



FEATURES

- Universal 85 - 264VAC or 120 - 370VDC 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
- High I/O isolation test voltage up to 3000VAC
- Withstand 5G vibration test
- Operating altitude up to 5000m
- Design refer to UL62368-1, EN60335-1, GB4943.1

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
EN/BIS/BS	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
	LM50-10C052412-10	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
EN/BIS/BS/IEC	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

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	--	370	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-recover					
Over-current Protection	3 outputs with balanced load	110% - 230% Io, self-recover					
Over-voltage Protection		5.75VDC ≤ Vo1 ≤ 6.75VDC (Output clamp)					
Note: 1.*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; 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	Environment temperature: 25±5°C Relative humidity: <95%RH, non-condensing Testing voltage: 500VDC	100	--	--	MΩ	
	Input - ⊕		100	--	--		
	Output - ⊕		100	--	--		
Operating Temperature			-30	--	+70	°C	
Storage Temperature			-40	--	+85		
Operating Humidity	Non-condensing			20	--	90	%RH
Storage Humidity				10	--	95	
Power Derating	Input voltage derating	85VAC - 115VAC	0.66	--	--	%VAC	
		115VAC - 264VAC	0	--	--		

		120VDC - 160VDC	0.5	--	--	%/VDC
		160VDC - 370VDC	0	--	--	
	Operating temperature derating	-30°C to + 50°C	--	--	--	% / °C
		+50°C to +70°C	2.5	--	--	
Safety Standard	IEC62368-1, IS 13252 (Part1) Safety Approval & EN62368-1, BS EN 62368-1(Report) Design refer to UL62368-1, EN60335-1, GB4943.1					
Safety Class	CLASS I					
MTBF	MIL-HDBK-217F@25°C	>300,000 h				

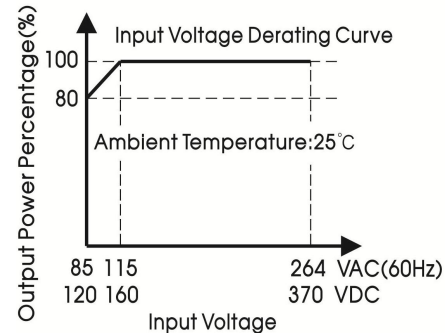
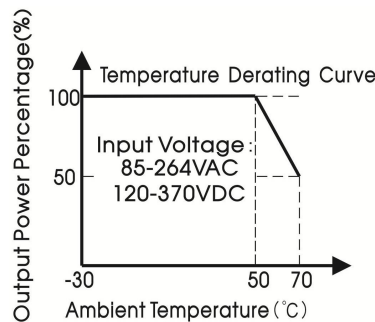
Physical Specifications

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

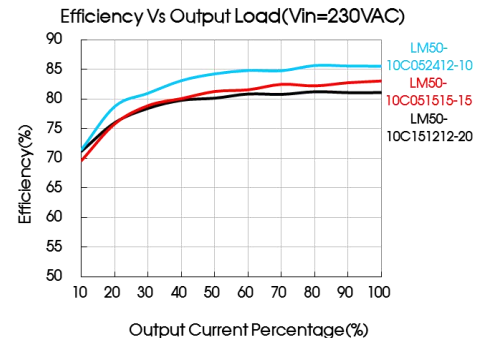
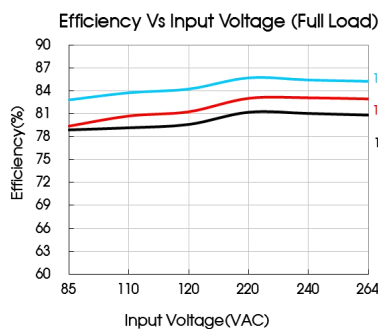
EMC Specifications

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/EN61000-4-5	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

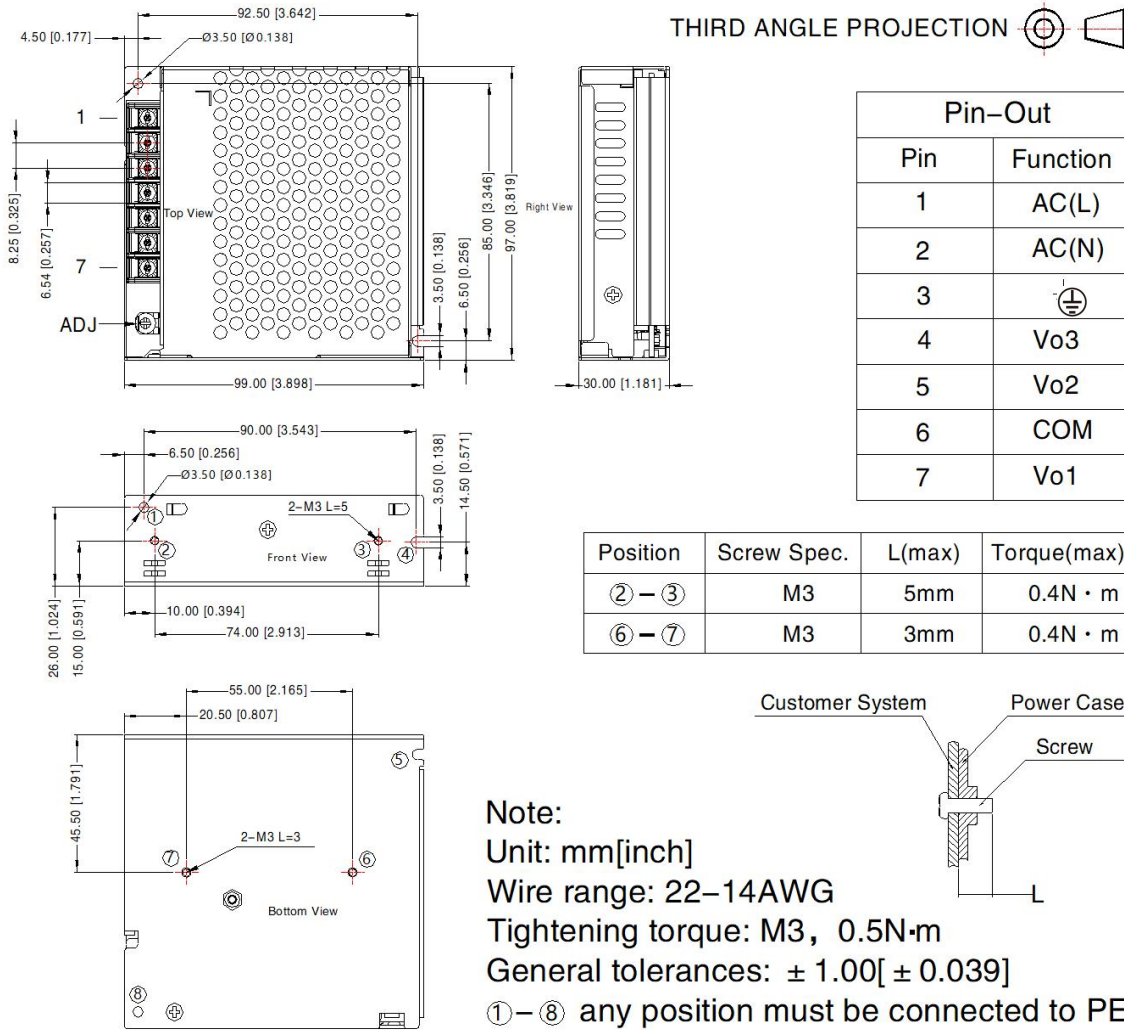
Product Characteristic Curve



- Note: 1. With an AC 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 Ta=25°C, humidity<75%RH with nominal input voltage and rated output load;
- All index testing methods in this datasheet are based on our company corporate standards;
- In order to improve the efficiency, there will be audible noise generated when work at light load, 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;
- CAUTION: Double pole, neutral fusing. Disconnect mains before servicing. / ATTENTION: Double pôle/fusible sur le neutre. Débrancher l'alimentation avant l'entretien;
- 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 terminal equipment. All EMC tests should be confirmed with the final equipment. Please consult our FAE for EMC test operation instructions.

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