

### 1 Watt

- Dual Output
- SMD Package
- Industry Standard Pinout
- Operating Temperature -40 °C to +105 °C
- 1500 VDC Isolation, 3000 VDC Option
- 3 Year Warranty



#### Dimensions:

ISA:  
0.600 x 0.440 x 0.285" (15.24 x 11.20 x 7.25 mm)

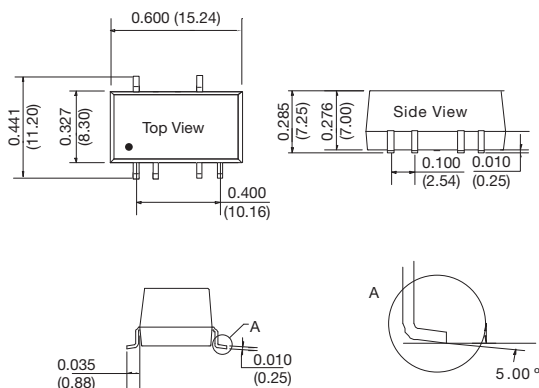
### Models & Ratings

Input Voltage	Output Voltage	Output Current	Input Current <sup>(2)</sup>		Maximum Capacitive Load	Efficiency <sup>(3)</sup>	Model Number <sup>(4)</sup>
			No Load	Full Load			
2.97-3.63 V	±5 V	±100 mA	25 mA	389 mA	100 µF	78%	ISA0305 <sup>(1)</sup>
	±12 V	±42 mA	25 mA	389 mA	100 µF	78%	ISA0312 <sup>(1)</sup>
	±15 V	±33 mA	25 mA	389 mA	100 µF	78%	ISA0315
4.5-5.5 V	±5 V	±100 mA	20 mA	250 mA	100 µF	80%	ISA0505 <sup>(1)</sup>
	±9 V	±56 mA	20 mA	250 mA	100 µF	80%	ISA0509 <sup>(1)</sup>
	±12 V	±42 mA	20 mA	247 mA	100 µF	81%	ISA0512 <sup>(1)</sup>
	±15 V	±33 mA	20 mA	247 mA	100 µF	81%	ISA0515 <sup>(1)</sup>
	±24 V	±21 mA	20 mA	247 mA	100 µF	81%	ISA0524 <sup>(1)</sup>
10.8-13.2 V	±5 V	±100 mA	15 mA	104 mA	100 µF	80%	ISA1205 <sup>(1)</sup>
	±9 V	±56 mA	15 mA	104 mA	100 µF	80%	ISA1209 <sup>(1)</sup>
	±12 V	±42 mA	15 mA	103 mA	100 µF	81%	ISA1212 <sup>(1)</sup>
	±15 V	±33 mA	15 mA	103 mA	100 µF	81%	ISA1215 <sup>(1)</sup>
	±24 V	±21 mA	15 mA	103 mA	100 µF	81%	ISA1224 <sup>(1)</sup>
13.5-16.5 V	±15 V	±33 mA	12 mA	83 mA	100 µF	81%	ISA1515 <sup>(1)</sup>
21.6-26.4 V	±5 V	±100 mA	10 mA	52 mA	100 µF	80%	ISA2405 <sup>(1)</sup>
	±9 V	±56 mA	10 mA	52 mA	100 µF	80%	ISA2409 <sup>(1)</sup>
	±12 V	±42 mA	10 mA	51 mA	100 µF	81%	ISA2412 <sup>(1)</sup>
	±15 V	±33 mA	10 mA	51 mA	100 µF	82%	ISA2415 <sup>(1)</sup>
	±24 V	±21 mA	10 mA	51 mA	100 µF	82%	ISA2424 <sup>(1)</sup>

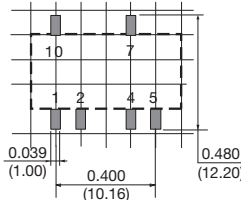
### Notes

1. For optional 3000 VDC isolation add suffix '-H' to end of part number e.g. ISA1224-H.
2. Input currents measured at nominal input voltage.
3. Typical value at full load.
4. For optional tape & reel option add suffix '-TR' to the end of the p/n. Reel quantity = 500

### Mechanical Details



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



PIN CONNECTIONS	
Pin	Function
1	GND
2	+Vin
4	0V
5	-Vout
7	+Vout
10	No Connection

### Notes

1. All dimensions are in inches (mm)
2. Weight: 0.004 lbs (1.8 g) typical.
3. Pin diameter: 0.02 ±0.002 (0.5 ±0.005)
4. Pin pitch and length tolerance: ±0.014 (±0.35)
5. Case tolerance: ±0.02 (±0.5)

### Input

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Input Voltage Range	2.97		3.63	VDC	3.3 V nominal
	4.50		5.50	VDC	5 V nominal
	10.80		13.20	VDC	12 V nominal
	13.50		16.50	VDC	15 V nominal
	21.60		26.40	VDC	24 V nominal
Input Current					See Models and Ratings table
Input Reflected Ripple		15		mA pk-pk	Through 12 $\mu$ H inductor and 47 $\mu$ F capacitor
Input Surge			5	VDC for 15 ms	3.3 V models
			9	VDC for 15 ms	5 V models
			18	VDC for 15 ms	12 V models
			21	VDC for 15 ms	15 V models
			30	VDC for 15 ms	24 V models
Input Filter	Capacitor				

### Output

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Output Voltage	$\pm 5$		$\pm 24$	VDC	See Models and Ratings table
Output Voltage Balance			$\pm 2$	%	Dual output models
Initial Set Accuracy			$\pm 3.0$	%	At 100% load
Minimum Load	10			%	
Line Regulation			$\pm 1.2$	%	Per 1% change of input voltage
Load Regulation				%	See graph
Cross Regulation			$\pm 5.0$	%	Dual output models when one load is varied between 25% and 100% and the other is fixed at 100% load
Start Up Delay		2		ms	
Ripple and Noise			60	mV pk-pk	20 MHz bandwidth, measured using 0.1 $\mu$ F capacitor
Transient Response			3	% deviation	Recovery to within 1% in 500 $\mu$ s for a 25% load change (5% max. deviation for 3.3 & 5 V models)
Short Circuit Protection					Continuous, with auto recovery, except 1 s max for 24 input V models
Maximum Capacitive Load					
Temperature Coefficient			0.02	%/°C	

### General

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Efficiency					See Models and Ratings table
Isolation: Input to Output	1500			VDC	For optional high isolation versions, 3000 VDC input to output add suffix -H to model number
Switching Frequency	50		300	kHz	
Isolation Resistance	$10^9$			$\Omega$	Input to output, tested at 500 VDC
Isolation Capacitance		20		pF	Input to output
Power Density			13	Win <sup>3</sup>	
Mean Time Between Failure	3500			kHrs	MIL-HDBK-217F, +25 °C GB
Weight		0.004 (1.8)		lb (g)	
Recommended Solder Profile	IPC/JEDEC J-STD-020D.1				

### 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	
Operating Humidity			95	% RH	Non-condensing
Cooling					Natural convection

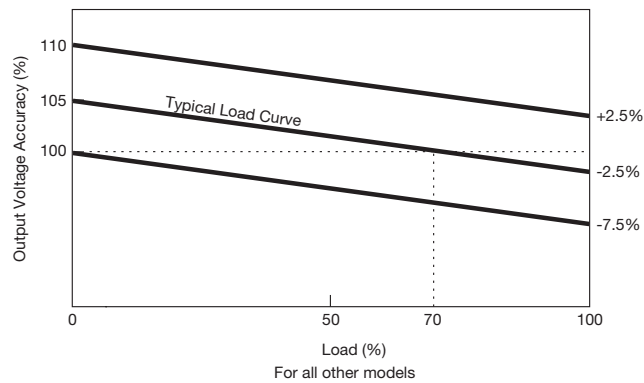
### EMC: Emissions

Phenomenon	Standard	Test Level	Notes & Conditions
Conducted	EN55022	Class B	See Application Note for Class B filter
Radiated	EN55022	Class B	See Application Note for Class B filter

### EMC: Immunity

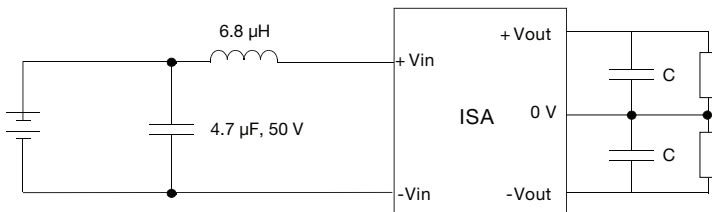
Phenomenon	Standard	Test Level	Criteria	Notes & Conditions
ESD Immunity	EN61000-4-2	3	B	
Radiated Immunity	EN61000-4-3	3 V/m	A	
EFT/Burst	EN61000-4-4	2	B	External input capacitor required, 330 $\mu$ F/100 V
Surge	EN61000-4-5	2	B	External input capacitor required, 330 $\mu$ F/100 V
Conducted Immunity	EN61000-4-6	3 V rms	A	
Magnetic Fields	EN61000-4-8	1 A/m	A	

### Load Regulation



### Application Note

#### EMI Filter for Class B Emissions



Output Voltage	C1
$\pm 5$	4.70 $\mu$ F
$\pm 9$	2.20 $\mu$ F
$\pm 12$	1.00 $\mu$ F
$\pm 15$	1.00 $\mu$ F
$\pm 24$	0.47 $\mu$ F