

## JCK Series



- 2:1 Input Range
- Operating Temperature  $-40\text{ }^{\circ}\text{C}$  to  $+105\text{ }^{\circ}\text{C}$
- 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>
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 Reflected Ripple Current	<ul style="list-style-type: none"> <li>• 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 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>
Input Filter	<ul style="list-style-type: none"> <li>• Pi network</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 10\%</math> on single outputs models only</li> </ul>
Start Up Delay	<ul style="list-style-type: none"> <li>• 30 ms max</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> max</li> </ul>
Load Regulation	<ul style="list-style-type: none"> <li>• Single output models: <math>\pm 0.5\%</math> max</li> <li>• Dual output models: <math>\pm 1\%</math> max balanced outputs</li> </ul>
Cross Regulation	<ul style="list-style-type: none"> <li>• <math>\pm 5\%</math> (see note 2)</li> </ul>
Setpoint Accuracy	<ul style="list-style-type: none"> <li>• <math>\pm 1\%</math></li> </ul>
Ripple & Noise	<ul style="list-style-type: none"> <li>• 100 mV pk-pk, 20 MHz bandwidth (see note 3)</li> </ul>
Transient Response	<ul style="list-style-type: none"> <li>• 3% max deviation, recovery to within 1% in <math>&lt;250\text{ }\mu\text{s}</math> for a 25% load change</li> </ul>
Temperature Coefficient	<ul style="list-style-type: none"> <li>• <math>0.02\%/^{\circ}\text{C}</math></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 5\text{ V}</math> models: <math>\pm 6.2\text{ V}</math> typical</li> <li>• <math>\pm 12\text{ V}</math> models: <math>\pm 15\text{ V}</math> typical</li> <li>• <math>\pm 15\text{ V}</math> models: <math>\pm 18\text{ V}</math> typical</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 mode), auto recovery</li> </ul>
Remote On/Off	<ul style="list-style-type: none"> <li>• See application notes</li> </ul>
Maximum Capacitive Load	<ul style="list-style-type: none"> <li>• See table</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>• 1500 pF typical</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>• <math>37.5\text{ W/in}^3</math></li> </ul>
MTBF	<ul style="list-style-type: none"> <li>• 430 kHrs min to MIL-HDBK-217F at <math>25\text{ }^{\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>105\text{ }^{\circ}\text{C}</math>, derate from 100% load at <math>50\text{ }^{\circ}\text{C}</math> to no load at <math>105\text{ }^{\circ}\text{C}</math></li> </ul>
Case Temperature	<ul style="list-style-type: none"> <li>• <math>+105\text{ }^{\circ}\text{C}</math> 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>• <math>-40\text{ }^{\circ}\text{C}</math> to <math>+125\text{ }^{\circ}\text{C}</math></li> </ul>

## EMC

Emissions	<ul style="list-style-type: none"> <li>• EN55022 level A conducted &amp; radiated with external components, see application notes</li> </ul>
ESD Immunity	<ul style="list-style-type: none"> <li>• EN61000-4-2, level 3, Perf Criteria A</li> </ul>
EFT/Burst	<ul style="list-style-type: none"> <li>• EN61000-4-4, level 3, Perf Criteria A<sup>(4)</sup></li> </ul>
Surge	<ul style="list-style-type: none"> <li>• EN61000-4-5, installation class 3, Perf Criteria A<sup>(4)</sup></li> </ul>
Conducted Immunity	<ul style="list-style-type: none"> <li>• EN61000-4-6, 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>

## 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	80 mA	2426 mA	20000 µF	89%	JCK3012S3V3†^
	5.0 V	6.00 A	180 mA	2874 mA	14000 µF	91%	JCK3012S05†^
	5.1 V	6.00 A	160 mA	2874 mA	14000 µF	92%	JCK3012S5V1
	12.0 V	2.50 A	30 mA	2809 mA	2000 µF	91%	JCK3012S12†^
	15.0 V	2.00 A	30 mA	2809 mA	2000 µF	92%	JCK3012S15†^
	±5.0 V	±3.00 A	180 mA	2874 mA	±3000 µF	89%	JCK3012D05†^
	±12.0 V	±1.25 A	50 mA	2874 mA	±1250 µF	90%	JCK3012D12†^
	±15.0 V	±1.00 A	50 mA	2874 mA	±1000 µF	91%	JCK3012D15†^
18-36 VDC	3.3 V	8.00 A	70 mA	1185 mA	20000 µF	91%	JCK3024S3V3†^
	5.0 V	6.00 A	100 mA	1420 mA	14000 µF	92%	JCK3024S05†^
	5.1 V	6.00 A	100 mA	1448 mA	14000 µF	92%	JCK3024S5V1
	12.0 V	2.50 A	20 mA	1436 mA	2000 µF	92%	JCK3024S12†^
	15.0 V	2.00 A	40 mA	1420 mA	2000 µF	92%	JCK3024S15†^
	±5.0 V	±3.00 A	100 mA	1437 mA	±3000 µF	90%	JCK3024D05†^
	±12.0 V	±1.25 A	40 mA	1453 mA	±1250 µF	91%	JCK3024D12†^
	±15.0 V	±1.00 A	50 mA	1437 mA	±1000 µF	91%	JCK3024D15†^
36-75 VDC	3.3 V	8.00 A	50 mA	593 mA	20000 µF	90%	JCK3048S3V3†^
	5.0 V	6.00 A	70 mA	702 mA	14000 µF	91%	JCK3048S05†^
	5.1 V	6.00 A	70 mA	724 mA	14000 µF	91%	JCK3048S5V1
	12.0 V	2.50 A	30 mA	718 mA	2000 µF	91%	JCK3048S12†^
	15.0 V	2.00 A	30 mA	710 mA	2000 µF	91%	JCK3048S15†^
	±5.0 V	±3.00 A	70 mA	710 mA	±3000 µF	90%	JCK3048D05†^
	±12.0 V	±1.25 A	50 mA	718 mA	±1250 µF	90%	JCK3048D12†^
	±15.0 V	±1.00 A	40 mA	718 mA	±1000 µF	90%	JCK3048D15†^

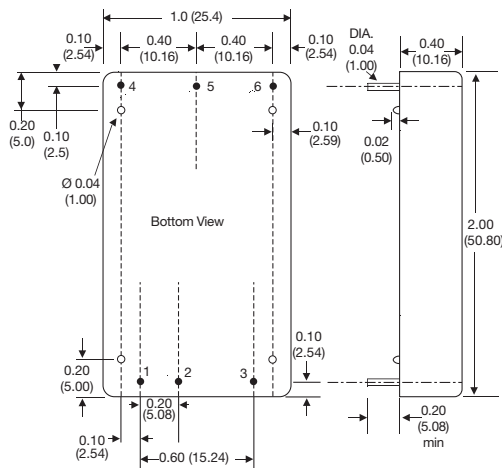
### Notes

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 across output rails.
4. A 220 µF/250 V capacitor across the input is required in order to meet EN61000-4-4 and EN61000-4-5.

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

^ Available from Newark. See pages 291-296

## Mechanical Details



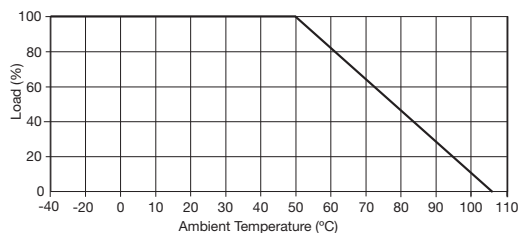
Pin	PIN CONNECTIONS	
	Single	Dual
1	+Vin	+Vin
2	-Vin	-Vin
3	Remote On/Off	Remote On/Off
4	+Vout	+Vout
5	Com	Com
6	Trim	-Vout

### Notes

1. All dimensions are in inches (mm).
2. Weight: 0.07 lbs (31 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

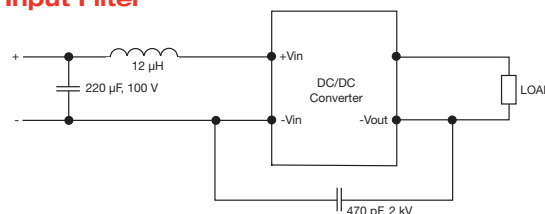
### Derating Curve



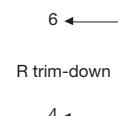
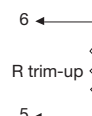
### Remote On/Off Control

Output On >3.0 VDC or open circuit  
Output Off <1.2 VDC or short circuit pins 2 & 3

### Input Filter



### External Output Trim



Output can be externally trimmed using this method.

Contact sales for details.