

## 1 Watt

- International medical safety approvals
- Single & dual unregulated outputs
- Compact SMD package
- 4kV VAC isolation reinforced
- 2 x MOPP at 250 VAC
- 2  $\mu$ A patient leakage current
- Operating temperature -40 °C to +105 °C
- Full load to 85°C convection
- Tape & reel package available
- Optional water washable versions
- 3 year warranty



### Dimensions:

#### ISM01:

0.74 x 0.68 x 0.41" (18.9 x 17.2 x 10.5 mm)

The ISM01 provides a compact cost effective SMD solution for healthcare applications providing 2 MOPP and IEC60601-1 compliance. Features include a high operating temperature, low leakage current, reinforced insulation and short circuit protection.

## Models & Ratings

Input voltage	Output voltage	Output current		Input current <sup>(1)</sup>		Maximum <sup>(2)</sup> capacitive load	Reflected ripple current	Efficiency	Model number <sup>(3)</sup>
		Min	Max	No load	Full load				
5V (4.5-5.5V)	5V	4.00 mA	200 mA	50 mA	265 mA	220 $\mu$ F	80 mA	76%	ISM0105S05
	12V	1.68 mA	84 mA		250 mA	220 $\mu$ F		80%	ISM0105S12
	15V	1.36 mA	68 mA		245 mA	220 $\mu$ F		83%	ISM0105S15
	$\pm 12$ V	$\pm 0.84$ mA	$\pm 42$ mA		250 mA	$\pm 100$ $\mu$ F		80%	ISM0105D12
	$\pm 15$ V	$\pm 0.66$ mA	$\pm 33$ mA		235 mA	$\pm 100$ $\mu$ F		84%	ISM0105D15
12V (10.8-13.2)	5V	4.00 mA	200 mA	35 mA	110 mA	220 $\mu$ F	40 mA	76%	ISM0112S05
	12V	1.68 mA	84 mA		105 mA	220 $\mu$ F		79%	ISM0112S12
	15V	1.36 mA	68 mA		105 mA	220 $\mu$ F		80%	ISM0112S15
	$\pm 12$ V	$\pm 0.84$ mA	$\pm 42$ mA		105 mA	$\pm 100$ $\mu$ F		79%	ISM0112D12
	$\pm 15$ V	$\pm 0.66$ mA	$\pm 33$ mA		105 mA	$\pm 100$ $\mu$ F		80%	ISM0112D15
24V (21.6-26.4)	5V	4.00 mA	200 mA	20 mA	55 mA	220 $\mu$ F	30 mA	76%	ISM0124S05
	12V	1.68 mA	84 mA		55 mA	220 $\mu$ F		80%	ISM0124S12
	15V	1.36 mA	68 mA		55 mA	220 $\mu$ F		80%	ISM0124S15
	$\pm 12$ V	$\pm 0.84$ mA	$\pm 42$ mA		55 mA	$\pm 100$ $\mu$ F		80%	ISM0124D12
	$\pm 15$ V	$\pm 0.66$ mA	$\pm 33$ mA		50 mA	$\pm 100$ $\mu$ F		80%	ISM0124D15

## Notes

1. Input currents measured at nominal input voltage.

2. Maximum capacitive load is per output.

3. For optional water washable version, add suffix '-P' e.g. ISM0112S05-P.

4. Add suffix '-TR' for tape and reel. MOQ 200 pcs.

5. Standard tube quantity 10 pcs.

### Input

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Input Voltage Range	4.5		5.5	VDC	5 V nominal
	10.8		13.2		12 V nominal
	21.6		26.4		24 V nominal
Input Filter	Internal 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

### Output

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Output Voltage	5.0		30	VDC	See Models and Ratings table
Initial Set Accuracy		±1.0	±3.0	%	
Output Voltage Balance		±0.1	±1.0	%	For dual output with balanced loads
Minimum Load	2			%	See Models and Ratings table
Line Regulation		±1.2	±1.5	%/1%	Output changes by max of 1.5% for each 1% change in input voltage
Load Regulation			10	%	10% to 100%
Ripple & Noise			100	mV pk-pk	20 MHz bandwidth. Measured using 0.47 µF ceramic capacitor.
Short Circuit Protection					Continuous, with auto recovery
Maximum Capacitive Load					See Models and Ratings table
Temperature Coefficient			0.02	%/°C	

### General

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Efficiency		80		%	See Models and Ratings table
Isolation: Input to Output	4000			VAC	Reinforced, 2 x MOPP at 250 VAC working voltage
Leakage Current			2	µA	
Isolation Resistance	10 <sup>9</sup>			Ω	At 500 VDC
Isolation Capacitance		20		pF	
Switching Frequency		55		kHz	
Power Density			4.8	W/in <sup>3</sup>	
Mean Time Between Failure	4.7			MHrs	MIL-HDBK-217F, +25 °C GB
Lead-Free Reflow Solder Process	IPC/JEDEC J-STD-020D.1				
Case Material	Non conductive, black plastic. UL94V-0 rated. (Note: not suitable for water washing)				
Pin Material	Solder coated. Phosphor bronze.				
Weight		0.01 (4.2)		lb (g)	
Moisture Sensitivity Level	Level 2				IPC/JEDEC J-STD-020D.1

### Environmental

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Operating Temperature	-40		+95	°C	See Derating Curve.
Storage Temperature	-50		+125	°C	
Case Temperature			+105	°C	
Humidity			95	%RH	Non-condensing
Cooling					Natural convection

### Safety Approvals

Safety Agency	Safety Standard	Notes & Conditions
CB	IEC60601-1	Medical
UL	ANSI/AAMI ES60601-1	Medical

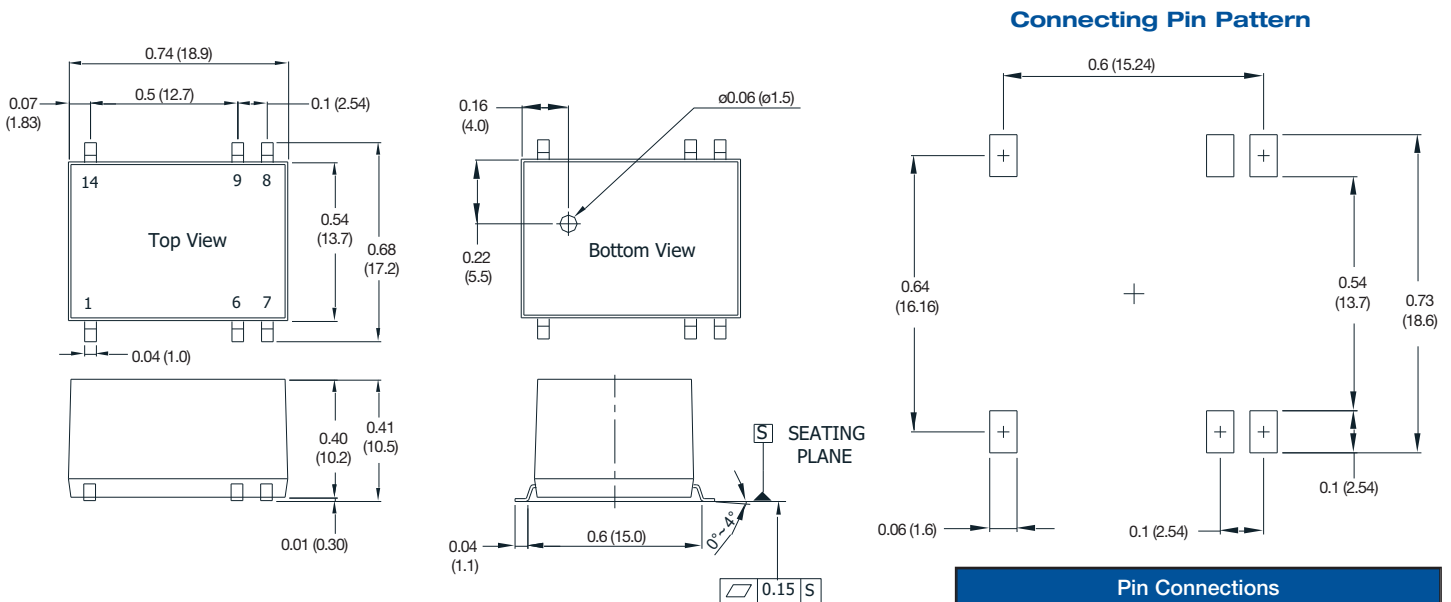
### EMC: Emissions

Phenomenon	Standard	Test Level	Notes & Conditions
Conducted	EN55011	Class A	See Application Notes

### EMC: Immunity

Phenomenon	Standard	Test Level	Criteria	Notes & Conditions
ESD	EN61000-4-2	±15 kV air discharge, ±8 kV contact	A	
Radiated	EN61000-4-3	10 V/m	A	
EFT/Burst	EN61000-4-4	±2 kV	A	
Surge	EN61000-4-5	±1 kV	A	
Conducted	EN61000-4-6	10 V rms	A	
Magnetic Fields	EN61000-4-8	30 A/m	A	

### Mechanical Details

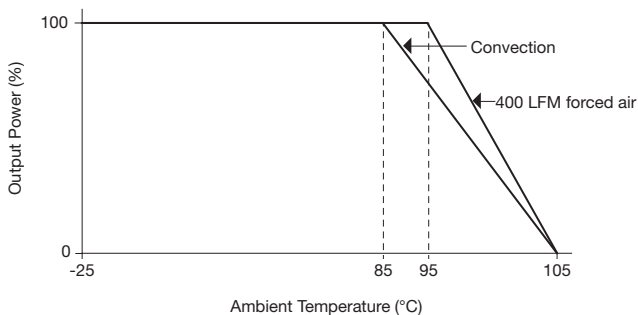


### Notes

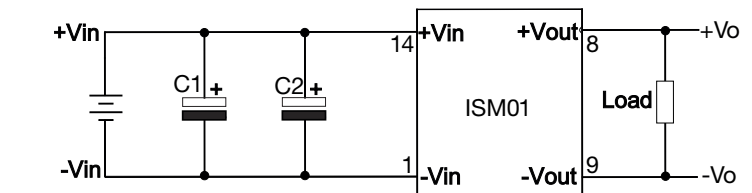
- All dimensions are in inches (mm)
- Weight: 0.01 lbs (4.2 g) approx.
- Tolerance: X.XX±0.02 (X.X±0.5)  
X.XXX±0.01 (X.XX±0.25)
- Pin Tolerance: ±0.002 (±0.05)

### Application Notes

#### Derating Curve



#### EMC Circuit for Class A



Model	C1	C2
5V	68µF/10V	N/A
12V	47µF/25V	47µF/25V
24V	22µF/35V	22µF/35V