

## 1W NATURAL CONVECTION

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  $\pm 5$  to  $\pm 24$ VDC
- SMD10 DIP package
- Industry standard pinout
- 1.5kVDC isolation, 3kVDC option
- Continuous short circuit protection
- UL62368-1 safety approvals
- Tape & reel option
- Operating temperature  $-40^{\circ}\text{C}$  to  $+105^{\circ}\text{C}$
- Full load to  $+100^{\circ}\text{C}$
- 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 <sup>(4,5)</sup>	Input Voltage	Output Voltage	Input Current <sup>(1)</sup>		Output Current		Maximum Capacitive Load	Efficiency <sup>(2)</sup>
			No Load	Full Load	Minimum	Maximum		
IAS0105D05	5V (4.5-5.5V)	$\pm 5$ V	5mA	244mA	$\pm 10$ mA	$\pm 100$ mA	$\pm 1200\mu\text{F}$	82%
IAS0105D09		$\pm 9$ V	12mA	241mA	$\pm 6$ mA	$\pm 56$ mA	$\pm 470\mu\text{F}$	83%
IAS0105D12		$\pm 12$ V	12mA	241mA	$\pm 5$ mA	$\pm 42$ mA	$\pm 220\mu\text{F}$	83%
IAS0105D15		$\pm 15$ V	18mA	241mA	$\pm 4$ mA	$\pm 34$ mA	$\pm 220\mu\text{F}$	83%
IAS0105D24		$\pm 24$ V	18mA	241mA	$\pm 3$ mA	$\pm 21$ mA	$\pm 100\mu\text{F}$	85%
IAS0112D05	12V (10.8 - 13.2V)	$\pm 5$ V	8mA	107mA	$\pm 10$ mA	$\pm 100$ mA	$\pm 1200\mu\text{F}$	82%
IAS0112D09		$\pm 9$ V	8mA	106mA	$\pm 6$ mA	$\pm 56$ mA	$\pm 470\mu\text{F}$	83%
IAS0112D12		$\pm 12$ V	8mA	106mA	$\pm 5$ mA	$\pm 42$ mA	$\pm 220\mu\text{F}$	83%
IAS0112D15		$\pm 15$ V	8mA	106mA	$\pm 4$ mA	$\pm 34$ mA	$\pm 220\mu\text{F}$	83%
IAS0112D24		$\pm 24$ V	8mA	103mA	$\pm 3$ m	$\pm 21$ mA	$\pm 100\mu\text{F}$	85%
IAS0115D15	15V (13.5-16.5V)	$\pm 15$ V	8mA	85mA	$\pm 4$ mA	$\pm 34$ mA	$\pm 220\mu\text{F}$	83%
IAS0124D05	24V (21.6-26.4V)	$\pm 5$ V	8mA	55mA	$\pm 10$ mA	$\pm 100$ mA	$\pm 1200\mu\text{F}$	82%
IAS0124D09		$\pm 9$ V	8mA	55mA	$\pm 6$ m	$\pm 56$ mA	$\pm 470\mu\text{F}$	83%
IAS0124D12		$\pm 12$ V	8mA	55mA	$\pm 5$ mA	$\pm 42$ mA	$\pm 220\mu\text{F}$	83%
IAS0124D15		$\pm 15$ V	8mA	55mA	$\pm 4$ mA	$\pm 34$ mA	$\pm 220$ F	83%
IAS0124D24		$\pm 24$ V	8mA	53mA	$\pm 3$ mA	$\pm 21$ mA	$\pm 100\mu\text{F}$	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				

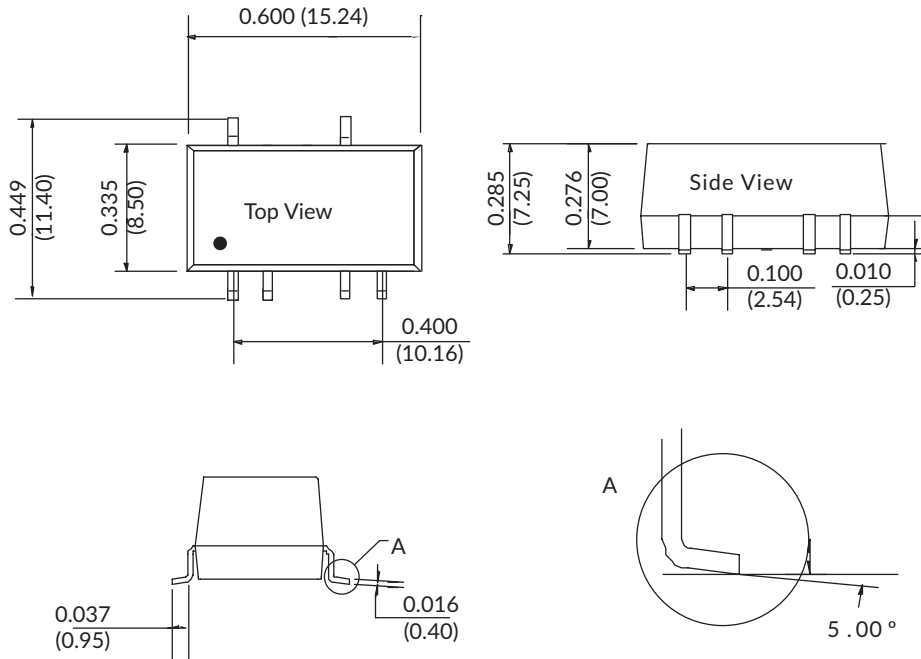
## Output

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Output Voltage	±5		±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

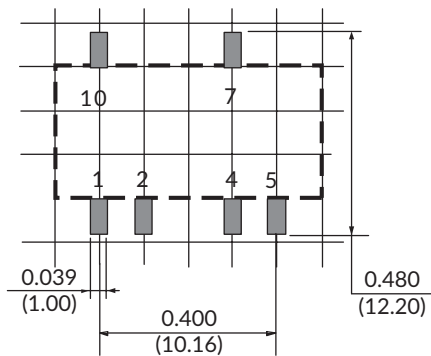
## General

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 <sup>9</sup>			Ω	Input to output, tested at 500VDC.
Isolation Capacitance		20		pF	
Power Density			20	W/in <sup>3</sup>	
Mean Time Between Failure	3500	90		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 <sup>(5)</sup>

### Notes:

1. All dimensions are in inches (mm)
2. Weight: 0.0031lbs (1.45g) typical.
3. Pin pitch and length tolerance:  $\pm 0.004$  ( $\pm 0.10$ )
4. Case tolerance:  $\pm 0.02$  ( $\pm 0.5$ )
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

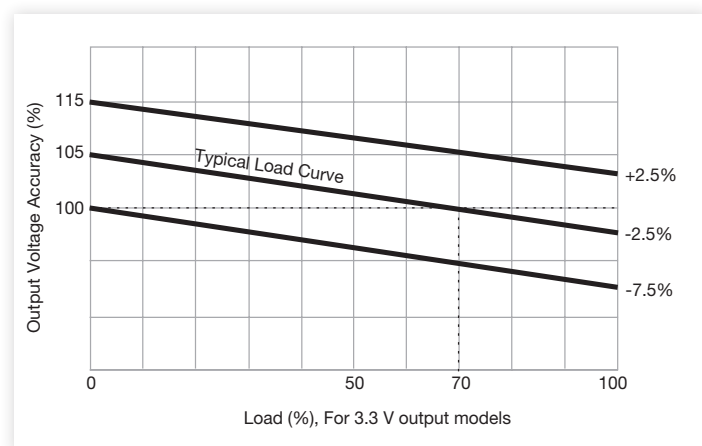
Phenomenon	Standard	Test Level	Notes & Conditions
Conducted	EN55032	Class B	
Radiated	EN55032	Class B	

## EMC: Immunity

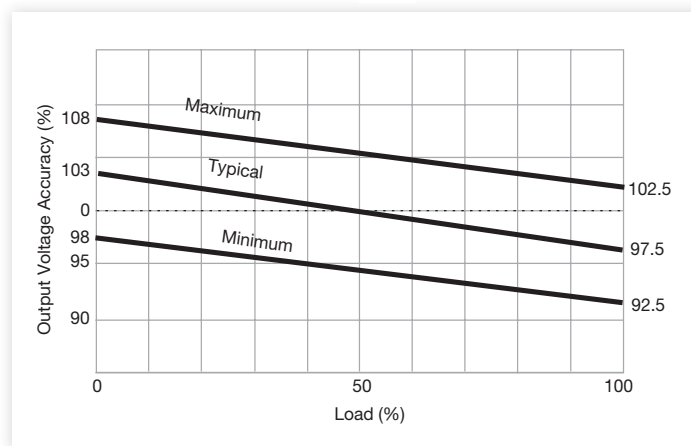
Phenomenon	Standard	Test Level	Criteria	Notes & Conditions
ESD Immunity	EN61000-4-2	±4kV contact / ±8kV air discharge	B	

## Load Regulation

5V Input

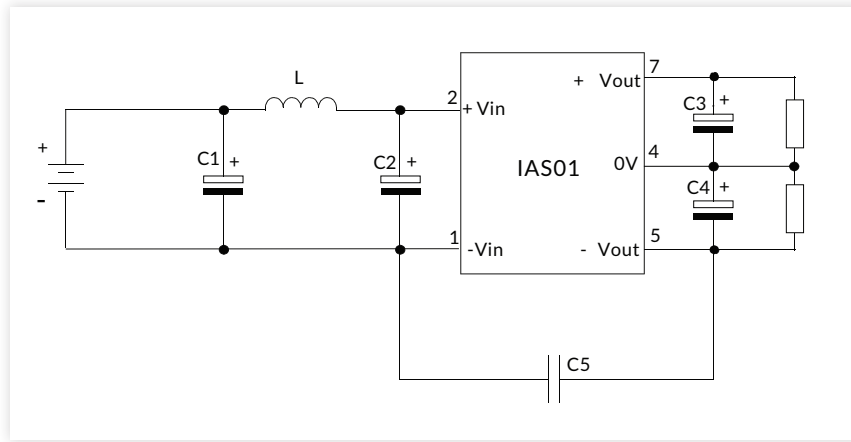


Other Input Series



## Application Notes

### EMI Filter for Class B Emissions



#### 5V Input:

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

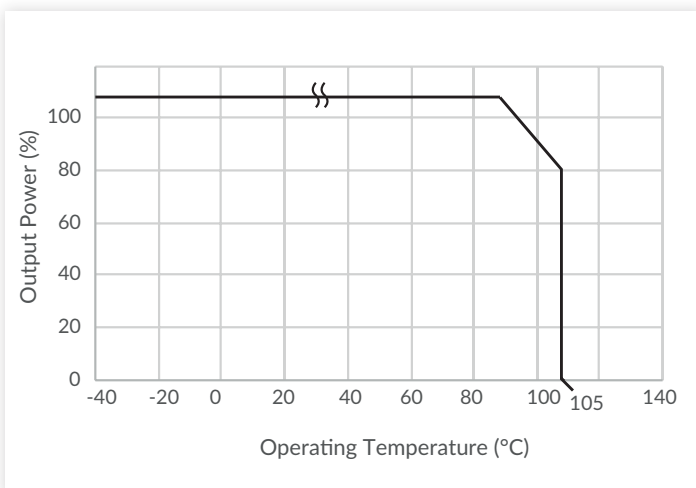
C5: 2kV, ceramic. Upgrade C5 to 4kV for 3kV isolation option -H

#### Other Input Series:

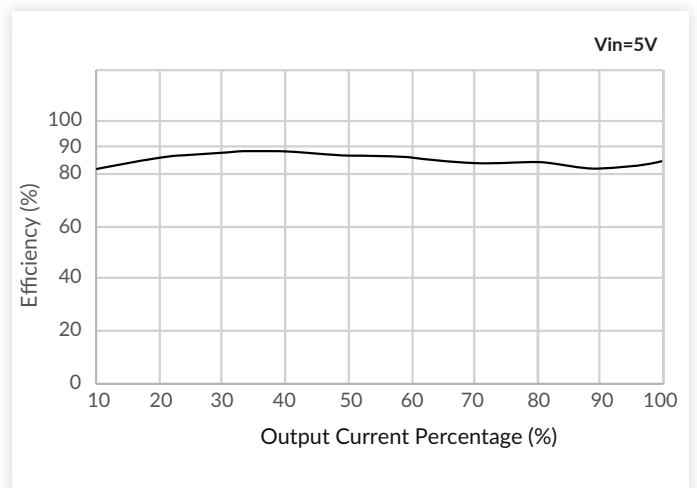
Output Voltage	C1, C2	C3, C4	C5	L
±5V	4.7μF, 50V	4.7μF, 16V	270pF, 2kV	6.8μH
±9V		1μF, 16V		
±12V		1μF, 25V		
±15V		0.47μF, 25V		
±24V		0.47μF, 50V		

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

#### Thermal Derating Curve



#### Efficiency vs Output Load (IAS0105D05)



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