



**THE DATASHEET OF  
JCJ1012S05**



## JCJ Series



- 2:1 Input Range
- DIP-24 Metal Package
- Operating Temperature  $-40\text{ }^{\circ}\text{C}$  to  $+100\text{ }^{\circ}\text{C}$
- Single & Dual Outputs
- Continuous Short Circuit Protection
- 1500 VDC Isolation
- 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 (36-75 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 Current	<ul style="list-style-type: none"> <li>• JCJ08: 35 mA, JCJ10: 20 mA pk-pk through 12 <math>\mu\text{H}</math> inductor</li> </ul>
Input Surge	<ul style="list-style-type: none"> <li>• 12 V models 24/25 VDC for 100 ms</li> <li>• 24 V models 40/50 VDC for 100 ms</li> <li>• 48 V models 100 VDC for 100 ms</li> </ul>
Undervoltage Lockout	<ul style="list-style-type: none"> <li>• None</li> </ul>
Reverse Voltage Protection	<ul style="list-style-type: none"> <li>• None</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>
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 other models (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>• <math>&lt; 3\%</math> max deviation, recovery to within 1% in 200 <math>\mu\text{s}</math> for a 25% load change</li> </ul>
Ripple & Noise	<ul style="list-style-type: none"> <li>• 75 mV pk-pk, 20 MHz bandwidth, (see note 4)</li> </ul>
Overvoltage Protection	<ul style="list-style-type: none"> <li>• JCJ10: 3.3 V models: 3.9 V typ., 5 V models: 6.2 V typ., 12 V models: 15.0 V typ., 15 V models: 18.0 V typ., <math>\pm 12\text{ V}</math> models: <math>\pm 15.0\text{ V}</math> typ., <math>\pm 15\text{ V}</math> models: <math>\pm 18.0\text{ V}</math> typ. JCJ08: No OVP</li> </ul>
Overload Protection	<ul style="list-style-type: none"> <li>• <math>&gt; 150\%</math> of full load</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>• 1200 pF max</li> </ul>
Switching Frequency	<ul style="list-style-type: none"> <li>• 330 kHz typical</li> </ul>
Power Density	<ul style="list-style-type: none"> <li>• JCJ10: 25 W/in<sup>3</sup></li> <li>• JCJ08: 20 W/in<sup>3</sup></li> </ul>
MTBF	<ul style="list-style-type: none"> <li>• <math>&gt; 900\text{ KHrs}</math> to MIL-HDBK-217F at 25 <math>^{\circ}\text{C}</math>, GB</li> </ul>

## Environmental

Operating Temperature	<ul style="list-style-type: none"> <li>• <math>-40\text{ }^{\circ}\text{C}</math> to <math>+100\text{ }^{\circ}\text{C}</math>, derate from 100% load at <math>+60\text{ }^{\circ}\text{C}</math> to no load at <math>+100\text{ }^{\circ}\text{C}</math></li> </ul>
Case Temperature	<ul style="list-style-type: none"> <li>• <math>+100\text{ }^{\circ}\text{C}</math> max</li> </ul>
Storage Temperature	<ul style="list-style-type: none"> <li>• <math>-40\text{ }^{\circ}\text{C}</math> to <math>+125\text{ }^{\circ}\text{C}</math></li> </ul>
Humidity	<ul style="list-style-type: none"> <li>• Up to 95% RH, 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>• EN55032 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, 4 kV contact discharge</li> <li>• JCJ10: 6 kV contact discharge, Perf Criteria A</li> </ul>
EFT/Burst	<ul style="list-style-type: none"> <li>• EN61000-4-4, level 1</li> <li>• JCJ10: level 3, Perf Criteria A, (see note 5)</li> </ul>
Surge	<ul style="list-style-type: none"> <li>• JCJ08: EN61000-4-5, installation class 2, JCJ10: installation class 3, Perf Criteria A, (see note 5)</li> </ul>
Conducted Immunity	<ul style="list-style-type: none"> <li>• EN61000-4-6, 3 Vrms</li> <li>• JCJ10: 10 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>

## Safety

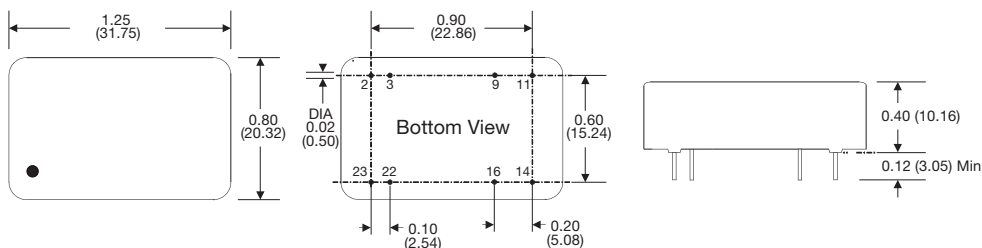
Safety Approvals	<ul style="list-style-type: none"> <li>• UL62368-1, CAN/CSA C22.2 No. 62368-1 CE (Meets all applicable directives), UKCA (Meets all applicable legislation)</li> </ul>
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Input Voltage	Output Voltage	Output Current	Input Current <sup>(1)</sup>		Maximum Capacitive Load	Efficiency	Model Number
			No Load	Full Load			
9-18 V	3.3 V	2.000 A	20 mA	0.69 A	3300 µF	80%	JCJ0812S3V3
	5.0 V	1.500 A	20 mA	0.76 A	2200 µF	82%	JCJ0812S05
	12.0 V	0.665 A	20 mA	0.78 A	470 µF	85%	JCJ0812S12
	15.0 V	0.535 A	20 mA	0.80 A	220 µF	83%	JCJ0812S15
	±5.0 V	±0.800 A	20 mA	0.81 A	±1000 µF	82%	JCJ0812D05
	±12.0 V	±0.335 A	20 mA	0.79 A	±220 µF	84%	JCJ0812D12
18-36 V	3.3 V	2.000 A	15 mA	0.34 A	3300 µF	80%	JCJ0824S3V3
	5.0 V	1.500 A	15 mA	0.38 A	2200 µF	82%	JCJ0824S05
	12.0 V	0.665 A	15 mA	0.39 A	470 µF	85%	JCJ0824S12
	15.0 V	0.535 A	15 mA	0.40 A	220 µF	84%	JCJ0824S15
	±5.0 V	±0.800 A	15 mA	0.41 A	±1000 µF	82%	JCJ0824D05
	±12.0 V	±0.335 A	15 mA	0.40 A	±220 µF	83%	JCJ0824D12
36-75 V	3.3 V	2.000 A	15 mA	0.17 A	3300 µF	80%	JCJ0848S3V3
	5.0 V	1.500 A	15 mA	0.19 A	2200 µF	82%	JCJ0848S05
	12.0 V	0.665 A	15 mA	0.20 A	470 µF	84%	JCJ0848S12
	15.0 V	0.535 A	15 mA	0.20 A	220 µF	84%	JCJ0848S15
	±5.0 V	±0.800 A	15 mA	0.20 A	±1000 µF	82%	JCJ0848D05
	±12.0 V	±0.335 A	15 mA	0.20 A	±220 µF	85%	JCJ0848D12
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
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

**Notes**

1. Input current measured at nominal input voltage.
2. From 10% to 100% load.
3. When one output is set at 100% load and the other varied between 25% and 100% load
4. Measured with 20 MHz bandwidth and 1 µF ceramic capacitor across output rails.
5. A 220 µF/100 V capacitor across the input is required to meet EN61000-4-4 and EN61000-4-5

**Mechanical Details and Application Note**

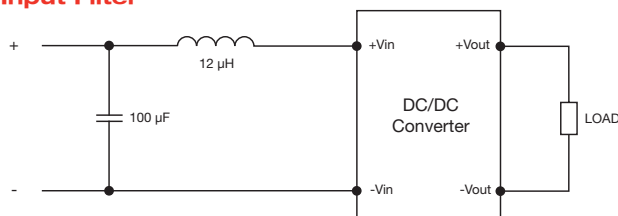


Pin Connections					
Pin	Single	Dual	Pin	Single	Dual
2	-Vin	-Vin	14	+Vout	+Vout
3	-Vin	-Vin	16	-Vout	Common
9	No Pin	Common	22	+Vin	+Vin
11	N.C.	-Vout	23	+Vin	+Vin

**Notes**

1. All dimensions are in inches (mm)
2. Weight: 0.04 lbs (17 g) approx.
3. Pin pitch and length tolerance: ±0.014 (±0.35)
4. Pin diameter tolerance: 0.02 ±0.002 (0.5 ±0.05)
5. Case tolerance: ±0.02 (±0.5)
6. Package: 24 in DIL nickel-coated copper.

**Input Filter**









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