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IMB01 series

XP Power

1W

DC-DC converters

Designed for medical applications, the IMB01 series offers a 2 x MOPP and IEC60601-1 compliant solution.

Included in the compact SIP7 package is short circuit protection, low leakage current of 2µA and full load operation to +85°C.



Features

- Unregulated single output
- ±10% input range
- Single outputs 5.0 to 15VDC
- SIP7 package
- World wide medical approvals
- 4kVAC reinforced isolation
- 2 x MOPP at 300VAC
- 2µA patient leakage current
- -40°C to +105°C operation
- Full load at +85°C ambient
- 3 year warranty

Applications

Autonomous equipment

Industrial

Technology

Dimensions

22.0 x 12.5 x 7.5mm (0.87 x 0.49 x 0.30")

Documentation

For further information click the link or scan the code

→ xppower.com

Models & ratings

Model number	Input voltage	Output voltage	Output current	Efficiency	Input current		Maximum capacitive load
					No load	Full load	
IMB0105S05	5VDC (4.5-5.5VDC)	5.0VDC	200mA	79%	50mA	253mA	220µF
IMB0105S12		12.0VDC	84mA	80%		252mA	
IMB0105S15		15.0VDC	68mA	81%		252mA	
IMB0112S05	12VDC (10.8-13.2VDC)	5.0VDC	200mA	79%	35mA	105mA	220µF
IMB0112S12		12.0VDC	84mA	81%		104mA	
IMB0112S15		15.0VDC	68mA	79%		108mA	
IMB0124S05	24VDC (21.6-26.4VDC)	5.0VDC	200mA	76%	20mA	55mA	220µF
IMB0124S12		12.0VDC	84mA	79%		53mA	
IMB0124S15		15.0VDC	68mA	79%		54mA	

Notes:

Input currents measured at nominal input voltage.

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Input

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Input voltage range	4.5	5	5.5	VDC	5VDC nominal
	10.8	12	13.2		12VDC nominal
	21.6	24	26.4		24VDC nominal
Input filter	Internal capacitor				
Input surge	-0.7		9	VDC for 100ms	5VDC models
	-0.7		18		12VDC models
	-0.7		30		24VDC models

Output

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Output voltage	5		15	VDC	See models and ratings table
Patient leakage current			2	µA	At 70% load
Initial set accuracy		±1	±3	%	% V nominal
Minimum load	10			%	Minimum load required for regulation
Line regulation		±1.2	±1.5	%	From minimum to maximum input
Load regulation			±10	%	From 10% to full load
Ripple & noise			75	mV pk-pk	20MHz bandwidth. Measured using 0.1µF ceramic capacitor
Short circuit protection	Continuous, auto recovery				
Maximum capacitive load	See models and ratings table				
Temperature coefficient		±0.01	±0.02	%/°C	

General

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Efficiency		80		%	
Isolation: input to output	4000			VAC	60s reinforced, 300 Vrms 2 x MOPP
Switching frequency		60		kHz	May enter burst mode frequency of 12-28kHz at light load
Isolation resistance	10^9			Ω	500VDC
Isolation capacitance		20		pF	100kHz, 1V
Power density			0.47 (7.8)	W/cm³ (W/in³)	
Mean time between failure	4.3			Mhrs	MIL-HDBK-217F, +25°C GB
Weight		4.1 (0.009)		g (lb)	
Case material	Non conductive black plastic, UL94V-0 rated				
Pin Material	Tinned copper				

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Environmental

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Operating Altitude			5000	m	
Transport Altitude			10,000	m	
Operating Temperature	-40		+105	°C	Derate linearly from 100% load at +85°C to 0% at +105°C
Storage Temperature	-50		+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 A	See application notes.
Radiated	EN55011	Class A	

Immunity - EMC

Phenomenon	Standard	Test level	Criteria	Notes & conditions
Medical Device EMC	IEC60601-1-2	Ed 4.0:2014	As below	
ESD Immunity	EN61000-4-2	Air ±15kV Contact ±8kV	A	Air discharge
Radiated Immunity	EN61000-4-3	10V/m	A	80% mod, 80MHz - 2.7GHz plus discrete communcation proximity field frequencies
EFT/Burst	EN61000-4-4	2kV	A	External input filter required, see application note
Surge	EN61000-4-5	2kV	A	External input filter required, see application note
Conducted Immunity	EN61000-4-6	10Vrms	A	
Magnetic Fields	EN61000-4-8	30A/m	A	

Safety approvals

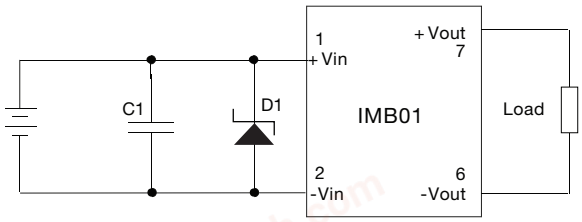
Safety agency	Standard	Notes & conditions
UL	ANSI/AMMI ES60601-1	2 x MOPP
CSA	CAN/CSA-C22.2 No.60601-1	
CE	Meets all applicable directives	
UKCA	Meets all applicable legislation	

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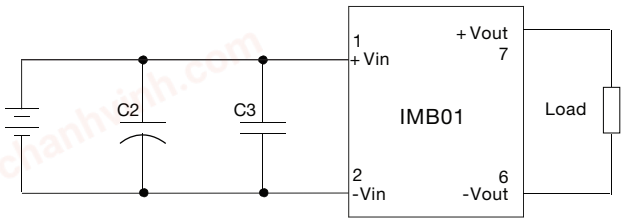
Application notes

External filter for surge and EFT



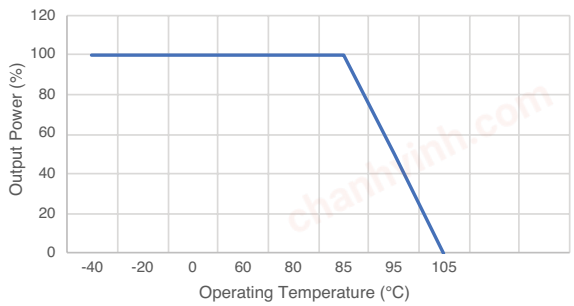
Part Number	C1	ZD1
IMB0105	330µF/25VDC, CHEMI-CON KY Series	1.5KE7.5CA (TVS Diode)
IMB0112	1800µF/25VDC, CHEMI-CON KY Series	
IMB0124	470µF/50VDC, CHEMI-CON KY Series	

EMI filter conducted emissions

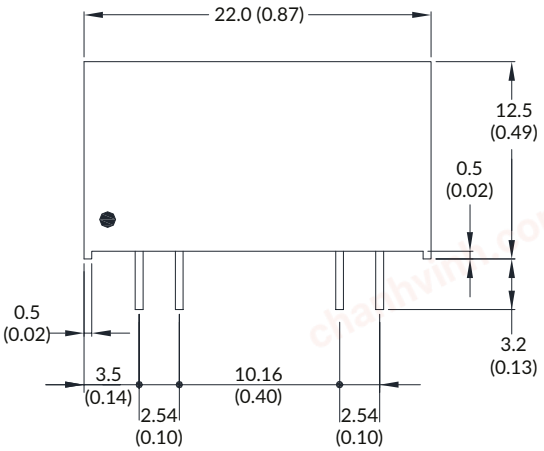


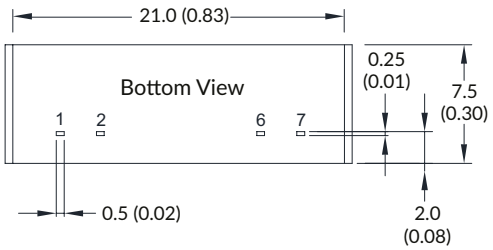
Part Number	C2	C3
IMB0105	47µF/16VDC, 1210 X5R	
IMB0112	47µF/25VDC, 1210 X5R	
IMB0124	10µF/50VDC, 1210 X7R	10µF/ 50VDC, 1210 XZR

Operating Temperature



Mechanical details





Pin	Single
1	+Vin
2	-Vin
6	-Vout
7	+Vout

Notes:

1. All dimensions are in mm (inches)
2. Weight: 4.1 (0.009) g (lb) approx.
3. Pin diameter: 0.5 ±0.05 (0.02 ±0.002)
3. Pin pitch tolerance: ±0.35 (±0.014)
5. Case tolerance: ±0.5 (±0.02)