AC/DC 50W Enclosed Switching Power Supply

LM50-10Dxx, LM50-10Dxx-Q Series

MORNSUN®

CE Report EN62368-1 | UKCA BS EN 62368-1 | IS13252(Part 1):2010/ IEC 60950-1:2005 R-41202800 www.bis.gov.in | RoHS | 5 years warranty

FEATURES

- Universal 85 - 264VAC or 120 - 370VDC 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
- High I/O isolation test voltage up to 3000VAC
- Withstand 5G vibration test
- Operating altitude up to 5000m

LM50-10Dxx series of power converter design features two isolated output versions, which can independently supply two different loads in the system that need to be isolated from each other.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	Io1	Io2		Vo1	Vo2
EN UKCA BIS	LM50-10D0512-20	54W	+5V/6.0A	+12V/2.0A	0.3-6.0A	0.2-3.0A	83	6000	2000
	LM50-10D0524-14	53.6W	+5V/4.0A	+24V/1.4A	0.4-6.0A	0.14-2.0A	84	4000	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	--	370	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	--	%
		Vo2	LM50-10D0512-20	--	±8.0	--	
			LM50-10D0524-14	-4.0	--	+8.0	
Line Regulation	Full load	Vo1		--	±0.5	--	
		Vo2	LM50-10D0512-20	--	±1.5	--	
			LM50-10D0524-14	--	±1.5	--	
Load Regulation	10% - 100% load (Balanced load)	Vo1		--	±0.5	--	
		Vo2	LM50-10D0512-20	--	±5.0	--	
			LM50-10D0524-14	--	±5.0	--	

Ripple & Noise*	20MHz bandwidth (peak-peak value)	Vo1		--	80	--	mV
		Vo2	LM50-10D0512-20	--	120	--	
			LM50-10D0524-14	--	150	--	
Temperature Coefficient	Vo1			--	±0.03	--	%/℃
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	Dual output with balanced load			110% - 230% Io, self-recover			
Over-voltage Protection (Vo1)				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.

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	--	--	
	Vo1 - Vo2			500	--	--	VDC
Insulation Resistance	Input - output	Environment temperature: 25±5℃, Relative humidity: <95%RH, non-condensing Testing voltage: 500VDC		100	--	--	MΩ
	Input - ⏚			100	--	--	
	Output - ⏚			100	--	--	
Operating Temperature				-30	--	+70	℃
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℃ to +45℃	--	--	--	%/℃
			+45℃ to +70℃	2.0	--	--	
Safety Standard				IS 13252 (Part1) Safety Approval & EN/BS EN 62368-1(Report) Design refer IEC/UL62368-1, EN60335-1, GB4943.1			
Safety Class				CLASS I			
MTBF	MIL-HDBK-217F@25℃			> 300,000 h			

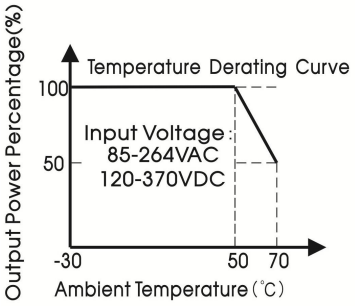
Physical Specifications

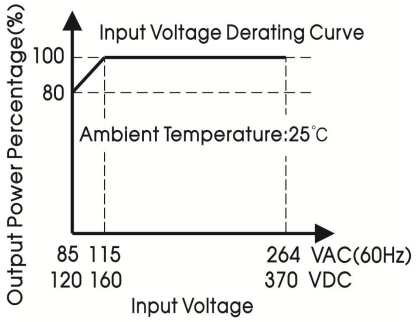
Case Material	Metal (AL1100, SGCC)
Dimension	99.00 x 99.00 x 30.00 mm
Weight	235g (Typ.)
Cooling Method	Free air convection

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	±2KV	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

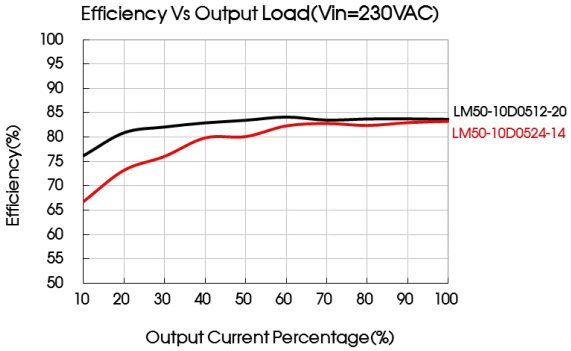
Product Characteristic Curve

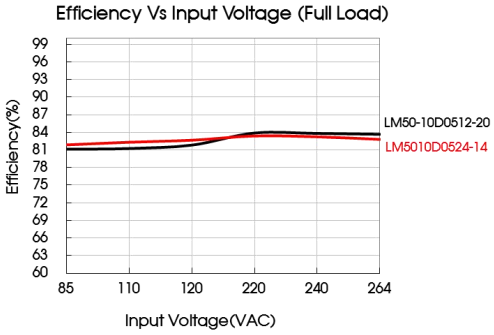




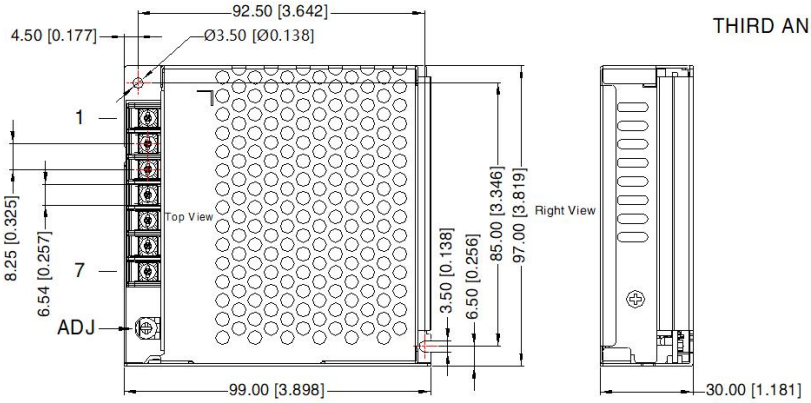
Note: 1. With an AC input voltage between 85-115VAC and a DC input between 120-160VDC the output power must be derated as per the temperature derating curves,

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



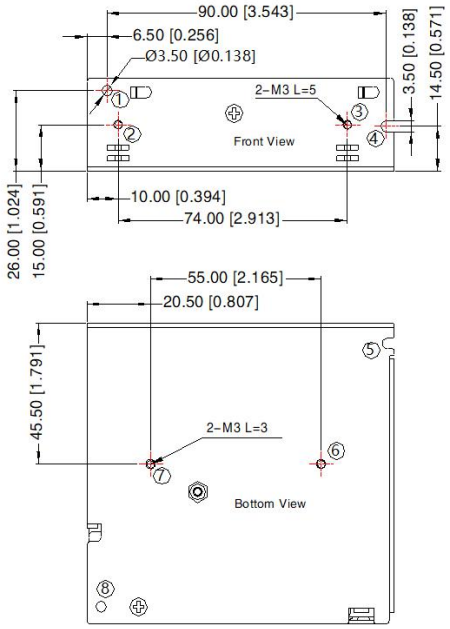


Dimensions and Recommended Layout

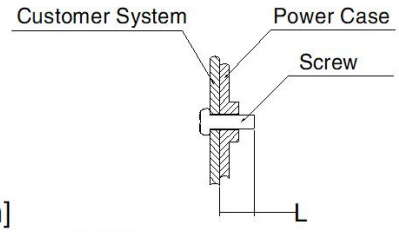


THIRD ANGLE PROJECTION

Pin–Out	
Pin	Function
1	AC(L)
2	AC(N)
3	⏚
4	–Vo2
5	+Vo2
6	–Vo1
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:

1. For additional information on Product Packaging please refer to www.mornsun-power.com. Packaging bag number: 58220066 ;
2. Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta=25℃, humidity<75%RH with nominal input voltage and rated output load;
3. All index testing methods in this datasheet are based on our company corporate standards;
4. 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;
5. We can provide product customization service, please contact our technicians directly for specific information;
6. Products are related to laws and regulations: see "Features" and "EMC";
7. The out case needs to be connected to PE (⏚) of system when the terminal equipment in operating;
8. CAUTION: Double pole, neutral fusing. Disconnect mains before servicing."/"ATTENTION: Double pôle/fusible sur le neutre. Débrancher lalimentation avant lentretien;
9. Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units;
10. 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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