

2W



The 2W ISM02 series is designed for medical applications with 1 x MOPP @ 300VAC, 4kVAC reinforced isolation and 2 μ A patient leakage current, it is housed in a SMD16 surface mount package. Featuring a $\pm 10\%$ input voltage range for 5, 12 & 24VDC nominal inputs, with regulated single outputs of 5, 12 & 15VDC, dual outputs ± 12 & ± 15 VDC.

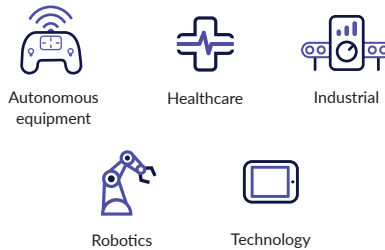
Short circuit protection is standard. Operating temperature range is from -20°C to +105°C, with derating from +85°C.



Features

- ▶ Unregulated single & dual outputs
- ▶ $\pm 10\%$ input range
- ▶ Single outputs 5.0 to 15VDC
- ▶ Dual outputs ± 12 & ± 15 VDC
- ▶ SMD16 package
- ▶ International medical safety approvals
- ▶ 4.0kVAC reinforced isolation
- ▶ 1 x MOPP @ 300VAC
- ▶ 2 μ A patient leakage current
- ▶ Tape & reel option
- ▶ Water washable option
- ▶ Operating temperature -25°C to +105°C
- ▶ Full power to +60°C
- ▶ 3 year warranty

Applications



Dimensions

24.0 x 18.1 x 9.3mm (0.94" x 0.71" x 0.36")

Documentation

For further information click the link or scan the code

→ xppower.com



Models & ratings

Model number ^(3,4,5)	Input voltage	Output voltage	Output current		Input current		Maximum capacitive load ⁽²⁾	Efficiency ⁽⁶⁾
			Minimum	Maximum	No load	Full load		
ISM0205S05	5VDC (4.5-5.5VDC)	5.0VDC	400mA	8.0mA	90mA	605mA	330 μ F	72%
ISM0205S12		12.0VDC	165mA	3.0mA		600mA	330 μ F	72%
ISM0205S15		15.0VDC	133mA	2.5mA		605mA	330 μ F	72%
ISM0205D12		± 12.0 VDC	± 83 mA	± 1.5 mA		555mA	± 100 μ F	72%
ISM0205D15		± 15.0 VDC	± 66 mA	± 1.0 mA		540mA	± 100 μ F	73%

Continued on page 2

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'.
4. Add suffix '-TR' for tape and reel. MOQ 200 pcs.
5. Standard tube quantity 10 pcs.
6. Measured at maximum load.

Models & ratings

Model number ^(3,4,5)	Input voltage	Output voltage	Output current		Input current		Maximum capacitive load ⁽²⁾	Efficiency ⁽⁶⁾
			Minimum	Maximum	No load	Full load		
ISM0212S05	12VDC (10.8-13.2VDC)	5.0VDC	400mA	8.0mA	40mA	255mA	330µF	70%
ISM0212S12		12.0VDC	165mA	3.0mA		250mA	330µF	72%
ISM0212S15		15.0VDC	133mA	2.5mA		250mA	330µF	72%
ISM0212D12		±12.0VDC	±83mA	±1.5mA		225mA	±100µF	74%
ISM0212D15		±15.0VDC	±66mA	±1.0mA		220mA	±100µF	75%
ISM0224S05	24VDC (21.6-26.4VDC)	5.0VDC	400mA	8.0mA	30mA	125mA	330µF	68%
ISM0224S12		12.0VDC	165mA	3.0mA		125mA	330µF	68%
ISM0224S15		15.0VDC	133mA	2.5mA		125mA	330µF	68%
ISM0224D12		±12.0VDC	±83mA	±1.5mA		110mA	±100µF	74%
ISM0224D15		±15.0VDC	±66mA	±1.0mA		110mA	±100µF	75%

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'.
4. Add suffix '-TR' for tape and reel. MOQ 200 pcs.
5. Standard tube quantity 10 pcs.
6. Measured at maximum load.

Input

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Input voltage range	4.5		5.5	VDC	5VDC nominal
	10.8		13.2		12VDC nominal
	21.6		26.4		24VDC nominal
Input filter	Internal Pi type filter				
Input surge			9	VDC for 1s	5VDC models
			18		12VDC models
			30		24VDC models

Output

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Output voltage	5		30	VDC	See models and ratings table
Initial set accuracy		±2	±4	%	
Output voltage balance		±0.1	±1	%	For dual output with balanced loads
Minimum load				A	See models and ratings table
Line regulation		±1.2	±1.5	%	
Load regulation			10	%	From 20% to 100% load. 5VDC output version is 12% max
Cross regulation			±5	%	On dual output models when one load is varied between 25% and 100% and other is fixed at 100%
Transient response		3	5	% deviation	Recovery within 1% in less than 250µs for a 25% load change.
Ripple & noise			150	mV pk-pk	20MHz bandwidth. Measured using 0.47µF ceramic capacitor.
Short circuit protection			0.5	s	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		72		%	See models and ratings table
Isolation: input to output	4000			VAC	60s, reinforced isolation at 300VAC, 1 x MOPP/2 x MOOP
	6000			VDC	1s
Leakage current			2	μA	240VAC, 60Hz
Isolation resistance	10 ⁹			Ω	At 500VDC
Isolation capacitance		15	20	pF	
Switching frequency	50	80	100	kHz	
Power density			0.74 (12.2)	W/cm ³ (W/in ³)	
Mean time between failure		2		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. Not suitable for water washing.				
Pin material	Solder-coated phosphor bronze				
Weight		3.75 (0.01)		g (lb)	
Moisture sensitivity level	Level 2, IPC/JEDEC J-STD-020D.1				

Environmental

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Operating temperature	-40		+105	°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	Standard	Notes & conditions
UL	ANSI AMMI ES60601-1, UL/cUL60950-1, UL/cUL62368-1	Medical
TUV	EN60601-1	Medical
CB	IEC60601-1	Medical
CE	Meets all applicable directives	
UKCA	Meets all applicable legislation	

Emissions - EMC

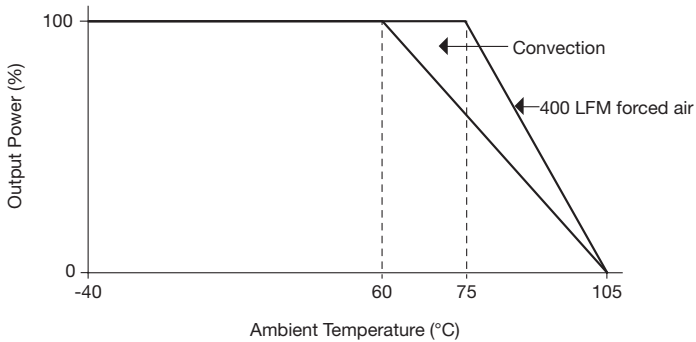
Phenomenon	Standard	Test level	Notes & conditions
Conducted	EN55011	Class A	See application note

Immunity - EMC

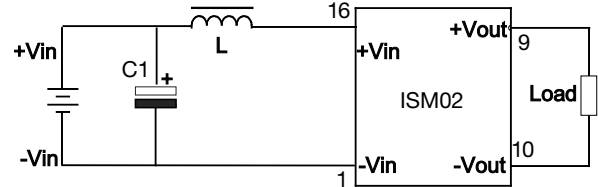
Phenomenon	Standard	Test level	Criteria	Notes & conditions
ESD immunity	EN61000-4-2	±15kV/±8kV	A	Air discharge/contact
Radiated immunity	EN61000-4-3	10Vrms	A	
EFT/Burst	EN61000-4-4	±2kV	A	
Surge	EN61000-4-5	±1kV	A	
Conducted immunity	EN61000-4-6	6kVrms	A	
Magnetic fields	EN61000-4-8	30A/m	A	

Application notes

Derating curve

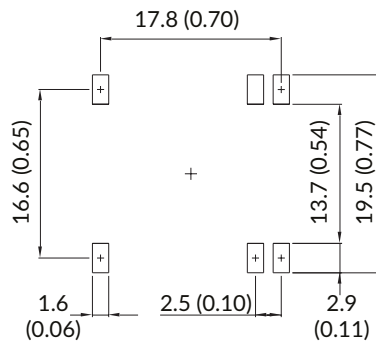
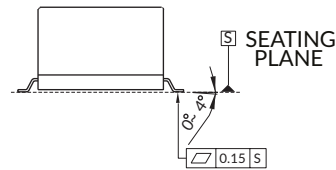
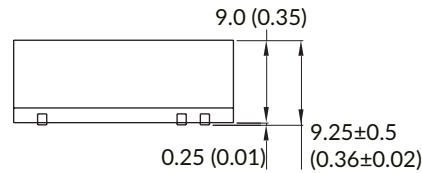
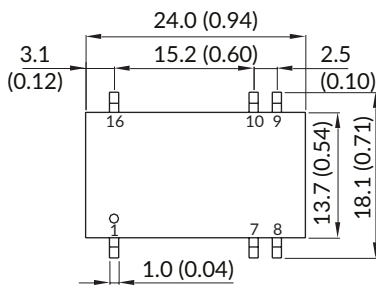


EMC circuit for Class A



C1	L
2.2μF/150VDC	88μH

Mechanical details



Pin connections		
Pin	Single	Dual
1	-Vin	-Vin
7	No Connection	No Connection
8	No Connection	Common
9	+Vout	+Vout
10	-Vout	-Vout
16	+Vin	+Vin

Notes:

- All dimensions are in mm (inches)
- Weight: 3.75 (0.01) g (lb) approx.
- Pin tolerance: x.x ±0.25 (x.xx ±0.01), x.xx ±0.13 (x.xxx ±0.005)
- Pin tolerance: ±0.05 (±0.002)