JHM03 series

XP Power

3W

DC-DC converters

The 3W JHM03 series is designed for medical applications with 2 x MOPP 3kVAC reinforced isolation and 2µA patient leakage current, it is housed in a DIP24 PCB mount plastic case.

Featuring a 1.5:1 input voltage range of 10 to 17VDC or 20 to 30VDC with regulated single outputs of 5, 12 & 15VDC, dual outputs ±12 & ±15VDC, adjustable +/-10% with a trim resistor.

Short circuit, overload & over voltage protection are standard. Operating temperature range is from -20°C to +100°C, with derating above +60°C.

Features

- Regulated single & dual outputs
- 1.5:1 input range
- Single outputs 5.0 to 15VDC
- Dual outputs ±12 & ±15VDC
- DIP24 package
- International medical safety approvals
- 3.0kVAC reinforced isolation
- 2µA patient leakage current
- EN55011 Class A with no external components
- -20°C to +100°C operating temperature
- Full power to +60°C
- 3 year warranty

Applications

Healthcare

Home healthcare

Medical diagnostics

Dimensions

31.75 x 20.32 x 10.4mm (1.25” X 0.6” X 0.4”)

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		Max capacitive load	Efficiency[3]
				No Load[1]	Full Load[2]		
JHM0312S05	10-17VDC	5.0VDC	600mA	52mA	380mA	720µF	75%
JHM0312S12		12.0VDC	250mA	64mA	370mA	300µF	77%
JHM0312S15		15.0VDC	200mA	64mA	370mA	240µF	78%
JHM0312D12		±12.0 VDC	±125mA	66mA	400mA	±140µF	80%
JHM0312D15		±15.0 VDC	±100mA	85mA	400mA	±120µF	80%

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Notes:

1. Input current measured at nominal input voltage.
2. Input current measured at lowest input voltage.
3. Typical values.

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Models & ratings

Model number	Input voltage	Output voltage	Output current	Input current		Max capacitive load	Efficiency[3]
				No Load[1]	Full Load[2]		
JHM0324S05	20-30VDC	5.0VDC	600mA	47mA	210mA	720µF	74%
JHM0324S12		12.0VDC	250mA	42mA	200mA	300µF	77%
JHM0324S15		15.0VDC	200mA	29mA	190mA	240µF	81%
JHM0324D12		±12.0 VDC	±125mA	40mA	200mA	±140µF	80%
JHM0324D15		±15.0 VDC	±100mA	50mA	190mA	±120µF	80%

Notes:

1. Input current measured at nominal input voltage.
2. Input current measured at lowest input voltage.
3. Typical values.

Input

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Input voltage range	10		17	VDC	12V nominal
	20		30		24V nominal
Input current	See models and ratings table				
Inrush current			25	A	At 30V
Input filter	Pi type				
Patient leakage current			25	µA	
Input surge			25	VDC	12V models for 3s
			50		24V models for 3s
Undervoltage lockout	ON: <9V, OFF: >8.5V				12V models
	ON: <18.8V, OFF: >16V				24V models

Output

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Output voltage	See models & ratings table				
Output voltage trim			±10	%	
Initial set accuracy			±1	%	
Minimum load	0			%	No minimum load required
Start up delay		5		ms	
Start up rise time		2		ms	
Line regulation			±0.3	%	
Load regulation			±2	%	0% to 10% load
			±1	%	10% to 100% load
Cross regulation			±4	%	On dual with one output set to 50% load and the other varied from 0% to 100% load
Transient response deviation			4	%	Deviation, recovery to within 1% in <500 µs for a 50% load change at 0.25A/µs rate
Ripple & noise			1.0%	pk-pk	20MHz bandwidth
Short circuit protection	Trip & restart (hiccup mode), auto recovery				
Temperature coefficient			±0.03	%/ °C	
Overload protection	120		200	%	
Overvoltage protection	120		140	%	

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General

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Efficiency		88		%	See Models & ratings table
Isolation		5000		VAC	For 10 ms (acc. to IEC60664-1), 3000 VAC reinforced isolation for 1 min.
Input to output capacitance			20	pF	
Power density			0.45 (7.5)	W/cm^3 (W/in^3)	
Mean time between failure		>1		Mhrs	MIL-HDBK-217F, +25°C GB
Switching frequency		180		kHz	1.2MHz variable
Weight		20 (0.04)		g (lb)	

Environmental

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Operating temperature	-20		+100	°C	Derate from 100% load at +60 °C to no load at 100 °C
Storage temperature	-40		+100	°C	
Case temperature			+100	°C	
Operating humidity	5		90	%RH	Non-condensing
Cooling	Natural convection				

Safety approvals

Safety agency	Standard	Notes & conditions
UL	ANSI/AMMI ES60601-1 3rd Edition CSA-22.2 No.60601-1:2008	
CB	IEC60601-1 3rd Edition	
CE	Meets all applicable directives	
UKCA	Meets all applicable legislation	

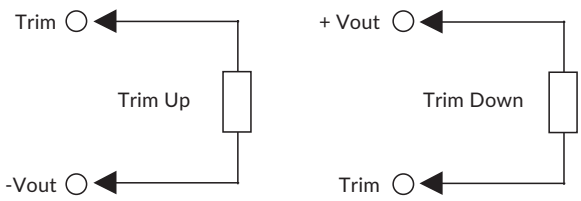
Emissions - EMC

Phenomenon	Standard	Test level	Notes & conditions
Conducted	EN55011/32	Level A	With no external components
Radiated	EN55011/32	Level A	

Immunity - EMC

Phenomenon	Standard	Test level	Criteria	Notes & conditions
Immunity	IEC60601-1-2, EN61204-3			
ESD immunity	EN61000-4-2	2	A	
Radiated immunity	EN61000-4-3	10V/m	A	
EFT/Burst	EN61000-4-4	3	A	
Surge	EN61000-4-5	1	A	
Conducted immunity	EN61000-4-6	10Vm	A	
Magnetic fields	EN61000-4-8	3A/m	A	

Application notes



For 5V output:
Trim +10%, R = 3.4 kΩ typical
Trim -10%, R = 1 kΩ typical

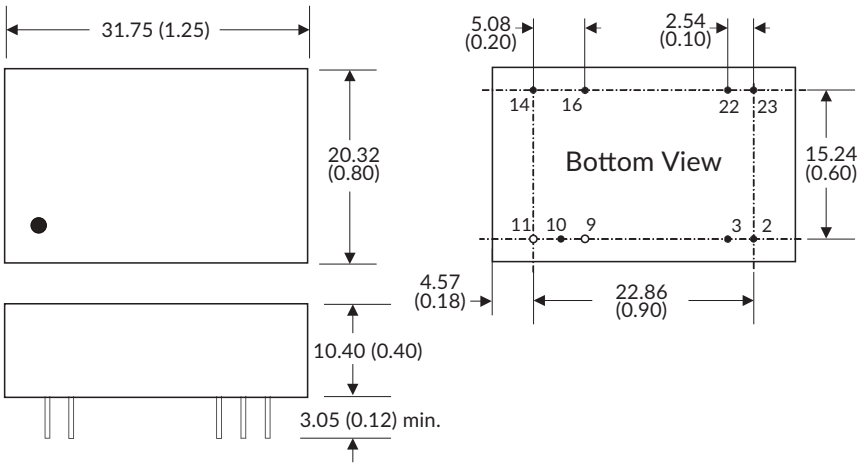
For 12V output:
Trim +10%, R = 5.9 kΩ typical
Trim -10%, R = 11.3 kΩ typical

For 15V output:
Trim +10%, R = 8.3 kΩ typical
Trim -10%, R = 10 kΩ typical

For ±12V output:
Trim +10%, R = 12.8 kΩ typical
Trim -10%, R = 9.5 kΩ typical

For ±15V output:
Trim +10%, R = 18 kΩ typical
Trim -10%, R = 14.8 kΩ typical

Mechanical details



Pin connections		
Pin	**Single**	**Dual**
2	-Vin	-Vin
3	-Vin	-Vin
9	No Pin	Common
10	Trim	Trim
11	No Pin	-Vout
14	+Vout	+Vout
16	-Vout	Common
22	+Vin	+Vin
23	+Vin	+Vin

Notes:

1. All dimensions are in mm (inches)
2. Weight: 20g (0.04lbs) 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)