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IMM02 series

XP Power

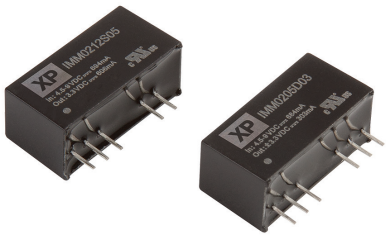
2W

DC-DC converters

The 2W IMM02 series is designed for medical applications with 1 x MOPP @250VAC 1.5kVAC isolation and 2µA patient leakage current, it is housed in a SIP8 PCB mount plastic case.

Featuring a 2:1 input voltage range of 4.5 to 9VDC or 9 to 18VDC with regulated single outputs of 3.3, 5, 12 & 15VDC, dual outputs ±3.3, ±5, ±12 & ±15VDC.

Remote On/Off, short circuit & overload protection are standard. Operating temperature range is from -20°C to +100°C, with derating above +60°C.



Features

- Regulated single & dual outputs
- 2:1 input range
- Single outputs 3.3 to 15VDC
- Dual outputs ±3.3 to ±15VDC
- SIP8 package
- International medical safety approvals
- 1.5kVAC isolation
- 1 x MOPP at 250VAC
- 2µA patient leakage current
- -20°C to +100°C operating temperature
- Full power to +60°C
- 3 year warranty

Applications

Autonomous equipment

Healthcare

Industrial

Robotics

Technology

Dimensions

21.85 x 9.2 x 11.1mm (0.86" x 0.36" x 0.44")

Documentation

For further information click the link or scan the code

→ xppower.com

Models & ratings

Model number	Input voltage	Output voltage	Output current	Input current		Maximum capacitive load
				No load	Full load	
IMM0205S3V3	4.5-9.0VDC	3V3	606mA	75mA	694mA	2200µF
IMM0205S05		5VDC	400mA	75mA	626mA	2200µF
IMM0205S12		12VDC	167mA	75mA	617mA	470µF
IMM0205S15		15VDC	133mA	75mA	617mA	470µF
IMM0205D03		±3.3VDC	±303mA	55mA	684mA	±1000µF
IMM0205D05		±5VDC	±200mA	55mA	654mA	±1000µF
IMM0205D12		±12VDC	±83mA	75mA	601mA	±220µF
IMM0205D15		±15VDC	±66mA	75mA	601mA	±220µF

Continued on page 2

Notes:

Input currents measured at low input voltage.

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Models & ratings

Model number	Input voltage	Output voltage	Output current	Input current		Maximum capacitive load
				No load	Full load	
IMM0212S3V3	9.0-18.0VDC	3V3	606mA	25mA	317mA	2200µF
IMM0212S05		5VDC	400mA	25mA	289mA	2200µF
IMM0212S12		12VDC	167mA	25mA	285mA	470µF
IMM0212S15		15VDC	133mA	25mA	289mA	470µF
IMM0212D03		±3.3VDC	±303mA	55mA	317mA	±1000µF
IMM0212D05		±5VDC	±200mA	55mA	292mA	±1000µF
IMM0212D12		±12VDC	±83mA	30mA	285mA	±220µF
IMM0212D15		±15VDC	±66mA	30mA	281mA	±220µF

Notes:

Input currents measured at nominal input voltage.

Input

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Input voltage range	4.5		9	VDC	5 VDC nominal
	9.0		18		12VDC nominal
Inrush let-through energy			0.05	A^2s	
Input reflected ripple		30		mA pk-pk	Through 12µH inductor and 47µF capacitor
Input surge			16	VDC for 100ms	5VDC models
			25		12VDC models

Output

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Output voltage	3.3		15	VDC	See models and ratings table
Initial set accuracy			±2	%	
Minimum load	No minimum load required				
Line regulation			±0.5	%	From 0% to full load
Load regulation			2.0	%	From 10% to full load (2% from 0% to 10% load)
Cross regulation			±5	%	On dual output models, when one output is at 25% load and other is varied from 10% load to full load
Ripple & noise			1	% pk-pk	20MHz bandwidth.Measured using 0.1µF ceramic capacitor
Short circuit protection					Continuous fold-back mode, with auto recovery
Maximum capacitive load	See models and ratings table				
Temperature coefficient			0.03	%/°C	
Overload protection	135	165	210	%	Of nominal output current at nominal input voltage
Remote on/off	Output is on if remote on/off (pin 3) is open Output turns off if 2-4mA is applied to remote on/off (pin 3)				

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General

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Efficiency	64	78	79	%	Typical value is for IMM0212S12
Isolation: input to output	1500			VAC	At 250VAC working voltage, 1 x MOPP
Switching frequency	175		1000	kHz	May enter burst mode frequency of 12-28kHz at light load
Isolation resistance	10^9			Ω	
Isolation capacitance			27	pF	
Power density			0.8 (14.0)	W/cm³ (W/in³)	
Mean time between failure	1			Mhrs	MIL-HDBK-217F, +25°C GB
Weight		4.2 (0.009)		g (lb)	

Environmental

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Operating temperature	-20		+100	°C	Derate from 100% load at +60°C to 50% at +80°C
Storage temperature	-40		+125	°C	
Case temperature			+105	°C	
Humidity			95	%RH	Non-condensing
Cooling	Natural convection				

Emissions - EMC

Phenomenon	Standard	Test level	Notes & conditions
Conducted	EN55011	Class B	See application notes.
Radiated	EN55011	Class B	

Immunity - EMC

Phenomenon	Standard	Test level	Criteria	Notes & conditions
ESD immunity	EN61000-4-2	±15kV	A	Air discharge
Radiated immunity	EN61000-4-3	10V/m	A	
EFT/burst	EN61000-4-4	2kV	A	External input filter required, see applications note
Surge	EN61000-4-5	2kV	A	External input filter required, see applications note
Conducted immunity	EN61000-4-6	10Vrms	A	
Magnetic fields	EN61000-4-8	30A/m	A	

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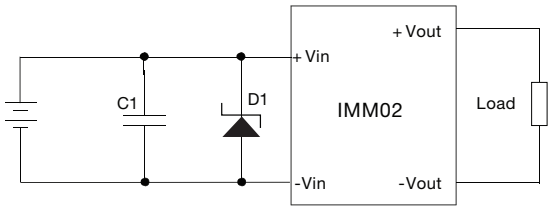
Safety approvals

Safety agency	Standard	Notes & conditions
UL	ANSI/AMMI ES60601-1	
CSA	CSA C22.2 No. 60601-1	
EN	EN60601-1	
CB	IEC60601-1	
CE	Meets all applicable directives	
UKCA	Meets all applicable legislation	

Application notes

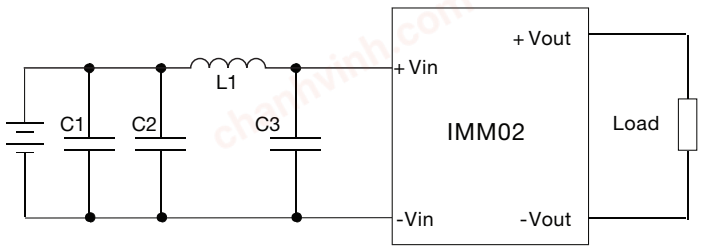
EFT and surge filter

C1 is 220µF, 100V dcelectrolytic capacitor
D1 is 18VDC, 3kW TVS for 5VDC input or 28VDC, 3kW TVS for 12VDC input



EMI filter conducted emissions

C2 & C3 are 10µF, 35VDC multilayer ceramic chip capacitors, placed as close as possible to the input pins
L1 is 12µH inductor
C1 is 200µF, 100VDC Electrolytic Capacitor for 5VDC input version only

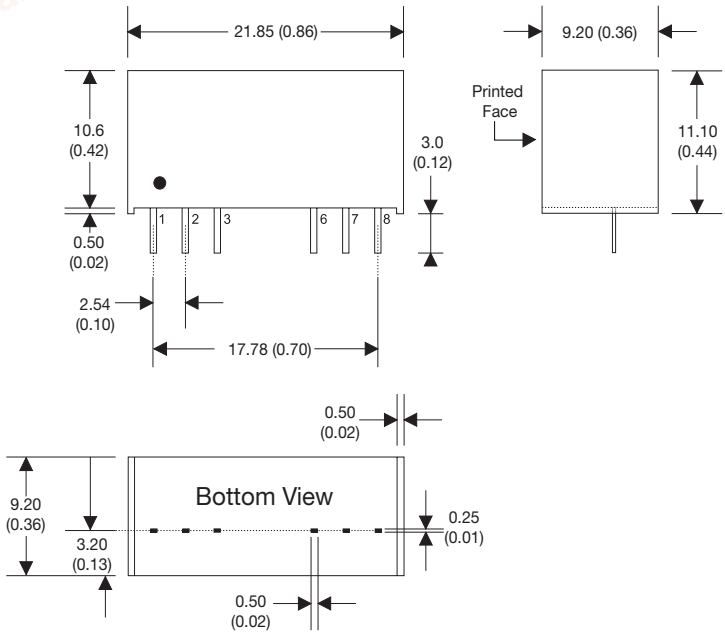


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Mechanical details



Pin connections		
Pin	**Single**	**Dual**
1	-Vin	-Vin
2	+Vin	+Vin
3	Remote On/Off	Remote On/Off
6	+Vout	+Vout
7	-Vout	Common
8	No Pin	-Vout

Notes:

1. All dimensions are in mm (inches)
2. Weight: 4.2 (0.009) g (lb) approx.
3. Pin diameter: 0.5 ±0.05 (0.02 ±0.002)
4. Pin pitch tolerance: ±0.35 (±0.014)
5. Case tolerance: ±0.5 (±0.02)