

20W, AC/DC converter



FEATURES

- Ultra wide input voltage range: 90 - 528VAC/100 - 745VDC
- Regulated output, Low ripple & noise
- Operating temperature range: -40°C to +70°C
- Output short circuit, over-current, over-voltage protection
- Isolation voltage: 4KVAC
- EFT /Surge: ±4KV Perf. Criteria B
- EN62368 approval

LD20-26Bxx Series — a compact size power converter offered by Mornsun. It features ultra wide input voltage, taking both DC and AC input voltage, low power consumption, high efficiency, high reliability, safer isolation. Meets EN62368 standards. The isolation voltage is 4000VAC between input and output. The product meets IEC/EN61000-4, CISPR32/EN55032 Standard. Used in such as electrical, instrumentation industries, Suitable for demanding high isolation voltage and strict electromagnetic compatibility of various terminal applications.

Selection Guide

| Certification | Part No.* | Output Power | Nominal Output Voltage and Current(Vo/Io) | Efficiency (230VAC, %/Typ.) | Max. Capacitive Load (μF) |
|---------------|------------|--------------|---|-----------------------------|---------------------------|
| CE | LD20-26B03 | 11.88W | 3.3V/3600mA | 74 | 10000 |
| | LD20-26B05 | 18W | 5V/3600mA | 78 | 10000 |
| | LD20-26B09 | 20W | 9V/2230mA | 79 | 7000 |
| | LD20-26B12 | | 12V/1660mA | 82 | 5000 |
| | LD20-26B15 | | 15V/1330mA | 83 | 3000 |
| | LD20-26B24 | | 24V/833mA | 83 | 1000 |

Note:*Part No. with suffix of "A2" means chassis mounting and suffix of "A4" means DIN-Rail mounting (e.g. LD20-26B03A2 means chassis mounting; LD20-26B03A4 means DIN-Rail mounting)

Input Specifications

| Item | Operating Conditions | Min. | Typ. | Max. | Unit |
|---------------------------------|----------------------|--------------------------------------|------|------|------|
| Input Voltage Range | AC Input | 90 | -- | 528 | VAC |
| | DC Input | 100 | -- | 745 | VDC |
| Input Frequency | | 47 | -- | 63 | Hz |
| Input Current | 115VAC | -- | -- | 0.8 | A |
| | 230VAC | -- | -- | 0.4 | |
| Inrush Current | 115VAC | -- | 35 | -- | |
| | 230VAC | -- | 60 | -- | |
| Leakage current | | 0.25mA RMS typ. 230VAC/50Hz | | | |
| Recommended External Input Fuse | | 3.15A/500VAC, slow fusing, necessary | | | |
| Hot Plug | | Unavailable | | | |

Output Specifications

| Item | Operating Conditions | Min. | Typ. | Max. | Unit |
|----------------------------|-----------------------------------|-----------------------------------|-------|------|------|
| Output Voltage Accuracy | LD20-26B03 | -- | ±3 | -- | % |
| | Others | -- | ±2 | -- | |
| Line Regulation | Full load | -- | ±0.5 | -- | |
| Load Regulation | 0% - 100% load | -- | ±1.0 | -- | mV |
| Ripple & Noise* | 20MHz bandwidth (peak-peak value) | -- | -- | 150 | mV |
| Temperature Coefficient | | -- | ±0.02 | -- | %/°C |
| Stand-by Power Consumption | | -- | -- | 0.75 | W |
| Short Circuit Protection | | Hiccup, continuous, self-recovery | | | |
| Over-current Protection | | 130 - 400%Io self-recovery | | | |

| | | | | | |
|--|---------------|--------------------------------|-----|----|----|
| Over-voltage protection | 3.3/5V output | ≤ 7.5 V (Output voltage clamp) | | | |
| | 9V output | ≤ 15 V (Output voltage clamp) | | | |
| | 12/15V output | ≤ 20 V (Output voltage clamp) | | | |
| | 24V output | ≤ 30 V (Output voltage clamp) | | | |
| Min. Load | | 0 | -- | -- | % |
| Hold-up Time | 230VAC input | -- | 35 | -- | ms |
| | 400VAC input | -- | 100 | -- | |
| Note: *Parallel line test method is adopted to test the ripple and noise, connect the output capacitor to the external circuit Fig.1, please see AC-DC Converter Application Notes for specific operation methods. | | | | | |

General Specifications

| Item | | Operating Conditions | Min. | Typ. | Max. | Unit |
|-----------------------|--------------|------------------------------------|-------------------------|------|------|--------|
| Isolation Voltage | Input-output | Test time: 1min | 4000 | -- | -- | VAC |
| Operating Temperature | | Work in the power drop curve range | -40 | -- | +70 | ℃ |
| Storage Temperature | | | -40 | -- | +85 | |
| Storage Humidity | | | -- | -- | 95 | %RH |
| Welding Temperature | | Wave-soldering | 260 ± 5℃; time: 5 - 10s | | | |
| | | Manual-welding | 360 ± 10℃; time: 3 - 5s | | | |
| Switching Frequency | | | -- | 65 | -- | kHz |
| Power Derating | | +55℃ to +70℃ | 3.0 | -- | -- | % /℃ |
| | | -40℃ to -10℃ | 1.0 | -- | -- | |
| | | 90VAC - 110VAC | 2.0 | -- | -- | % /VAC |
| | | 480AVC - 528VAC | 0.417 | -- | -- | |
| Safety Standard | | | EN62368 | | | |
| Safety Certification | | | EN62368 | | | |
| Safety Class | | | CLASS II | | | |
| MTBF | | MIL-HDBK-217F@25℃ | ≥ 300,000 h | | | |

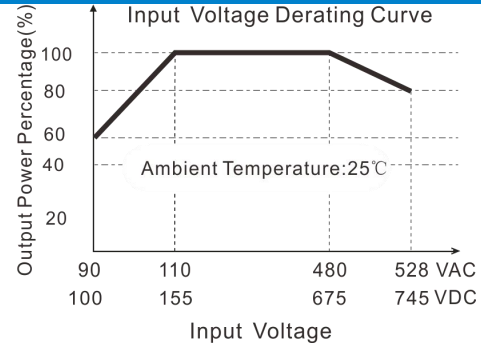
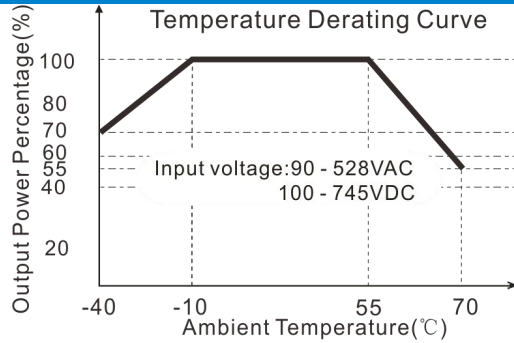
Physical Specifications

| | | |
|-----------------|----------------------|---|
| Casing Material | | Black flame-retardant and heat-resistant plastic (UL94 V-0) |
| Dimension | Horizontal package | 70.00*48.00*30.00mm |
| | A2 chassis mounting | 96.10*54.00*38.50 mm |
| | A4 Din-Rail mounting | 96.10*54.00*43.10 mm |
| Weight | Horizontal package | 160g (Typ.) |
| | A2 chassis mounting | 210g (Typ.) |
| | A4 Din-Rail mounting | 250g (Typ.) |
| Cooling Method | | Free air convection |

EMC Specifications

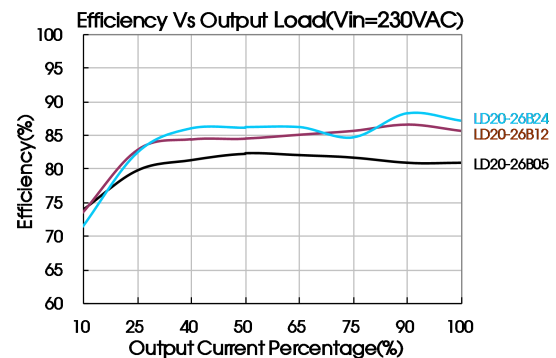
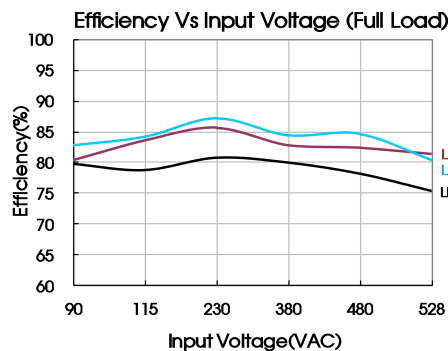
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|-----|--|---|------------------|
| EMI | CE | CISPR32/EN55032 CLASS B | |
| | RE | CISPR32/EN55032 CLASS B | |
| EMS | ESD | IEC/EN 61000-4-2 Contact ±6KV/Air ±8KV | Perf. Criteria B |
| | RS | IEC/EN 61000-4-3 10V/m | perf. Criteria A |
| | EFT | IEC/EN 61000-4-4 ±2KV | perf. Criteria B |
| | | IEC/EN 61000-4-4 ±4KV (See Fig. 2 or Fig. 3 for recommended circuit) | perf. Criteria B |
| | Surge | IEC/EN 61000-4-5 line to line ±2KV | perf. Criteria B |
| | | IEC/EN 61000-4-5 line to line ±4KV (See Fig. 2 or Fig. 3 for recommended circuit) | perf. Criteria B |
| | CS | IEC/EN61000-4-6 10Vr.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 Input voltage should be derated based on temperature derating when it is 90 - 110VAC/480 - 528VAC/100 - 155 VDC/675 - 745VDC;
 ② This product is suitable for use in natural air cooling environments, if in a closed environment, please contact our company's FAE.



Design Reference

1. Typical application circuit

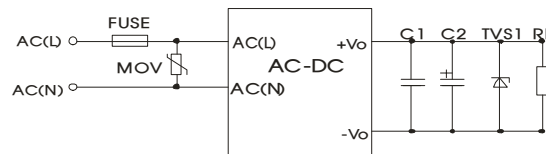


Fig. 1

| 型号 | FUSE | MOV | C2 (uF) | TVS1 |
|------------|--|---------|---------|----------|
| LD20-26B03 | 3.15A/500VAC, slow fusing, necessary | S20K625 | 330 | SMBJ7.0A |
| LD20-26B05 | | | 330 | SMBJ7.0A |
| LD20-26B09 | | | 220 | SMBJ12A |
| LD20-26B12 | | | 220 | SMBJ20A |
| LD20-26B15 | | | 220 | SMBJ20A |
| LD20-26B24 | | | 220 | SMBJ30A |

Note:

Output filtering capacitor C2 is electrolytic capacitor, it is recommended to use high frequency and low impedance electrolytic capacitor. For capacitance and current of capacitor please refer to manufacture's datasheet. Capacitor voltage reduced to at least 80%. C1 is ceramic capacitor, which is used to filter high-frequency noise, recommended 1μF. TVS is a recommended component to protect post-circuits if converter fails.

2. EMC solution-recommended circuit

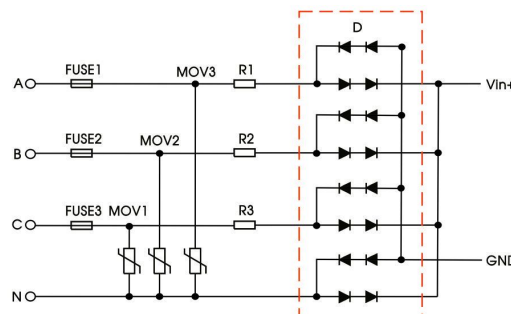


Fig. 2 Recommended circuit for applications which require 4KV differential-mode inrush standard (full-wave rectification)

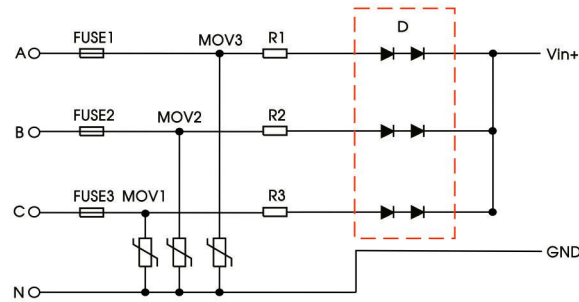
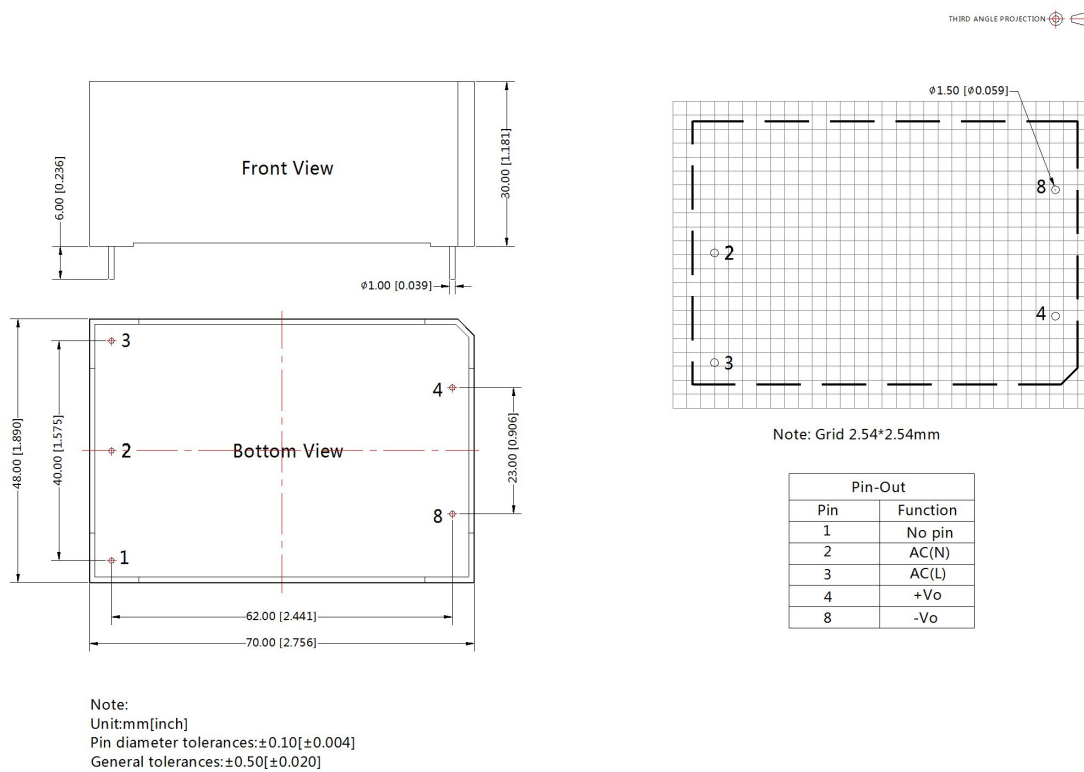


Fig. 3 Recommended circuit for applications which require 4KV differential-mode inrush standard (half-wave rectification)

| Recommend Parameter For Higher EMC Standard Circuit | |
|---|--------------------------------------|
| Element model | Recommended value |
| MOV1, MOV2, MOV3 | S20K510 |
| D | 2A/1000V |
| R1, R2, R3 | 10Ω/5W |
| FUSE1, FUSE2, FUSE3 | 3.15A/500VAC, slow fusing, necessary |

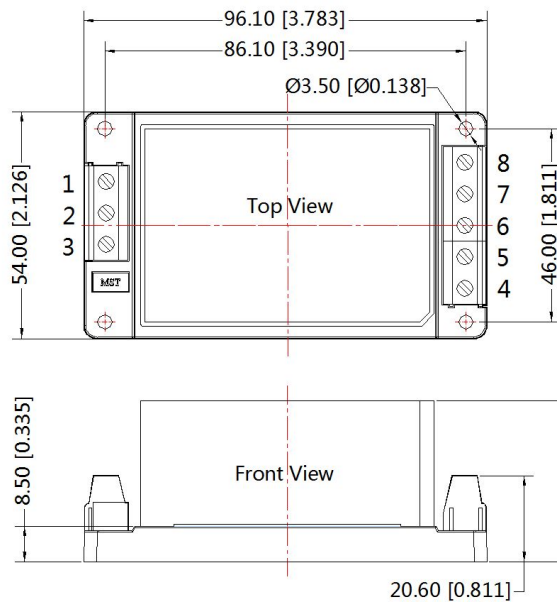
3. For more information Please find the application note on www.mornsun-power.com

Dimensions and Recommended Layout



A2 Dimensions

THIRD ANGLE PROJECTION

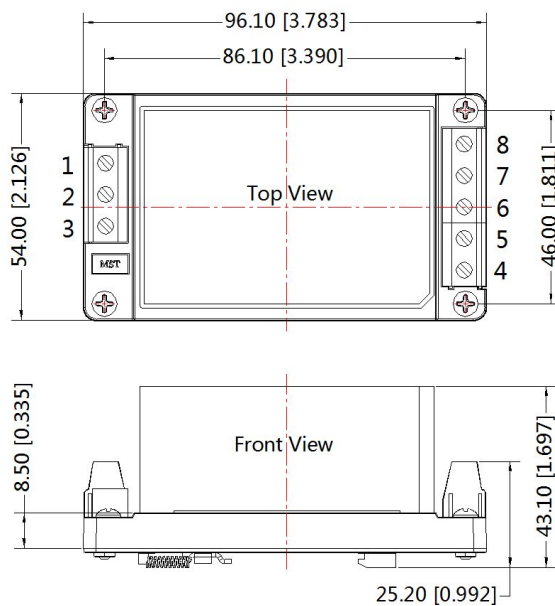


| Pin-Out | |
|---------|----------|
| Pin | Function |
| 1 | NC |
| 2 | AC(N) |
| 3 | AC(L) |
| 4 | +Vo |
| 5 | NC |
| 6 | NC |
| 7 | NC |
| 8 | -Vo |

Note:
Unit: mm[inch]
Wire range: 24-12 AWG
Tightening torque: Max 0.4 N·m
General tolerances: ±1.00[±0.039]

A4 Dimensions

THIRD ANGLE PROJECTION



| Pin-Out | |
|---------|----------|
| Pin | Function |
| 1 | NC |
| 2 | AC(N) |
| 3 | AC(L) |
| 4 | +Vo |
| 5 | NC |
| 6 | NC |
| 7 | NC |
| 8 | -Vo |

Note:
Unit: mm[inch]
Mounting rail: TS35, rail needs to connect safety ground
Wire range: 24-12 AWG
Tightening torque: Max 0.4 N·m
General tolerances: ±1.00[±0.039]

Notes:

1. Packing information please refer to Product Packing Information which can be downloaded from www.mornsun-power.com . Packing bag number: 58220017 (Horizontal package), 58220019 (A2/A4 package);
2. If the product is not operated within the required load range, the product performance cannot be guaranteed to comply with all parameters in the datasheet;
3. Unless otherwise specified, parameters in this datasheet were measured under the conditions of $T_a=25^{\circ}\text{C}$, humidity<75% with nominal input voltage and rated output load;
4. All index testing methods in this datasheet are based on our Company's corporate standards;
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. 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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