

# 10 Watts

## JCH Series



- 2:1 Input Range
- Industry Standard Package
- 1500 VDC Isolation
- Continuous Short Circuit Protection
- -40 °C to +100 °C Operating Temperature
- Single & Dual Outputs
- 3 Year Warranty

## Specification

### Input

Input Voltage Range	<ul style="list-style-type: none"> <li>• 12 V (9-18 VDC)</li> <li>• 24 V (18-36 VDC)</li> <li>• 48 V (36-72 VDC)</li> </ul>
Input Current	<ul style="list-style-type: none"> <li>• See table</li> </ul>
Input Reflected Ripple Current	<ul style="list-style-type: none"> <li>• 35 mA rms through 12 <math>\mu</math>H inductor</li> </ul>
Input Filter	<ul style="list-style-type: none"> <li>• Pi network</li> </ul>
Input Surge	<ul style="list-style-type: none"> <li>• 12 V models 25 VDC for 100 ms</li> <li>• 24 V models 50 VDC for 100 ms</li> <li>• 48 V models 100 VDC for 100 ms</li> </ul>

### Output

Output Voltage	<ul style="list-style-type: none"> <li>• See table</li> </ul>
Voltage Balance	<ul style="list-style-type: none"> <li>• <math>\pm 1\%</math> (<math>\pm 2\%</math> for dual output 3.3 V models)</li> </ul>
Minimum Load	<ul style="list-style-type: none"> <li>• No minimum load required</li> </ul>
Line Regulation	<ul style="list-style-type: none"> <li>• <math>\pm 0.5\%</math></li> </ul>
Load Regulation	<ul style="list-style-type: none"> <li>• <math>\pm 0.5\%</math> single outputs, <math>\pm 1.0</math> dual outputs</li> </ul>
Setpoint Accuracy	<ul style="list-style-type: none"> <li>• <math>\pm 1.0\%</math></li> </ul>
Ripple & Noise	<ul style="list-style-type: none"> <li>• 100 mV pk-pk for 3.3 V to 15 V models,</li> <li>• 150 mV pk-pk for 24 V models,</li> <li>• 20 MHz bandwidth</li> </ul>
Transient Response	<ul style="list-style-type: none"> <li>• 3% max deviation, recovery to within 1% in 250 <math>\mu</math>s for a 25% load change</li> </ul>
Temperature Coefficient	<ul style="list-style-type: none"> <li>• 0.02%/°C</li> </ul>
Overload Protection	<ul style="list-style-type: none"> <li>• 140% of full load</li> </ul>
Short Circuit Protection	<ul style="list-style-type: none"> <li>• Trip &amp; restart (hiccup mode) with auto recovery</li> </ul>
Maximum Capacitive Load	<ul style="list-style-type: none"> <li>• See table</li> </ul>
Start Up Delay	<ul style="list-style-type: none"> <li>• &lt;20 ms</li> </ul>

### General

Efficiency	<ul style="list-style-type: none"> <li>• See table</li> </ul>
Isolation Voltage	<ul style="list-style-type: none"> <li>• 1500 VDC Input to Output</li> <li>• 1000 VDC Input to Case</li> <li>• 1000 VDC Output to Case</li> </ul>
Isolation Capacitance	<ul style="list-style-type: none"> <li>• 500 pF typical input to output</li> </ul>
Isolation Resistance	<ul style="list-style-type: none"> <li>• <math>10^9 \Omega</math></li> </ul>
Switching Frequency	<ul style="list-style-type: none"> <li>• 200 kHz typical</li> </ul>
Power Density	<ul style="list-style-type: none"> <li>• 12.5 W/in<sup>3</sup></li> </ul>
MTBF	<ul style="list-style-type: none"> <li>• &gt;1.1 Mhrs to MIL-STD-217F at 25 °C, GB</li> </ul>

### Environmental

Operating Temperature	<ul style="list-style-type: none"> <li>• -40 °C to +100 °C, derate from 100% load at +85 °C to 0% load at +100 °C</li> </ul>
Case Temperature	<ul style="list-style-type: none"> <li>• +100 °C max</li> </ul>
Storage Temperature	<ul style="list-style-type: none"> <li>• -40 °C to +125 °C</li> </ul>
Cooling	<ul style="list-style-type: none"> <li>• Convection-cooled</li> </ul>
Operating Humidity	<ul style="list-style-type: none"> <li>• Up to 95% RH, non-condensing</li> </ul>

### EMC

Emissions	<ul style="list-style-type: none"> <li>• EN55022 Class A conducted &amp; radiated with external components, see application note</li> </ul>
ESD Immunity	<ul style="list-style-type: none"> <li>• EN61000-4-2, 8 kV air discharge Perf Criteria A</li> </ul>
Radiated Immunity	<ul style="list-style-type: none"> <li>• EN61000-4-3, 3 V/m, Perf Criteria A</li> </ul>

## Models and Ratings

Input Voltage	Output Voltage	Output Current	Input Current <sup>(1)</sup>		Efficiency	Maximum Capacitive Load	Model Number
			No Load	Full Load			
9-18 VDC	3.3 V	2000 mA	30 mA	705 mA	78%	2200 µF	JCH1012S3V3†^
	5.0 V	2000 mA	30 mA	1016 mA	82%	2200 µF	JCH1012S05†^
	12.0 V	833 mA	30 mA	992 mA	84%	680 µF	JCH1012S12†^
	15.0 V	666 mA	30 mA	992 mA	84%	470 µF	JCH1012S15†^
	24.0 V	416 mA	30 mA	980 mA	85%	330 µF	JCH1012S24
	±3.3 V	±1000 mA	30 mA	1068 mA	78%	±1000 µF	JCH1012D03†^
	±5.0 V	±1000 mA	30 mA	1016 mA	82%	±1000 µF	JCH1012D05†^
	±12.0 V	±416 mA	30 mA	992 mA	84%	±470 µF	JCH1012D12†^
	±15.0 V	±333 mA	30 mA	980 mA	85%	±330 µF	JCH1012D15†^
±24.0 V	±208 mA	30 mA	980 mA	85%	±220 µF	JCH1012D24	
18-36 VDC	3.3 V	2000 mA	25 mA	352 mA	78%	2200 µF	JCH1024S3V3†^
	5.0 V	2000 mA	25 mA	508 mA	82%	2200 µF	JCH1024S05†^
	12.0 V	833 mA	25 mA	496 mA	84%	680 µF	JCH1024S12†^
	15.0 V	666 mA	25 mA	490 mA	85%	470 µF	JCH1024S15†^
	24.0 V	416 mA	25 mA	484 mA	86%	330 µF	JCH1024S24
	±3.3 V	±1000 mA	25 mA	352 mA	78%	±1000 µF	JCH1024D03†^
	±5.0 V	±1000 mA	25 mA	508 mA	82%	±1000 µF	JCH1024D05†^
	±12.0 V	±416 mA	25 mA	496 mA	84%	±470 µF	JCH1024D12†^
	±15.0 V	±333 mA	25 mA	496 mA	84%	±330 µF	JCH1024D15†^
±24.0 V	±208 mA	25 mA	490 mA	85%	±220 µF	JCH1024D24	
36-72 VDC	3.3 V	2000 mA	20 mA	176 mA	78%	2200 µF	JCH1048S3V3†^
	5.0 V	2000 mA	20 mA	251 mA	83%	2200 µF	JCH1048S05†^
	12.0 V	833 mA	20 mA	248 mA	84%	680 µF	JCH1048S12†^
	15.0 V	666 mA	20 mA	248 mA	84%	470 µF	JCH1048S15†^
	24.0 V	416 mA	20 mA	245 mA	86%	330 µF	JCH1048S24
	±3.3 V	±1000 mA	20 mA	176 mA	78%	±1000 µF	JCH1048D03†^
	±5.0 V	±1000 mA	20 mA	254 mA	82%	±1000 µF	JCH1048D05†^
	±12.0 V	±416 mA	20 mA	245 mA	85%	±470 µF	JCH1048D12†^
	±15.0 V	±333 mA	20 mA	245 mA	85%	±330 µF	JCH1048D15†^
±24.0 V	±208 mA	20 mA	242 mA	86%	±220 µF	JCH1048D24	

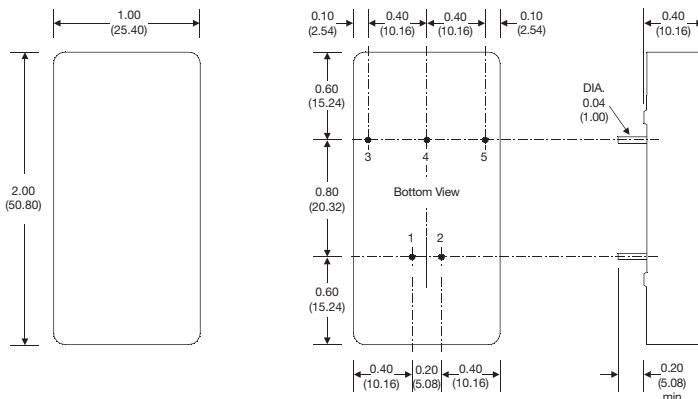
### Notes

1. Measured at nominal input voltage.

† Available from Farnell & element14. See pages 284-290.

^ Available from Newark. See pages 291-296.

## Mechanical Details



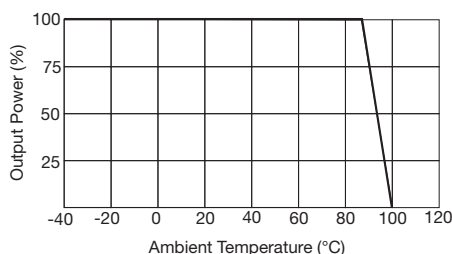
PIN CONNECTIONS		
Pin	Single	Dual
1	+Vin	+Vin
2	-Vin	-Vin
3	+Vout	+Vout
4	No Pin	Com
5	-Vout	-Vout

### Notes

- All dimensions are in inches (mm)
- Weight: 0.07 lbs (30 g)
- Pin diameter tolerance: ±0.002 (±0.05)
- Pin pitch tolerance: ±0.014 (±0.35)
- Case tolerance: ±0.02 (±0.50)

## Application Notes

### Derating Curve



### Input Filter

