

### 15 Watts

- International Medical Approvals
- 4000 VAC Reinforced Insulation
- 2 x MOPP
- Medical Approval, IEC60601-1, 3rd Edition
- 2  $\mu$ A Patient Leakage Current
- Compact 1 x 1.6" Footprint
- EN55011 Level A With No External Components
- 3 Year Warranty



#### Dimensions:

**JHM15:**  
1.60 x 1.00 x 0.40" (40.60 x 25.40 x 10.20 mm)

### Models & Ratings

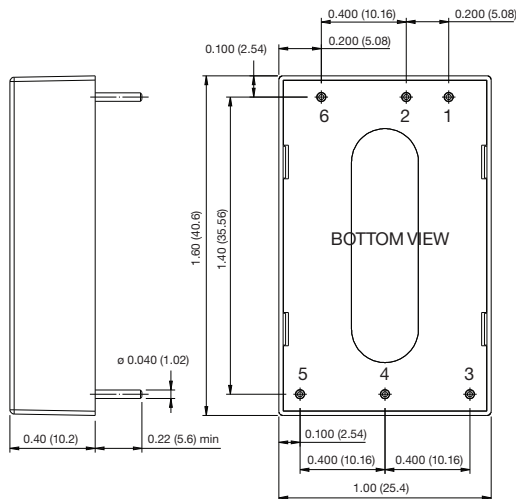
Input Voltage	Output Voltage	Output Current	Input Current		Maximum Capacitive Load <sup>(3)</sup>	Efficiency <sup>(4)</sup>	Model Number
			No Load <sup>(1)</sup>	Full Load <sup>(2)</sup>			
9-18 V	5.0 V	3000 mA	9.2 mA	1930 mA	3000 $\mu$ F	87%	JHM1512S05
	12.0 V	1250 mA	6.5 mA	1938 mA	1330 $\mu$ F	86%	JHM1512S12
	15.0 V	1000 mA	8.0 mA	1944 mA	1000 $\mu$ F	86%	JHM1512S15
	$\pm$ 5.0 V	$\pm$ 1500 mA	6.6 mA	1955 mA	$\pm$ 1470 $\mu$ F	84%	JHM1512D05
	$\pm$ 12.0 V	$\pm$ 625 mA	11.2 mA	1911 mA	$\pm$ 660 $\mu$ F	87%	JHM1512D12
	$\pm$ 15.0 V	$\pm$ 500 mA	11.0 mA	1879 mA	$\pm$ 550 $\mu$ F	88%	JHM1512D15
18-36 V	5.0 V	3000 mA	5.6 mA	972 mA	3000 $\mu$ F	86%	JHM1524S05
	12.0 V	1250 mA	6.1 mA	968 mA	1830 $\mu$ F	85%	JHM1524S12
	15.0 V	1000 mA	6.4 mA	966 mA	1000 $\mu$ F	87%	JHM1524S15
	$\pm$ 5.0 V	$\pm$ 1500 mA	5.4 mA	981 mA	$\pm$ 1470 $\mu$ F	83%	JHM1524D05
	$\pm$ 12.0 V	$\pm$ 625 mA	7.3 mA	954 mA	$\pm$ 660 $\mu$ F	87%	JHM1524D12
	$\pm$ 15.0 V	$\pm$ 500 mA	8.5 mA	943 mA	$\pm$ 550 $\mu$ F	87%	JHM1524D15

### Notes

1. Input current measured at nominal input voltage.
2. Input current measured at lowest input voltage.

3. Maximum capacitive load is per output.
4. Typical values.

### Mechanical Details



Pin	Pin Connections	
	Single	Dual
1	+Vin	+Vin
2	-Vin	-Vin
3	+Vout	+Vout
4	-Vout	Common
5	Trim	-Vout
6	No Pin	No Pin

### Notes

1. All dimensions are in inches (mm)
2. Weight: 0.04 lbs (20 g) approx.
3. Pin diameter: 0.04  $\pm$  0.002 (1.02  $\pm$  0.05)
4. Pin pitch tolerance:  $\pm$  0.01 ( $\pm$  0.25)
5. Case tolerance:  $\pm$  0.02 ( $\pm$  0.5)

### Input

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Input Voltage Range	9		18	VDC	12 V nominal
	18		36	VDC	24 V nominal
Input Current					See Models and Ratings table
Inrush Current			70	A	at 36V
Input Filter	Pi type				
Patient Leakage Current			2	µA	
Undervoltage Lockout	On at >8.8V. Off <8.3V				12 V models
	On at >17.5V. Off <17.0V				24 V models
Input Surge			25	VDC	12 V models for 3 s
			50	VDC	24 V models for 3 s

### Output

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Output Voltage	5		15	V	See Models and Ratings table
Output Voltage Trim			±10	%	Via external resistors, see Application Notes
Initial Set Accuracy			±1	%	on V1
			±2	%	on V2 of dual output models
Minimum Load	0			A	No minimum load required
Start Up Delay		25		ms	
Start Up Rise Time		22		ms	
Line Regulation			±0.3	%	
Load Regulation			±2	%	0 - 10% load
			±1	%	10 - 100% load
Cross Regulation			±4	%	On dual output models with one output set to 50% load and the other varied from 10% to 100% load (D05 20% to 100%)
Transient Response			4	% deviation	Recovery to within 1% in <500 µs for a 50% load change at 0.25 A/µs rate
Ripple & Noise			1	% pk-pk	20 MHz bandwidth
Short Circuit Protection					Trip & Restart (hiccup mode), auto recovery
Overload Protection	120		200	%	Trip & Restart (hiccup mode)
Overvoltage Protection	115		140	%	Non latching, auto recovery
Temperature Coefficient			0.03	%/°C	

### General

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Efficiency		86		%	See Models and Ratings table
Isolation			4000	VAC	For 1 min. Double/reinforced with a working voltage of 250 VAC. Meets 2 x MOPP per 3rd edition of IEC60601-1 5000 VAC for 10 ms in accordance with IEC60664-1
Input to Output Capacitance			20	pF	
Switching Frequency		250		kHz	
Power Density			23	W/in <sup>3</sup>	
Mean Time Between Failure		>1		MHrs	MIL-HDBK-217F, +25 °C GB
Weight		0.04 (20.0)		lb (g)	

### Environmental

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Operating Temperature	-40		+80	°C	See derating curve
Storage Temperature	-55		+100	°C	
Case Temperature			+100	°C	
Humidity	5		90	%RH	Non-condensing
Cooling					Natural convection
Shock	±3 shocks in each plane, total 18 shocks of 30 g : 11 ms halfsine. Conforms to EN60068-2-27 & EN60068-2-47				
Vibration	10-500 Hz at 2 g sweep and endurance at resonance in all 3 planes. Conforms to EN60068-2-6				

### EMC: Emissions

Phenomenon	Standard	Test Level	Notes & Conditions
Conducted	EN55011 & EN55022	Level A	
Radiated	EN55011 & EN55022	Level A	

### EMC: Immunity

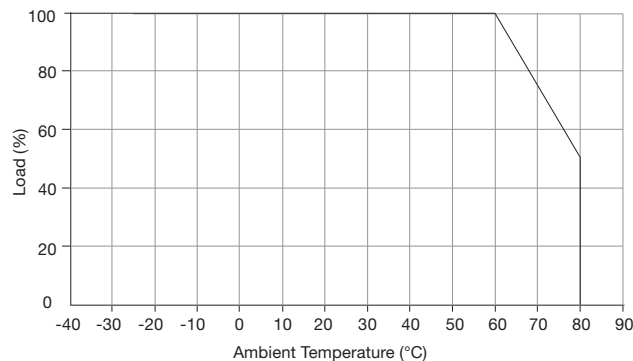
Phenomenon	Standard	Test Level	Criteria	Notes & Conditions
Immunity	IEC60601-1-2, EN61204-3			
ESD Immunity	EN61000-4-2	2	A	
Radiated Immunity	EN61000-4-3	10 V/m	A	
EFT/Burst	EN61000-4-4	2	A	
Surges	EN61000-4-5	1	A	
Conducted Immunity	EN61000-4-6	10 Vm	A	
Magnetic Fields	EN61000-4-8	3 A/m	A	
Safety Approvals	ANSI/AMMI ES60601-1 3rd Edition, CSA-22.2 No.60601-1:2008, IEC60601-1 3rd Edition			

### Safety Approvals

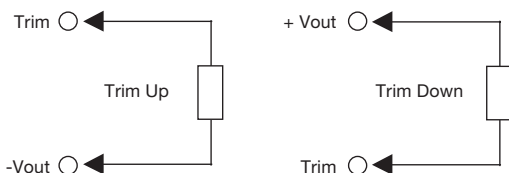
Safety Agency	Safety Standard	Notes & Conditions
CB Report	IEC60601-1 Ed 3 Including Risk Management	Medical
UL	ANSI/AAMI ES60601-1 3rd Ed. & CSA C22.2, No.60601-1:2008	Medical
CE	Meets all applicable directives	
UKCA	Meets all applicable legislation	

### Application Notes

#### Derating Curve



#### External Output Trim



For 5 V output:  
 Trim +10%, R = 3.4 k typical  
 Trim -10%, R = 1.1 k typical

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

For 15 V output:  
 Trim +10%, R = 8.4 k typical  
 Trim -10%, R = 10.4 k typical