3/6 Watts
JHM Series





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

Specification

Input

Input Voltage Range	• 12 V (10-17 VDC) 24 V (20-30 VDC)
Input Current	• See table
Inrush Current	• 25 A max at 30 V
Input Filter	• Pi network
Patient Leakage Current	• 2 µA max
Undervoltage Lockout	• 12 V model, on at <9 V, off >8.5 V 24 V model on at <18.8 V, off >16 V
Input Surge	• 12 V models 25 V for 3 s 24 V model 50 V for 3 s

Output

Output Voltage	• See table
Output Voltage Trim	• ±10%
Minimum Load	• No minimum load required
Initial Set Accuracy	• ±1% max
Start Up Delay	• 5 ms typical
Start Up Rise Time	• 2 ms typical
Line Regulation	• ±0.3% max
Load Regulation	• ±2% max 0% to 10% load, ±1% max 10% to 100% load
Cross Regulation	• ±4% max on dual with one output set to 50% load and the other varied from 0% to 100% load
Transient Response	• 4% max deviation, recovery to within 1% in <500 µs for a 50% load change at 0.25 A/µs rate
Ripple & Noise	• 1% pk-pk max 20 MHz bandwidth
Overload Protection	• 120% - 200%
Overvoltage Protection	• 120% - 140%
Temperature Coefficient	• ±0.03/°C max
Short Circuit Protection	• Trip and restart (hiccup mode), auto recovery

General

Efficiency	• See tables
Isolation	• 5000 VAC for 10 ms (acc. to IEC60664-1), 3000 VAC reinforced isolation for 1 min.
Input to Output Capacitance	• 20 pF max
Switching Frequency	• JHM03: 180 kHz to 1.2 MHz variable JHM06: 200 kHz to 1.6 MHz variable
Power Density	• JHM03: 7.5 W/in^3, JHM06: 17.0 W/in^3
MTBF	• >1 MHrs typical to MIL-STD-217F at 25 °C, GB

Environmental

Operating Temperature	• -20 °C to +100 °C, derate from 100% load at +60 °C to no load at 100 °C
Case Temperature	• +100 °C max
Storage Temperature	• -40 °C to +100 °C
Operating Humidity	• 5-90%, non-condensing
Cooling	• Natural convection

EMC & Safety

Emissions	• EN55011 & EN55032 level A conducted & radiated with no external components
Immunity	• IEC60601-1-2, EN61204-3
ESD Immunity	• EN61000-4-2, level 2, Perf Criteria A
Radiated Immunity	• EN61000-4-3, 10 V/m Perf Criteria A
EFT/Burst	• EN61000-4-4, level 3 Perf Criteria A
Surge	• EN61000-4-5, level 1 Perf Criteria A
Conducted Immunity	• EN61000-4-6, 10 Vm, Perf Criteria A
Magnetic Field	• EN61000-4-8, 3 A/m Perf Criteria A
Safety Approvals	• ANSI/AMMI ES60601-1 3rd Edition CSA-22.2 No.60601-1:2008 IEC60601-1 3rd Edition, CE & UKCA meets all applicable directives & legislation.

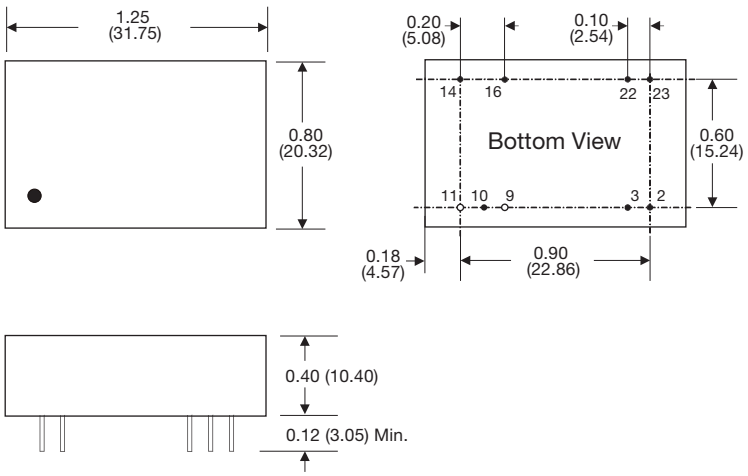
Models and Ratings

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

Notes

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

Mechanical Details



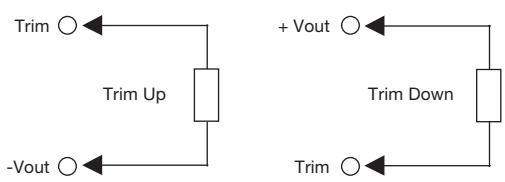
Pin Connections		
Pin	Single	Dual
2	-Vin	-Vin
3	-Vin	-Vin
9	No Pin	Common
10	Trim	Trim
11	No Pin	-Vout
14	+Vout	+Vout
16	-Vout	Common
22	+Vin	+Vin
23	+Vin	+Vin

Notes

1. All dimensions are in inches (mm)
2. Weight: 0.04 lbs (20 g) approx.
3. Pin diameter: 0.02 ±0.002 (0.5 ±0.05)
4. Pin pitch tolerance: ±0.014 (±0.35)
5. Case tolerance: ±0.02 (±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 ±12 V output:
Trim +10%, R = 12.8 k typical
Trim -10%, R = 9.5 k typical

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