# THE DATASHEET OF

# PI01S1215A

# PI01S/D Sries

**1W DC/DC CONVERTER, High isolation, SIP-Package**


## FEATURES

- Efficiency up to 75%
- SIP Package with Industry Standard Pinout
- High Isolation Volage 3000VACrms
- Lead free ,RoHs Complian
- Industrial & Medical Safety Approval
- Operating Temperature range - 25°C to +85°C
- Low isolation Capacitance
- >2 MHours MTBF
- 3 Years Product Warranty


The PI01S/D series are miniature, SIP Package, isolated 1W DC/DC converters with 3,000VAC isolation. It allows a wide operating temperature range of –25°C to +85°C. With high isolation, PI01S/D is suitable for all kinds of medical device application. These high isolated DC/DC converters are the latest offering from a world leader in power systems technology and manufacturing — Delta Electronics, Inc.

## Model List

| Model Number | Input Voltage (Range) | Output Voltage | Output Current | | Input Current | | Load Regulation | Max. capacitive Load | Efficiency (typ.) |
|---|---|---|---|---|---|---|---|---|---|
| | | | Max. | Min. | @Max. Load | @No Load | | | @Max. Load |
| | VDC | VDC | mA | mA | mA(typ.) | mA(typ.) | % (max.) | uF | % |
| PI01S0505A | 5 (4.5 ~ 5.5) | 5 | 200 | 4 | 303 | 55 | 10 | 680 | 66 |
| PI01S0512A | | 12 | 80 | 2 | 291 | | 8 | | 66 |
| PI01S0515A | | 15 | 65 | 1 | 295 | | 8 | | 66 |
| PI01D0505A | | ±5 | ±100 | ±2 | 303 | | 10 | 220* | 66 |
| PI01D0512A | | ±12 | ±40 | ±1 | 267 | | 8 | | 72 |
| PI01D0515A | | ±15 | ±35 | ±1 | 287 | | 8 | | 73 |
| PI01S1205A | 12 (10.8 ~ 13.2) | 5 | 200 | 4 | 126 | 30 | 10 | 680 | 66 |
| PI01S1212A | | 12 | 80 | 2 | 121 | | 8 | | 66 |
| PI01S1215A | | 15 | 65 | 1 | 123 | | 8 | | 66 |
| PI01D1205A | | ±5 | ±100 | ±2 | 126 | | 10 | 220* | 66 |
| PI01D1212A | | ±12 | ±40 | ±1 | 108 | | 8 | | 74 |
| PI01D1215A | | ±15 | ±35 | ±1 | 117 | | 8 | | 75 |

* For each output



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## Input Characteristics

| Parameter | Model | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|
| Input Voltage Range | 5V Input Models | 4.5 | 5 | 5.5 | VDC |
| | 12V Input Models | 10.8 | 12 | 13.2 | |
| Input Surge Voltage (1 sec. max.) | 5V Input Models | -0.7 | --- | 9 | |
| | 12V Input Models | -0.7 | --- | 29 | |
| Reverse Polarity Input Current | All Models | --- | --- | 0.3 | A |
| Input Filter | | LC Filter | | | |
| Internal Power Dissipation | | --- | --- | 650 | mW |

## Output Characteristics

| Parameter | Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|
| Output Voltage Accuracy | | --- | ±1.0 | ±3.0 | % |
| Output Voltage Balance | Dual Output, Balanced Loads | --- | ±0.1 | ±1.0 | % |
| Line Regulation | For Vin Change of 1% | --- | ±1.2 | ±1.5 | % |
| Load Regulation | Io=20% to 100% | See Model Selection Guide | | | |
| Ripple & Noise (20MHz) | | --- | 100 | 150 | $mV_{P-P}$ |
| Ripple & Noise (20MHz) | Over Line, Load & Temp. | --- | --- | 200 | $mV_{P-P}$ |
| Ripple & Noise (20MHz) | | --- | --- | 15 | mV rms |
| Temperature Coefficient | | --- | ±0.01 | ±0.02 | %/℃ |
| Short Circuit Protection | | 0.5 Second Max. | | | |

## Isolation and Safety Standards

| Parameter | Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|
| I/O Isolation Voltage (rated) | 60 Seconds | 3000 | --- | --- | VACrms |
| I/O Isolation Test Voltage | Flash tested for 1 Second | 4500 | --- | --- | $V_{PK}$ |
| I/O Isolation Resistance | 500 VDC | 10 | --- | --- | GΩ |
| I/O Isolation Capacitance | 100KHz, 1V | --- | 15 | 20 | pF |
| Safety Standards | cUL/UL60950-1, CSA C22.2 No. 60950-1-03 | | | | |
| | UL60601-1,CSA C22.2 No.601-1 | | | | |
| | IEC/EN 60950-1, IEC/EN 60601-1 | | | | |
| Approvals | IEC60950-1 CB report, cUL/UL 60950-1 certificate | | | | |
| | UL60601-1 UL certificate | | | | |

## General Characteristics

| Parameter | Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|
| Switching Frequency | | 50 | 80 | 100 | KHz |
| MTBF (calculated) | MIL-HDBK-217F@25℃, Ground Benign | 2,000,000 | --- | --- | Hours |

## Recommended Input Fuse

| 5V Input Models | 12V Input Models |
|---|---|
| 500mA Slow-Blow Type | 200mA Slow-Blow Type |

## Environmental Specifications

| Parameter | Conditions | Min. | Max. | Unit |
|---|---|---|---|---|
| Operating Temperature Range (with Derating) | Ambient | -25 | +85 | ℃ |
| Case Temperature | | --- | +90 | ℃ |
| Storage Temperature Range | | -50 | +125 | ℃ |
| Humidity (non condensing) | | --- | 95 | % rel. H |
| Cooling | Free-Air convection | | | |
| Lead Temperature (1.5mm from case for 10Sec.) | | --- | 260 | ℃ |


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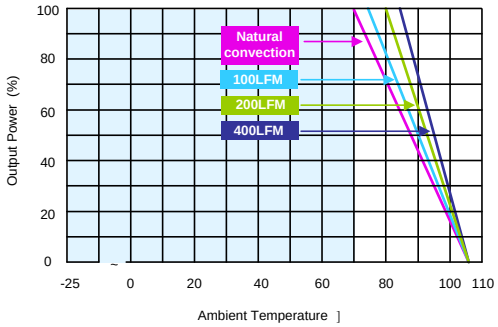
## Power Derating Curve

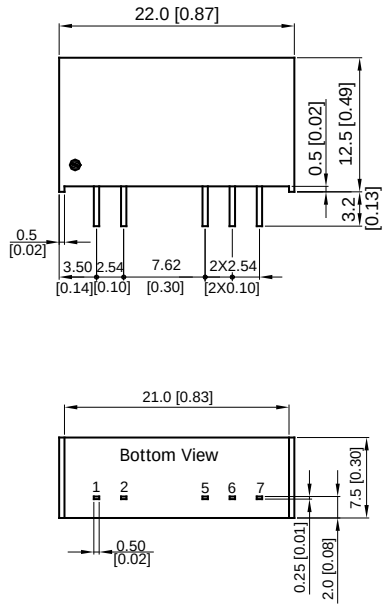



## Notes

1 Specifications typical at Ta=+25℃, resistive load, nominal input voltage and rated output current unless otherwise noted.
2 Ripple & Noise measurement bandwidth is 0-20MHz.
3 These power converters require a minimum output loading to maintain specified regulation, operation under no-load conditions will not damage these modules; however they may not meet all specifications listed.
4 All DC/DC converters should be externally fused at the front end for protection.
5 Specifications subject to change without notice.

## Mechanical Drawing

Mechanical Dimensions




Pin Connections

| Pin | Single Output | Dual Output |
|---|---|---|
| 1 | +Vin | +Vin |
| 2 | -Vin | -Vin |
| 5 | -Vout | -Vout |
| 6 | No Pin | Common |
| 7 | +Vout | +Vout |

- ▶All dimensions in mm (inches)
- ▶Tolerance: X.X±0.25 (X.XX±0.01)
  X.XX±0.13 ( X.XXX±0.005)
- ▶Pins ±0.05 (±0.002)

## Physical Outline

| | | |
|---|---|---|
| Case Size | : | 22.0x7.5x12.5mm (0.87x0.30x0.49 Inches) |
| Case Material | : | Non-Conductive Black Plastic (flammability to UL 94V-0 rated) |
| Weight | : | 3.9g |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## Part Numbering System

| P | I | 01 | S | 05 | 12 | A |
|---|---|---|---|---|---|---|
| Form factor | Family series | Watt | Number of Outputs | Input Voltage | Output Voltage | Option Code |
| D-DIP | A~Z | 01:1W | S - Single | 03:3.3V | 03:3.3V | A - Std. Functions |
| P-SIP | | 02:2W | D- Dual | 05: 5V | 05: 5V | |
| S-SMD | | 03:3W | | 12:12V | 12:12V | |
| | | 04:4W | | 24: 24V | 15: 15V | |
| | | 06:6W | | 48:48V | 24: 24V | |

### WARRANTY

Delta offers a three(3) years limited warranty. Complete warranty information is listed on our web site or is available upon request from Delta.

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