

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 - +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 (CE/CCC pending)
- Withstand 300VAC surge input for 5s
- Over-voltage class III (designed to meet EN61558)
- Operating up to 5000m altitude

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 and high reliability. 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 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 (Pending) | LM35-20B05 | 35 | 5V/7A | 4.5-5.5 | 82 | 8000 |
| | LM35-20B12 | 36 | 12V/3A | 10.2-13.8 | 86 | 1500 |
| | LM35-20B15 | 36 | 15V/2.4A | 13.5-18 | 87 | 1000 |
| | LM35-20B24 | 36 | 24V/1.5A | 21.6-28.8 | 88 | 750 |

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 | -- | |
| 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 | -- | |
| Output Ripple & Noise* | 20MHz bandwidth | 5V | -- | 80 | -- | mV |
| | | 12V/15V | -- | 120 | -- | |

| | | | | | | |
|----------------------------|--|-----|-----------------------------------|-------|-----|------|
| | (peak-to-peak value) | 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 is less than 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 | °C |
| Storage Humidity | Non-condensing | | -- | -- | 95 | %RH |
| Switching Frequency | | | | 65 | | kHz |
| Power Derating | Operating temperature derating | -30°C to -25°C | 85VAC-100VAC | 5 | | % / °C |
| | | +50°C to +70°C | | 2 | | |
| | Input voltage derating | 85VAC-100VAC | 1.33 | | | % / VAC |
| Safety Standard | | | Meet IEC/EN/UL62368/EN60335/GB4943 | | | |
| Safety Class | | | CLASS I | | | |
| MTBF | | | MIL-HDBK-217F@25°C >300,000 h | | | |

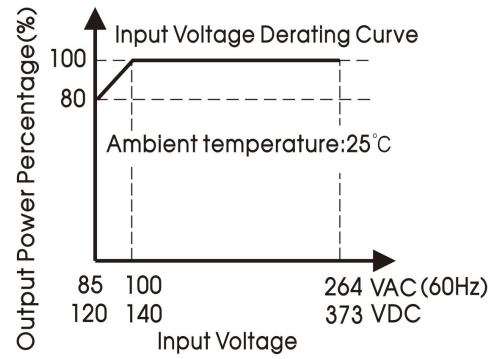
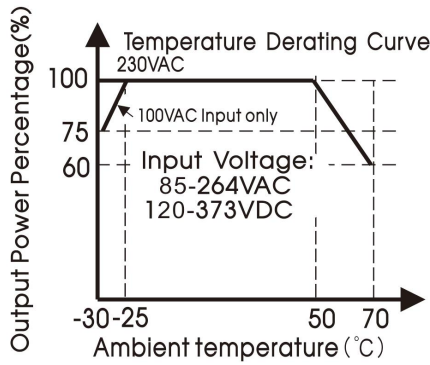
Mechanical Specifications

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

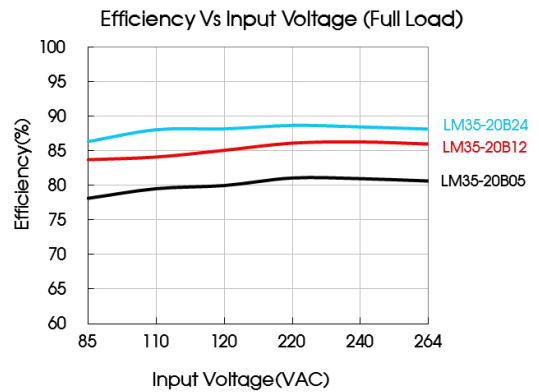
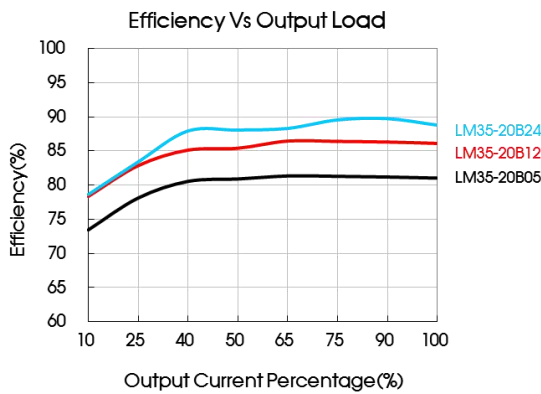
Electromagnetic Compatibility (EMC)

| | | | | |
|-----|-------|------------------|---------------------------------------|------------------|
| EMI | CE | CISPR32/EN55032 | CLASS B | |
| | RE | CISPR32/EN55032 | CLASS B | |
| EMS | 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 |
| | DIP | IEC/EN61000-4-11 | 0%, 70% | perf. Criteria B |

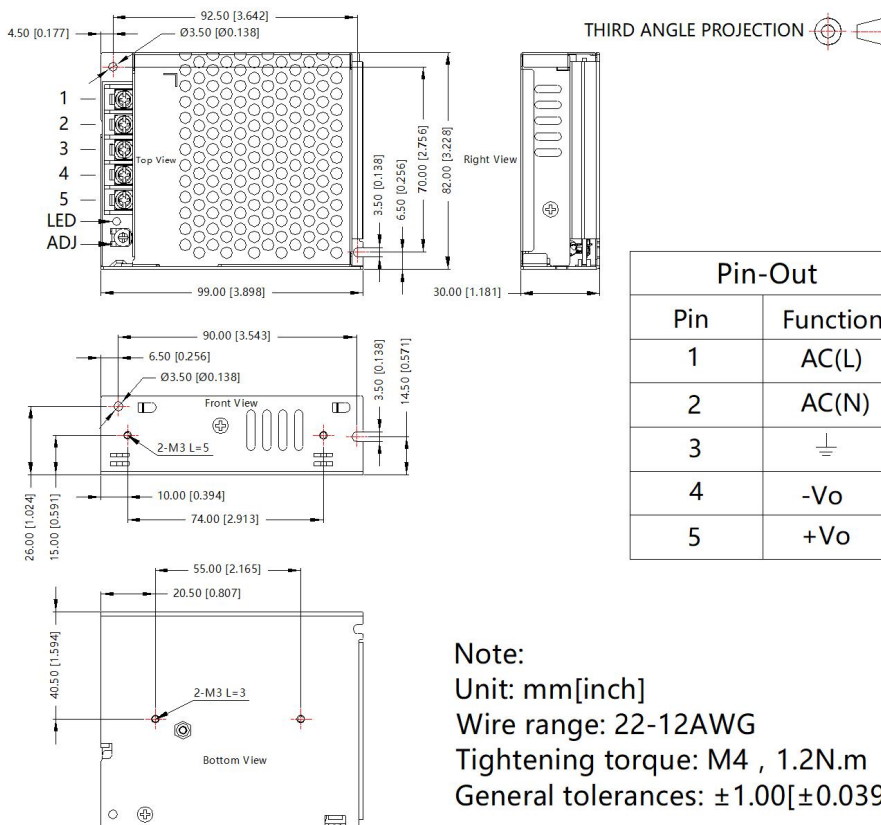
Product Characteristic Curve



Note: ① Input voltage reduction is required on the basis of temperature reduction for the input voltage is 85 - 100VAC/120 - 140VDC;
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:

1. For additional information on Product Packaging please refer to 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 ambient 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. 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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