



**THE DATASHEET OF
IAS0105D12**



1W

DC-DC POWER SUPPLIES

The dual output IAS01 series is an ideal solution for isolating voltage rails in a distributed power supply architecture such as analog, digital, data and relay circuits. This product family offers a compact design with high efficiency, 1.5kV isolation with 3.0kV optional, short circuit protection and high operating temperature.



Features

- Unregulated dual outputs
- $\pm 10\%$ input range
- Dual outputs $\pm 3V3$ to $\pm 24VDC$
- SMD10 DIP package
- Industry standard pinout
- 1.5kVDC isolation, 3kVDC option
- Continuous short circuit protection
- UL62368-1 safety approvals
- Tape & reel option
- Operating temperature $-40^{\circ}C$ to $+105^{\circ}C$
- Full load to $+100^{\circ}C$
- 3 year warranty

Applications



Industrial Electronics



Instrumentation



Technology

Dimensions

0.600" x 0.335" x 0.285" (15.24 x 8.50 x 7.25 mm)

Models & Ratings

| Model Number ^(4,5) | Input Voltage | Output Voltage | Input Current ⁽¹⁾ | | Output Current | | Maximum Capacitive Load | Efficiency ⁽²⁾ |
|-------------------------------|-----------------------|----------------|------------------------------|-----------|----------------|----------------|-------------------------|---------------------------|
| | | | No Load | Full Load | Minimum | Maximum | | |
| IAS0105D3V3 | 5V (4.5-5.5V) | $\pm 3V3V$ | 5mA | 270mA | $\pm 15mA$ | $\pm 152mA$ | $\pm 1200\mu F$ | 74% |
| IAS0105D05 | | $\pm 5V$ | 5mA | 244mA | $\pm 10mA$ | $\pm 100mA$ | $\pm 1200\mu F$ | 82% |
| IAS0105D09 | | $\pm 9V$ | 12mA | 241mA | $\pm 6mA$ | $\pm 56mA$ | $\pm 470\mu F$ | 83% |
| IAS0105D12 | | $\pm 12V$ | 12mA | 241mA | $\pm 5mA$ | $\pm 42mA$ | $\pm 220\mu F$ | 83% |
| IAS0105D15 | | $\pm 15V$ | 18mA | 241mA | $\pm 4mA$ | $\pm 34mA$ | $\pm 220\mu F$ | 83% |
| IAS0105D24 | | $\pm 24V$ | 18mA | 241mA | $\pm 3mA$ | $\pm 21mA$ | $\pm 100\mu F$ | 85% |
| IAS0112D05 | 12V (10.8 - 13.2V) | $\pm 5V$ | 8mA | 107mA | $\pm 10mA$ | $\pm 100mA$ | $\pm 1200\mu F$ | 82% |
| IAS0112D09 | | $\pm 9V$ | 8mA | 106mA | $\pm 6mA$ | $\pm 56mA$ | $\pm 470\mu F$ | 83% |
| IAS0112D12 | | $\pm 12V$ | 8mA | 106mA | $\pm 5mA$ | $\pm 42mA$ | $\pm 220\mu F$ | 83% |
| IAS0112D15 | | $\pm 15V$ | 8mA | 106mA | $\pm 4mA$ | $\pm 34mA$ | $\pm 220\mu F$ | 83% |
| IAS0112D24 | $\pm 24V$ | 8mA | 103mA | $\pm 3mA$ | $\pm 21mA$ | $\pm 100\mu F$ | 85% | |
| IAS0115D15 | 15V (13.5-16.5V) | $\pm 15V$ | 8mA | 85mA | $\pm 4mA$ | $\pm 34mA$ | $\pm 220\mu F$ | 83% |
| IAS0124D05 | 24V (21.6-26.4V) | $\pm 5V$ | 8mA | 55mA | $\pm 10mA$ | $\pm 100mA$ | $\pm 1200\mu F$ | 82% |
| IAS0124D09 | | $\pm 9V$ | 8mA | 55mA | $\pm 6mA$ | $\pm 56mA$ | $\pm 470\mu F$ | 83% |
| IAS0124D12 | | $\pm 12V$ | 8mA | 55mA | $\pm 5mA$ | $\pm 42mA$ | $\pm 220\mu F$ | 83% |
| IAS0124D15 | | $\pm 15V$ | 8mA | 55mA | $\pm 4mA$ | $\pm 34mA$ | $\pm 220\mu F$ | 83% |
| IAS0124D24 | | $\pm 24V$ | 8mA | 53mA | $\pm 3mA$ | $\pm 21mA$ | $\pm 100\mu F$ | 85% |

Notes:

1. Input currents measured at nominal input voltage.
2. Typical value at full load.
3. Standard tube quantity = 32

4. For tape & reel option add suffix -TR. Reel quantity = 500
5. Optional 3kVDC isolation add suffix '-H'.

Input

| Characteristic | Minimum | Typical | Maximum | Units | Notes & Conditions |
|------------------------|------------------------------|---------|---------|----------|---|
| Input Voltage | 4.5 | | 26.4 | VDC | See models and ratings table |
| Input Reflected Ripple | | 15/30 | 63 | mA pk-pk | Through 4.7μH inductor and 220μF capacitor, 5V input/other models |
| Input Surge | -0.7 | | 9 | VDC | IAS0105 for max 1s |
| | | | 18 | | IAS0112 for max 1s |
| | | | 21 | | IAS0115 for max 1s |
| | | | 30 | | IAS0124 for max 1s |
| Input Current | See models and ratings table | | | | |
| Input Filter | Integrated capacitor | | | | |

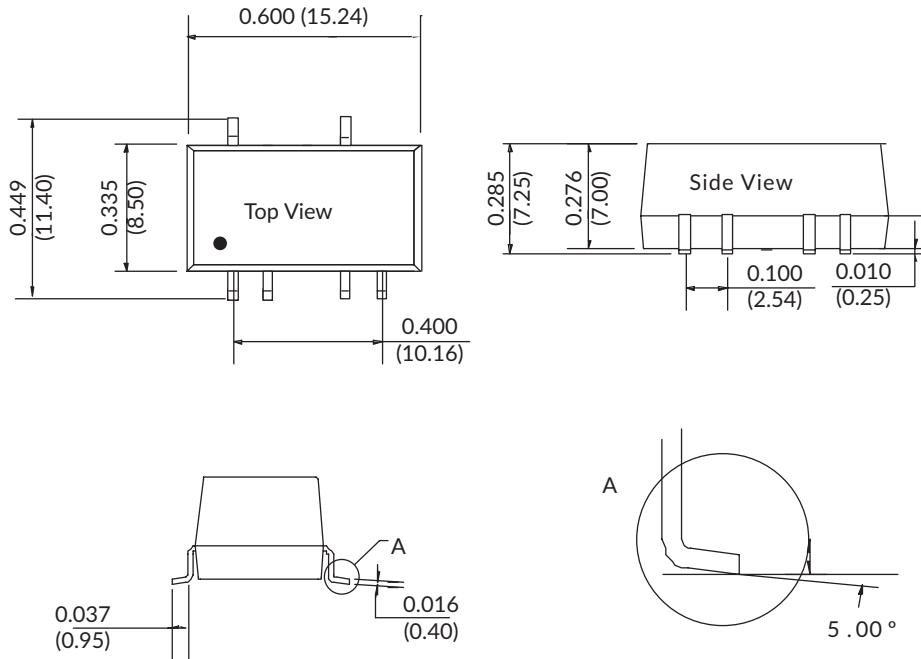
Output

| Characteristic | Minimum | Typical | Maximum | Units | Notes & Conditions |
|--------------------------|--------------------------------|---------|----------|----------|---|
| Output Voltage | ±3V3 | | ±24 | VDC | See models and ratings table |
| Initial Set Accuracy | See Load Regulation curve | | | | |
| Minimum Load | 10 | | | % | |
| Line Regulation | | | ±1.2 | % | Per ±1% change of input voltage |
| Load Regulation | -7.5 | | 8 | % | See Load Regulation curves |
| Ripple and Noise | | 30 (50) | 75 (100) | mV pk-pk | 20 MHz bandwidth, measured using 0.1μF capacitor, (±24 VDC output models) |
| Short Circuit Protection | Continuous, with auto recovery | | | | |
| Maximum Capacitive Load | See Models and Ratings table | | | | |
| Temperature Coefficient | | ±0.02 | | %/°C | Full load |

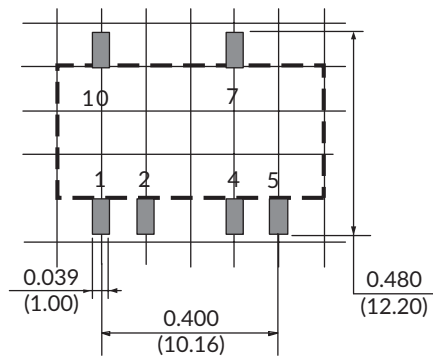
General

| Characteristic | Minimum | Typical | Maximum | Units | Notes & Conditions |
|----------------------------|---|--------------|---------|-------------------|--|
| Efficiency | See Models and Ratings table. | | | | |
| Isolation: Input to Output | 1500/3000 | | | VDC | |
| Switching Frequency | 260 | 270 | 278 | kHz | Low input voltage 10% load to high input voltage at full load. |
| Isolation Resistance | 10 ⁹ | | | Ω | Input to output, tested at 500VDC. |
| Isolation Capacitance | | 20 | | pF | |
| Power Density | | | 20 | W/in ³ | |
| Mean Time Between Failure | 3500 | | | khrs | MIL-HDBK-217F, 25°C GB. |
| Weight | | 0.0031 (1.4) | | lb(g) | |
| Recommended Solder Profile | IPC/JEDEC J-STD-020D.1 | | | | |
| MSL | Level 1 | | | | |
| Case Material | Black plastic, flame retardant UL94V-0 | | | | |
| Pin Material | Phosphor bronze | | | | |
| Water Wash | Non-soaking water wash with de-ionised water. Dry thoroughly. | | | | |

Mechanical Details



Recommended Footprint
Top View grid: 0.1 x 0.1 in (2.54 x 2.54 mm)



| Pin Connections | |
|-----------------|------------------------------|
| Pin | Function |
| 1 | -Vin |
| 2 | +Vin |
| 4 | 0Vout |
| 5 | -Vout |
| 7 | +Vout |
| 10 | No Connection ⁽⁵⁾ |

Notes:

1. All dimensions are in inches (mm)
2. Weight: 0.0031lbs (1.45g) typical.
3. Pin pitch and length tolerance: ± 0.004 (± 0.10)
4. Case tolerance: ± 0.02 (± 0.5)
5. Pin 10 leave floating.

Environmental

| Characteristic | Minimum | Typical | Maximum | Units | Notes & Conditions |
|-----------------------|--------------------|---------|---------|-------|--|
| Operating Temperature | -40 | | +105 | °C | Derate from 100% load at +100°C to 80% load at 105°C |
| Storage Temperature | -55 | | +125 | °C | |
| Case Temperature | | | +105 | °C | |
| Case Temperature Rise | | 15 | | %RH | Ambient 25°C |
| Operating Humidity | | | 95 | m | Non-condensing |
| Cooling | Natural convection | | | | |

Safety Approvals

| Safety Agency | Standard | Notes & Conditions |
|---------------|----------------------------------|--------------------|
| UL | UL62368-1 | |
| CE | Meets all applicable directives | |
| UKCA | Meets all applicable legislation | |

EMC: Emissions

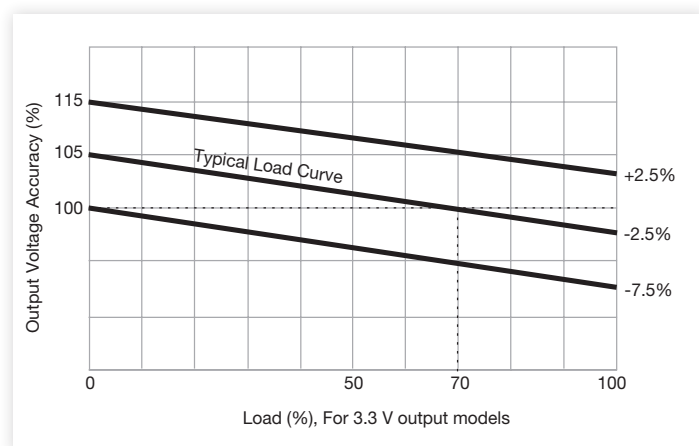
| Phenomenon | Standard | Test Level | Notes & Conditions |
|------------|----------|------------|--------------------|
| Conducted | EN55032 | Class B | |
| Radiated | EN55032 | Class B | |

EMC: Immunity

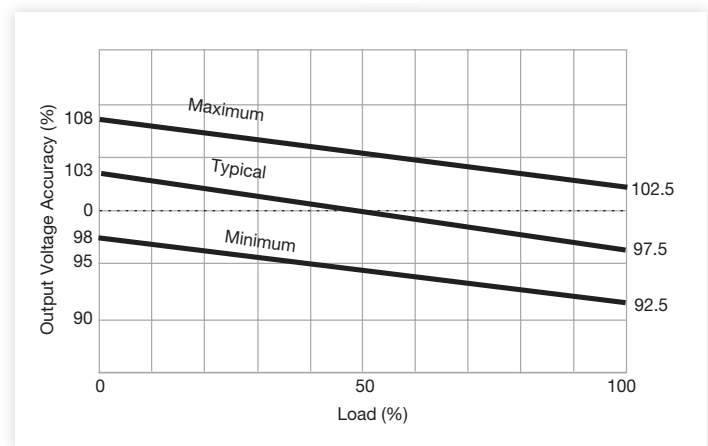
| Phenomenon | Standard | Test Level | Criteria | Notes & Conditions |
|--------------|-------------|--------------------------------------|----------|--------------------|
| ESD Immunity | EN61000-4-2 | ±4kV contact / ±8kV air discharge | B | |

Load Regulation

5V Input

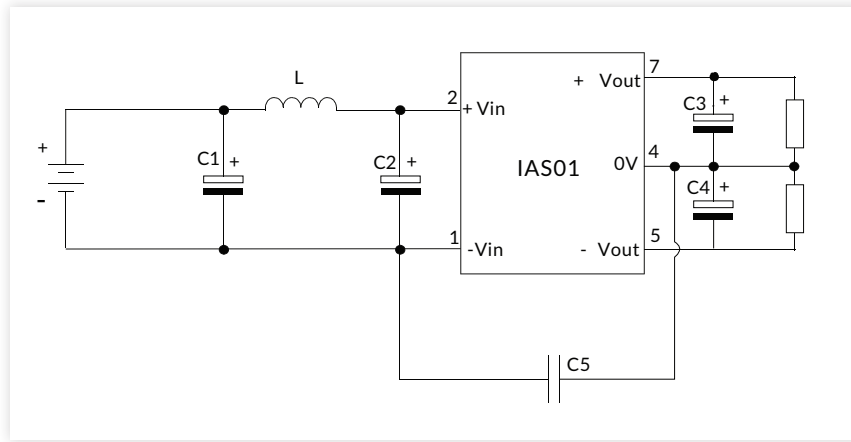


Other Input Series



Application Notes

EMI Filter for Class B Emissions



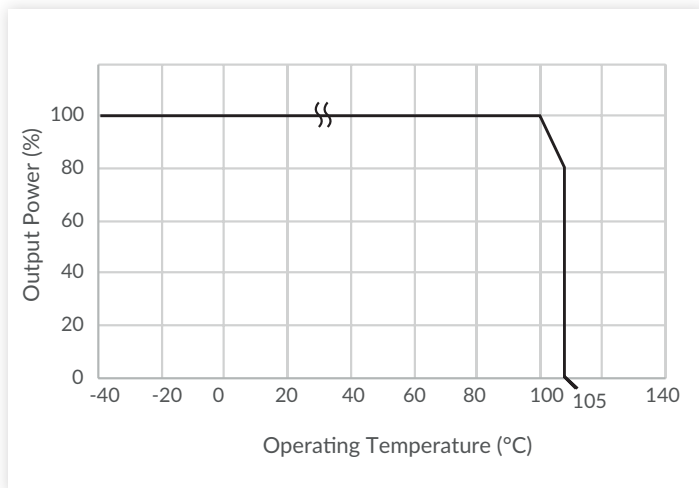
| 5V Input: | | | | |
|------------------|------------|------------|------------|-------|
| Output Voltage | C1, C2 | C3, C4 | C5 | L |
| ±3V3, ±5V | 4.7µF, 25V | 4.7µF, 16V | Not fitted | 6.8µH |
| ±9V | | 2.2µF, 16V | | |
| ±12V, ±15V, ±24V | | 1µF, 50V | 1nF | |

C5: 2kV, ceramic. Upgrade C5 to 4kV for 3kV isolation option -H

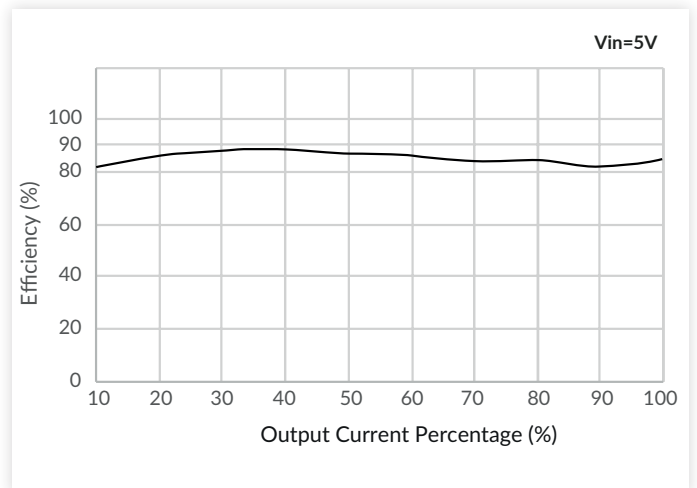
| Other Input Series: | | | | |
|---------------------|------------|-------------|------------|-------|
| Output Voltage | C1, C2 | C3, C4 | C5 | L |
| ±5V | 4.7µF, 50V | 4.7µF, 16V | 270pF, 2kV | 6.8µH |
| ±9V | | 1µF, 16V | | |
| ±12V | | 1µF, 25V | | |
| ±15V | | 0.47µF, 25V | | |
| ±24V | | 0.47µF, 50V | | |

C5: 2kV, ceramic. Upgrade C5 to 4kV for 3kV isolation option -H

Thermal Derating Curve



Efficiency vs Output Load (IAS0105D05)









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