

## JCK Series



- 2:1 Input Range
- -40 °C to +100 °C Operating Temperature
- Single & Dual Outputs
- Remote On/Off
- High Efficiency – up to 93%
- 1600 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>  |
| 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 36 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 Trim      | <ul style="list-style-type: none"><li>• ±10% max on single outputs</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>• ±0.5% max</li></ul>   |
| Load Regulation          | <ul style="list-style-type: none"><li>• Single output models: ±0.5% max</li><li>• Dual output models: ±1% max balanced outputs</li></ul>  |
| Cross Regulation         | <ul style="list-style-type: none"><li>• ±5% for dual outputs (see note 2)</li></ul>   |
| Setpoint Accuracy        | <ul style="list-style-type: none"><li>• ±1% 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;5 ms</li></ul>  |
| Ripple & Noise           | <ul style="list-style-type: none"><li>• 75 mV pk-pk (see note 3)</li></ul>  |
| Transient Response       | <ul style="list-style-type: none"><li>• ±3% max deviation, recovery to within 1% in 250 μs 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>• ±12 V models: ±15 V typical</li><li>• ±15 V models: ±18 V typical</li></ul> |
| Overload Protection      | <ul style="list-style-type: none"><li>• &gt;140% of full load at nominal input</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 V) or Open</li><li>• Off = Logic Low (&lt;1.2 V) or short pin 2 to pin 6</li></ul>   |
| 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>• 1200 pF typical</li></ul>   |
| Isolation Resistance  | <ul style="list-style-type: none"><li>• 10<sup>9</sup>Ω min</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>• 25 W/in<sup>3</sup></li></ul>   |
| MTBF                  | <ul style="list-style-type: none"><li>• &gt;680 kHrs minimum to MIL-HDBK-217F at 25 °C, GB</li></ul>  |

#### Environmental

- |                       |  |
|-----------------------|--|
| Operating Temperature | <ul style="list-style-type: none"><li>• -40 °C to +100 °C, derate from 100% load at +70 °C to 0% load at +100 °C</li></ul> |
| Case Temperature      | <ul style="list-style-type: none"><li>• +100 °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>• Up to 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 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, 6 kV contact, Perf Criteria A</li></ul>                                     |
| Radiated Immunity  | <ul style="list-style-type: none"><li>• EN61000-4-3 10 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 2, Perf Criteria B*</li></ul>  |
| Conducted Immunity | <ul style="list-style-type: none"><li>• EN61000-4-6 10 V/rms, 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 μF/100 V.

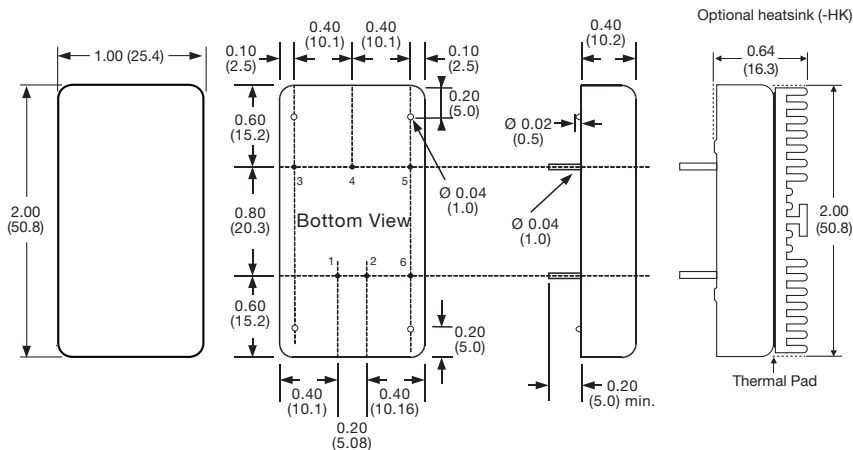
## Models and Ratings

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 VDC	5.500 A	60 mA	1.74 A	10,000 $\mu$ F	90%	JCK2012S3V3
	5.0 VDC	4.000 A	60 mA	1.87 A	6,800 $\mu$ F	92%	JCK2012S05
	12.0 VDC	1.670 A	30 mA	1.92 A	1,000 $\mu$ F	90%	JCK2012S12
	15.0 VDC	1.330 A	30 mA	1.92 A	680 $\mu$ F	90%	JCK2012S15
	$\pm$ 12.0 VDC	$\pm$ 0.835 A	30 mA	1.94 A	$\pm$ 470 $\mu$ F	89%	JCK2012D12
18-36 VDC	3.3 VDC	5.500 A	35 mA	0.86 A	10,000 $\mu$ F	91%	JCK2024S3V3
	5.0 VDC	4.000 A	35 mA	0.93 A	6,800 $\mu$ F	93%	JCK2024S05
	12.0 VDC	1.670 A	25 mA	0.95 A	1,000 $\mu$ F	91%	JCK2024S12
	15.0 VDC	1.330 A	25 mA	0.95 A	680 $\mu$ F	91%	JCK2024S15
	$\pm$ 12.0 VDC	$\pm$ 0.835 A	30 mA	0.96 A	$\pm$ 470 $\mu$ F	90%	JCK2024D12
36-75 VDC	3.3 VDC	5.500 A	25 mA	0.43 A	10,000 $\mu$ F	91%	JCK2048S3V3
	5.0 VDC	4.000 A	25 mA	0.46 A	6,800 $\mu$ F	93%	JCK2048S05
	12.0 VDC	1.670 A	15 mA	0.47 A	1,000 $\mu$ F	91%	JCK2048S12
	15.0 VDC	1.330 A	15 mA	0.47 A	680 $\mu$ F	91%	JCK2048S15
	$\pm$ 12.0 VDC	$\pm$ 0.835 A	20 mA	0.48 A	$\pm$ 470 $\mu$ F	90%	JCK2048D12
	$\pm$ 15.0 VDC	$\pm$ 0.665 A	20 mA	0.48 A	$\pm$ 330 $\mu$ F	89%	JCK2048D15

### Notes

- Input current specified at nominal 12, 24 V or 48 V input.
- Cross regulation is  $\pm$ 5% when one output is at 100% and the other is varied between 25% and 100%.
- Measured with 20 MHz bandwidth and 1  $\mu$ F ceramic capacitor across output rails.
- For heatsink option add '-HK' to the end of the part number.

## Mechanical Details



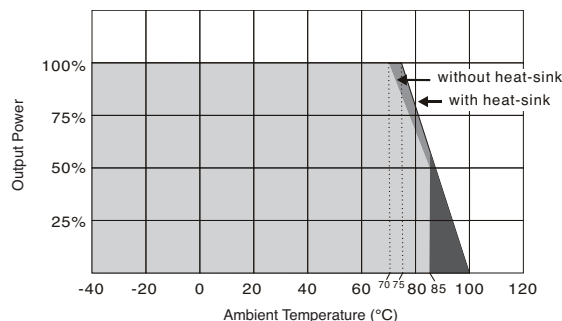
PIN CONNECTIONS		
Pin	Single	Dual
1	+Vin	+Vin
2	-Vin	-Vin
3	+Vout	+Vout
4	Trim	Com
5	-Vout	-Vout
6	Remote On/Off	Remote On/Off

### Notes

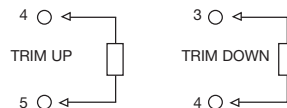
- All dimensions are in inches (mm).
- Weight: 0.07 lbs (30 g)
- Pin diameter: 0.04  $\pm$  0.002 (1.0  $\pm$  0.05)
- Pin pitch tolerance:  $\pm$ 0.014 ( $\pm$ 0.35)
- Case tolerance:  $\pm$ 0.02 ( $\pm$ 0.5)

## Application Notes

### Derating Curve

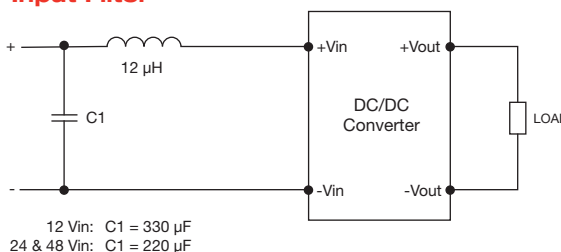


### External Output Trim



- For 3.3 V output:**  
Trim +10%, R = 10 k typical  
Trim -10%, R = 15 k typical
- For 5 V output:**  
Trim +10%, R = 10 k typical  
Trim -10%, R = 5 k typical
- For 12 V output:**  
Trim +10%, R = 22 k typical  
Trim -10%, R = 5 k typical
- For 15 V output:**  
Trim +10%, R = 20 k typical  
Trim -10%, R = 5 k typical

### Input Filter



### Remote On/Off Control

- Output On >3.0 VDC or open circuit  
Output Off <1.2 VDC or short circuit pins 2 & 6