

FEATURES

- Efficiency up to 88.5%
- SIP Package with Industry Standard Pinout
- Semi-regulated Output Voltage
- Isolation Voltage 1000VDC
- Operating Temperature Range -40°C to +85°C
- UL/IEC/EN 60950-1 Safety
- Single and Dual Outputs
- Lead free, RoHs Compliant
- >2 MHours MTBF
- CSA / NRTL60950-1 safety approval
- 3 Years Product Warranty



The PE01S/D series are miniature, SIP Package, isolated 1W DC/DC converters with 1,000VDC isolation and very high efficiency. It offers short circuit protection and allows a wide operating temperature range of -40°C to +85°C. These products provide a typical load regulation of 2.5% to 5.0% depending on each model. The PE01S/D DC/DC converters are a compromise between a fully regulated converter and a non-regulated converter. 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.) | Reflected Ripple mA(typ.) | Max. capacitive Load uF | Efficiency (typ.) % | | | | |
|--------------|------------------------------|-----------------------|----------------|------|---------------|----------|-----------------------------|------------------------------|----------------------------|------------------------|-----|---|-----|------|
| | | | Max. | Min. | @Max.Load | @No Load | | | | | | | | |
| | | | mA | mA | mA(typ.) | mA(typ.) | | | | | | | | |
| PE01S0505A | 5 (4.5 ~ 5.5) | 5 | 200 | 4 | 238 | 30 | 6.5 | 7 | 220 | 84 | | | | |
| PE01S0509A | | 9 | 110 | 2 | 228 | | 5 | | | 87 | | | | |
| PE01S0512A | | 12 | 84 | 1.5 | 232 | | 5.2 | | | 87 | | | | |
| PE01S0515A | | 15 | 67 | 1 | 230 | | 5 | | | 87.5 | | | | |
| PE01D0505A | | ±5 | ±100 | ±2 | 237 | | 5.2 | | | 84.5 | | | | |
| PE01D0509A | | ±9 | ±56 | ±1 | 234 | | 4.2 | | | 86 | | | | |
| PE01D0512A | | ±12 | ±42 | ±0.8 | 233 | | 4.6 | | | 86.5 | | | | |
| PE01D0515A | | ±15 | ±34 | ±0.7 | 236 | | 4.5 | | | 86.5 | | | | |
| PE01S1205A | | 12 (10.8 ~ 13.2) | 5 | 200 | 4 | | 99 | | | 12 | 5 | 4 | 220 | 84 |
| PE01S1209A | | | 9 | 110 | 2 | | 95 | | | | 3.4 | | | 86.5 |
| PE01S1212A | 12 | | 84 | 1.5 | 95 | 3.4 | 88.5 | | | | | | | |
| PE01S1215A | 15 | | 67 | 1 | 95 | 2.7 | 88 | | | | | | | |
| PE01D1205A | ±5 | | ±100 | ±2 | 99 | 3.9 | 84.5 | | | | | | | |
| PE01D1209A | ±9 | | ±56 | ±1 | 98 | 2.8 | 86 | | | | | | | |
| PE01D1212A | ±12 | | ±42 | ±0.8 | 95 | 2.9 | 88.5 | | | | | | | |
| PE01D1215A | ±15 | | ±34 | ±0.7 | 94 | 2.6 | 87.5 | | | | | | | |
| PE01S2405A | 24 (21.6 ~ 26.4) | | 5 | 200 | 4 | 50 | 11 | 3.7 | 8 | | 220 | | | 84 |
| PE01S2409A | | | 9 | 110 | 2 | 48 | | 2.5 | | | | | | 86.5 |
| PE01S2412A | | 12 | 84 | 1.5 | 48 | 2.4 | | 87.5 | | | | | | |
| PE01S2415A | | 15 | 67 | 1 | 48 | 2.3 | | 87.5 | | | | | | |
| PE01D2405A | | ±5 | ±100 | ±2 | 50 | 3.7 | | 83.5 | | | | | | |
| PE01D2409A | | ±9 | ±56 | ±1 | 49 | 2.5 | | 86 | | | | | | |
| PE01D2412A | | ±12 | ±42 | ±0.8 | 48 | 2.4 | | 87 | | | | | | |
| PE01D2415A | | ±15 | ±34 | ±0.7 | 49 | 2.3 | | 87 | | | | | | |

* For each output



Input Characteristics

| Parameter | Model | Min. | Typ. | Max. | Unit |
|-----------------------------------|------------------|--------------------|------|------|------|
| 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 | |
| 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 | |
| Reverse Polarity Input Current | All Models | --- | --- | 0.3 | A |
| Input Filter | | Internal Capacitor | | | |
| Internal Power Dissipation | | --- | --- | 450 | mW |

Output Characteristics

| Parameter | Conditions | Min. | Typ. | Max. | Unit |
|--------------------------|-----------------------------|---------------------------|-------|-------|-------------------|
| Output Voltage Balance | Dual Output, Balanced Loads | --- | ±0.1 | ±1.0 | % |
| Line Regulation | For Vin Change of 1% | --- | ±1.05 | ±1.2 | % |
| Load Regulation | Io=20% to 100% | See Model Selection Guide | | | |
| Ripple & Noise (20MHz) | | --- | 30 | 60 | mV _{P-P} |
| 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 | 40 | 60 | 120 | pF |
| Switching Frequency | | 50 | 100 | 120 | KHz |
| MTBF (calculated) | MIL-HDBK-217F@25°C, Ground Benign | 2,000,000 | --- | --- | Hours |
| Safety Approvals | CSA 60950-1 recognition, IEC/EN 60950-1(CB-scheme) | | | | |

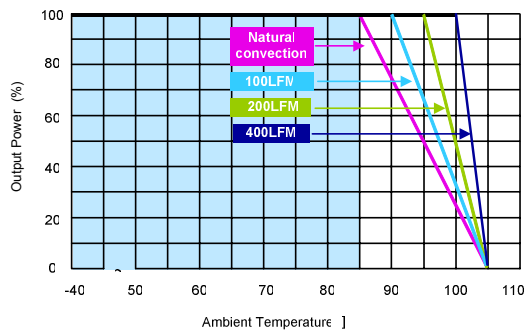
Recommended Outside Input Fuse

| 5V Input Models | 12V Input Models | 24V Input Models |
|----------------------|----------------------|----------------------|
| 500mA Slow-Blow Type | 200mA Slow-Blow Type | 100mA Slow-Blow Type |

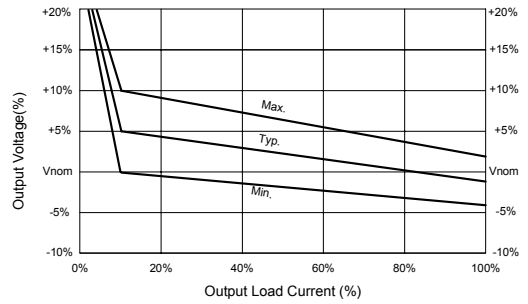
Environmental Specifications

| Parameter | Conditions | Min. | Max. | Unit |
|---|---------------------|------|------|----------|
| Operating Temperature Range (without Derating) | Ambient | -40 | +85 | °C |
| Case Temperature | | --- | +95 | °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



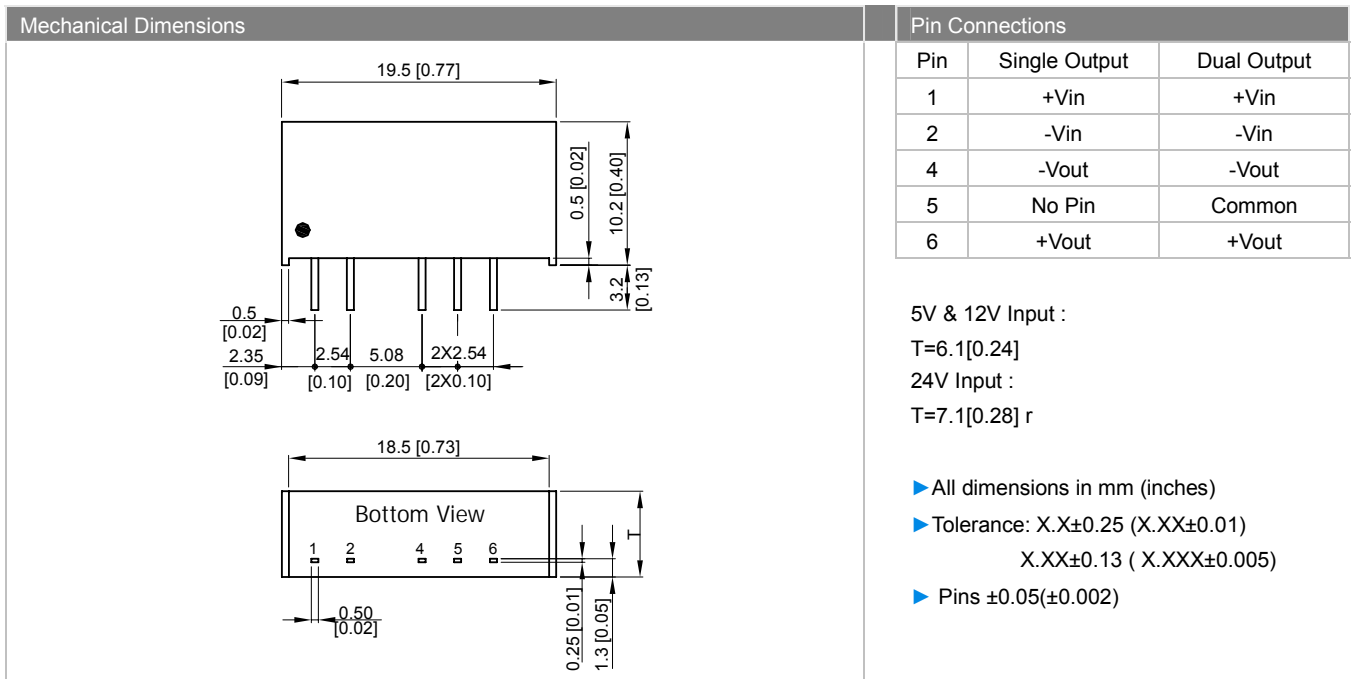
Output Voltage Tolerance



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



Physical Outline

| | |
|-------------------------|---|
| Case Size (5&12V Input) | : 19.5x6.1x10.2mm (0.77x0.24x0.40 Inches) |
| Case Size (24V Input) | : 19.5x7.1x10.2mm (0.77x0.28x0.40 Inches) |
| Case Material | : Non-Conductive Black Plastic (flammability to UL 94V-0 rated) |
| Weight (5&12V Input) | : 2.2g |
| Weight (24V Input) | : 2.6g |



Part Numbering System

| P | E | 01 | 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

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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