

### 1 Watt

- Single Output
- SMD Package
- Industry Standard Pinout
- Regulated Output
- Operating Temperature -40 °C to +85 °C
- 1500 VDC Isolation, 3000 VDC Option
- 3 Year Warranty



#### Dimensions:

ISW:  
0.600 x 0.44 x 0.285" (15.24 x 11.2 x 7.25 mm)

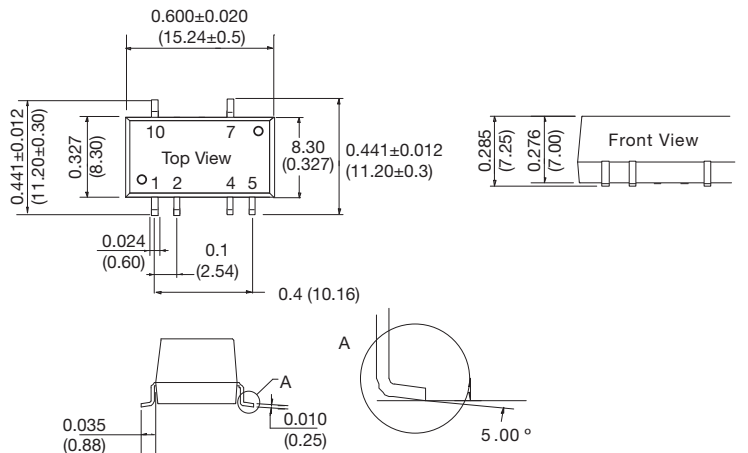
### Models & Ratings

Input Voltage	Output Voltage	Output Current	Input Current <sup>(3)</sup>		Maximum Capacitive Load	Efficiency	Model Number
			No Load	Full Load			
4.75-5.25	3.3 V	243 mA	15 mA	270 mA	220 µF	58%	ISW0503A <sup>(1)</sup>
	5 V	200 mA	15 mA	270 mA	220 µF	72%	ISW0505A <sup>(1)</sup>
	12 V	84 mA	15 mA	270 mA	220 µF	73%	ISW0512A <sup>(1)</sup>
	15 V	67 mA	15 mA	270 mA	220 µF	74%	ISW0515A <sup>(1)</sup>
11.4-12.6	5 V	200 mA	10 mA	115 mA	220 µF	73%	ISW1205A <sup>(1)</sup>
	12 V	84 mA	10 mA	115 mA	220 µF	73%	ISW1212A <sup>(1)</sup>
	15 V	67 mA	10 mA	115 mA	220 µF	75%	ISW1215A
22.8-25.2	5 V	200 mA	7 mA	56 mA	220 µF	73%	ISW2405A <sup>(1)</sup>
	12 V	84 mA	7 mA	56 mA	220 µF	73%	ISW2412A <sup>(1)</sup>

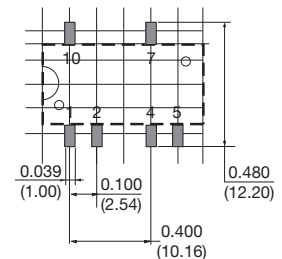
#### Notes

1. For optional 3000 VDC isolation add suffix '-H' to end of part number e.g. ISW1224A-H.
2. Input currents measured at nominal input voltage.
3. Typical value at full load.

### 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	0 V
5	0 V
7	+Vo
10	NC

#### Notes

1. All dimensions are in inches (mm)
2. Weight: 0.004 lbs (2.0 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	4.75		5.25	VDC	5 V nominal
	11.4		12.6	VDC	12 V nominal
	22.8		25.2	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			9	VDC for 1 s	5 V models
			18	VDC for 1 s	12 V models
			30	VDC for 1 s	24 V models
Input Filter	Capacitor				

### Output

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Output Voltage	3.3		15	VDC	See Models and Ratings table
Initial Set Accuracy			$\pm 3$	%	At 100% load
Minimum Load	10			%	
Line Regulation			$\pm 0.25$	%	Per 1% change of input voltage ( $\pm 1.5\%$ for 3V3 output)
Load Regulation			3	%	3.3 V output from 10%, full load
			2	%	Other outputs from 10%, full load
Start Up Delay		2		ms	
Ripple and Noise			50	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
Short Circuit Protection					Continuous, with auto recovery
Maximum Capacitive Load			220	$\mu$ F	
Temperature Coefficient			0.03	%/ $^{\circ}$ 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			13.3	Win <sup>3</sup>	
Mean Time Between Failure	3500			kHrs	MIL-HDBK-217F, +25 $^{\circ}$ C GB
Weight		0.004 (2.0)		lb (g)	

### Environmental

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Operating Temperature	-40		+85	$^{\circ}$ C	Derate from 100% load at +70 $^{\circ}$ C to 60% load at 85 $^{\circ}$ C
Storage Temperature	-55		+125	$^{\circ}$ C	
Case Temperature			+115	$^{\circ}$ C	
Operating Humidity			95	% RH	Non-condensing
Cooling					Natural convection

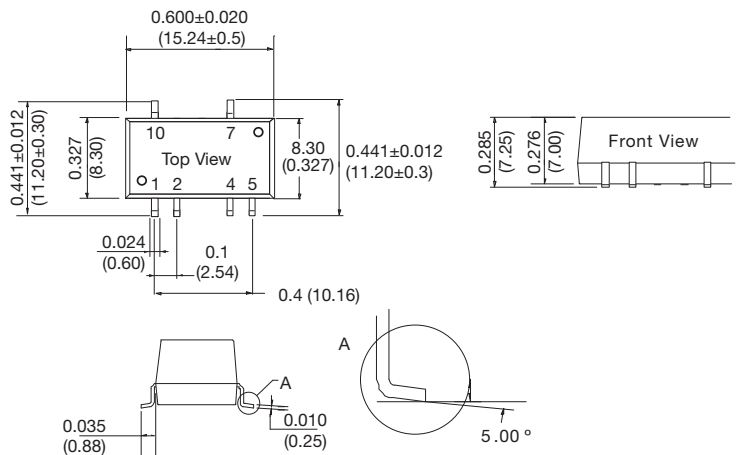
### EMC: Emissions

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

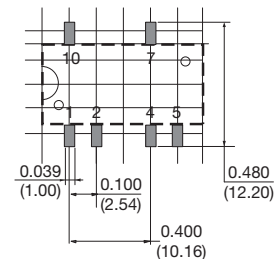
### EMC: Immunity

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	

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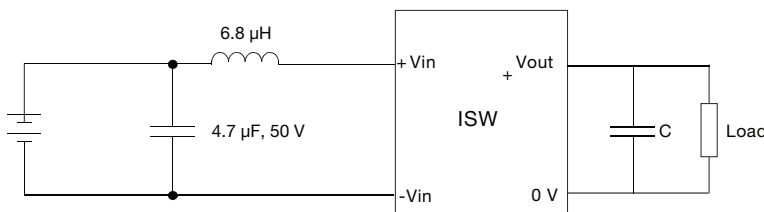
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### Application Note

#### EMI Filter for Class B Emissions



Output Voltage	C
3.3	10.00 $\mu$ F
5	10.00 $\mu$ F
12	2.20 $\mu$ F
15	1.00 $\mu$ F

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