

FEATURES

- Efficiency up to 83%
- SIP Package with Industry Standard Pinout
- Package Dimension :
19.5 x 10.2 x 7.6 mm (0.77"x 0.4"x 0.3")
- Isolation Voltage 1000 VDC
- Operating Temperature Range -40°C to +85°C
- Single and Dual Outputs
- >2 MHours MTBF
- Lead free, RoHS compliant
- 3 Years Product Warranty



The PC02S/D series are miniature, SIP Package, isolated 2W DC/DC converters with 1,000VDC isolation. It offers short circuit protection and allows a wide operating temperature range of -40°C to +85°C. These 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) VDC | Output Voltage VDC | Output Current | | Input Current | | Load Regulation % (max.) | Max. capacitive Load uF | Efficiency (typ.) |
|--------------|------------------------------|-----------------------|----------------|------------|------------------------|----------------------|-----------------------------|----------------------------|-------------------|
| | | | Max. mA | Min. mA | @Max. Load mA(typ.) | @No Load mA(typ.) | | | @Max. Load % |
| PC02S0503A | 5 (4.5 ~ 5.5) | 3.3 | 500 | 10 | 452 | 60 | 11 | 470 | 73 |
| PC02S0505A | | 5 | 400 | 8 | 526 | | 11 | | 76 |
| PC02S0512A | | 12 | 165 | 3 | 495 | | 7 | | 80 |
| PC02S0515A | | 15 | 133 | 2.5 | 499 | | 7 | 80 | |
| PC02D0505A | | ±5 | ±200 | ±4 | 519 | | 10 | 77 | |
| PC02D0512A | | ±12 | ±83 | ±1.5 | 504 | | 7 | 390* | 79 |
| PC02D0515A | | ±15 | ±66 | ±1 | 501 | | 7 | 79 | |
| PC02S1203A | 12 (10.8 ~ 13.2) | 3.3 | 500 | 10 | 185 | 30 | 8 | 470 | 74 |
| PC02S1205A | | 5 | 400 | 8 | 212 | | 8 | | 78 |
| PC02S1212A | | 12 | 165 | 3 | 200 | | 5 | | 82 |
| PC02S1215A | | 15 | 133 | 2.5 | 200 | | 5 | 83 | |
| PC02D1205A | | ±5 | ±200 | ±4 | 210 | | 8 | 79 | |
| PC02D1212A | | ±12 | ±83 | ±1.5 | 201 | | 5 | 390* | 82 |
| PC02D1215A | | ±15 | ±66 | ±1 | 200 | | 5 | 82 | |
| PC02S2403A | 24 (21.6 ~ 26.4) | 3.3 | 500 | 10 | 92 | 15 | 8 | 470 | 74 |
| PC02S2405A | | 5 | 400 | 8 | 108 | | 8 | | 77 |
| PC02S2412A | | 12 | 165 | 3 | 101 | | 5 | | 81 |
| PC02S2415A | | 15 | 133 | 2.5 | 101 | | 5 | 82 | |
| PC02D2405A | | ±5 | ±200 | ±4 | 105 | | 8 | 79 | |
| PC02D2412A | | ±12 | ±83 | ±1.5 | 102 | | 5 | 3908 | 81 |
| PC02D2415A | | ±15 | ±66 | ±1 | 100 | | 5 | 82 | |

* For each output



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 | |
| | 24V Input Models | 21.6 | 24 | 26.4 | |
| Input Surge Voltage (1 sec. max.) | 5V Input Models | -0.7 | --- | 9 | VDC |
| | 12V Input Models | -0.7 | --- | 18 | |
| | 24V Input Models | -0.7 | --- | 30 | |
| Reverse Polarity Input Current | All Models | --- | --- | 0.3 | A |
| Input Filter | | Pi 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 | %/°C |
| Short Circuit Protection | | 0.5 Second Max. | | | |

General Characteristics

| Parameter | Conditions | Min. | Typ. | Max. | Unit |
|-------------------------------|-----------------------------------|-----------|-------|-------|-------|
| I/O Isolation Voltage (rated) | 60 Seconds | 1000 | --- | --- | VDC |
| I/O Isolation Resistance | 500 VDC | 1000 | --- | --- | MΩ |
| I/O Isolation Capacitance | 100KHz, 1V | --- | 80 | 120 | pF |
| Switching Frequency | | 50 | 80 | 100 | KHz |
| MTBF (calculated) | MIL-HDBK-217F@25°C, Ground Benign | 2,000,000 | ----- | ----- | Hours |

Recommended Outside Input Fuse

| 5V Input Models | 12V Input Models | 24V Input Models |
|-----------------------|----------------------|----------------------|
| 1000mA Slow-Blow Type | 500mA Slow-Blow Type | 200mA Slow-Blow Type |

Environmental Specifications

| Parameter | Conditions | Min. | Max. | Unit |
|---|---------------------|------|------|----------|
| Operating Temperature Range (with Derating) | Ambient | -40 | +85 | °C |
| Case Temperature | | --- | +90 | °C |
| Storage Temperature Range | | -50 | +125 | °C |
| Humidity (non condensing) | | --- | 95 | % rel. H |
| Cooling | Free-Air convection | | | |
| Lead Temperature (1.5mm from case for 10Sec.) | | --- | 260 | °C |

Power Derating Curve

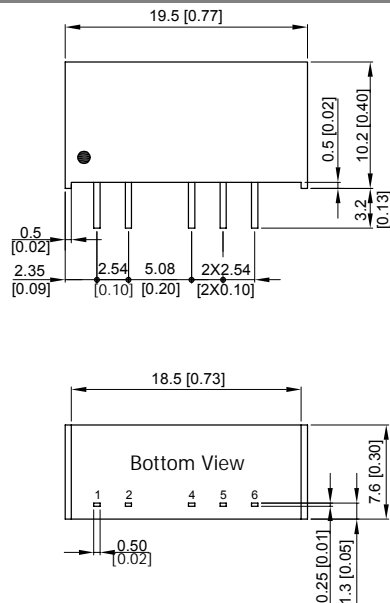


Notes

- 1 Specifications typical at $T_a=+25^{\circ}\text{C}$, 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 |
| 4 | -Vout | -Vout |
| 5 | No Pin | Common |
| 6 | +Vout | +Vout |

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

Physical Outline

| | |
|---------------|---|
| Case Size | : 19.5x7.6x10.2mm (0.77x0.30x0.40 Inches) |
| Case Material | : Non-Conductive Black Plastic (flammability to UL 94V-0 rated) |
| Weight | : 2.7g |



| Part Numbering System | | | | | | |
|-----------------------|---------------|-------|-------------------|---------------|----------------|--------------------|
| P | C | 02 | S | 05 | 05 | 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

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- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



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