

## Excellent Integrated System Limited

Stocking Distributor

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# 40 Watts

## JCK Series



- 2:1 Input Range
- Very High Power Density
- Single and Dual Outputs
- High Efficiency – Up to 92%
- Remote On/Off
- 1600 VDC Isolation
- 3 Year Warranty

### Specification

#### Input

- |                                |  |
|--------------------------------|--|
| Input Voltage Range            | <ul style="list-style-type: none"> <li>• 12 V (9-18 VDC), 24 V (18-36 VDC), 48 V (36-75 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>• 20 mA pk-pk through 12 <math>\mu</math>H inductor, 5 Hz to 20 MHz</li> </ul>  |
| Undervoltage Lockout           | <ul style="list-style-type: none"> <li>• 12 V models: ON 8.6 V, OFF 7.9 V typical</li> <li>• 24 V models: ON 17.8 V, OFF 16 V typical</li> <li>• 48 V models: ON 33.5 V, OFF 30.5 V typical</li> </ul> |
| Input Surge                    | <ul style="list-style-type: none"> <li>• 12 V models 25 VDC for 1000 ms</li> <li>• 24 V models 50 VDC for 1000 ms</li> <li>• 48 V models 100 VDC for 1000 ms</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</math>10% on single outputs models only, contact sales for details</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</math>0.5% max</li> </ul>   |
| Load Regulation          | <ul style="list-style-type: none"> <li>• Single output models: <math>\pm</math>0.5% max</li> <li>• Dual output models: <math>\pm</math>1% max balanced outputs</li> </ul>  |
| Cross Regulation         | <ul style="list-style-type: none"> <li>• <math>\pm</math>5% (see note 2)</li> </ul>  |
| Setpoint Accuracy        | <ul style="list-style-type: none"> <li>• <math>\pm</math>1%</li> </ul>   |
| Start Up Time            | <ul style="list-style-type: none"> <li>• 30 ms typical</li> </ul>  |
| Ripple & Noise           | <ul style="list-style-type: none"> <li>• 100 mV for 3V3 +5 V models, 150 mV for other models (see note 3)</li> </ul>   |
| Transient Response       | <ul style="list-style-type: none"> <li>• 3% max deviation, recovery to within 1% in &lt;250 <math>\mu</math>s for a 25% load change</li> </ul>   |
| Temperature Coefficient  | <ul style="list-style-type: none"> <li>• 0.02%/<math>^{\circ}</math>C</li> </ul>   |
| Overvoltage Protection   | <ul style="list-style-type: none"> <li>• 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</math>12 V models: <math>\pm</math>15 V typical</li> <li>• <math>\pm</math>15 V models: <math>\pm</math>18 V typical</li> </ul> |
| Overload Protection      | <ul style="list-style-type: none"> <li>• 115-130% of output current</li> </ul>   |
| Short Circuit Protection | <ul style="list-style-type: none"> <li>• Trip &amp; restart (Hiccup mode), auto recovery</li> </ul>  |
| Remote On/Off            | <ul style="list-style-type: none"> <li>• On = Logic High (&gt;3.0) or Open</li> <li>• Off = Logic Low (&lt;1.2 V) or short pin 2 to 3</li> </ul>   |

#### General

- |                       |   |
|-----------------------|---|
| Efficiency            | <ul style="list-style-type: none"> <li>• See table</li> </ul>   |
| Isolation             | <ul style="list-style-type: none"> <li>• 1600 VDC Input to Output</li> <li>• 1600 VDC Input to Case</li> <li>• 1600 VDC Output to Case</li> </ul> |
| Isolation Capacitance | <ul style="list-style-type: none"> <li>• 1000 pF typical</li> </ul>   |
| Switching Frequency   | <ul style="list-style-type: none"> <li>• 270 kHz typical</li> </ul>   |
| Power Density         | <ul style="list-style-type: none"> <li>• 50 W/in<sup>3</sup></li> </ul>   |
| MTBF                  | <ul style="list-style-type: none"> <li>• 330 kHrs min to MIL-HDBK-217F at 25 <math>^{\circ}</math>C, GB</li> </ul>                                |

#### Environmental

- |                       |   |
|-----------------------|---|
| Operating Temperature | <ul style="list-style-type: none"> <li>• -40 <math>^{\circ}</math>C to +70 <math>^{\circ}</math>C, derate from 100% load at 55 <math>^{\circ}</math>C to 60% load at 70 <math>^{\circ}</math>C</li> </ul> |
| Case Temperature      | <ul style="list-style-type: none"> <li>• +105 <math>^{\circ}</math>C max</li> </ul>   |
| Cooling               | <ul style="list-style-type: none"> <li>• Convection-cooled</li> </ul>   |
| Operating Humidity    | <ul style="list-style-type: none"> <li>• 5-95% RH, non-condensing</li> </ul>  |
| Storage Temperature   | <ul style="list-style-type: none"> <li>• -40 <math>^{\circ}</math>C to +125 <math>^{\circ}</math>C</li> </ul>   |

#### EMC

- |                    |   |
|--------------------|---|
| Emissions          | <ul style="list-style-type: none"> <li>• EN55022 class B conducted &amp; radiated 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 1, 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, 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>   |

\*External input capacitor required, 220  $\mu$ F/100 V.

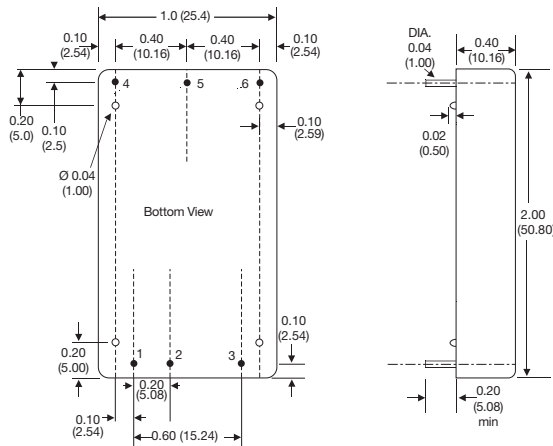
**Models and Ratings**

Input Voltage	Output Voltage	Output Current	Input Current <sup>(1)</sup>		Maximum Capacitive Load	Efficiency	Model Number
			No Load	Full Load			
9-18 VDC	3.3 V	8.00 A	100 mA	2444 mA	21000 µF	90%	JCK4012S3V3
	5.0 V	8.00 A	150 mA	3663 mA	13000 µF	91%	JCK4012S05
	12.0 V	3.33 A	40 mA	3663 mA	2000 µF	91%	JCK4012S12
	15.0 V	2.67 A	50 mA	3663 mA	1500 µF	91%	JCK4012S15
	±12.0 V	±1.67 A	30 mA	3663 mA	±1200 µF	91%	JCK4012D12
	±15.0 V	±1.33 A	50 mA	3623 mA	±750 µF	92%	JCK4012D15
18-36 VDC	3.3 V	8.00 A	60 mA	1208 mA	21000 µF	91%	JCK4024S3V3
	5.0 V	8.00 A	80 mA	1811 mA	13000 µF	92%	JCK4024S05
	12.0 V	3.33 A	30 mA	1831 mA	2000 µF	91%	JCK4024S12
	15.0 V	2.67 A	40 mA	1811 mA	1500 µF	92%	JCK4024S15
	±12.0 V	±1.67 A	50 mA	1831 mA	±1200 µF	91%	JCK4024D12
	±15.0 V	±1.33 A	40 mA	1811 mA	±750 µF	92%	JCK4024D15
36-75 VDC	3.3 V	8.00 A	40 mA	604 mA	21000 µF	91%	JCK4048S3V3
	5.0 V	8.00 A	60 mA	905 mA	13000 µF	92%	JCK4048S05
	12.0 V	3.33 A	20 mA	915 mA	2000 µF	91%	JCK4048S12
	15.0 V	2.67 A	20 mA	905 mA	1500 µF	92%	JCK4048S15
	±12.0 V	±1.67 A	30 mA	906 mA	±1200 µF	92%	JCK4048D12
	±15.0 V	±1.33 A	40 mA	906 mA	±750 µF	92%	JCK4048D15

**Notes**

1. Input current specified at nominal input.
2. Cross regulation for duals is ±5% when one output is at 100% and the other is varied between 25% and 100%.
3. Measured with 1 µF ceramic capacitor in parallel with a 10 µF electrolytic across output rails.

**Mechanical Details**



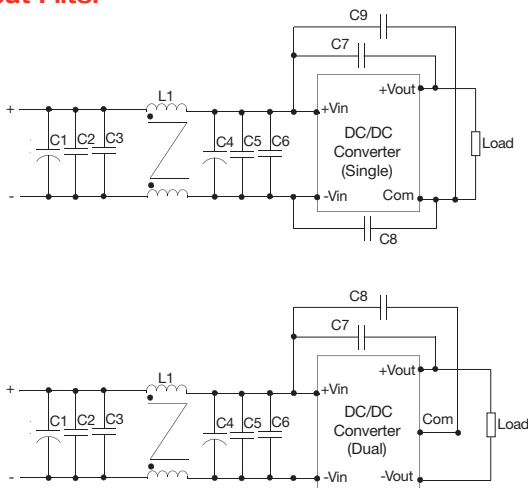
PIN CONNECTIONS		
Pin	Single	Dual
1	+Vin	+Vin
2	-Vin	-Vin
3	Remote On/Off	Remote On/Off
4	+Vout	+Vout
5	Com	Com
6	Trim	-Vout

**Notes**

1. All dimensions are in inches (mm).
2. Weight: 0.07 lbs (30 g) approx
3. Pin diameter: 0.04 ±0.002 (1.0 ±0.05)
4. Pin pitch tolerance: ±0.014 (±0.35)
5. Case tolerance: ±0.02 (±0.5)

**Application Notes**

**Input Filter**



JCK40 Single	C1	L1	C2/C3/C5/C6	C4
12 V	220 µF, 100 V	Common Mode Choke 68 µH	6.8 µF, 50 V	330 µF, 100 V
24 V			4.7 µF, 50 V	220 µF, 100 V
48 V			1.5 µF, 1000 V	220 µF, 100 V
JCK40 Dual	C1	L1	C2/C3/C5/C6	C4
12 V	220 µF, 100 V	Common Mode Choke 68 µH	6.8 µF, 50 V	330 µF, 100 V
24 V			4.7 µF, 50 V	220 µF, 100 V
48 V			1.5 µF, 1000 V	220 µF, 100 V

JCK40 Single	C7	C8	C9
12 V			1000 pF, 2 kV
24 V	1000 pF, 2 kV	1000 pF, 2 kV	
48 V	1000 pF, 2 kV	1000 pF, 2 kV	
JCK40 Dual	C7	C8	
12 V	1000 pF, 2 kV	1000 pF, 2 kV	
24 V	1000 pF, 2 kV	1000 pF, 2 kV	
48 V	1000 pF, 2 kV	1000 pF, 2 kV	

**External Output Trim**

