AC/DC 35W Enclosed Switching Power Supply

LM35-10D0515-12

MORNSUN®

RoHS

FEATURES

- Input voltage range: 85-264VAC / 120-370VDC
- Operating temperature range: -30℃ to +70℃
- High efficiency, high reliability and long life
- Output with LED indicator
- Output short circuit, over current, over voltage protection
- Meets 3000VAC isolation voltage
- Withstand 5G vibration test
- Up to 5000m altitude application
- 3 years warranty

The LM35-10D0515-12 product is designed with two isolated outputs, which can supply power to two units in the system at the same time, and is the best power solution for industrial control equipment, instrumentation and other applications. It can work at an ambient temperature of -30℃ to +70℃ without adding a fan for heat dissipation. In addition, the EMC performance of the product meets the requirements of IEC61000 standard, and the EMI bare metal meets the CISPR32/EN55032 Class B standard, which provides protection for the electromagnetic compatibility of the equipment. The product also complies with IEC/EN/UL62368, EN60335, GB4943 safety specifications, integrates a variety of protection functions, ultra-high cost performance, is a variety of industrial, civil and smart home, building equipment the best power choice.

Selection Guide

Certification	Part No.*	Output Power (W)*	Nominal Output Voltage and Current (Vo/Io)		Output Voltage Adjustable Range (V)	Efficiency at 230VAC (%) Typ.*	Max. Capacitive Load (μF)	
			(Vo1/Io1)	(Vo2/Io2)	Vo1		Vo1	Vo2
--	LM35-10D0515-12	33W	+5V/3.0A	+15V/1.2A	4.75-5.50	81	4000	1000

Input Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Input Voltage Range	Rated input (Certified voltage)		100	--	240	VAC
	AC input		85	--	264	
	DC input		120	--	370	VDC
Input Voltage Frequency	Rated input (Certified voltage)		50	--	60	Hz
	AC input		47	--	63	
Input Current	Rated input (Certified voltage)		--	--	0.75	A
	115VAC		--	--	0.75	
	230VAC		--	--	0.5	
Inrush Current	115VAC	Cold start	--	30	--	
	230VAC		--	50	--	
Start-up Delay Time	115VAC/230VAC, rated load		--	2000	--	ms
Input Fuse	Built-in fuse		--	3.115	--	A
Hot Plug			Unavailable			

Output Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Output Voltage Accuracy	Full load range	Vo1	--	±2.0	--	%
		Vo2	--	±8.0	--	
Line Regulation	Rated load	Vo1	--	±0.5	--	
		Vo2	--	±1.5	--	
Load Regulation	0% - 100% load (two outputs with balance load)	Vo1	--	±0.5	--	
		Vo2	--	±5.0	--	
Minimum Load	Vo1		10	--	--	

	Vo2		10	--	--	
Ripple & Noise*	20MHz bandwidth (peak-peak value)	Vo1	--	--	80	mV
		Vo2	--	--	150	
	20MHz bandwidth (peak-peak value)	Vo1	--	--	1000	
		Vo2	--	--	1000	
Temperature Coefficient	Vo1		--	±0.03	--	%/℃
Hold-up Time	115VAC, rated load		--	5	--	ms
	230VAC, rated load		--	30	--	
Short Circuit Protection	Recovery time <3s after the short circuit disappear.		Hiccup mode, continuous, self-recover			
Over-current Protection	230VAC, rated load (two outputs with balance load)	Normal temperature, high temperature	110% - 220% Io, hiccup, self-recover			
		Low temperature	⩾110% full load after derating, hiccup, self-recover			
Over-voltage Protection			⩽6.75VDC (Hiccup, self-recover)			

Note: *The "Tip and barrel method" is used for ripple and noise test, output parallel 10uF 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 Test	Input - ⏚	Electric strength test for 1min., leakage current <10mA		500	--	--	VAC
	Input - output			3000	--	--	
	Output - ⏚			2000	--	--	
	Output - output			500	--	--	
Insulation Resistance	Input - ⏚	Ambient temperature: 25 ± 5℃ Relative humidity: < 95%RH, no condensation Test voltage: 500VDC		100	--	--	MΩ
	Input - output			100	--	--	
	Output - ⏚			100	--	--	
Operating Temperature				-30	--	+70	℃
Storage Temperature				-40	--	+85	
Operating Humidity		Non-condensing		20	--	90	%RH
Storage Humidity				10	--	95	
Power Derating		Operating temperature derating	+50℃ to +70℃	2.5	--	--	%/℃
		Input voltage derating	85VAC - 115VAC	0.667	--	--	%/VAC
			120VDC - 160VDC	0.5	--	--	%/VDC
Leakage Current	240AC, 60Hz		Touch current	<2mA			
Safety Standards				Design refer to UL/IEC/EN62368-1, EN60335-1, IS13252 (Part1), BS EN62368-1, GB4943.1			
Safety Class				CLASS I			
MTBF	MIL-HDBK-217F@25℃			⩾300,000 h			
Warranty	Ambient temperature: 50℃			3 years			

Environmental Characteristics

Item	Operating Conditions	Standard
High and Low Temperature Working	+70℃, -30℃	GB2423.1, IEC60068-2-1
Sinusoidal Vibration	10 - 500Hz, 2g, three directions of X, Y, Z axis	GB2423.10, IEC60068-2-6
High Temperature Storage	+85℃	GB2423.2, IEC60068-2-2
Hot and Humid	+85℃, 85%RH	GB2423.50, IEC60068-2-67

General Specifications

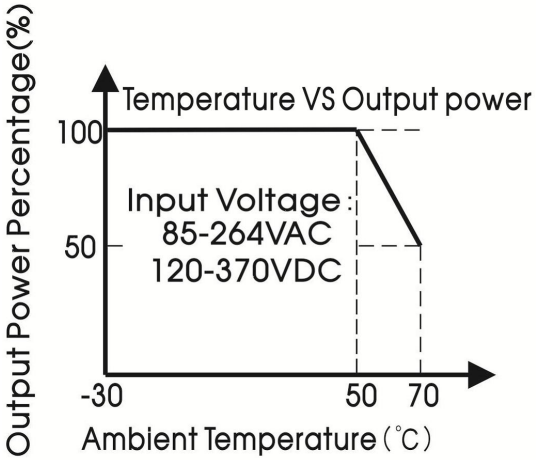
Case Material	Metal (AL1100, SGCC)
Dimensions	99.00mm x 97.00mm x 30.00 mm
Weight	210g (Typ.)
Cooling Method	Air cooling

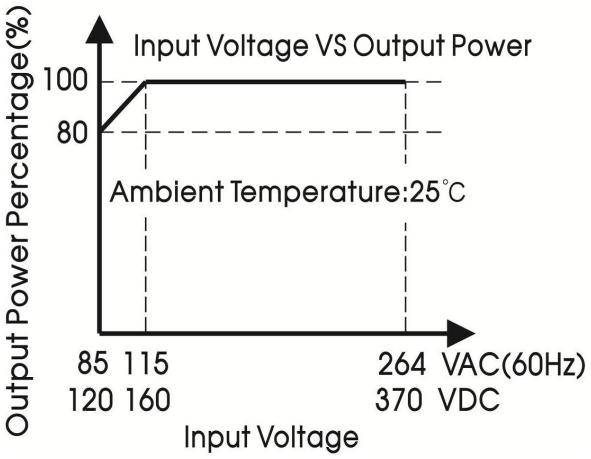
Electromagnetic Compatibility (EMC)

Emissions	CE	CISPR32 EN55032 CLASS B	
	RE	CISPR32 EN55032 CLASS B	
Immunity	ESD	IEC/EN61000-4-2 Contact ±6KV/Air ±8KV	perf. Criteria A
	RS	IEC/EN61000-4-3 10V/m	
	EFT	IEC/EN61000-4-4 ±2KV	
	Surge	IEC/EN61000-4-5 line to line ±2KV/line to ground ±4KV	
	CS	IEC/EN61000-4-6 0.15 - 80MHz 10Vr.m.s	
	MS	IEC/EN61000-4-8 30A/m	
	Voltage dips	IEC/EN61000-4-11 0%, 70%	perf. Criteria B

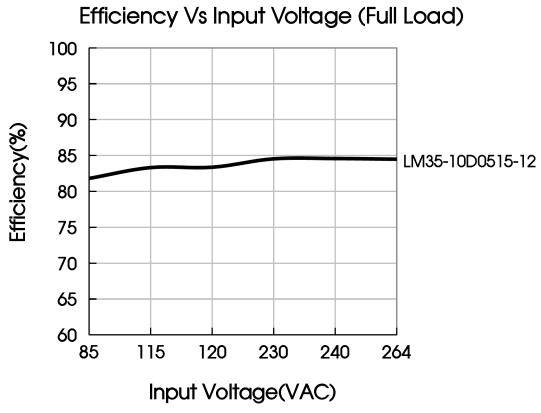
Note: *perf. Criteria:
A: The equipment shall continue to operate as intended without operator intervention;
B: After the test, the equipment shall continue to operate as intended without operator intervention;
C: Loss of function is allowed, provided the function is self-recoverable, or can be restored by the operation of the controls by the user in accordance with the manufacturer's instructions.

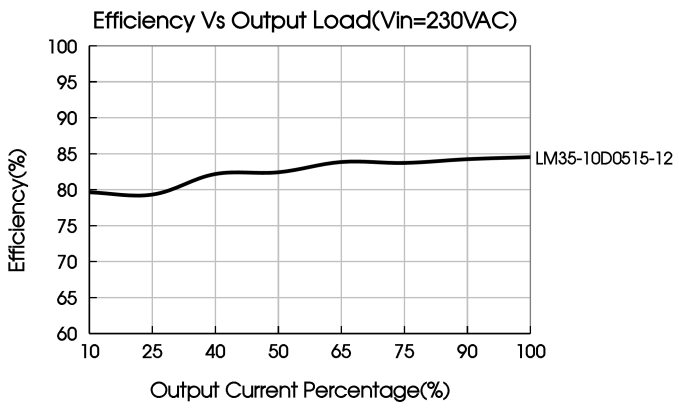
Product Characteristic Curve



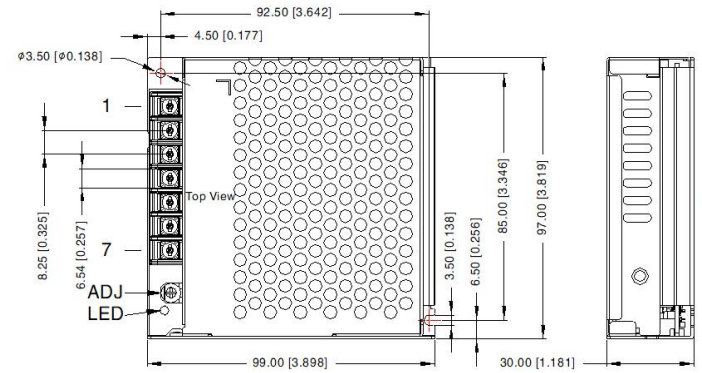


Note: 1. With an AC input voltage between 85 -115VAC and a DC input between 120-160VDC the output power must be derated as per the temperature derating curves;
2. This product is suitable for applications using natural air cooling; for applications in closed environment please consult Mornsun FAE.



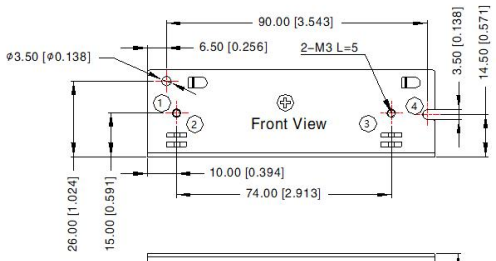


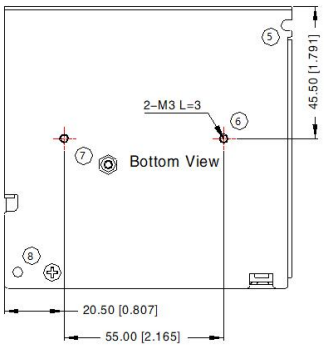
Dimensions and Recommended Layout



THIRD ANGLE PROJECTION

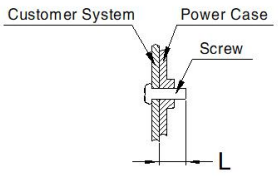
Pin–Out	
Pin	Function
1	AC(L)
2	AC(N)
3	⏚
4	–Vo2
5	+Vo2
6	–Vo1
7	+Vo1





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:
Unit: mm[inch]
ADJ:Output adjustable resistor
Wire range: 22–14AWG
Tightening torque: M3, 0.5N.m(Max)
General tolerances: ± 1.00[± 0.039]

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. The room temperature derating of 5℃/1000m is needed for operating altitude greater than 2000m;
4. All index testing methods in this datasheet are based on our company corporate standards;
5. 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;
6. We can provide product customization service, please contact our technicians directly for specific information;
7. Products are related to laws and regulations: see "Features" and "EMC";
8. The out case needs to be connected to PE (⏚) of system when the terminal equipment in operating;
9. The output voltage can be adjusted by the ADJ, clockwise to increase;
10. Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units;
11. 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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