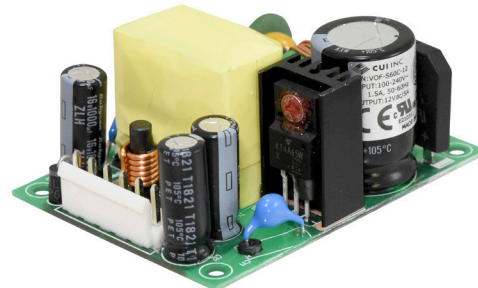


**SERIES:** VOF-S60C | **DESCRIPTION:** AC-DC POWER SUPPLY

**FEATURES**

- universal input range (90 ~ 264 Vac)
- Class B emissions (EN55032/CISPR/FCC)
- certified to IEC/EN/UL 62368-1
- short circuit protection
- over voltage protection
- < 150 mW no-load power consumption
- Class II



| 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>(A)     | max<br>(A) |                            |   |                                       |
| VOF-S60C-5  | 5                       | 0              | 8.00       | 40                         | 50  | 86                                    |
| VOF-S60C-12 | 12                      | 0              | 5.00       | 60                         | 120   | 88                                    |
| VOF-S60C-15 | 15                      | 0              | 4.00       | 60                         | 150   | 88                                    |
| VOF-S60C-24 | 24                      | 0              | 2.50       | 60                         | 240   | 89                                    |
| VOF-S60C-36 | 36                      | 0              | 1.67       | 60                         | 360   | 89                                    |
| VOF-S60C-48 | 48                      | 0              | 1.25       | 60                         | 480   | 90                                    |

Notes: 1. At full load, nominal input, 20 MHz bandwidth oscilloscope, with 0.1  $\mu$ F ceramic and 10  $\mu$ F electrolytic capacitors on the output.  
 For model VOF-S60B-5, add a 0.1  $\mu$ F ceramic and 47  $\mu$ F electrolytic capacitors on the output.  
 2. At 230 Vac, full load, 25°C.

**PART NUMBER KEY**


## INPUT

| parameter       | conditions/description       | min | typ | max  | units |
|-----------------|------------------------------|-----|-----|------|-------|
| voltage         |                              | 90  |     | 264  | Vac   |
|                 |                              | 120 |     | 370  | Vdc   |
| frequency       |                              | 47  |     | 63   | Hz    |
| current         | at 100 Vac                   |     |     | 1.5  | A     |
|                 | at 240 Vac                   |     |     | 0.8  | A     |
| inrush current  | at 240 Vac, cold start, 25°C |     |     | 120  | A     |
| leakage current | at 264 Vac                   |     |     | 0.25 | mA    |

## OUTPUT

| parameter                  | conditions/description                         | min | typ   | max   | units |
|----------------------------|--|-----|-------|-------|-------|
| capacitive load            | 5 Vdc output models                            |     |       | 8,000 | μF    |
|                            | 12 Vdc output models                           |     |       | 5,000 | μF    |
|                            | 15 Vdc output models                           |     |       | 4,000 | μF    |
|                            | 24 Vdc output models                           |     |       | 2,400 | μF    |
|                            | 36 Vdc output models                           |     |       | 1,680 | μF    |
|                            | 48 Vdc output models                           |     |       | 680   | μF    |
| initial set point accuracy | 5 Vdc output models                            |     | ±2    |       | %     |
|                            | all other models                               |     | ±1    |       | %     |
| line regulation            | measured at high line to low line at full load |     | ±1    |       | %     |
| load regulation            | 10%~100% load                                  |     | ±1    |       | %     |
| start-up time              | 115 Vac  |     | 2     |       | s     |
|                            | 230 Vac  |     | 1     |       | s     |
| hold-up time               | at 115 Vac                                     |     | 10    |       | ms    |
| switching frequency        |  |     | 65    |       | kHz   |
| temperature coefficient    |  |     | ±0.05 |       | %/°C  |

## PROTECTIONS

| parameter                | conditions/description      | min | typ  | max | units |
|--------------------------|-----------------------------|-----|------|-----|-------|
| over voltage protection  | TVS to clamp output voltage |     |      |     |       |
|                          | 5 Vdc output models         |     | 6.8  |     | Vdc   |
|                          | 12 Vdc output models        |     | 15.0 |     | Vdc   |
|                          | 15 Vdc output models        |     | 18.0 |     | Vdc   |
|                          | 24 Vdc output models        |     | 30.0 |     | Vdc   |
|                          | 36 Vdc output models        |     | 47.0 |     | Vdc   |
|                          | 48 Vdc output models        |     | 56.0 |     | Vdc   |
| short circuit protection | hiccup, auto recovery       |     |      |     |       |

## SAFETY & COMPLIANCE

| parameter                      | conditions/description  | min   | typ | max | units |
|--------------------------------|---|-------|-----|-----|-------|
| isolation voltage              | input to output for 1 minute  | 3,000 |     |     | Vac   |
| isolation resistance           |   | 100   |     |     | MΩ    |
| safety approvals               | UL 62368-1, EN 62368-1, IEC 62368-1   |       |     |     |       |
| safety class                   | Class II  |       |     |     |       |
| conducted emissions            | EN55032 2015, EN61000-6-3 2007+A1: 2011+AC: 2012, Class B, 47 CFR FCC Part 15 Subpart B (Class B) |       |     |     |       |
| radiated emissions             | EN55032 2015, EN61000-6-3 2007+A1: 2011+AC: 2012, Class B, 47 CFR FCC Part 15 Subpart B (Class B) |       |     |     |       |
| harmonic current emissions     | EN61000-3-2:2014  |       |     |     |       |
| voltage fluctuations & flicker | EN61000-3-3:2013  |       |     |     |       |

**SAFETY & COMPLIANCE (CONTINUED)**

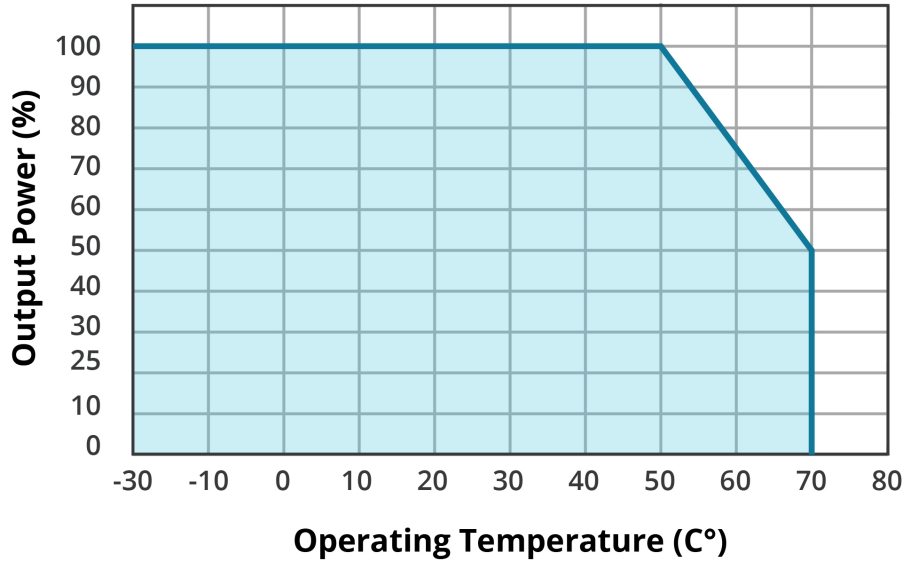
| parameter                      | conditions/description   | min     | typ | max | units |
|--------------------------------|--|---------|-----|-----|-------|
| ESD                            | IEC61000-4-2:2008, air ±8kV  |         |     |     |       |
| radiated immunity              | IEC61000-4-3:2010  |         |     |     |       |
| EFT/burst                      | IEC61000-4-4:2012, ±0.5 kV, ±1 kV, ±2 kV,  |         |     |     |       |
| surge                          | IEC61000-4-5:2014, ±0.5 kV, ±1 kV  |         |     |     |       |
| conducted immunity             | IEC61000-4-6:2013  |         |     |     |       |
| power frequency magnetic field | IEC61000-4-8:2009  |         |     |     |       |
| voltage dips & interruptions   | IEC61000-4-11:2004, dip 30% 10 ms, dip 60% 100ms, dip >95% 5000 ms<br>IEC61000-4-11:2004, >95% 5000 ms |         |     |     |       |
| MTBF                           | as per MIL-HDBK-217F, at 115 Vac, 25°C, GB   | 300,000 |     |     | hours |
| RoHS                           | yes  |         |     |     |       |

**ENVIRONMENTAL**

| parameter             | conditions/description  | min | typ | max   | units |
|-----------------------|---|-----|-----|-------|-------|
| operating temperature | see derating curves   | -30 |     | 70    | °C    |
| storage temperature   |   | -30 |     | 85    | °C    |
| operating humidity    | non-condensing  |     |     | 93    | %     |
| altitude              |   |     |     | 5,000 | m     |
| vibration             | as per MIL-STD-810F Table 514.5C-VIII; 15~2000 Hz for 1 hour on each axis for 3 hours |     | 4   |       | G     |
| shock                 | as per MIL-STD-810F Table 516.5, Table 516.5-1; for 10 ms on each axis 3 times        |     | 75  |       | G     |

## DERATING CURVE

### TEMPERATURE DERATING CURVE



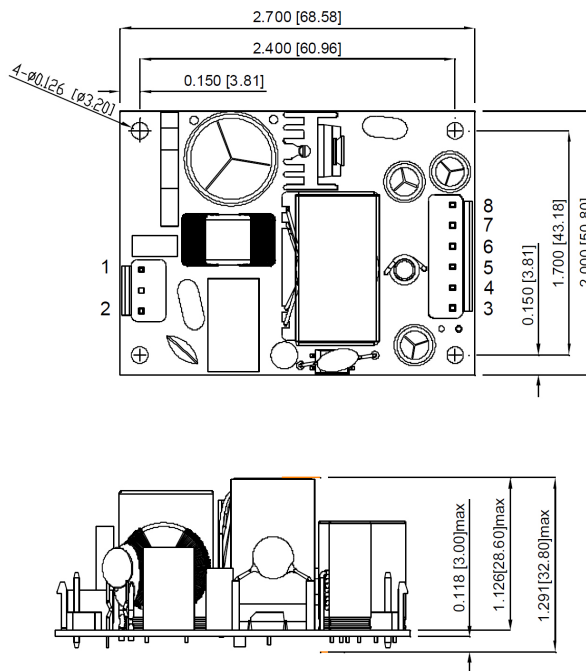
## MECHANICAL

| parameter  | conditions/description                        | min | typ | max | units |
|------------|---|-----|-----|-----|-------|
| dimensions | 2.70 x 2.00 x 1.29 (68.58 x 50.80 x 32.80 mm) |     |     |     | inch  |
| weight     |   |     | 96  |     | g     |

## MECHANICAL DRAWING

units: inch [mm]  
tolerance: ±0.020[±0.50]

| PIN CONNECTIONS |          |
|-----------------|----------|
| PIN             | Function |
|                 | Standard |
| 1               | AC (L)   |
| 2               | AC (N)   |
| 3               | -Vo      |
| 4               | -Vo      |
| 5               | -Vo      |
| 6               | +Vo      |
| 7               | +Vo      |
| 8               | +Vo      |

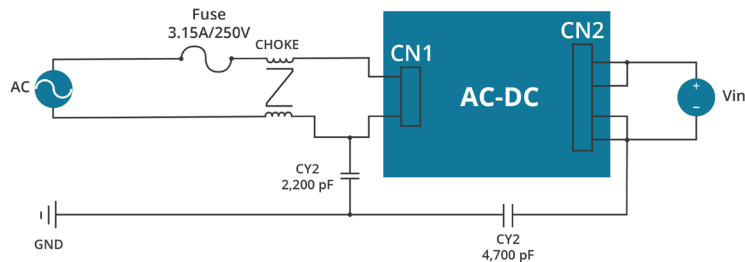


## EMC RECOMMENDATIONS

When used in a Class I system implementation (utilizing an Earth Ground connection as depicted in the schematic below), the VOF-S60C series requires additional inductance and Y-Caps to meet EN55032 Class B. These additional components are not required in a Class II implementation where no Earth Ground is present.

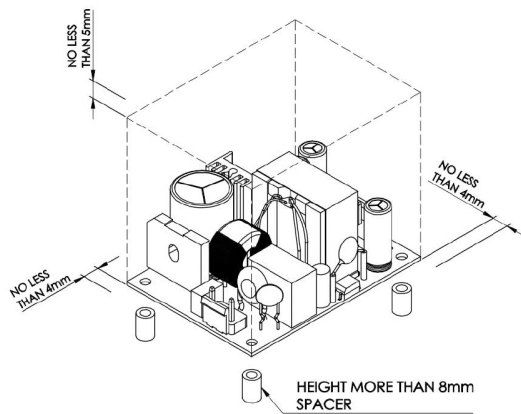
| CHOKE         |            |                       |               |
|---------------|------------|-----------------------|---------------|
| Specification | Inductance | Duplex Winding/Turns  | Manufacturers |
| T10*6*5C A15  | 2.6 mH     | TIW-M<br>Φ 0.35*2/25T | ACME          |
| T10*6*5C R15K | 2.6 mH     | TIW-M<br>Φ 0.35*2/25T | VAKOS         |

| Y-CAP    |                   |                |               |
|----------|-------------------|----------------|---------------|
| Subclass | Withstand Voltage | Capacitance    | Manufacturers |
| Y2 CAP   | 250 V (min.)      | 2200 pF (typ.) | TDK           |
| Y2 CAP   | 250 V (min.)      | 4700 pF (typ.) | TDK           |



## INSTALLATION INSTRUCTIONS

The VOF-S60C has four 3.2 mm diameter mounting holes; one in each corner. Use 8 mm tall spacers (6 mm outside diameter max) to mount the unit, which will maintain the isolation and vibration specifications. A minimum of 4 mm clearance is required for all four sides of the unit and a minimum of 5 mm clearance is required above the top surface of the unit.



## REVISION HISTORY

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| rev. | description                            | date       |
|------|--|------------|
| 1.0  | initial release                        | 02/14/2020 |
| 1.01 | derating curve and emc circuit updated | 05/13/2021 |

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



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