

ACX01A SERIES

1W DC to DC Converter

Description:

This series of DC to DC Converter module provide 1 Watts of continues output power. They are suited for use in Data communication, Telecommunication and other Industry equipment.

Features:

- +/- 10% Wide Input Range Voltage
- Efficiency up to 81%
- Un-Regulated Output
- Single or Dual Output
- Size : 6.1W x 19.5L x 10.2Hmm (For ACA01A and ACB01A)
- 7.1W x 19.5L x 10.2Hmm (For ACC01A)
- 1000VDC Isolation
- Potting Material : Epoxy(Flammability to UL94V-0)
- Case Material : Non-Conductive Black Plastic(Flammability to UL94V-0)
- Industrial Standard Pin-out
- 3 year warranty



7Pin SIP Package

Electrical Characteristics:

| Sym. | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|-------|-------------------------------|---|------------------|-------|-------|------|
| Vin | Input Voltage for ACA01A | | 4.5 | 5 | 5.5 | VDC |
| | Input Voltage for ACB01A | | 10.8 | 12 | 13.2 | VDC |
| | Input Voltage for ACC01A | | 21.6 | 24 | 26.4 | VDC |
| Fs | Switching Frequency | | | 80 | | kHz |
| Po | Output Power Range | | 0 | | 1 | W |
| Vo | Output Voltage Range | | See Rating Chart | | | V |
| Io | Output Current Range | | See Rating Chart | | | A |
| Acc | Output Voltage Accuracy | Io=Full load, Vin=Typ., at 25°C | | ±1.0 | ±3.0 | % |
| Eff | Efficiency | Io=Full load, Vin=Typ., at 25°C | 74 | 77 | 81 | % |
| REG-i | Line Regulation | Io=Full load, Vin=Vmax to Vmin, at 25°C | | ±1.2 | ±1.5 | % |
| REG-o | Load Regulation | Io=20% to 100%, Vin=Typ., at 25°C | 5 | | 10 | % |
| Vp-p | Ripple & Noise (Peak to Peak) | Each Output, 20MHz | | 50 | 75 | mV |
| Vio | Isolation Voltage | Input to Output | 1000 | | | VDC |
| Ris | Isolation Resistance | Input to Output | 1000 | | | MΩ |
| Cis | Isolation Capacitance | Input to Output | | | 120 | pF |
| TC | Temperature Coefficient | All Output | | ±0.01 | ±0.02 | %/°C |
| Scp | Short Circuit Protection | Momentary | | | 0.5 | Sec. |
| Br | Balance Regulation | Io=Full load, Vin=Typ., Dual Output | | ±0.1 | ±1.0 | % |

Environmental:

| Sym. | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|--------|---|------------------|------|------|------|------|
| Toper | Operating Temperature Range | Without derating | -40 | | 85 | °C |
| Tcase | Maximum Case Temperature | | -40 | | 90 | °C |
| Tstg | Storage Temperature | | -40 | | 125 | °C |
| Hr | Relative Humidity | | 0 | | 95 | % |
| MTBF | Operating Temperature at 25°C, Calculated per MIL-HDBK-217F | | 2M | | | Hrs |
| Cool | The Cooling Condition is Free | | | | | |
| Filter | Internal Capacitor | | | | | |

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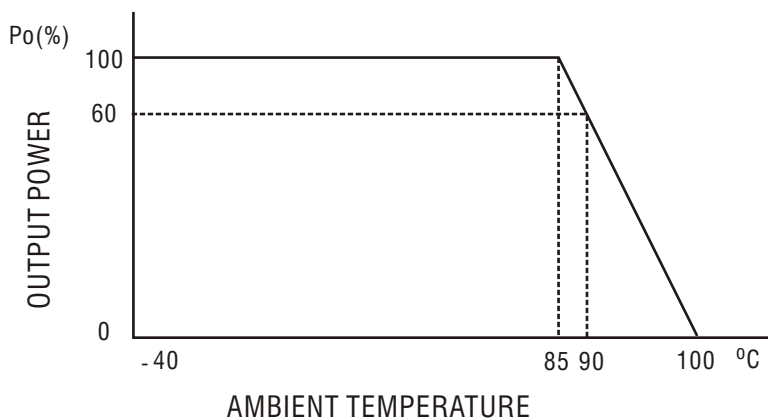
Selection Chart :

| Model Number | Input Voltage | Output Voltage | Output Current | | Efficiency (Typ.) | Cap.Load ⁽⁷⁾ |
|--------------|-------------------------------|----------------|----------------|--------|-------------------|-------------------------|
| | | | Min. | Max. | | |
| ACA01A-101 | 4.5~5.5VDC (Nominal:5V) | 3.3VDC | 6.1mA | 303mA | 74% | 220μF |
| ACA01A-102 | | 5VDC | 4.0mA | 200mA | 78% | 220μF |
| ACA01A-105 | | 12VDC | 1.7mA | 84mA | 79% | 220μF |
| ACA01A-106 | | 15VDC | 1.3mA | 67mA | 79% | 220μF |
| ACA01A-202 | | ±5VDC | ±2.0mA | ±100mA | 73% | 100μF |
| ACA01A-205 | | ±12VDC | ±0.8mA | ±42mA | 80% | 100μF |
| ACA01A-206 | | ±15VDC | ±0.7mA | ±33mA | 80% | 100μF |
| ACB01A-101 | 10.8~13.2VDC (Nominal:12V) | 3.3VDC | 6.1mA | 303mA | 76% | 220μF |
| ACB01A-102 | | 5VDC | 4.0mA | 200mA | 79% | 220μF |
| ACB01A-105 | | 12VDC | 1.7mA | 84mA | 80% | 220μF |
| ACB01A-106 | | 15VDC | 1.3mA | 67mA | 80% | 220μF |
| ACB01A-202 | | ±5VDC | ±2.0mA | ±100mA | 75% | 100μF |
| ACB01A-205 | | ±12VDC | ±0.8mA | ±42mA | 81% | 100μF |
| ACB01A-206 | | ±15VDC | ±0.7mA | ±33mA | 81% | 100μF |
| ACC01A-101 | 21.6~26.4VDC (Nominal:24V) | 3.3VDC | 6.1mA | 303mA | 73% | 220μF |
| ACC01A-102 | | 5VDC | 4.0mA | 200mA | 77% | 220μF |
| ACC01A-105 | | 12VDC | 1.7mA | 84mA | 77% | 220μF |
| ACC01A-106 | | 15VDC | 1.3mA | 67mA | 78% | 220μF |
| ACC01A-202 | | ±5VDC | ±2.0mA | ±100mA | 73% | 100μF |
| ACC01A-205 | | ±12VDC | ±0.8mA | ±42mA | 79% | 100μF |
| ACC01A-206 | | ±15VDC | ±0.7mA | ±33mA | 79% | 100μF |

Note :

- (1) All specifications are measured at nominal input voltage, constant resistive load between Min. and Max. output current, and probe bandwidth should be under 20MHz, Ta = +25°C.
- (2) When Load is lower than Min. output current or under no-load, it will not damage the devices; however, it may not meet all specifications.
- (3) Output Ripple & Noise Test please refers to Sinpro Electronics Co., Ltd. proposed test-method.
- (4) Load Regulation and Line Regulation calculating please refers to Sinpro Electronics Co., Ltd. proposed formula.
- (5) An external fuse is needed at the front end of DC/DC converters for protection and base on surge current and maximum input current when settle it in recommended.
- (6) "Vin-L" means "Vin-Min.", "Vin-N" means "Vin-Typ.", "Vin-H" means "Vin-Max."
- (7) Total Capacitive Loads of output should be lower than this value.

Derating Curve :



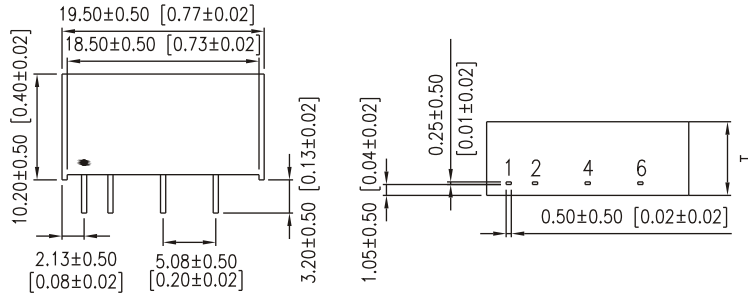
Note: At nominal input, Full load and cooling is natural convection.

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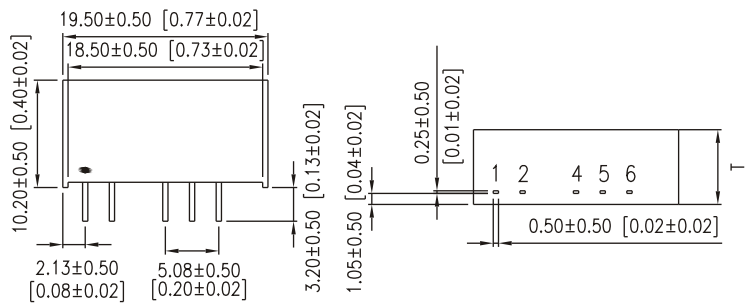
1W DC to DC Converter

Mechanical Specifications :

Single



Dual



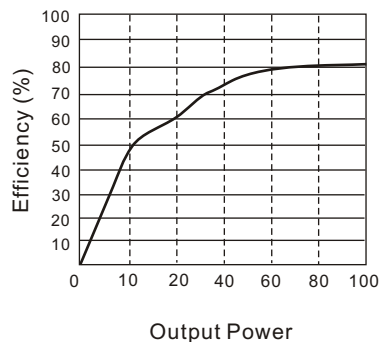
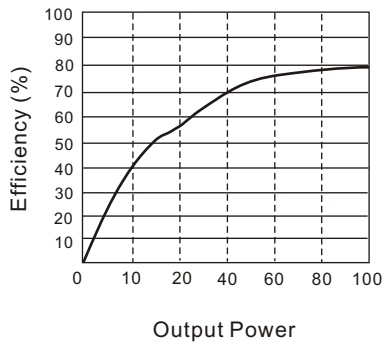
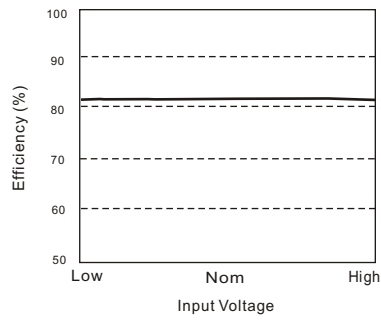
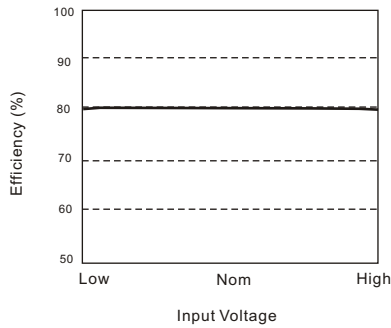
Pin Connections:

| Pin | Single | Dual |
|-----|--------|--------|
| 1 | +Vin | +Vin |
| 2 | - Vin | - Vin |
| 4 | -Vout | -Vout |
| 5 | No Pin | Common |
| 6 | +Vout | +Vout |

Note:

1. Dimensions are shown in mm.
2. Weight: 2.1gs.

Efficiency-Curve :



Output Power vs. Efficiency, $V_o=3.3V, 5V \& \pm 5V$

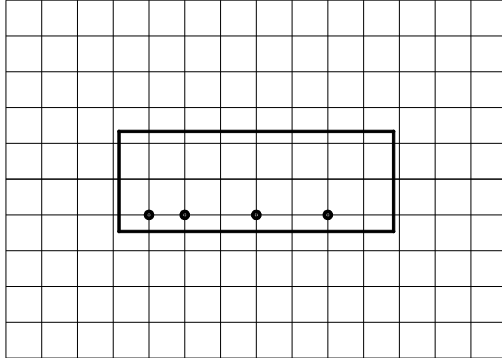
Output Power vs. Efficiency, Other Output Voltages

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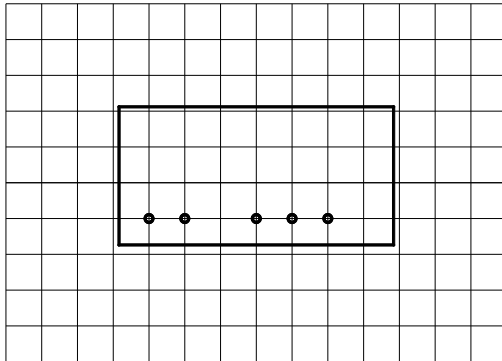
1W DC to DC Converter

Grid : 0.1 inch / 2.54 mm
Dot(Drill Hole): Φ 0.8 +0.2 / -0 mm

Single



Dual



| Tolerance | Millimeters | Inches |
|-----------|------------------|-------------------|
| | XX.X \pm 0.25 | XX.X \pm 0.01 |
| | XX.XX \pm 0.13 | XX.XX \pm 0.005 |
| Pin | \pm 0.1 | \pm 0.004 |