

## JCJ10 Series



- 2:1 Input Range
- DIP-24 Metal Package
- Operating Temperature -40 °C to +100 °C
- Single & Dual Outputs
- Continuous Short Circuit Protection
- 1500 VDC Isolation
- High Efficiency - Up to 90%

## 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 (36-75 VDC)</li> </ul>
Input Current	<ul style="list-style-type: none"> <li>• See table</li> </ul>
Input Filter	<ul style="list-style-type: none"> <li>• Pi network</li> </ul>
Input Reflected Ripple	<ul style="list-style-type: none"> <li>• 20 mA pk-pk through 12 <math>\mu</math>H inductor, 5 Hz to 20 MHz</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>
Output Voltage Balance	<ul style="list-style-type: none"> <li>• <math>\pm 1\%</math> max, dual output models</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>• &lt;20 ms</li> </ul>
Start Up Rise Time	<ul style="list-style-type: none"> <li>• &lt;10 ms</li> </ul>
Line Regulation	<ul style="list-style-type: none"> <li>• <math>\pm 0.5\%</math> max</li> </ul>
Load Regulation	<ul style="list-style-type: none"> <li>• <math>\pm 0.7\%</math> for 2.5-3.3 V models, <math>\pm 0.5\%</math> for all others, see note 2</li> </ul>
Cross Regulation	<ul style="list-style-type: none"> <li>• <math>\pm 5\%</math> on dual output models, see note 3</li> </ul>
Transient Response	<ul style="list-style-type: none"> <li>• &lt;3% max deviation, recovery to within 1% in 250 <math>\mu</math>s for a 25% load change</li> </ul>
Ripple & Noise	<ul style="list-style-type: none"> <li>• 85 mV pk-pk, 20 MHz BW, with 1 <math>\mu</math>F ceramic capacitor, see note 4</li> </ul>
Overload Protection	<ul style="list-style-type: none"> <li>• &gt;150%</li> </ul>
Overvoltage Protection	<ul style="list-style-type: none"> <li>• 2.5-3.3 V models: 3.9 V typical</li> <li>• 5 V models: 6.2 V typical</li> <li>• 12 V models: 15 V typical</li> <li>• 15 V models: 18 V typical</li> <li>• <math>\pm 12</math> V models: <math>\pm 15</math> V typical</li> <li>• <math>\pm 15</math> V models: <math>\pm 18</math> V typical</li> </ul>
Short Circuit Protection	<ul style="list-style-type: none"> <li>• Trip &amp; restart (hiccup) with auto recovery</li> </ul>
Maximum Capacitive Load	<ul style="list-style-type: none"> <li>• See tables</li> </ul>
Temperature Coefficient	<ul style="list-style-type: none"> <li>• <math>\pm 0.02/^\circ\text{C}</math> max</li> </ul>

## General

Efficiency	<ul style="list-style-type: none"> <li>• See tables</li> </ul>
Isolation	<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>• 1000 pF max</li> </ul>
Switching Frequency	<ul style="list-style-type: none"> <li>• 330 kHz typical</li> </ul>
MTBF	<ul style="list-style-type: none"> <li>• &gt;1.1 Mhrs to MIL-STD-217F</li> </ul>

## Environmental

Operating Temperature	<ul style="list-style-type: none"> <li>• -40 °C to +100 °C, derate from 100% load at +60 °C to no 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>
Humidity	<ul style="list-style-type: none"> <li>• Up to 90%, non-condensing</li> </ul>
Cooling	<ul style="list-style-type: none"> <li>• Natural convection</li> </ul>

## EMC

Emissions	<ul style="list-style-type: none"> <li>• EN55022 Class A conducted with external components - see application note</li> </ul>
ESD Immunity	<ul style="list-style-type: none"> <li>• EN61000-4-2, 4 kV contact discharge Perf Criteria B</li> </ul>
Radiated Immunity	<ul style="list-style-type: none"> <li>• EN61000-4-3, 3 V/m Perf Criteria A</li> </ul>
EFT/Burst	<ul style="list-style-type: none"> <li>• EN61000-4-4, level 3 Perf Criteria B*</li> </ul>
Surge	<ul style="list-style-type: none"> <li>• EN61000-4-5, level 3 Perf Criteria B*</li> </ul>
Conducted Immunity	<ul style="list-style-type: none"> <li>• EN61000-4-6, 3 Vrms Perf Criteria A</li> </ul>
Magnetic Field	<ul style="list-style-type: none"> <li>• EN61000-4-8, 1 A/m Perf Criteria A</li> </ul>

\* See note 5.

## Models and Ratings

Input Voltage	Output Voltage	Output Current	Input Current <sup>(1)</sup>		Maximum Capacitive Load	Efficiency	Model Number
			No Load	Full Load			
9-18 V	2.5 V	3.000 A	10 mA	0.79 A	2200 µF	81%	JCJ1012S2V5
	3.3 V	3.000 A	10 mA	1.01 A	2200 µF	84%	JCJ1012S3V3
	5.0 V	2.000 A	10 mA	0.99 A	2200 µF	86%	JCJ1012S05
	12.0 V	0.833 A	10 mA	0.98 A	820 µF	87%	JCJ1012S12
	15.0 V	0.667 A	10 mA	0.96 A	470 µF	89%	JCJ1012S15
	±12.0 V	±0.416 A	10 mA	0.98 A	±220 µF	87%	JCJ1012D12
18-36 V	2.5 V	3.000 A	10 mA	0.38 A	2200 µF	84%	JCJ1024S2V5
	3.3 V	3.000 A	10 mA	0.50 A	2200 µF	85%	JCJ1024S3V3
	5.0 V	2.000 A	10 mA	0.48 A	2200 µF	89%	JCJ1024S05
	12.0 V	0.833 A	10 mA	0.49 A	820 µF	88%	JCJ1024S12
	15.0 V	0.667 A	10 mA	0.49 A	470 µF	88%	JCJ1024S15
	±12.0 V	±0.416 A	10 mA	0.49 A	±220 µF	88%	JCJ1024D12
36-75 V	2.5 V	3.000 A	10 mA	0.19 A	2200 µF	84%	JCJ1048S2V5
	3.3 V	3.000 A	10 mA	0.25 A	2200 µF	85%	JCJ1048S3V3
	5.0 V	2.000 A	10 mA	0.24 A	2200 µF	88%	JCJ1048S05
	12.0 V	0.833 A	10 mA	0.25 A	820 µF	87%	JCJ1048S12
	15.0 V	0.667 A	10 mA	0.24 A	470 µF	88%	JCJ1048S15
	±12.0 V	±0.416 A	10 mA	0.25 A	±220 µF	87%	JCJ1048D12
	±15.0 V	±0.333 A	10 mA	0.25 A	±150 µF	87%	JCJ1048D15

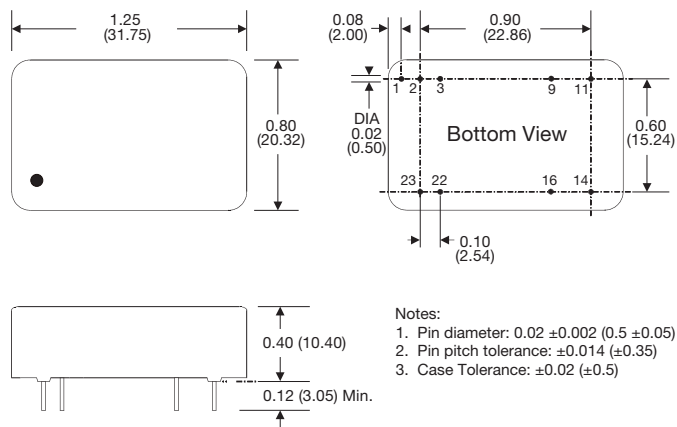
### Notes

1. Input current measured at nominal input voltage.
2. From 10% to 100% load.
3. When one output is set at 100% and the other varied between 25% and 100% load.
4. Measured with 20 MHz BW and 1 µF ceramic capacitor across output rails.
5. External input capacitor required, Nippon Chemi-Con KY series, 220 µF/100 V or equivalent.

## Mechanical Details

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

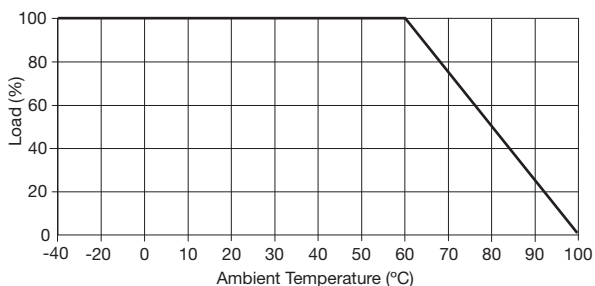
### 24 Pin DIL Package - Nickel Coated Copper



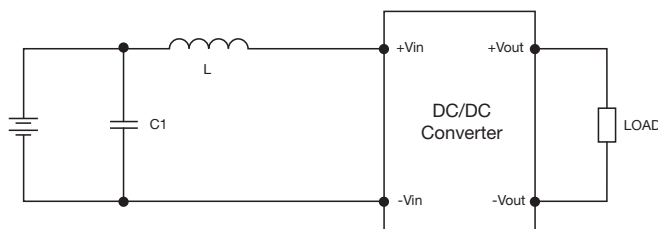
Pin	Pin Connections	
	Single	Dual
2	-Vin	-Vin
3	-Vin	-Vin
9	No Pin	Common
11	Not Connected	-Vout
14	+Vout	+Vout
16	-Vout	Common
22	+Vin	+Vin
23	+Vin	+Vin

## Application Notes

### Derating Curve



### Input Filter



Model	L	C1
12 V	12 µH	100 µF, 100 V
24 V	12 µH	100 µF, 100 V
48 V	12 µH	100 µF, 100 V