chanhvinh.com

IMA01 series

XP Power

1W

DC-DC converters

The 1W IMA01 series is designed for medical applications with 2 x MOPP @125VAC, 4kVAC isolation and 2µA patient leakage current, it is housed in a SIP7 PCB mount plastic case.

Featuring a ±10% input voltage range for 5, 12, 15 & 24VDC nominal inputs, with single outputs of 3.3, 5, 9, 12 & 15VDC, dual outputs ±3.3, ±5, ±9, ±12 & ±15VDC.

Short circuit protection is standard. Operating temperature range is from -40°C to +75°C, with no derating.



Features

- Unregulated single & dual outputs
- ±10% input range
- Single outputs 3.3 to 15VDC
- Dual outputs ±3.3 to ±15VDC
- SIP7 package
- International medical safety approvals
- 4.0kVAC isolation
- 1 x MOPP @250VAC
- 2 x MOPP @125VAC
- 2µA patient leakage current
- -40°C to +75°C operating temperature
- Full power to +75°C
- 3 year warranty

Applications

Autonomous equipment

Healthcare

Industrial

Robotics

Technology

Dimensions

19.5 x 9.2 x 11.1mm (0.77" 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	Efficiency	Input current		Maximum capacitive load
					No load	Full load	
IMA0105S3V3	4.5-5.5VDC	3V3	300mA	70%	50mA	285mA	1000µF
IMA0105S05		5VDC	200mA	77%	50mA	260mA	470µF
IMA0105S09		9VDC	111mA	78%	50mA	255mA	470µF
IMA0105S12		12VDC	83.3mA	80%	50mA	250mA	220µF
IMA0105S15		15VDC	66.7mA	77%	60mA	260mA	220µF
IMA0105D03		±3V3	±150mA	70%	50mA	285mA	±470µF
IMA0105D05		±5VDC	±100mA	77%	50mA	260mA	±220µF
IMA0105D09		±9VDC	±55.5mA	78%	50mA	255mA	±220µF
IMA0105D12		±12VDC	±41.6mA	80%	50mA	250mA	±100µF
IMA0105D15		±15VDC	±33.3mA	77%	60mA	260mA	±100µF

Continued on page 2

Notes:

Input currents measured at nominal input voltage.

chanhvinh.com

IMA01 series

DC-DC converters

Models & ratings

Model number	Input voltage	Output voltage	Output current	Efficiency	Input current		Maximum capacitive load
					No load	Full load	
IMA0112S3V3	10.8-13.2VDC	3V3	300mA	75%	25mA	111mA	1000µF
IMA0112S05		5VDC	200mA	75%	30mA	111mA	470µF
IMA0112S09		9VDC	111mA	76%	30mA	110mA	470µF
IMA0112S12		12VDC	83.3mA	77%	30mA	108mA	220µF
IMA0112S15		15VDC	66.7mA	75%	30mA	111mA	220µF
IMA0112D03		±3V3	±150mA	75%	25mA	111mA	±470µF
IMA0112D05		±5VDC	±100mA	75%	30mA	111mA	±220µF
IMA0112D09		±9VDC	±55.5mA	76%	30mA	110mA	±220µF
IMA0112D12		±12VDC	±41.6mA	77%	30mA	108mA	±100µF
IMA0112D15		±15VDC	±33.3mA	75%	30mA	111mA	±100µF
IMA0115S3V3	13.5-16.5VDC	3V3	300mA	73%	15mA	91mA	1000µF
IMA0115S05		5VDC	200mA	72%	25mA	93mA	470µF
IMA0115S09		9VDC	111mA	74%	25mA	90mA	470µF
IMA0115S12		12VDC	83.3mA	76%	25mA	88mA	220µF
IMA0115S15		15VDC	66.7mA	75%	25mA	89mA	220µF
IMA0115D03		±3V3	±150mA	73%	15mA	91mA	±470µF
IMA0115D05		±5VDC	±100mA	72%	25mA	93mA	±220µF
IMA0115D09		±9VDC	±55.5mA	74%	25mA	90mA	±220µF
IMA0115D12		±12VDC	±41.6mA	76%	25mA	88mA	±100µF
IMA0115D15		±15VDC	±33.3mA	75%	25mA	89mA	±100µF
IMA0124S3V3	21.6-26.4VDC	3V3	300mA	68%	20mA	62mA	1000µF
IMA0124S05		5VDC	200mA	68%	20mA	62mA	470µF
IMA0124S09		9VDC	111mA	72%	20mA	58mA	470µF
IMA0124S12		12VDC	83.3mA	72%	20mA	58mA	220µF
IMA0124S15		15VDC	66.7mA	72%	20mA	58mA	220µF
IMA0124D03		±3V3	±150mA	68%	20mA	62mA	±470µF
IMA0124D05		±5VDC	±100mA	68%	20mA	62mA	±220µF
IMA0124D09		±9VDC	±55.5mA	72%	20mA	58mA	±220µF
IMA0124D12		±12VDC	±41.6mA	72%	20mA	58mA	±100µF
IMA0124D15		±15VDC	±33.3mA	72%	20mA	58mA	±100µF

Notes:

Input currents measured at nominal input voltage.

Input

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Input voltage range	4.5		5.5	VDC	5 VDC nominal
	10.8		13.2		12VDC nominal
	13.5		16.5		15VDC nominal
	21.6		26.4		24VDC nominal
Input reflected ripple		20		mA pk-pk	Through 12µH inductor and 47µF capacitor
Input surge			7	VDC for 100ms	5VDC models
			15		12VDC models
			18		15VDC models
			28		24VDC models

chanhvinh.com

IMA01 series

DC-DC converters

Output

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Output voltage	3.3		30	VDC	See models and ratings table
Initial set accuracy			±5	%	At full load
Minimum load	10			%	Minimum load required to meet specified regulation
Line regulation			±1.2	%/1%	Output changes by max of 1.2% for each 1% change in input voltage
Load regulation		10		%	From 10% to full load, see application note
Cross regulation		±4		%	On dual output models, when one output is at 25% load and other is varied from 10% load to full load
Ripple & noise			150	mV pk-pk	20MHz bandwidth. Measured using 10µF electrolytic in parallel with 0.1µF ceramic capacitor
Short circuit protection					Continuous
Maximum capacitive load					See models and ratings table
Temperature coefficient			0.03	%/°C	

General

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Efficiency		75		%	
Isolation: input to output	4000			VAC	Designed to meet 1 x MOPP at 250VAC working voltage, 2 x MOPP at 125VAC working voltage
Patient leakage current			2	µA	
Isolation resistance	10^9			Ω	
Isolation capacitance		10	20	pF	
Switching frequency	50		100	kHz	
Power density			0.5 (8.2)	W/cm³ (W/in³)	
Mean time between failure	2.5			MHrs	MIL-HDBK-217F, +25°C GB
Weight		3.6 (0.008)		g (lb)	

Environmental

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Operating temperature	-40		+75	°C	No derating
Storage temperature	-40		+125	°C	
Case temperature			+100	°C	
Humidity	2.5		95	%RH	Non-condensing
Cooling	Natural convection				

chanhvinh.com

IMA01 series

DC-DC converters

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	10Vrms	A	
EFT/burst	EN61000-4-4	2kV	A	External components required, see applications note
Surge	EN61000-4-5	2kV	A	External components required, see applications note
Conducted immunity	EN61000-4-6	10Vrms	A	
Magnetic fields	EN61000-4-8	30A/m	A	

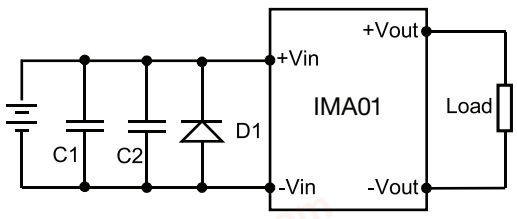
Safety approvals

Safety agency	Standard	Notes & conditions
UL	ANSI/AMMI ES60601-1	1 x MOPP at 250VAC
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

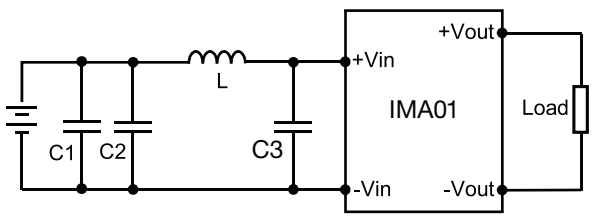
Input components (C1, C2, D1) are used to help meet surge test requirement for the module.



Product	C1	C2	D1
IMA0105XXXX	1000 µF/35VDC	330µF/50VDC	SMDJ9.0A
IMA0112XXXX	1000 µF/35VDC	330µF/50VDC	SMDJ13A
IMA0115XXXX	1000 µF/35VDC	330µF/50VDC	SMDJ18A
IMA0124XXXX	1000 µF/35VDC	330µF/50VDC	SMDJ28A

EMI Filter

Input filter components (C1,C2, C3 and L) are used to help meet conducted emissions requirements for the module. These components should be mounted as close as possible to the module, and all leads should be minimised to decrease radiated noise.



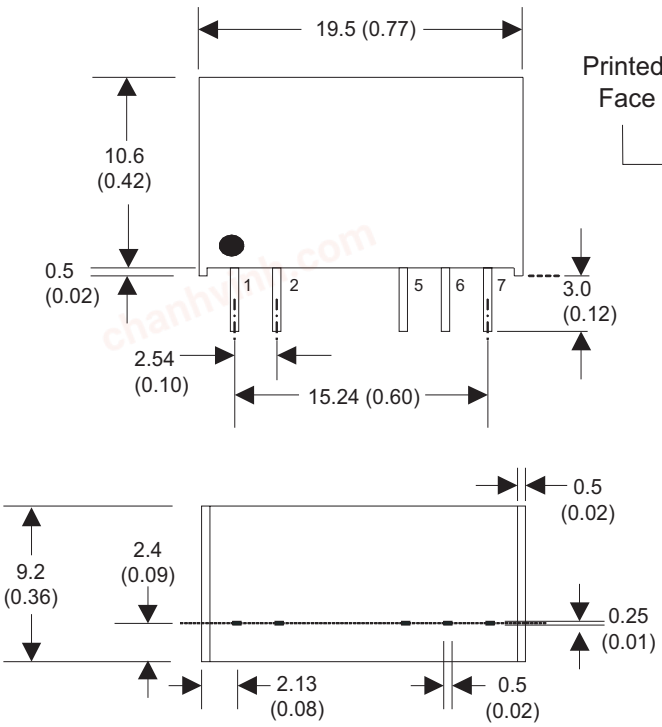
Product	C1	C2	C3	L
IMA0105XXXX	1206, 4.7µF/ 50VDC			6.8 µH
IMA0112XXXX		1206, 4.7µF/ 50VDC		
IMA0115XXXX				
IMA0124XXXX			1206, 4.7µF/ 50VDC	

chanhvinh.com

IMA01 series

DC-DC converters

Mechanical details



Pin connections		
Pin	**Single**	**Dual**
1	+Vin	+Vin
2	-Vin	-Vin
5	-Vout	-Vout
6	No Pin	Common
7	+Vout	+Vout

Notes:

1. All dimensions are in mm (inches)
2. Weight: 3.6 (0.008) 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)