

## KEY FEATURES

- Switching Power Module for PCB Mountable
- Fully Encapsulated Plastic Case
- Universal Input Range 90-264VAC, 47-440 Hz
- Single and Dual Output
- Low Ripple and Noise
- Isolation Class II
- Maximum No-Load Watts < 0.3W
- CE , UL Approval
- 2-Years Product Warranty



## ELECTRICAL SPECIFICATIONS

| Model No. ( Single Output )                  | AOC-33S   | AOC-5S | AOC-8S | AOC-9S | AOC-12S | AOC-14S | AOC-15S | AOC-24S |
|--|---|--------|--------|--------|---------|---------|---------|---------|
| Max Output Wattage (W)                       | 3.96W   | 4W     | 4W     | 4W     | 4W      | 4W      | 4W      | 4W      |
| Input  | Voltage   |        |        |        |         |         |         |         |
|  | 90-264 VAC or 120-370 VDC   |        |        |        |         |         |         |         |
|  | Frequency (Hz)  |        |        |        |         |         |         |         |
|  | 47-440 Hz   |        |        |        |         |         |         |         |
|  | Current (Full load)   |        |        |        |         |         |         |         |
|  | 95 mA max. (115 VAC) / 65 mA max. (230 VAC)                             |        |        |        |         |         |         |         |
| Inrush Current (<500us)                      |   |        |        |        |         |         |         |         |
| 15 A max. (115 VAC) / 25 A max. (230 VAC)    |   |        |        |        |         |         |         |         |
| Leakage Current                              |   |        |        |        |         |         |         |         |
| 0.25 mA max.                                 |   |        |        |        |         |         |         |         |
| External Fuse (recommend)                    |   |        |        |        |         |         |         |         |
| 3.15 A slow blow type                        |   |        |        |        |         |         |         |         |
| Output                                       | Voltage (V.DC.)   |        |        |        |         |         |         |         |
|  | 3.3V  | 5V     | 8V     | 9V     | 12V     | 14V     | 15V     | 24V     |
|  | Voltage Accuracy  |        |        |        |         |         |         |         |
|  | ±2%   |        |        |        |         |         |         |         |
|  | Current (mA) max  |        |        |        |         |         |         |         |
|  | 1200  | 800    | 500    | 444    | 333     | 286     | 267     | 167     |
|  | Line Regulation (LL-HL) (typ.)  |        |        |        |         |         |         |         |
|  | ±0.2%   |        |        |        |         |         |         |         |
|  | Load Regulation (0-100%) (typ.)   |        |        |        |         |         |         |         |
|  | ±1%   |        | ±0.5%  |        |         |         |         |         |
|  | Minimum Load  |        |        |        |         |         |         |         |
| 0%   |   |        |        |        |         |         |         |         |
| Maximum Capacitive Load                      |   |        |        |        |         |         |         |         |
| 14000uF                                      | 8000uF  | 2700uF | 2400uF | 1000uF | 750uF   | 700uF   | 220uF   |         |
| Ripple & Noise (Vp-p) max                    |   |        |        |        |         |         |         |         |
| <250mV                                       | <200mV  | <150mV | <100mV |        |         |         |         |         |
| Efficiency                                   |   |        |        |        |         |         |         |         |
| 68%  | 72%   | 74%    | 75%    | 76%    | 76%     | 76%     | 77%     |         |
| Hold-up Time                                 |   |        |        |        |         |         |         |         |
| 15 ms min.                                   |   |        |        |        |         |         |         |         |
| Switching Frequency                          |   |        |        |        |         |         |         |         |
| 132±8 KHz                                    |   |        |        |        |         |         |         |         |
| Protection                                   | Over Power Protection   |        |        |        |         |         |         |         |
|  | Hiccup technique, auto-recovery   |        |        |        |         |         |         |         |
|  | Over Voltage Protection   |        |        |        |         |         |         |         |
| Zener diode clamp                            |   |        |        |        |         |         |         |         |
| Short Circuit Protection                     |   |        |        |        |         |         |         |         |
| Hiccup mode, indefinite (automatic recovery) |   |        |        |        |         |         |         |         |
| Isolation                                    | Input-Output (V.AC)   |        |        |        |         |         |         |         |
| 3000V  |   |        |        |        |         |         |         |         |
| Environment                                  | Operating Temperature   |        |        |        |         |         |         |         |
|  | -40°C...+70°C ( with derating )   |        |        |        |         |         |         |         |
|  | Storage Temperature   |        |        |        |         |         |         |         |
|  | -40°C...+125°C  |        |        |        |         |         |         |         |
|  | Temperature Coefficient   |        |        |        |         |         |         |         |
| ±0.02%/°C                                    |   |        |        |        |         |         |         |         |
| Humidity                                     |   |        |        |        |         |         |         |         |
| 95% RH                                       |   |        |        |        |         |         |         |         |
| MTBF   |   |        |        |        |         |         |         |         |
| >350,000 h @ 25°C (MIL-HDBK-217F)            |   |        |        |        |         |         |         |         |
| Physical                                     | Dimension (L x W x H)   |        |        |        |         |         |         |         |
|  | 1.44 x 1.07 x 0.67 Inches ( 36.66 x 27.16 x 17.1 mm ) Tolerance ±0.5 mm |        |        |        |         |         |         |         |
|  | Case Material   |        |        |        |         |         |         |         |
|  | Plastic resin with Fiberglass (flammability to UL 94V-0)                |        |        |        |         |         |         |         |
| Weight                                       |   |        |        |        |         |         |         |         |
| 26 g   |   |        |        |        |         |         |         |         |
| Cooling Method                               |   |        |        |        |         |         |         |         |
| Free air convection                          |   |        |        |        |         |         |         |         |
| Safety                                       | Agency Approvals  |        |        |        |         |         |         |         |
| UL , cUL , CE                                |   |        |        |        |         |         |         |         |
| EMC  | EMI (Conducted & Radiated Emission)                                     |        |        |        |         |         |         |         |
|  | EN 55022 class B  |        |        |        |         |         |         |         |
| EMS (Noise Immunity)                         |   |        |        |        |         |         |         |         |
| EN 55024                                     |   |        |        |        |         |         |         |         |

1. All specifications valid at nominal input voltage, full load and +25°C after warm-up time unless otherwise stated.

2. Ripple & Noise are measured at 20MHz of bandwidth with 0.1uF & 47uF parallel capacitor.

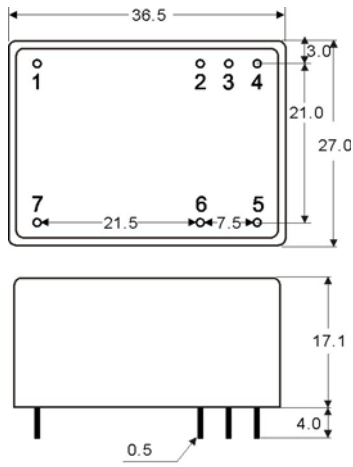
**ELECTRICAL SPECIFICATIONS**

| Model No. ( Dual Output ) | AOC-5S3.3S                          | AOC-8S5S  | AOC-12S5S               |                        |
|---------------------------|-------------------------------------|---|-------------------------|------------------------|
| Max Output Wattage (W)    | 3.5W                                | 3.6W  | 3.6W                    |                        |
| Input                     | Voltage                             | 90-264 VAC or 120-370 VDC   |                         |                        |
|                           | Frequency (Hz)                      | 47-440 Hz   |                         |                        |
|                           | Current (Full load)                 | 95 mA max. (115 VAC) / 65 mA max. (230 VAC)                             |                         |                        |
|                           | Inrush Current (<500us)             | 15 A max. (115 VAC) / 25 A max. (230 VAC)                               |                         |                        |
|                           | Leakage Current                     | 0.25 mA max.  |                         |                        |
|                           | External Fuse (recommend)           | 3.15 A slow blow type   |                         |                        |
| Output                    | Voltage (V.DC.)                     | Vo : 5V Vr : 3.3V   | Vo : 8V Vr : 5V         | Vo : 12V Vr : 5V       |
|                           | Voltage Accuracy                    | Vo : ±2% Vr : ±5%   |                         |                        |
|                           | Current (mA) max                    | 600 / 150   | 375 / 120               | 250 / 120              |
|                           | Line Regulation (LL-HL) (typ.)      | Vo : ±0.2% Vr : ±3%   |                         |                        |
|                           | Load Regulation (0-100%) (typ.)     | Vo : ±0.5% Vr : ±5%   |                         |                        |
|                           | Minimum Load                        | 25%   |                         |                        |
|                           | Maximum Capacitive Load             | Vo : 5600uF Vr : 4700uF   | Vo : 1000uF Vr : 4700uF | Vo : 330uF Vr : 4700uF |
|                           | Ripple & Noise (Vp-p) max           | <200mV  | <150mV                  | <100mV                 |
|                           | Efficiency                          | 72%   | 74%                     | 75%                    |
|                           | Hold-up Time                        | 15 ms min.  |                         |                        |
|                           | Switching Frequency                 | 132±8 KHz   |                         |                        |
| Protection                | Over Power Protection               | Hiccup technique, auto-recovery   |                         |                        |
|                           | Over Voltage Protection             | Zener diode clamp   |                         |                        |
|                           | Short Circuit Protection            | Hiccup mode, indefinite (automatic recovery)                            |                         |                        |
| Isolation                 | Input-Output (V.AC)                 | 3000V   |                         |                        |
| Environment               | Operating Temperature               | -40°C...+70°C ( with derating )   |                         |                        |
|                           | Storage Temperature                 | -40°C...+125°C  |                         |                        |
|                           | Temperature Coefficient             | ±0.02%/°C   |                         |                        |
|                           | Humidity                            | 95% RH  |                         |                        |
|                           | MTBF                                | >350,000 h @ 25°C (MIL-HDBK-217F)                                       |                         |                        |
| Physical                  | Dimension (L x W x H)               | 1.44 x 1.07 x 0.67 Inches ( 36.66 x 27.16 x 17.1 mm ) Tolerance ±0.5 mm |                         |                        |
|                           | Case Material                       | Plastic resin with Fiberglass (flammability to UL 94V-0)                |                         |                        |
|                           | Weight                              | 26 g  |                         |                        |
|                           | Cooling Method                      | Free air convection   |                         |                        |
| Safety                    | Agency Approvals                    | UL , cUL , CE   |                         |                        |
| EMC                       | EMI (Conducted & Radiated Emission) | EN 55022 class B  |                         |                        |
|                           | EMS (Noise Immunity)                | EN 55024  |                         |                        |

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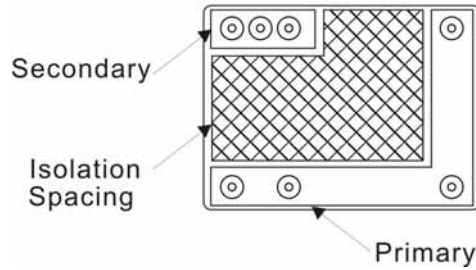
2. Ripple & Noise are measured at 20MHz of bandwidth with 0.1uF & 47uF parallel capacitor.

**MECHANICAL DIMENSION ( Top View )**



Tolerance  $\pm 0.5$  mm

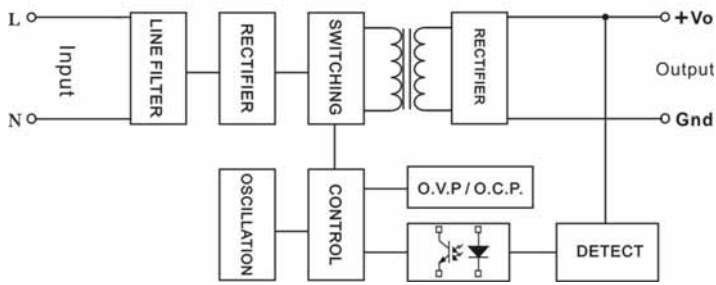
**Isolation Bottom View**



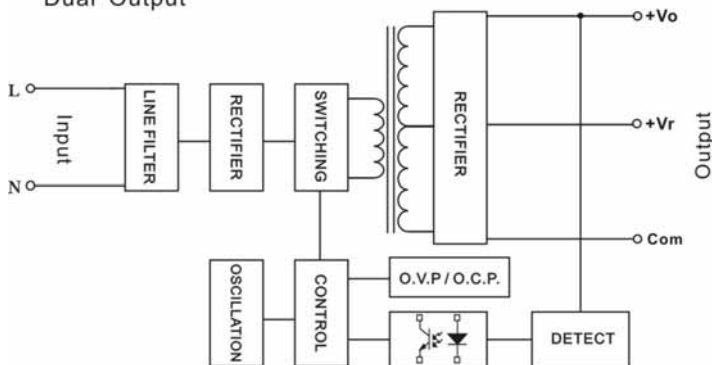
| PIN# | Single    | Dual      |
|------|-----------|-----------|
| 1    | NC        | NC        |
| 2    | +Vo       | +Vo       |
| 3    | GND       | COM       |
| 4    | NC        | +Vr       |
| 5    | AC IN (L) | AC IN (L) |
| 6    | AC IN (N) | AC IN (N) |
| 7    | NC        | NC        |

**BLOCK DIAGRAM**

**Single Output**



**Dual Output**



**DERATING**

