

# 3/6 Watts JHM Series



- International Medical Approvals
- 3000 VAC Reinforced Insulation
- 60 ° C Operation Without Derating
- 2  $\mu$ A Patient Leakage Current
- DIP-24 Package
- EN55011 Level A With No External Components
- 3 Year Warranty

## Specification

### Input

|                         |                                                                                                                                                   |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| Input Voltage Range     | <ul style="list-style-type: none"> <li>• 12 V (10-17 VDC)</li> <li>• 24 V (20-30 VDC)</li> </ul>                                                  |
| Input Current           | <ul style="list-style-type: none"> <li>• See table</li> </ul>                                                                                     |
| Inrush Current          | <ul style="list-style-type: none"> <li>• 25 A max at 30 V</li> </ul>                                                                              |
| Input Filter            | <ul style="list-style-type: none"> <li>• Pi network</li> </ul>                                                                                    |
| Patient Leakage Current | <ul style="list-style-type: none"> <li>• 2 <math>\mu</math>A max</li> </ul>                                                                       |
| Undervoltage Lockout    | <ul style="list-style-type: none"> <li>• 12 V model, on at &lt;9 V, off &gt;8.5 V</li> <li>• 24 V model on at &lt;18.8 V, off &gt;16 V</li> </ul> |
| Input Surge             | <ul style="list-style-type: none"> <li>• 12 V models 25 V for 3 s</li> <li>• 24 V model 50 V for 3 s</li> </ul>                                   |

### Output

|                          |                                                                                                                                                                                 |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Output Voltage           | <ul style="list-style-type: none"> <li>• See table</li> </ul>                                                                                                                   |
| Output Voltage Trim      | <ul style="list-style-type: none"> <li>• <math>\pm 10\%</math></li> </ul>                                                                                                       |
| Minimum Load             | <ul style="list-style-type: none"> <li>• No minimum load required</li> </ul>                                                                                                    |
| Initial Set Accuracy     | <ul style="list-style-type: none"> <li>• <math>\pm 1\%</math> max</li> </ul>                                                                                                    |
| Start Up Delay           | <ul style="list-style-type: none"> <li>• 5 ms typical</li> </ul>                                                                                                                |
| Start Up Rise Time       | <ul style="list-style-type: none"> <li>• 2 ms typical</li> </ul>                                                                                                                |
| Line Regulation          | <ul style="list-style-type: none"> <li>• <math>\pm 0.3\%</math> max</li> </ul>                                                                                                  |
| Load Regulation          | <ul style="list-style-type: none"> <li>• <math>\pm 2\%</math> max 0% to 10% load,</li> <li>• <math>\pm 1\%</math> max 10% to 100% load</li> </ul>                               |
| Cross Regulation         | <ul style="list-style-type: none"> <li>• <math>\pm 4\%</math> max on dual with one output set to 50% load and the other varied from 0% to 100% load</li> </ul>                  |
| Transient Response       | <ul style="list-style-type: none"> <li>• 4% max deviation, recovery to within 1% in &lt;500 <math>\mu</math>s for a 50% load change at 0.25 A/<math>\mu</math>s rate</li> </ul> |
| Ripple & Noise           | <ul style="list-style-type: none"> <li>• 1% pk-pk max 20 MHz bandwidth</li> </ul>                                                                                               |
| Overload Protection      | <ul style="list-style-type: none"> <li>• 120% - 200%</li> </ul>                                                                                                                 |
| Overvoltage Protection   | <ul style="list-style-type: none"> <li>• 120% - 140%</li> </ul>                                                                                                                 |
| Temperature Coefficient  | <ul style="list-style-type: none"> <li>• <math>\pm 0.03/^{\circ}\text{C}</math> max</li> </ul>                                                                                  |
| Short Circuit Protection | <ul style="list-style-type: none"> <li>• Trip and restart (hiccup mode), auto recovery</li> </ul>                                                                               |

### General

|                             |                                                                                                                                       |
|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| Efficiency                  | <ul style="list-style-type: none"> <li>• See tables</li> </ul>                                                                        |
| Isolation                   | <ul style="list-style-type: none"> <li>• 5000 VAC for 10 ms (acc. to IEC60664-1), 3000 VAC reinforced isolation for 1 min.</li> </ul> |
| Input to Output Capacitance | <ul style="list-style-type: none"> <li>• 20 pF max</li> </ul>                                                                         |
| Switching Frequency         | <ul style="list-style-type: none"> <li>• JHM03: 180 kHz to 1.2 MHz variable</li> <li>• JHM06: 200 kHz to 1.6 MHz variable</li> </ul>  |
| Power Density               | <ul style="list-style-type: none"> <li>• JHM03: 7.5 W/in<sup>3</sup>, JHM06: 17.0 W/in<sup>3</sup></li> </ul>                         |
| MTBF                        | <ul style="list-style-type: none"> <li>• &gt;1 Mhrs typical to MIL-STD-217F at 25 <math>^{\circ}\text{C}</math>, GB</li> </ul>        |

### Environmental

|                       |                                                                                                                                                                                                                                         |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operating Temperature | <ul style="list-style-type: none"> <li>• -20 <math>^{\circ}\text{C}</math> to +100 <math>^{\circ}\text{C}</math>, derate from 100% load at +60 <math>^{\circ}\text{C}</math> to no load at 100 <math>^{\circ}\text{C}</math></li> </ul> |
| Case Temperature      | <ul style="list-style-type: none"> <li>• +100 <math>^{\circ}\text{C}</math> max</li> </ul>                                                                                                                                              |
| Storage Temperature   | <ul style="list-style-type: none"> <li>• -40 <math>^{\circ}\text{C}</math> to +100 <math>^{\circ}\text{C}</math></li> </ul>                                                                                                             |
| Operating Humidity    | <ul style="list-style-type: none"> <li>• 5-90%, non-condensing</li> </ul>                                                                                                                                                               |
| Cooling               | <ul style="list-style-type: none"> <li>• Natural convection</li> </ul>                                                                                                                                                                  |

### EMC & Safety

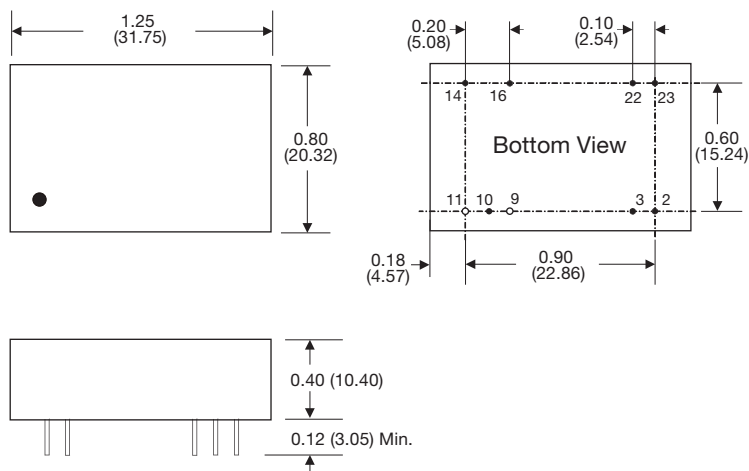
|                    |                                                                                                                                                           |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Emissions          | <ul style="list-style-type: none"> <li>• EN55011 &amp; EN55022 level A conducted &amp; radiated with no external components</li> </ul>                    |
| Immunity           | <ul style="list-style-type: none"> <li>• IEC60601-1-2, EN61204-3</li> </ul>                                                                               |
| ESD Immunity       | <ul style="list-style-type: none"> <li>• EN61000-4-2, level 2, Perf Criteria A</li> </ul>                                                                 |
| Radiated Immunity  | <ul style="list-style-type: none"> <li>• EN61000-4-3, 10 V/m Perf Criteria A</li> </ul>                                                                   |
| EFT/Burst          | <ul style="list-style-type: none"> <li>• EN61000-4-4, level 3 Perf Criteria A</li> </ul>                                                                  |
| Surge              | <ul style="list-style-type: none"> <li>• EN61000-4-5, level 1 Perf Criteria A</li> </ul>                                                                  |
| Conducted Immunity | <ul style="list-style-type: none"> <li>• EN61000-4-6, 10 Vm, Perf Criteria A</li> </ul>                                                                   |
| Magnetic Field     | <ul style="list-style-type: none"> <li>• EN61000-4-8, 3 A/m Perf Criteria A</li> </ul>                                                                    |
| Safety Approvals   | <ul style="list-style-type: none"> <li>• ANSI/AMMI ES60601-1 3rd Edition</li> <li>• CSA-22.2 No.60601-1:2008</li> <li>• IEC60601-1 3rd Edition</li> </ul> |

| Input Voltage | Output Voltage | Output Current | Input Current          |                          | Maximum Capacitive Load | Efficiency <sup>(3)</sup> | Model Number |
|---------------|----------------|----------------|------------------------|--------------------------|-------------------------|---------------------------|--------------|
|               |                |                | No Load <sup>(1)</sup> | Full Load <sup>(2)</sup> |                         |                           |              |
| 10-17 V       | 5.0 V          | 600 mA         | 52 mA                  | 380 mA                   | 720 $\mu$ F             | 75%                       | JHM0312S05   |
|               | 12.0 V         | 250 mA         | 64 mA                  | 370 mA                   | 300 $\mu$ F             | 77%                       | JHM0312S12   |
|               | 15.0 V         | 200 mA         | 64 mA                  | 370 mA                   | 240 $\mu$ F             | 78%                       | JHM0312S15   |
|               | $\pm 12.0$ V   | $\pm 125$ mA   | 66 mA                  | 400 mA                   | $\pm 140$ $\mu$ F       | 80%                       | JHM0312D12   |
|               | $\pm 15.0$ V   | $\pm 100$ mA   | 85 mA                  | 400 mA                   | $\pm 120$ $\mu$ F       | 80%                       | JHM0312D15   |
| 20-30 V       | 5.0 V          | 600 mA         | 47 mA                  | 210 mA                   | 720 $\mu$ F             | 74%                       | JHM0324S05   |
|               | 12.0 V         | 250 mA         | 42 mA                  | 200 mA                   | 300 $\mu$ F             | 77%                       | JHM0324S12   |
|               | 15.0 V         | 200 mA         | 29 mA                  | 190 mA                   | 240 $\mu$ F             | 81%                       | JHM0324S15   |
|               | $\pm 12.0$ V   | $\pm 125$ mA   | 40 mA                  | 200 mA                   | $\pm 140$ $\mu$ F       | 80%                       | JHM0324D12   |
|               | $\pm 15.0$ V   | $\pm 100$ mA   | 50 mA                  | 190 mA                   | $\pm 120$ $\mu$ F       | 80%                       | JHM0324D15   |
| 10-17 V       | 5.0 V          | 1200 mA        | 72 mA                  | 790 mA                   | 1200 $\mu$ F            | 78%                       | JHM0612S05   |
|               | 12.0 V         | 500 mA         | 86 mA                  | 750 mA                   | 500 $\mu$ F             | 80%                       | JHM0612S12   |
|               | 15.0 V         | 400 mA         | 85 mA                  | 740 mA                   | 400 $\mu$ F             | 83%                       | JHM0612S15   |
|               | $\pm 12.0$ V   | $\pm 250$ mA   | 60 mA                  | 730 mA                   | $\pm 250$ $\mu$ F       | 83%                       | JHM0612D12   |
|               | $\pm 15.0$ V   | $\pm 200$ mA   | 80 mA                  | 730 mA                   | $\pm 200$ $\mu$ F       | 84%                       | JHM0612D15   |
| 20-30 V       | 5.0 V          | 1200 mA        | 44 mA                  | 380 mA                   | 1200 $\mu$ F            | 78%                       | JHM0624S05   |
|               | 12.0 V         | 500 mA         | 39 mA                  | 360 mA                   | 500 $\mu$ F             | 83%                       | JHM0624S12   |
|               | 15.0 V         | 400 mA         | 27 mA                  | 350 mA                   | 400 $\mu$ F             | 85%                       | JHM0624S15   |
|               | $\pm 12.0$ V   | $\pm 250$ mA   | 37 mA                  | 360 mA                   | $\pm 250$ $\mu$ F       | 83%                       | JHM0624D12   |
|               | $\pm 15.0$ V   | $\pm 200$ mA   | 39 mA                  | 360 mA                   | $\pm 200$ $\mu$ F       | 83%                       | JHM0624D15   |

**Notes**

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

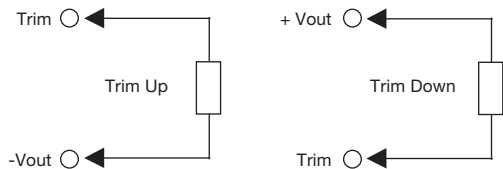
3. Typical values.

**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 inches (mm)  
 2. Weight: 0.04 lbs (20 g) approx.  
 3. Pin diameter: 0.02  $\pm$  0.002 (0.5  $\pm$  0.05)  
 4. Pin pitch tolerance:  $\pm$  0.014 ( $\pm$  0.35)  
 5. Case tolerance:  $\pm$  0.02 ( $\pm$  0.5)

**Application Notes****External Output Trim**

For 5 V output:  
 Trim +10%, R = 3.4 k typical  
 Trim -10%, R = 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 = 8.3 k typical  
 Trim -10%, R = 10 k typical

For  $\pm 12$  V output:  
 Trim +10%, R = 12.8 k typical  
 Trim -10%, R = 9.5 k typical

For  $\pm 15$  V output:  
 Trim +10%, R = 18 k typical  
 Trim -10%, R = 14.8 k typical



Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

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