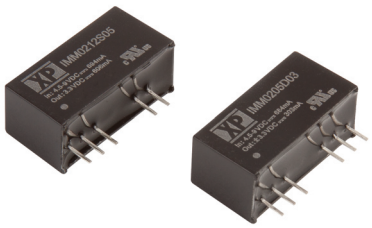
IMM02 Series

DC-DC Converter

POWER SOLVE

2 Watts

- World Wide Medical Approvals
- Single and Dual Outputs
- SIP8 Package
- -20 °C to +100 °C Operation
- Full Load at 60 °C Ambient
- 1500 VAC Isolation
- 1 x MOPP at 250VAC
- MTBF 1 MHrs
- 3 Year Warranty



Dimensions:

IMM02:
0.86 x 0.36 x 0.44" (21.85 x 9.2 x 11.1 mm)

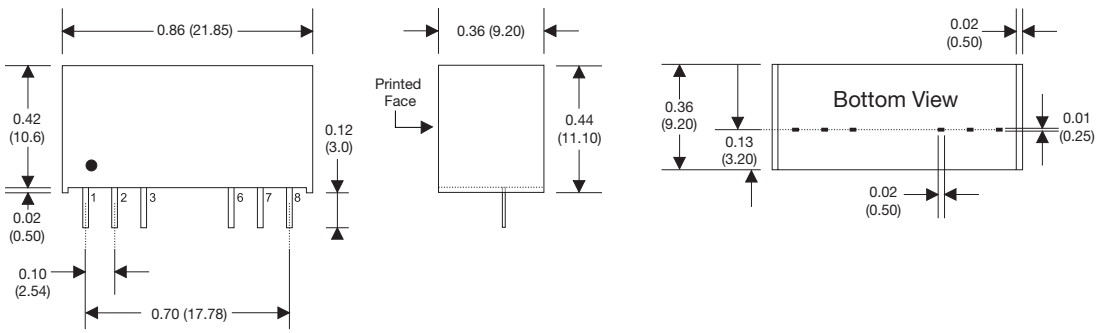
Models & Ratings

Input Voltage	Output Voltage	Output Current	Input current		Maximum capacitive load	Model Number
			No Load	Full Load		
4.5-9.0 V	3V3	606 mA	75 mA	694 mA	2200 µF	IMM0205S3V3
	5 V	400 mA	75 mA	626 mA	2200 µF	IMM0205S05
	12 V	167 mA	75 mA	617 mA	470 µF	IMM0205S12
	15 V	133 mA	75 mA	617 mA	470 µF	IMM0205S15
	±3.3 V	±303 mA	55 mA	684 mA	±1000 µF	IMM0205D03
	±5 V	±200 mA	55 mA	654 mA	±1000 µF	IMM0205D05
	±12 V	±83 mA	75 mA	601 mA	±220 µF	IMM0205D12
	±15 V	±66 mA	75 mA	601 mA	±220 µF	IMM0205D15
9.0-18.0 V	3V3	606 mA	25 mA	317 mA	2200 µF	IMM0212S3V3
	5 V	400 mA	25 mA	289 mA	2200 µF	IMM0212S05
	12 V	167 mA	25 mA	285 mA	470 µF	IMM0212S12
	15 V	133 mA	25 mA	289 mA	470 µF	IMM0212S15
	±3.3 V	±303 mA	55 mA	317 mA	±1000 µF	IMM0212D03
	±5 V	±200 mA	55 mA	292 mA	±1000 µF	IMM0212D05
	±12 V	±83 mA	30 mA	285 mA	±220 µF	IMM0212D12
	±15 V	±66 mA	30 mA	281 mA	±220 µF	IMM0212D15

Notes

Input currents measured at low input voltage.

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 inches (mm)
2. Weight: 0.009 lbs (4.2 g) approx.
3. Pin diameter: 0.02±0.002 (0.5±0.05)
4. Pin pitch tolerance: ±0.014 (±0.35)
5. Case tolerance: ±0.02 (±0.5)

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Input

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Input Voltage Range	4.5		9	VDC	5 V nominal
	9		18	VDC	12 V nominal
Inrush Current			0.05	A^2s	
Input Reflected Ripple Current		30		mA pk-pk	Through 12 µH inductor and 47 µF capacitor
Input Surge			16	VDC for 100 ms	5 V models
			25	VDC for 100 ms	12 V 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	0			%	
Line Regulation			±0.5	%	
Load Regulation			2.0	%	From 0% to full 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	20 MHz bandwidth. Measured using 0.1 µF 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 2-4 mA is applied to remote on/off (pin 3)				

General

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Efficiency	64	78	79	%	Typical value is for IMM0212S12
Isolation: Input to Output	1500			VAC	At 250 VAC working voltage, 1 x MOPP
Switching Frequency	175		1000	kHz	May enter burst mode frequency of 12-28 kHz at light load
Isolation Resistance	10^9			Ω	
Isolation Capacitance			27	pF	
Power Density			14	W/in^3	
Mean Time Between Failure	1			MHrs	MIL-HDBK-217F, +25 °C GB
Weight		0.009 (4.2)		lb (g)	

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

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EMC: Emissions

Phenomenon	Standard	Test Level	Notes & Conditions
Conducted	EN55011	Class B	See Application Note
Radiated	EN55011	Class B	

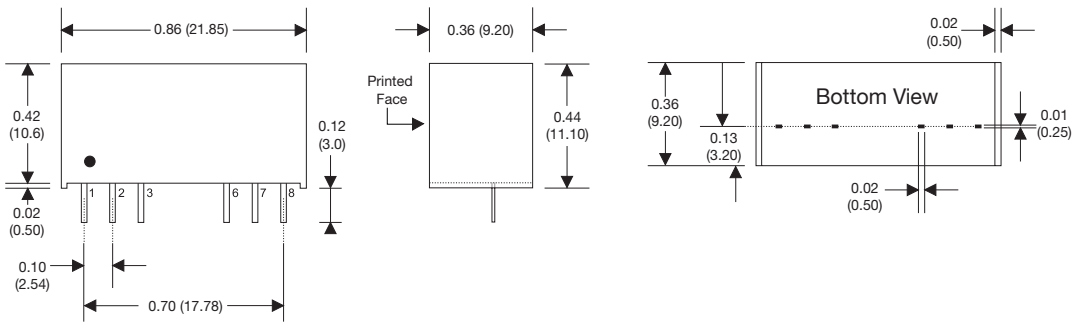
EMC: Immunity

Phenomenon	Standard	Test Level	Criteria	Notes & Conditions
ESD Immunity	EN61000-4-2	±15 kV	A	Air Discharge
Radiated Immunity	EN61000-4-3	10 Vrms	A	
EFT/Burst	EN61000-4-4	2 kV	A	External input filter required, see applications note
Surge	EN61000-4-5	2 kV	A	External input filter required, see applications note
Conducted Immunity	EN61000-4-6	10 V rms	A	
Magnetic Fields	EN61000-4-8	30 A/m	A	

Safety Approvals

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

Mechanical Details



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Notes

1. All dimensions are in inches (mm)
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3. Pin diameter: 0.02±0.002 (0.5±0.05)
4. Pin pitch tolerance: ±0.014 (±0.35)
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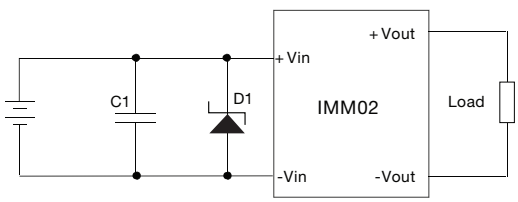
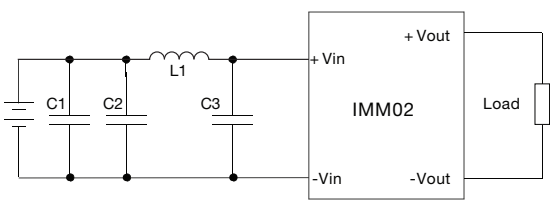
Application Note

External Filter for Surge and EFT



C1 is 220 µF, 100 V electrolytic capacitor
D1 is 18 V, 3 kW TVS for 5 V input or 28 V, 3 kW TV5 for 12 V input

EMI Filter Conducted Emissions



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

Specifications subject to change without notice.

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