;

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

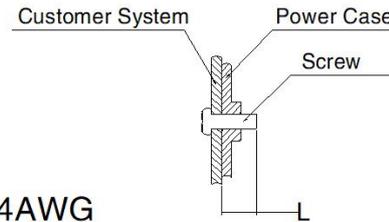


Dimensions and Recommended Layout



Pin-Out	
Pin	Function
1	AC(L)
2	AC(N)
3	⏏
4	Vo3
5	Vo2
6	COM
7	Vo1

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: 22-14AWG
Tightening torque: M3, 0.5N·m
General tolerances: ± 1.00[± 0.039]
① - ⑧ any position must be connected to PE

- 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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