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IMM05 series

XP Power

5W

DC-DC converters

The 5W IMM05 series is designed for medical applications with 1 x MOPP at 250VAC, 1.5kVAC isolation and 2µA patient leakage current, it is housed in a SIP9 PCB mount plastic case.

Featuring a 2:1 input voltage ranges of 4.5 to 9VDC, 9 to 18VDC or 18 to 36VDCwith regulated single outputs of 3.3, 5, 12 & 15VDC, dual outputs ±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 ±12 & ±15VDC
- SIP9 package
- International medical safety approvals
- 1.5kVAC isolation
- 1 x MOPP at 250VAC
- 2µA patient leakage current
- Remote On/Off
- -20°C to +100°C operating temperature
- Full power to +60°C
- 3 year warranty

Applications

Autonomous equipment

Healthcare

Industrial

Robotics

Technology

Dimensions

26.0 x 9.3 x 12.5mm (1.02” x 0.36” x 0.49”)

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(1)	
IMM0505S3V3	5VDC (4.5-9.0VDC)	3V3	1200mA	105mA	1100mA	2200µF
IMM0505S05		5VDC	1000mA		1372mA	1000µF
IMM0505S12		12VDC	416mA		1353mA	470µF
IMM0505S15		15VDC	333mA		1354mA	330µF
IMM0505D12		±12.0VDC	±208mA		1387mA	±220µF
IMM0505D15		±15.0VDC	±166mA		1383mA	±168µF

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Notes:

Full load input current measured at minimum 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(1)	
IMM0512S3V3	12VDC (9.0-18.0VDC)	3V3	1200mA	55mA	550mA	2200µF
IMM0512S05		5VDC	1000mA		678mA	1000µF
IMM0512S12		12VDC	416mA		676mA	470µF
IMM0512S15		15VDC	333mA		677mA	330µF
IMM0512D12		±12.0VDC	±208mA		676mA	±220µF
IMM0512D15		±15.0VDC	±166mA		675mA	±168µF
IMM0524S3V3	24VDC (18.0-36.0VDC)	3V3	1200mA	30mA	275mA	2200µF
IMM0524S05		5VDC	1000mA		339mA	1000µF
IMM0524S12		12VDC	416mA		334mA	470µF
IMM0524S15		15VDC	333mA		334mA	330µF
IMM0524D12		±12.0VDC	±208mA		338mA	±220µF
IMM0524D15		±15.0VDC	±166mA		337mA	±168µF

Notes:

Input currents measured at nominal input voltage.

Input

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Input voltage range	4.5		9	VDC	5VDC nominal
	9		18		12VDC nominal
	18		36		24VDC nominal
Inrush current		3.5		A	
		1.5			
		0.7			
Input reflected ripple		30		mA pk-pk	Through 12µH inductor and 47µF capacitor
Input surge			15	VDC for 100ms	5VDC models
			25		12VDC models
			50		24VDC models
Input current remote on/off		2.5		mA	Idle current at Vin nominal

Output

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Output voltage	3.3		30	VDC	See models and ratings table
Initial set accuracy			±2	%	At full load
Minimum load	No minimum load required				
Line regulation		±4	±0.5	%	From minimum to maximum input
Load regulation			±2.0	%	From 0-100% 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
Transient response deviation			4	%	Deviation recovering to within 1% in 500µs for 25% load change at 0.1Aµs
Ripple & noise			75	mV, 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		140		%	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). See application note.				

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General

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Efficiency		82		%	
Isolation: input to output	1500			VAC	At 250VAC working voltage, basic insulation, 1 x MOPP, 60s
Switching frequency	177		1300	kHz	
Isolation resistance	10^9			Ω	
Isolation capacitance			27	pF	
Leakage current			2	µA	
Power density			1.7 (28.0)	W/cm³ (W/in³)	
Mean time between failure	630			Khrs	MIL-HDBK-217F, +25°C GB
Weight		6.2 (0.0014)		g (lb)	
Case material	Non conductive black plastic				
Potting material	Epoxy (UL94V-0 rated)				
Pin material	C5191R-H matte tin coated				
Solder process			260	°C	Waveflow 1.5mm (0.05”) from case, 10 seconds max.

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 (operating and storage)	5		95	%RH	Non-condensing
Cooling	Natural convection				
Altitude			5000	m	Transport altitude 10km
Temperature coefficient		±0.03		%/°C	

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
Medical device EMC	EN60601-1-2	2015		
ESD immunity	EN61000-4-2	±15kV	A	Air discharge
Radiated immunity	EN61000-4-3	10Vrms	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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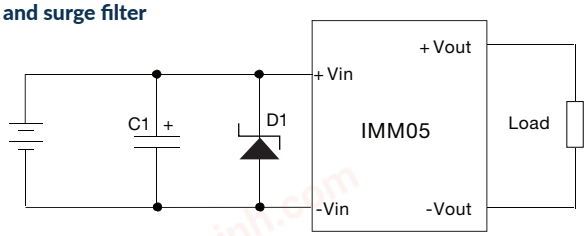
DC-DC converters

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	

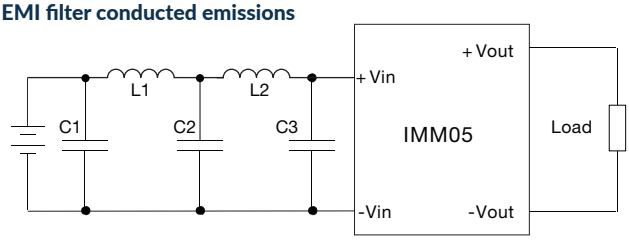
Application notes

EFT and surge filter



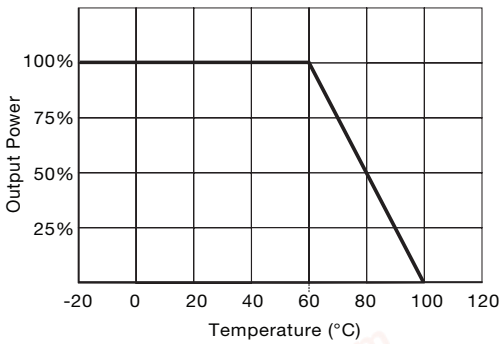
Model	C1	D1
IMM0505	220µF/100VDC	TVS, 16VDC, 3kW
IMM0512		TVS, 26VDC, 3kW
IMM0524		TVS, 51VDC, 3kW

EMI filter conducted emissions

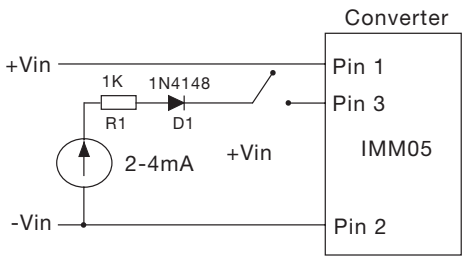


Model	C1	C2	C3	L1	L2
IMM0505	1210, 22µF/25VDC	1210, 22µF/25VDC	1210, 22µF/25VDC	10µH	10µH
IMM0512	2220, 22µF/50VDC	2220, 22µF/50VDC		12µH	12µH
IMM0524	2220, 22µF/50VDC	2220, 22µF/50VDC		22µH	22µH

Derating curve



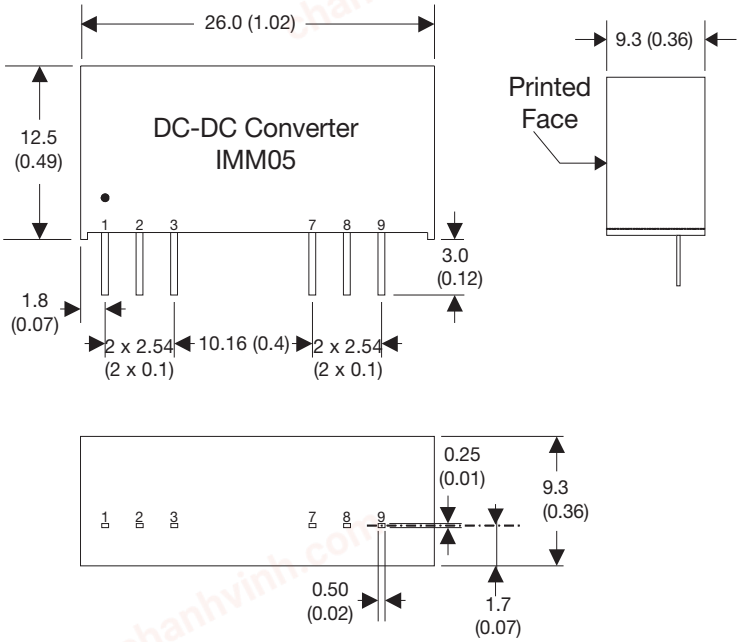
Remote on/off



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Mechanical details



Pin connections		
Pin	**Single**	**Dual**
1	+Vin	+Vin
2	-Vin	-Vin
3	Remote on/off	Remote on/off
7	No Pin	-Vout
8	-Vout	Common
9	+Vout	+Vout

Notes:

1. All dimensions are in mm (inches)
2. Weight: 6.2 (0.014) 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)
6. Stand-off tolerance: ±0.1 (±0.004)