



## FEATURES

- Universal 85 - 264VAC or 120 - 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

LM35-20Bxx series is one of Mornsun's enclosed AC-DC switching power supply. It features universal AC input and at the same time accepts DC input voltage, cost-effective, 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, IEC/UL/ 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)
CE, CCC	LM35-20B05	35	5V/7A	4.5-5.5	82	8000
	LM35-20B12	36	12V/3A	10.2-13.8	86	1500
	LM35-20B15		15V/2.4A	13.5-18	87	1000
	LM35-20B24		24V/1.5A	21.6-28.8	88	750

Note: \*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 Voltage Frequency		47	--	63	Hz	
Input Current	115VAC	--	--	0.8	A	
	230VAC	--	--	0.4		
Inrush Current	115VAC	Cold start	--	30		--
	230VAC		--	45		--
Leakage Current	240VAC	<0.75mA				
Hot Plug		Unavailable				





## Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Output Voltage Accuracy	Full load range	5V	--	±2	--
		12V/15V/24V	--	±1	--
Line Regulation	Rated load	--	±0.5	--	%
Load Regulation	0% - 100% load	5V	--	±1	--
		12V/15V/24V	--	±0.5	--
Ripple & Noise*	20MHz bandwidth (peak-to-peak value)	5V	--	80	--
		12V/15V	--	120	--
		24V	--	180	--

Temperature Coefficient		--	±0.03	--	%/°C
Minimum Load		0	--	--	%
Stand-by Power Consumption		--	--	0.3	W
Hold-up Time	115VAC	12	--	--	ms
	230VAC	30	--	--	
Short Circuit Protection	Recovery time <5s after the short circuit disappear.	Hiccup, continuous, self-recovery			
Over-current Protection		110% - 150% Io, self-recovery			
Over-voltage Protection	5V	≤ 6.3VDC (Clamping protection)			
	12V	≤ 16.2VDC (Clamping protection)			
	15V	≤ 21.75VDC (Clamping protection)			
	24V	≤ 33.6VDC (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	-30°C to -25°C	<100VAC Input	5	--	--	% / °C
		+50°C to +70°C		2	--	--	
	Input voltage derating	<100VAC Input	1.33	--	--	%/VAC	
Safety Standard			Meet IEC/EN/UL62368/EN60335/GB4943				
Safety Class			CLASS I				
MTBF	MIL-HDBK-217F@25°C		>300,000 h				

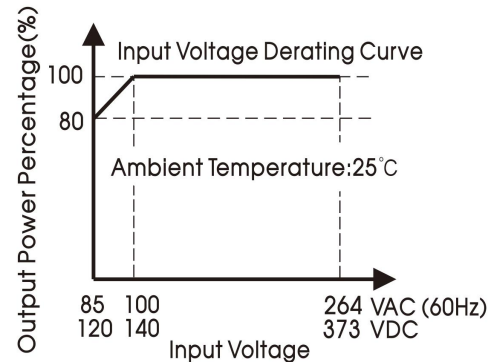
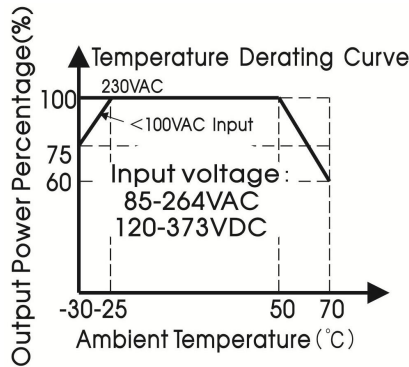
## Mechanical Specifications

Case Material	Metal (AL1100, SGCC)
Dimensions	99.00 x 82.00 x 30.00 mm
Weight	180g (Typ.)
Cooling Method	Free air convection

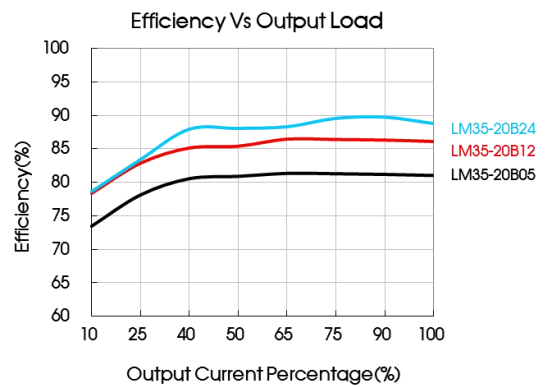
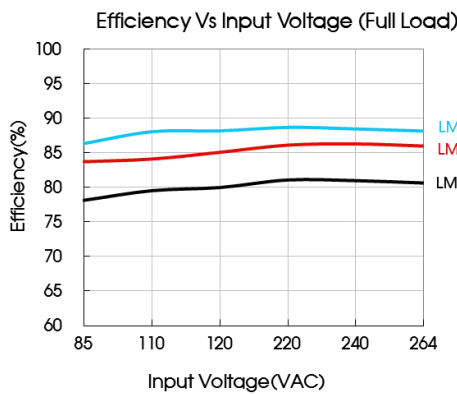
## Electromagnetic Compatibility (EMC)

Emissions	CE	CISPR32/EN55032	CLASS B	
	RE	CISPR32/EN55032	CLASS B	
	Harmonic current	IEC/EN61000-3-2	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

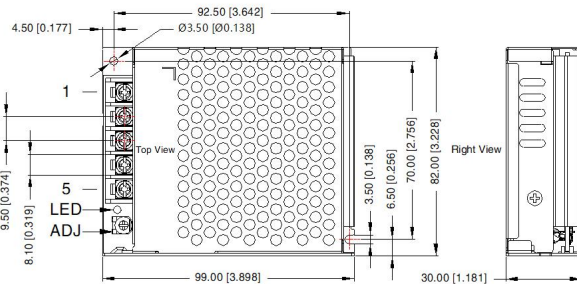
Product Characteristic Curve



Note: ① With an input voltage between 85-100VAC and a DC input between 120-140VDC 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.

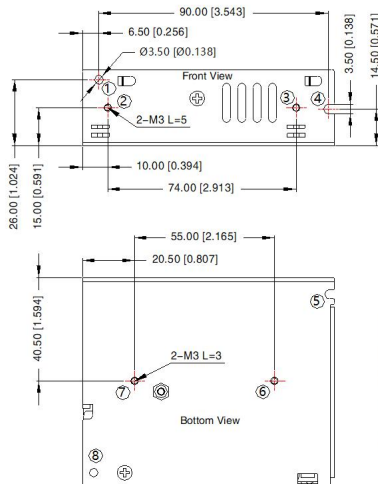


Dimensions and Recommended Layout

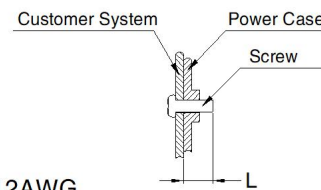


THIRD ANGLE PROJECTION

Pin-Out	
Pin	Function
1	AC(L)
2	AC(N)
3	⊥
4	-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:

1. For additional information on Product Packaging please refer to [www.mornsun-power.com](http://www.mornsun-power.com). Packaging bag number: 58220067;
2. 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;
3. The room temperature derating of  $5^{\circ}\text{C}/1000\text{m}$  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 ( $\perp$ ) of system when the terminal equipment in operating;
9. 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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