

## FEATURES

- Universal 85 - 305Vac and 100 - 430Vdc
- Operating temperature range - 30°C to +70°C
- Up to 83% efficiency
- No-load power consumption < 0.5W
- Over-voltage class III (designed to meet EN61558)
- Output short circuit, over-current, over-voltage protection
- EMI performance meets. CISPR32 / EN55032 CLASS B
- Safety IEC/UL62368-1, GB4943.1, IS13252 (Part1) Safety Approval & EN62368-1, BS EN62368-1(Report)
- Operating Altitude upto 5000m
- Supplied with Terminal cover

## RS PRO Embedded Switch Mode Power Supplies

RS Stock No: 254-3511



RS Professionally Approved Products bring to you professional quality parts across all product categories. Our product range has been tested by engineers and provides a comparable quality to the leading brands without paying a premium price.

## Product Description

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, IEC/UL/EN62368, GB4943 standards and they are widely used in areas of industrial, LED, street light control, electricity, security, telecommunications, smart home etc.

|                      |  |
|----------------------|--|
| <b>Model</b>         | AC-DC Enclosed 15W                                       |
| <b>Mounting Type</b> | Chassis Mount  |
| <b>MTBF</b>          | MIL-HDBK-217F@25°C > 700,000 h                           |
| <b>Applications</b>  | Industrial control systems, instrumentation and lighting |

| RS Stock#      | Input Voltage                   | Output Voltage | Output Current | Adj' range (V) | Max. Capacitive Load(μF) | Efficiency (Typ) |
|----------------|---------------------------------|----------------|----------------|----------------|--------------------------|------------------|
| <b>2543509</b> | 85 to 305V ac<br>100 to 430V dc | 5V DC          | 3A             | 4.5-5.5V       | 2400                     | 78%              |
| <b>2543510</b> | 85 to 305V ac<br>100 to 430V dc | 12V DC         | 1.3A           | 10.2-13.8V     | 1800                     | 82%              |
| <b>2543511</b> | 85 to 305V ac<br>100 to 430V dc | 15V DC         | 1A             | 13.5-18V       | 1200                     | 82%              |
| <b>2543512</b> | 85 to 305V ac<br>100 to 430V dc | 24V DC         | 0.625A         | 21.6-28.8V     | 600                      | 83%              |
| <b>2543513</b> | 85 to 305V ac<br>100 to 430V dc | 48V DC         | 0.32A          | 42-54V         | 300                      | 83%              |

## Input Specifications

| Item                    | Operating Conditions | Min        | Typ | Max. | Unit        |    |
|-------------------------|----------------------|------------|-----|------|-------------|----|
| Input Voltage Range     | AC Input             | 85         | -   | 305  | VAC         |    |
|                         | DC Input             | 100        | -   | 430  | VDC         |    |
| Input Voltage Frequency |                      | 47         | -   | 63   | Hz          |    |
| Input Current           | 115VAC               | -          | -   | 0.35 | A           |    |
|                         | 230VAC               | -          | -   | 0.25 |             |    |
| Inrush Current          | 115VAC               | Cold Start | -   | -    |             | 30 |
|                         | 230VAC               |            | -   | -    |             | 50 |
| Leakage Current         | 277VAC               |            |     |      | <0.5mA      |    |
| Hot Plug                |                      |            |     |      | Unavailable |    |

## Output Specifications

| Item   | Operating Conditions                                |                 | Min                                       | Typ   | Max. | Unit |
|--|---|-----------------|---|-------|------|------|
| Output Voltage Accuracy  | Full Load Range                                     | 5V              | -   | ±2    | -    | %    |
|  |   | 12V/15V/24V/48V | -   | ±1    | -    |      |
| Line Regulation  | Rated Load  | 5V              | -   | ±1    | -    |      |
|  |   | 12V/15V/24V/48V | -   | ±0.5  | -    |      |
| Load Regulation  | 0% - 100% load                                      | 5V              | -   | ±1    | -    |      |
|  |   | 12V/15V/24V/48V | -   | ±0.5  | -    |      |
| Output Ripple & Noise*   | 20MHz bandwidth<br>(peak-to-peak value)             | 5V              | -   | -     | 80   | mV   |
|  |   | 12/15V          | -   | -     | 120  |      |
|  |   | 24/48V          | -   | -     | 150  |      |
| Temperature Coefficient  |   |                 | -   | ±0.03 | -    | %/°C |
| Minimum Load   |   |                 | 0   | -     | -    | %    |
| Hold-up Time   | 230VAC  |                 | 48  | -     | -    | ms   |
| Short Circuit Protection   | Recovery time <5s after the short circuit disappear |                 | Hiccup, continuous, self-recovery         |       |      |      |
| Over-current Protection  |   |                 | ≥110% I <sub>o</sub> , self-recovery      |       |      |      |
| Over-voltage Protection  | 5V  |                 | ≤6.75VDC (Output voltage hiccup or clamp) |       |      |      |
|  | 12V   |                 | ≤16.2VDC (Output voltage hiccup or clamp) |       |      |      |
|  | 15V   |                 | ≤21.8VDC (Output voltage hiccup or clamp) |       |      |      |
|  | 24V   |                 | ≤33.6VDC (Output voltage hiccup or clamp) |       |      |      |
|  | 48V   |                 | ≤60.0VDC (Output voltage hiccup or clamp) |       |      |      |
| Note: *The "Tip and barrel method" is used for ripple and noise test, output parallel 47uF electrolytic capacitor and 0.1uF ceramic capacitor. |   |                 |   |       |      |      |

## General Specifications

| Item                  | Operating Conditions |  | Min            | Typ | Max. | Unit |      |
|-----------------------|----------------------|--|----------------|-----|------|------|------|
| Isolation             | Input-Earth          | Electric Strength Test for 1min.,<br>leakage current <10mA | 2000           | -   | -    | VAC  |      |
|                       | Input-output         |  | 4000           | -   | -    |      |      |
|                       | Output-Earth         |  | 1250           | -   | -    |      |      |
| Insulation Resistance | Input-Earth          | At 500VDC  | 100            | -   | -    | MΩ   |      |
|                       | Input-output         |  | 100            | -   | -    |      |      |
|                       | Output-Earth         |  | 100            | -   | -    |      |      |
| Operating Temperature |                      |  | -30            | -   | +70  | °C   |      |
| Storage Temperature   |                      |  | -40            | -   | +85  |      |      |
| Storage Humidity      | Non-condensing       |  | 20             | -   | 90   | %RH  |      |
| Switching Frequency   |                      |  | -              | 65  | -    | KHz  |      |
| Power Derating        |                      | -30°C to -25°C   | 85VAC - 100VAC | 6   | -    | -    | %/°C |

|                      |                                |              |  |   |      |      |
|----------------------|--------------------------------|--------------|--|---|------|------|
|                      | Operating temperature derating | 50°C to 70°C | 2  | - | -    |      |
|                      | Input voltage derating         | 85VAC-100VAC | 1.33   | - | -    | %VAC |
| 277VAC - 305VAC      |                                | 0.72         | -  | - |      |      |
| Altitude             |                                |              | -  | - | 5000 | m    |
| Safety Certification |                                |              | IEC/UL62368-1, GB4943.1, IS13252 (Part1) Safety Approval & EN62368-1, BS EN62368-1(Report) |   |      |      |
| Safety Class         |                                |              | CLASS I  |   |      |      |
| MTBF                 | MIL-HDBK-217F@25°C             |              | >700,000 h   |   |      |      |

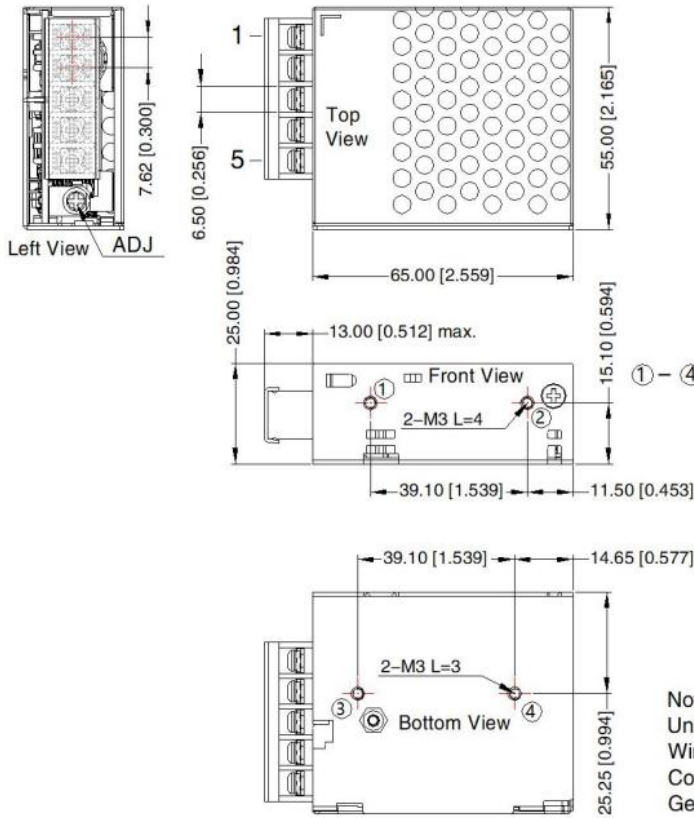
## EMC Specifications

|           |                |   |                  |
|-----------|----------------|---|------------------|
| Emissions | CE             | CISPR32/EN55032 CLASS B                             |                  |
|           | RE             | CISPR32/EN55032 CLASS B                             |                  |
| Immunity  | ESD            | IEC/EN 61000-4-2 Contact $\pm 6$ KV /Air $\pm 8$ KV | Perf. Criteria B |
|           | 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 $\pm 1$ KV/ $\pm 2$ KV             | Perf. Criteria A |
|           | CS             | IEC/EN61000-4-6 10 Vrms                             | Perf. Criteria A |
|           | DIP (AC input) | IEC/EN61000-4-11 0%, 70%                            | Perf. Criteria B |

## Mechanical Specifications

|                |                          |
|----------------|--------------------------|
| Case Material  | Metal (AL5052, SGCC)     |
| Dimensions     | 65.00 x 55.00 x 25.00 mm |
| Weight         | 90.0g (Typ.)             |
| Cooling Method | Free air convection      |

## Dimensions and recommended layout

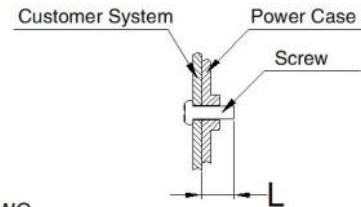


THIRD ANGLE PROJECTION

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

① - ④ any position must be connected to the earth ( $\oplus$ )

| Position | Screw Spec. | L(max) | Torque(max) |
|----------|-------------|--------|-------------|
| ① - ②    | M3          | 4mm    | 0.4N·m      |
| ③ - ④    | M3          | 3mm    | 0.4N·m      |

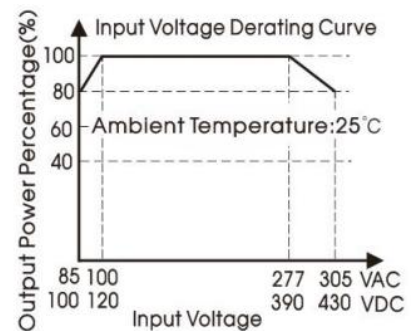
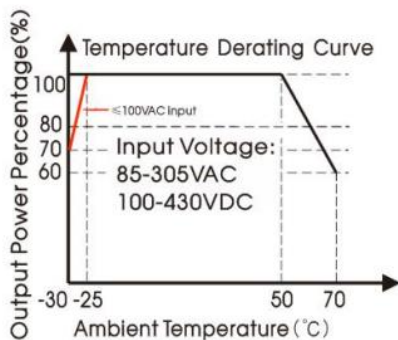


Note:  
 Unit: mm[inch]  
 Wire range: 22-14AWG  
 Connector tightening torque: M3, 0.4N·m  
 General tolerances:  $\pm 1.00[\pm 0.039]$

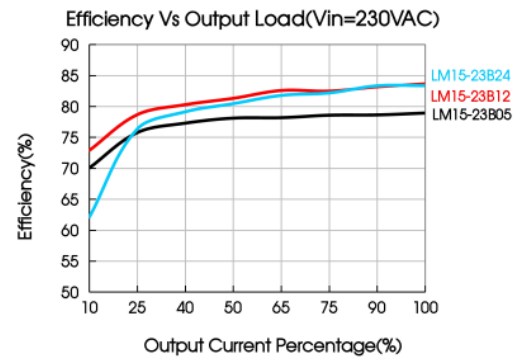
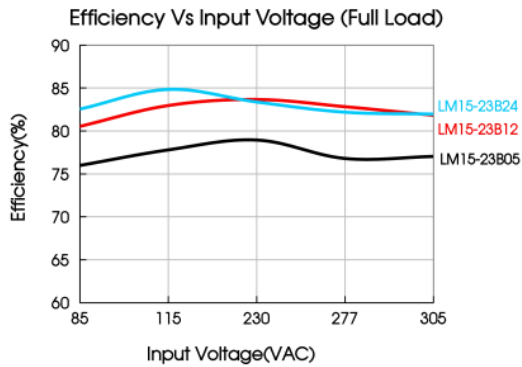
## Approvals

|                 |  |
|-----------------|--|
| Safety Standard | IEC/UL62368-1, GB4943.1, IS13252 (Part1) Safety Approval & EN62368-1, BS EN62368-1(Report) |
| Safety Class    | Class I  |

## Product Characteristic Curve



Note: 1. With an AC Input between 85-100V/277-305VAC and a DC Input between 100-120VDC/390-430VDC, the output power must be derated as per temperature derating curves;



## Note:

1. Unless otherwise specified, parameters in this datasheet were measured under the conditions of  $T_a=25^{\circ}\text{C}$ , humidity.
2. The ambient temperature derating of  $5^{\circ}\text{C}/1000\text{m}$  is needed for operating altitude greater than 2000m.
3. 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.
4. Products are related to laws and regulations: see "Features" and "EMC".
5. The outer case needs to be connected to the earth of system when the terminal equipment in operating.
6. Our products shall be classified according to ISO14001 and related environmental laws and regulations and shall be handled by qualified units.
7. The power supply is considered a component which will be installed into a terminal equipment. All EMC tests should be confirmed with the final equipment.