

# AC/DC 75W Enclosed Switching Power Supply

LM75-23Bxx, LM75-23Bxx-C, LM75-23Bxx-Q Series



## FEATURES

- Universal 85 - 305VAC or 120 - 430VDC 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
- Over-voltage class III
- Operating altitude up to 5000m



**RoHS**



LM75-23Bxx series is one of 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

## 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) |
|---------------|------------|------------------|--|-------------------------------------|-------------------------------|---------------------------|
| UL/EN/CCC/IEC | LM75-23B05 | 70               | 5V/14A                                     | 4.5-5.5                             | 85                            | 10000                     |
|               | LM75-23B12 | 72               | 12V/6A                                     | 10.2-13.8                           | 87                            | 6000                      |
|               | LM75-23B15 | 75               | 15V/5A                                     | 13.5-18                             | 87                            | 5000                      |
|               | LM75-23B24 | 76.8             | 24V/3.2A                                   | 21.6-28.8                           | 89                            | 1500                      |
|               | LM75-23B36 | 75.6             | 36V/2.1A                                   | 32.4-39.6                           | 89                            | 1000                      |
|               | LM75-23B48 | 76.8             | 48V/1.6A                                   | 43.2-52.8                           | 90.5                          | 680                       |
| EN            | LM75-23B55 | 75               | 55V/1.36A                                  | 52-56                               | 90.5                          | 680                       |

Note: \*Use suffix "C" for terminal with protective cover and suffix "Q" for conformal coating.

## Input Specifications

| Item                    | Operating Conditions | Min.        | Typ. | Max. | Unit |
|-------------------------|----------------------|-------------|------|------|------|
| Input Voltage Range     | AC input             | 85          | --   | 305  | VAC  |
|                         | DC input             | 120         | --   | 430  | VDC  |
| Input Voltage Frequency |                      | 47          | --   | 63   | Hz   |
| Input Current           | 115VAC               | --          | --   | 2    | A    |
|                         | 230VAC               | --          | --   | 1    |      |
| Inrush Current          | 115VAC               | --          | 40   | --   |      |
|                         | 230VAC               | --          | 75   | --   |      |
| Leakage Current         | 277VAC               | <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/36V/48V/55V | ±1   | --   |      |
| Line Regulation         | Rated load           | --                      | ±0.5 | --   |      |
| Load Regulation         | 0% - 100% load       | 5V                      | ±1   | --   |      |
|                         |                      | 12V/15V/24V/36V/48V/55V | ±0.5 | --   |      |
| Ripple & Noise*         | 20MHz bandwidth      | 5V                      | 100  | --   | mV   |



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|  |  |             |                                      |       |                             |      |
|--|--|-------------|--------------------------------------|-------|-----------------------------|------|
|  | (peak-to-peak value)                                 | 12V/15V     | --                                   | 120   | --                          |      |
|  |  | 24V         | --                                   | 150   | --                          |      |
|  |  | 36V/48V/55V | --                                   | 200   | --                          |      |
| Temperature Coefficient  | 0°C to 50°C, 230VAC                                  |             | --                                   | ±0.03 | --                          | %/°C |
| Minimum Load   |  |             | 0                                    | --    | --                          | %    |
| Stand-by Power Consumption   |  |             | --                                   | --    | 0.5                         | W    |
| Hold-up Time   | 115VAC   |             | 8                                    | --    | --                          | ms   |
|  | 230VAC   |             | 55                                   | --    | --                          |      |
| Short Circuit Protection   | Recovery time <5s after the short circuit disappear. |             | Hiccup, continuous, self-recovery    |       |                             |      |
| Over-current Protection  | 230VAC, rated load                                   |             | Normal temperature, High temperature |       | 110%-200% Io, self-recovery |      |
|  |  |             | Low temperature                      |       | ≥110% Io, self-recovery     |      |
| Over-voltage Protection  | 5V   |             | ≤6.3VDC (Output voltage clamp)       |       |                             |      |
|  | 12V  |             | ≤16.2VDC (Hiccup, self-recovery)     |       |                             |      |
|  | 15V  |             | ≤21.75VDC (Hiccup, self-recovery)    |       |                             |      |
|  | 24V  |             | ≤33.6VDC (Hiccup, self-recovery)     |       |                             |      |
|  | 36V  |             | ≤50VDC (Output voltage clamp)        |       |                             |      |
|  | 48V/55V  |             | ≤60VDC (Output voltage clamp)        |       |                             |      |
| Note: *The "Tip and barrel method" is used for ripple and noise test, output parallel 47uF 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 |                | 2000  | --   | --   | VAC  |
|                       | Input - output                 |   |                | 4000  | --   | --   |      |
|                       | output - ⊕                     |   |                | 1250  | --   | --   |      |
| Insulation Resistance | Input - ⊕                      | At 500VDC   |                | 100   | --   | --   | MΩ   |
|                       | Input - output                 |   |                | 100   | --   | --   |      |
|                       | output - ⊕                     |   |                | 100   | --   | --   |      |
| Operating Temperature |                                |   |                | -30   | --   | +70  | °C   |
| Storage Temperature   |                                |   |                | -40   | --   | +85  |      |
| Operating Humidity    | Non-condensing                 |   |                | 20  | --   | 90   | %RH  |
| Storage Humidity      |                                |   |                | --  | --   | 95   |      |
| Switching Frequency   |                                |   |                | --  | 65   | --   | kHz  |
| Power Derating        | Operating temperature derating | 5V output   | +40°C to +70°C | 1.3   | --   | --   | %/°C |
|                       |                                | Other output  | +50°C to +70°C | 2   | --   | --   |      |
|                       | Input voltage derating         | 85VAC-100VAC  |                | 1.33  | --   | --   | %VAC |
|                       |                                | 277VAC-305VAC   |                | 0.71  | --   | --   |      |
| Safety Standard       | 5V/12V/15V/24V/36V/48V         |   |                | IEC/UL62368-1, GB4943.1 safety approved & EN62368-1, EN60335-1, EN61558-1 (Report) Design refer to IEC/EN/UL62368-1, EN60335-1, EN61558-1, GB4943.1 |      |      |      |
|                       | 55V                            |   |                | EN62368-1, EN60335-1, EN61558-1 (Report) Design refer to IEC/EN/UL62368-1, EN60335-1, EN61558-1, GB4943.1   |      |      |      |
| Safety Class          |                                |   |                | CLASS I   |      |      |      |
| MTBF                  | MIL-HDBK-217F@25°C             |   |                | >300,000 h  |      |      |      |

# AC/DC 75W Enclosed Switching Power Supply

LM75-23Bxx, LM75-23Bxx-C, LM75-23Bxx-Q Series



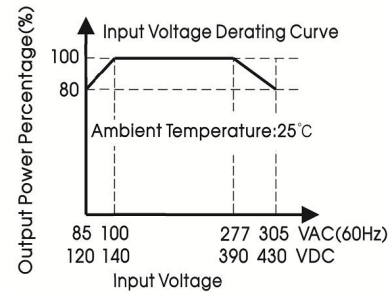
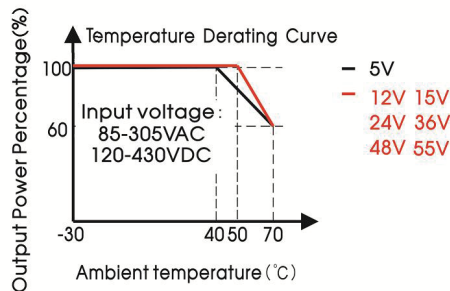
## Mechanical Specifications

|                |                          |
|----------------|--------------------------|
| Case Material  | Metal (AL1100, SGCC)     |
| Dimensions     | 99.00 x 97.00 x 30.00 mm |
| Weight         | 220g (Typ.)              |
| Cooling Method | Free air convection      |

## Electromagnetic Compatibility (EMC)

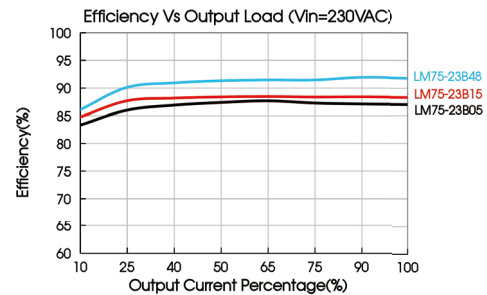
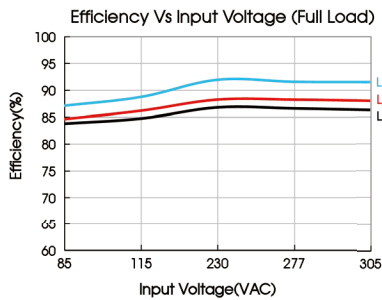
|           |   |                  |   |                  |
|-----------|---|------------------|---|------------------|
| Emissions | CE  | CISPR32/EN55032  | CLASS B   |                  |
|           | RE  | CISPR32/EN55032  | CLASS B   |                  |
|           | Harmonic current  | IEC/EN61000-3-2  | CLASS A   |                  |
| Immunity  | ESD   | IEC/EN 61000-4-2 | Contact $\pm 6$ KV/Air $\pm 8$ KV                 | perf. Criteria A |
|           | RS  | IEC/EN 61000-4-3 | 10V/m   | perf. Criteria A |
|           | EFT   | IEC/EN 61000-4-4 | $\pm 2$ KV  | perf. Criteria A |
|           | Surge   | IEC/EN 61000-4-5 | line to line $\pm 2$ KV/line to ground $\pm 4$ KV | 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 AC 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.



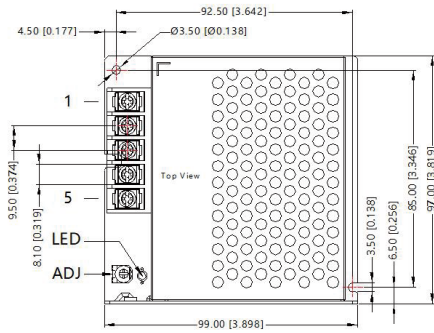
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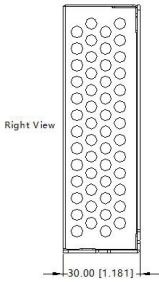


## Dimensions and Recommended Layout

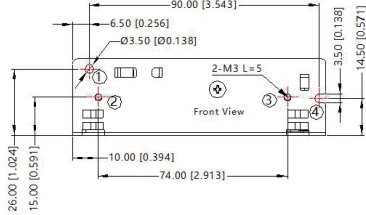
### LM75-23Bxx, LM75-23Bxx-Q Series



THIRD ANGLE PROJECTION

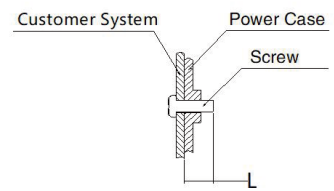
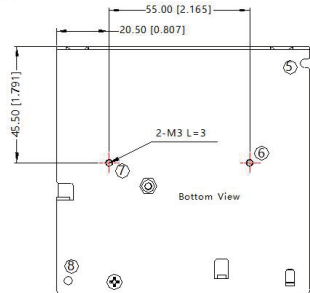


| Pin-Out |          |
|---------|----------|
| Pin     | Function |
| 1       | AC(L)    |
| 2       | AC(N)    |
| 3       | ⊕        |
| 4       | -Vo      |
| 5       | +Vo      |



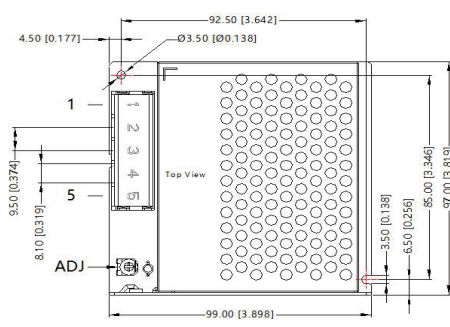
①-⑧ any position must be connected to the earth (⊕)

| Position | Screw Spec. | L(max) | Torque(max) |
|----------|-------------|--------|-------------|
| ② - ③    | M3          | 5mm    | 0.4N·m      |
| ⑥ - ⑦    | M3          | 3mm    | 0.4N·m      |

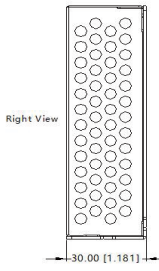


Note:  
 Unit: mm[inch]  
 Wire range: 22-12AWG  
 Connector tightening torque: M3.5 , 0.8N·m  
 General tolerances: ± 1.00[± 0.039]

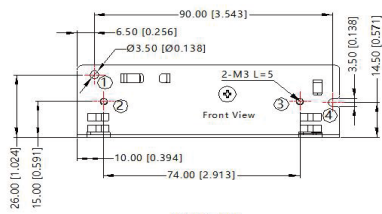
### LM75-23Bxx-C Series



THIRD ANGLE PROJECTION

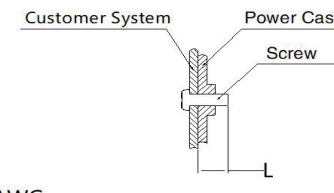
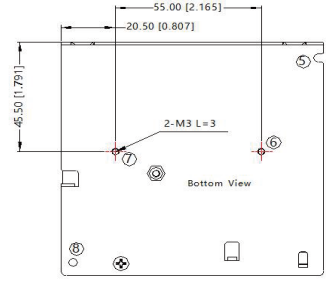


| Pin-Out |          |
|---------|----------|
| Pin     | Function |
| 1       | AC(L)    |
| 2       | AC(N)    |
| 3       | ⊕        |
| 4       | -Vo      |
| 5       | +Vo      |



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Note:  
 Unit: mm[inch]  
 Wire range: 22-12AWG  
 Connector tightening torque: M3.5 , 0.8N·m  
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## NOTE:

1. For additional information on Product Packaging please refer to [www.szhehuiyuan.com](http://www.szhehuiyuan.com).
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. The out case needs to be connected to the earth 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.
10. The power supply is considered a component which will be installed into a final equipment. All EMC tests should be confirmed with the final equipment. Please consult our FAE for EMC test operation instructions.

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