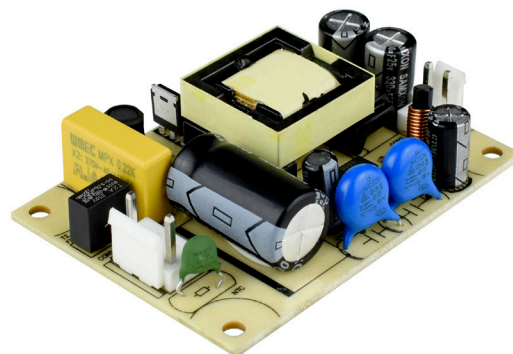


**SERIES:** VOF-15C | **DESCRIPTION:** AC-DC POWER SUPPLY

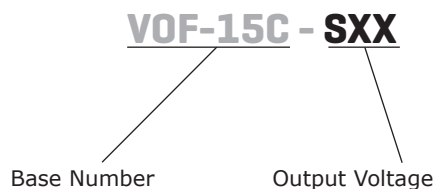
**FEATURES**

- universal input (85~264 Vac)
- 2.5 × 1.8 × 0.75 in (63.5 × 45.7 × 19 mm)
- class B EMI performance, meets CISPR32 / EN55032
- output short circuit, overcurrent & overvoltage protection
- designed to meet: IEC/EN/UL 60335 & 62368
- safety certified: IEC/EN/UL 62368



| MODEL       | output voltage<br>(Vdc) | output current |             | output power<br>max<br>(W) | ripple and noise <sup>1</sup><br>max<br>(mVp-p) | efficiency <sup>2</sup><br>typ<br>(%) |
|-------------|-------------------------|----------------|-------------|----------------------------|---|---------------------------------------|
|             |                         | min<br>(mA)    | max<br>(mA) |                            |   |                                       |
| VOF-15C-S3  | 3.3                     | 0              | 3000        | 9                          | 100   | 72                                    |
| VOF-15C-S5  | 5                       | 0              | 2800        | 14                         | 100   | 76                                    |
| VOF-15C-S9  | 9                       | 0              | 1600        | 15                         | 100   | 78                                    |
| VOF-15C-S12 | 12                      | 0              | 1250        | 15                         | 100   | 81                                    |
| VOF-15C-S15 | 15                      | 0              | 1000        | 15                         | 100   | 81                                    |
| VOF-15C-S24 | 24                      | 0              | 625         | 15                         | 100   | 82                                    |

Notes: 1. At full load, nominal input, 20 MHz bandwidth oscilloscope, with 1  $\mu$ F ceramic and 10  $\mu$ F electrolytic capacitors on the output.  
 2. At 230 Vac input.  
 3. All specifications are measured at T<sub>a</sub>=25°C, humidity <75%, nominal input voltage, and rated output load unless otherwise specified.

**PART NUMBER KEY**


**INPUT**

| parameter                 | conditions/description | min | typ | max | units |
|---------------------------|------------------------|-----|-----|-----|-------|
| voltage                   |                        | 85  |     | 264 | Vac   |
|                           |                        | 100 |     | 370 | Vdc   |
| frequency                 |                        | 47  |     | 60  | Hz    |
| current                   | at 115 Vac             |     |     | .37 | A     |
|                           | at 230 Vac             |     |     | .22 | A     |
| inrush current            | at 115 Vac             |     | 20  |     | A     |
|                           | at 230 Vac             |     | 30  |     | A     |
| no load power consumption |                        |     |     | 0.5 | W     |

**OUTPUT**

| parameter                  | conditions/description | min | typ   | max    | units |
|----------------------------|------------------------|-----|-------|--------|-------|
| capacitive load            | 3.3 Vdc output models  |     |       | 20,000 | µF    |
|                            | 5 Vdc output models    |     |       | 10,000 | µF    |
|                            | 9 Vdc output models    |     |       | 5,800  | µF    |
|                            | 12 Vdc output models   |     |       | 5,200  | µF    |
|                            | 15 Vdc output models   |     |       | 4,500  | µF    |
|                            | 24 Vdc output models   |     |       | 1,000  | µF    |
| initial set point accuracy | 3.3 Vdc output models  |     | ±3    |        | %     |
|                            | all other models       |     | ±2    |        | %     |
| line regulation            | at full load           |     | ±0.5  |        | %     |
| load regulation            | from 0~100% load       |     | ±1    |        | %     |
| hold-up time               | at 115 Vac, full load  |     | 10    |        | ms    |
|                            | at 230 Vac, full load  |     | 60    |        | ms    |
| switching frequency        |                        |     | 60    |        | kHz   |
| temperature coefficient    |                        |     | ±0.02 |        | %/°C  |

**PROTECTIONS**

| parameter                | conditions/description              | min | typ | max | units |
|--------------------------|-------------------------------------|-----|-----|-----|-------|
| over voltage protection  | output voltage clamp, auto recovery |     |     |     |       |
|                          | 3.3, 5 Vdc output models            |     |     | 7.5 | Vdc   |
|                          | 9 Vdc output models                 |     |     | 15  | Vdc   |
|                          | 12, 15 Vdc output models            |     |     | 20  | Vdc   |
|                          | 24 Vdc output models                |     |     | 30  | Vdc   |
| over current protection  | hiccup, auto recovery               | 130 |     | 300 | %     |
| short circuit protection | hiccup, continuous, auto-recovery   |     |     |     |       |

**SAFETY & COMPLIANCE**

| parameter           | conditions/description   | min   | typ | max | units |
|---------------------|--|-------|-----|-----|-------|
| isolation voltage   | input to output electric strength test for 1 minute, leakage current <5 mA | 3,000 |     |     | Vac   |
| safety approvals    | IEC/EN/UL 62368-1 certified (designed to meet IEC/EN/UL 60335-1)           |       |     |     |       |
| safety class        | Class II   |       |     |     |       |
| conducted emissions | CISPR32/EN55032, Class B   |       |     |     |       |
| radiated emissions  | CISPR32/EN55032, Class B   |       |     |     |       |
| ESD                 | IEC/EN61000-4-2, Contact ±6KV, Perf. Criteria B                            |       |     |     |       |
| radiated immunity   | IEC/EN61000-4-3, 10V/m, Perf. Criteria A                                   |       |     |     |       |

## SAFETY & COMPLIANCE (CONTINUED)

| parameter                    | conditions/description                               | min     | typ | max | units |
|------------------------------|--|---------|-----|-----|-------|
| EFT/burst                    | IEC/EN61000-4-4, ±2 kV, perf. Criteria B             |         |     |     |       |
| surge                        | IEC/EN61000-4-5, line to line ±1KV, perf. Criteria B |         |     |     |       |
| conducted immunity           | IEC/EN61000-4-6, 10 Vrms, Perf. Criteria A           |         |     |     |       |
| voltage dips & interruptions | IEC/EN61000-4-11, 0%,70%, perf. Criteria B           |         |     |     |       |
| MTBF                         | as per MIL-HDBK-217F at 25°C                         | 300,000 |     |     | hours |
| RoHS                         | yes  |         |     |     |       |

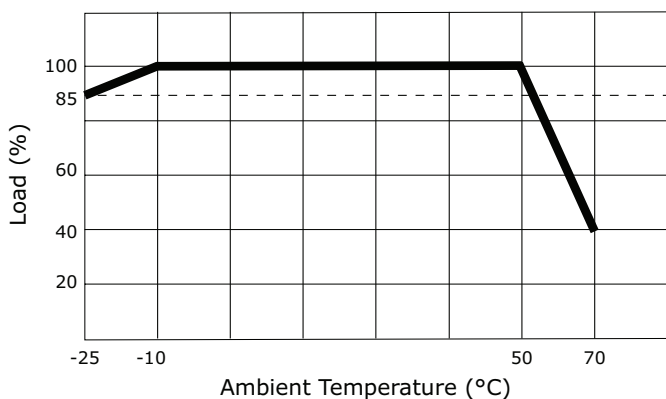
Notes: 4. The power supply is considered a component which will be installed into final equipment. The final equipment still must be tested to meet the necessary EMC directives.

## ENVIRONMENTAL

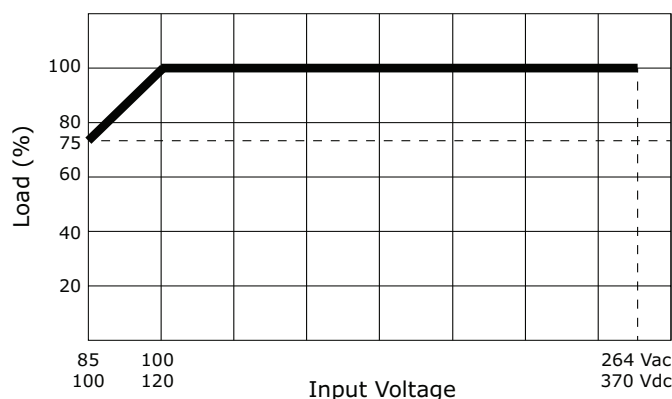
| parameter             | conditions/description | min | typ | max | units |
|-----------------------|------------------------|-----|-----|-----|-------|
| operating temperature | see derating curves    | -25 |     | 70  | °C    |
| storage temperature   |                        | -25 |     | 85  | °C    |
| storage humidity      | non-condensing         |     |     | 90  | %     |

## DERATING CURVES

Load vs. Ambient Temperature  
(at 85~264 Vac / 100~370 Vdc Input Voltage)

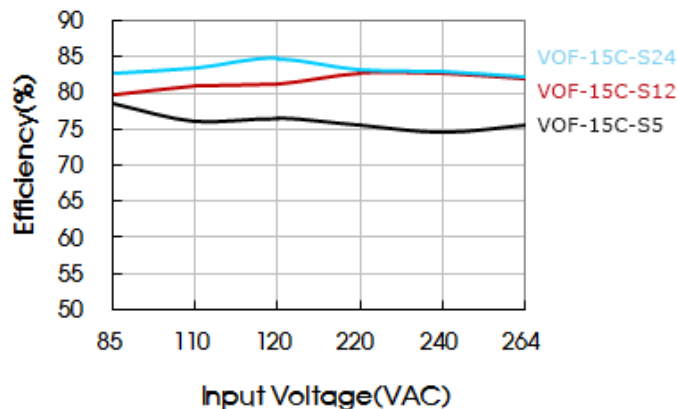


Load vs. Input Voltage  
(at 25°C Ambient Temperature)

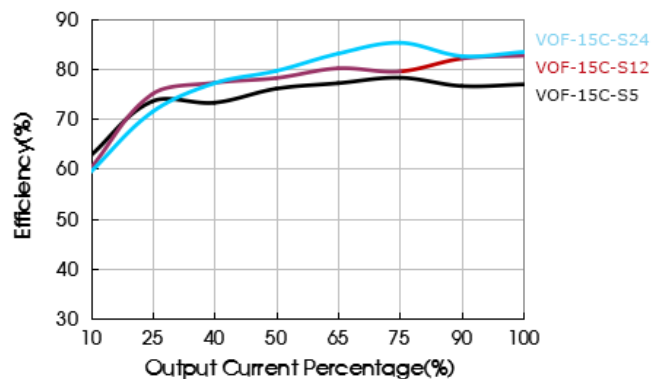


## EFFICIENCY CURVES

Efficiency vs. Input Voltage  
(at full load)



Efficiency vs. Load Current  
(at 230 Vac)



## DESIGN REFERENCE

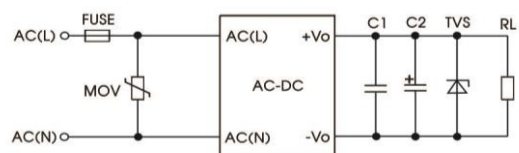


Fig. 1: Typical circuit diagram

| Part No.    | FUSE                 | MOV     | C1 (μF) | C2 (μF) | TVS      |
|-------------|----------------------|---------|---------|---------|----------|
| VOF-15C-S3  | 2A/250V<br>slow-blow | S14K300 | 0.1     | 22      | SMBJ7.0A |
| VOF-15C-S5  |                      |         |         |         | SMBJ7.0A |
| VOF-15C-S9  |                      |         |         |         | SMBJ12A  |
| VOF-15C-S12 |                      |         |         |         | SMBJ20A  |
| VOF-15C-S15 |                      |         |         |         | SMBJ20A  |
| VOF-15C-S24 |                      |         |         |         | SMBJ30A  |

### Output Filter Components:

We recommend using an electrolytic capacitor with high frequency, and low ESR rating for C2 (refer to manufacture's datasheet). Choose a Capacitor voltage rating with at least 20% margin, in other words not exceeding 80%. C1 is a ceramic capacitor used for filtering high-frequency noise and TVS is a recommended suppressor diode to protect the application in case of a converter failure.

## MECHANICAL

| parameter  | conditions/description | min | typ | max | units |
|------------|------------------------|-----|-----|-----|-------|
| dimensions | 63.50 x 45.70 x 19.00  |     |     |     | mm    |
| weight     |                        |     | 36  |     | g     |

## MECHANICAL DRAWING (BOARD MOUNT)

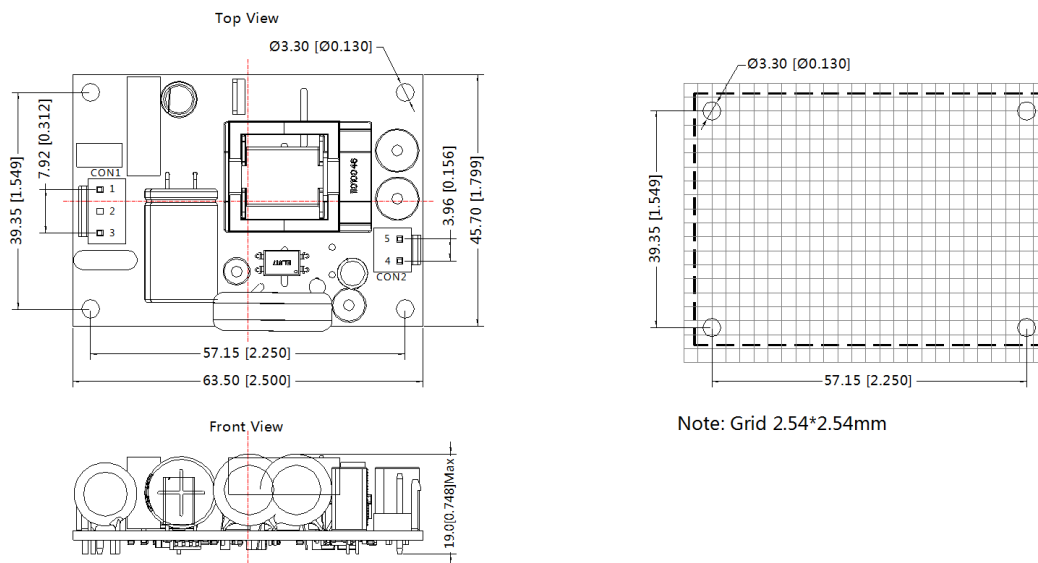
units: mm[inch]

tolerance: ±0.50[±0.020]

In CON1 model: VH-3A, Recommended terminal: VH-3Y

Out CON2 model: VH-2A, recommended terminal: VH-2Y

Mounting hole screwing torque: Max 0.4 N·m



Note: Grid 2.54\*2.54mm

| PIN-Out |          |  |   |
|---------|----------|--|---|
| PIN     | Function | Connector                                | Terminal                                |
| 1       | AC(L)    | VH-3A<br>or B2P3-VH<br>or the same Spec. | VH-3Y<br>or VHR-3N<br>or the same Spec. |
| 2       | NoPin    |  |   |
| 3       | AC(N)    |  |   |
| 4       | -Vo      | VH-2A<br>or B2P-VH<br>or the same Spec.  | VH-2Y<br>or VHR-2N<br>or the same Spec. |
| 5       | +Vo      |  |   |

## REVISION HISTORY

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| rev. | description     | date       |
|------|-----------------|------------|
| 1.0  | initial release | 10/24/2019 |

The revision history provided is for informational purposes only and is believed to be accurate.



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