

# JCK40 SERIES

DC/DC Single & Dual Output: 40 Watts



## 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 Reflected Ripple Current	<ul style="list-style-type: none"><li>20 mA pk-pk through 12 <math>\mu</math>H inductor,</li><li>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,</li><li>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</li><li>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,</li><li>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</li><li>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%/°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),</li><li>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</li><li>to 3</li></ul>

## Features

- 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

## 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</li><li>at 25 °C, GB</li></ul>

## Environmental

Operating Temperature	<ul style="list-style-type: none"><li>-40 °C to +70 °C, derate from 100% load</li><li>at 55 °C to 60% load at 70 °C</li></ul>
Case Temperature	<ul style="list-style-type: none"><li>+105 °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 °C to +125 °C</li></ul>

## EMC

Emissions	<ul style="list-style-type: none"><li>EN55022 class B conducted &amp; radiated</li><li>with external components, see application</li><li>note</li></ul>
ESD Immunity	<ul style="list-style-type: none"><li>EN61000-4-2, 4 kV contact discharge,</li><li>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.

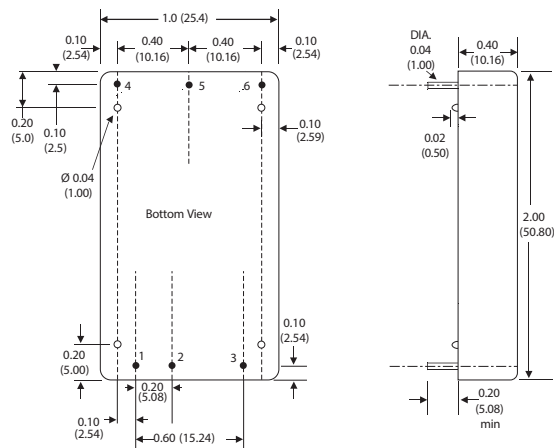
Models and Ratings

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 †^
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 †^
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



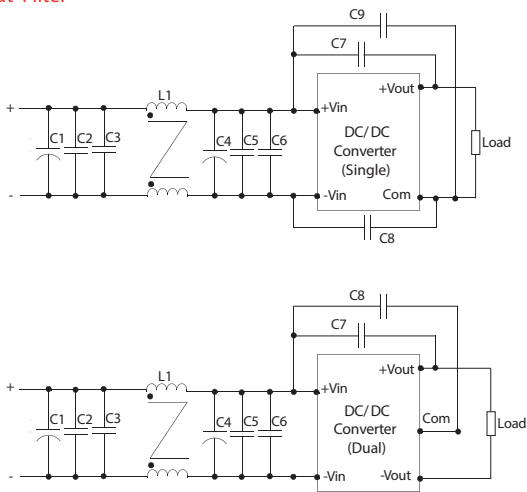
Pin	PIN CONNECTIONS	
	Single	Dual
1	+Vin	+Vin
2	-Vin	-Vin
3	Remote On/Off	Remote On/Off
4	+Vout	+Vout
5	Com	Com
6	Trim	-Vout

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

