



FEATURES

- 165 - 264VAC or 180 - 373VDC Input voltage
- Accepts AC or DC input (dual-use of same terminal)
- Operating ambient temperature range: -30°C to +70°C
- Low standby power consumption, high efficiency
- High I/O isolation test voltage up to 4000VAC
- Low ripple & noise
- Output short circuit, over-current, over-voltage protection
- Safety according to IEC/EN/UL62368, EN60335, GB4943
- Withstand 300VAC surge input for 5s
- Over-voltage class III (designed to meet EN61558)
- Operating altitude up to 5000m
- Low leakage current: <0.3mA

LM35-22B12-DX is one of Mornsun's enclosed AC-DC switching power supply. It features AC input and at the same time accepts DC input voltage, cost-effective, low leakage current, low no load power consumption, high efficiency, high reliability and double or reinforced insulation. These converters offer excellent EMC performance and meet IEC/EN61000-4, CISPR32/EN55032, IEC62368, UL62368, EN62368, EN60335, GB4943 standards and they are widely used in areas of industrial, LED, street light control, electricity, security, telecommunications, smart home etc.

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)
--	LM35-22B12-DX	36	12V/3A	10.2-13.8	86	1500

Input Specifications





Item	Operating Conditions		Min.	Typ.	Max.	Unit
Input Voltage Range	AC input		165	--	264	VAC
	DC input		180	--	373	VDC
Input Voltage Frequency			47	--	63	Hz
Input Current	230VAC		--	--	0.6	A
Inrush Current	230VAC	Cold start	--	45	--	
Leakage Current	240VAC		<0.3mA			
Hot Plug			Unavailable			

Output Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Output Voltage Accuracy	Full load range		--	±1	--	%
Line Regulation	Rated load		--	±0.5	--	
Load Regulation	0% - 100% load		--	±0.5	--	
Ripple & Noise*	20MHz bandwidth (peak-to-peak value)		--	120	--	mV
Temperature Coefficient			--	±0.03	--	%/°C
Minimum Load			0	--	--	%
Stand-by Power Consumption			--	--	0.3	W
Hold-up Time	230VAC		30	--	--	ms
Short Circuit Protection	Recovery time <5s after the short circuit disappear.		Hiccup, continuous, self-recovery			

Over-current Protection		110%-150% I _o , self-recovery
Over-voltage Protection		≤16.2VDC (clamping protection)
Note: *The "Tip and barrel method" is used for ripple and noise test, please refer to AC-DC Converter 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	2000	--	--	VAC
	Input-output		4000	--	--	
	Output- 		1250	--	--	
Insulation Resistance	Input- 	At 500VDC	50	--	--	MΩ
	Input-output		50	--	--	
	Output- 		50	--	--	
Operating Temperature			-30	--	+70	°C
Storage Temperature			-40	--	+85	
Storage Humidity	Non-condensing		--	--	95	%RH
Switching Frequency			--	65	--	kHz
Power Derating	Operating temperature derating	+50°C to +70°C	2	--	--	%/°C
	Input voltage derating	180VDC - 200VDC	1	--	--	%/VDC
Safety Standard			Meet IEC/EN/UL62368, EN60335, GB4943			
Safety Class			CLASS I			
MTBF	MIL-HDBK-217F@25°C		>300,000 h			

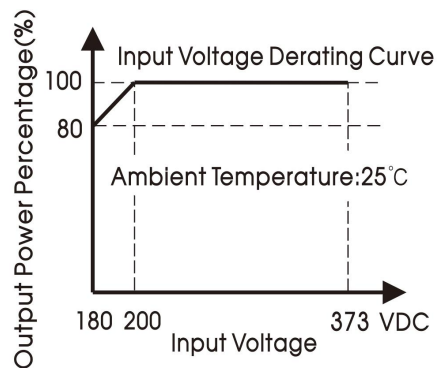
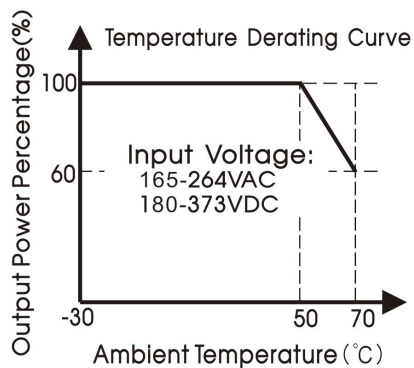
Mechanical Specifications

Case Material	Metal (AL1100, SGCC)
Dimensions	99.00 x 82.00 x 30.00 mm
Weight	190g (Typ.)
Cooling Method	Free air convection

Electromagnetic Compatibility (EMC)

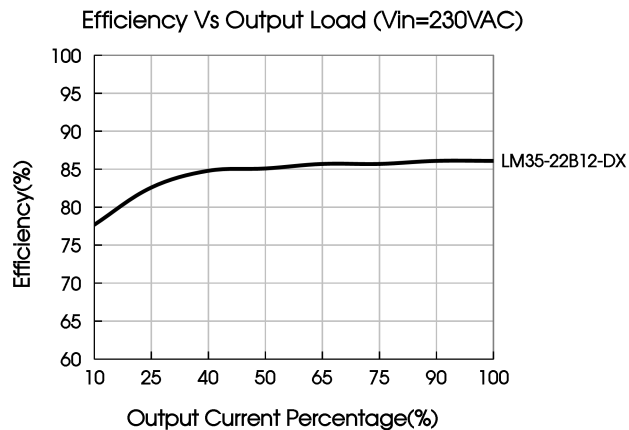
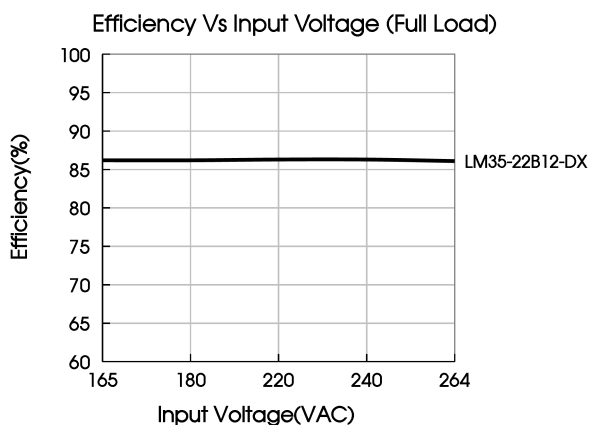
Emissions	CE	CISPR32/EN55032	CLASS A	
	RE	CISPR32/EN55032	CLASS A	
Immunity	ESD	IEC/EN 61000-4-2	Contact ±6KV /Air ±8KV	Perf. Criteria A
	RS	IEC/EN 61000-4-3	10V/m	perf. Criteria A
	EFT	IEC/EN 61000-4-4	±2KV	perf. Criteria A
	Surge	IEC/EN 61000-4-5	line to line ±2KV/line to ground ±4KV	perf. Criteria A
	CS	IEC/EN61000-4-6	10 Vr.m.s	perf. Criteria A
	Voltage dips, short interruptions and voltage variations immunity	IEC/EN61000-4-11	0%, 70%	perf. Criteria B

Product Characteristic Curve

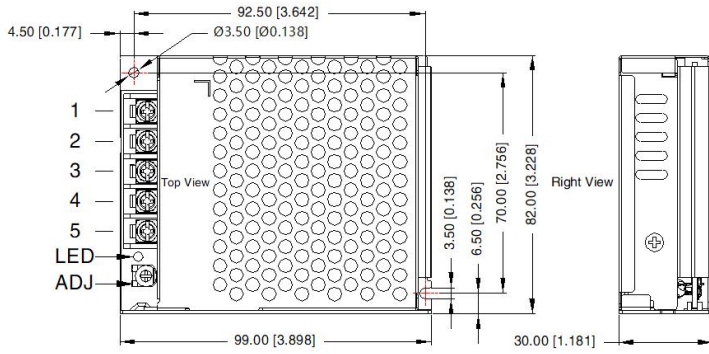


Note: ①For input voltage of 180 - 200VDC, input voltage derating is required based on temperature derating;

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

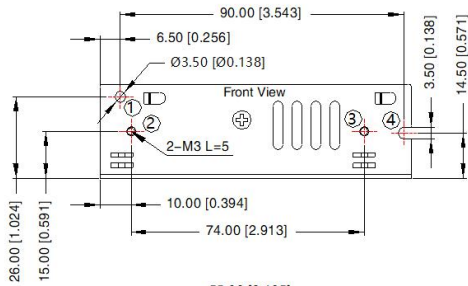


Dimensions and Recommended Layout

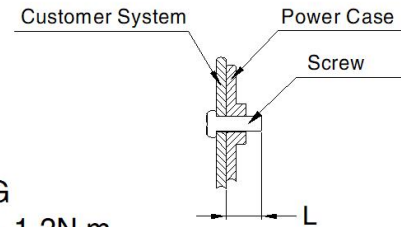
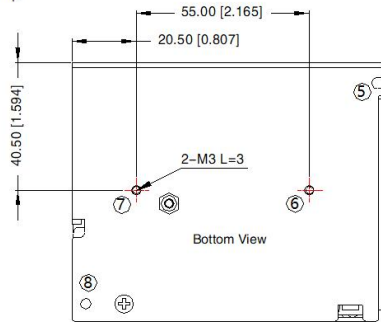


THIRD ANGLE PROJECTION

Pin-Out	
Pin	Function
1	AC(L)
2	AC(N)
3	⊥
4	-Vo
5	+Vo



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: 22-12AWG
Tightening torque: M4, 1.2N·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: 58220067;
 - 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;
 - The room temperature derating of 5°C/1000m 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.

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