

# 60 Watts

## JCK Series



- 2:1 Input Range
- Very High Power Density
- High Efficiency – Up to 92%
- Remote On/Off
- 1600 VDC Isolation
- OCP, OVP & OTP Functions
- 3 Year Warranty

### Specification

#### Input

Input Voltage Range	<ul style="list-style-type: none"> <li>• 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>• 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>• 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>• <math>\pm</math>10%</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>• <math>\pm</math>0.5% max</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>• 75 mV for 3V3 +5 V models, 100 mV for other models (see note 2)</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> </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>• 2000 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>• 37.5 W/in<sup>3</sup></li> </ul>
MTBF	<ul style="list-style-type: none"> <li>• &gt;110 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 +85 <math>^{\circ}</math>C, see derating curve</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>• Natural convection</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 A conducted &amp; radiated with no external components</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>

#### Safety

Safety Approvals	<ul style="list-style-type: none"> <li>• CE (Meets all applicable directives), UKCA (Meets all applicable legislation)</li> </ul>
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\*External input capacitor required, 220  $\mu$ F/100 V.

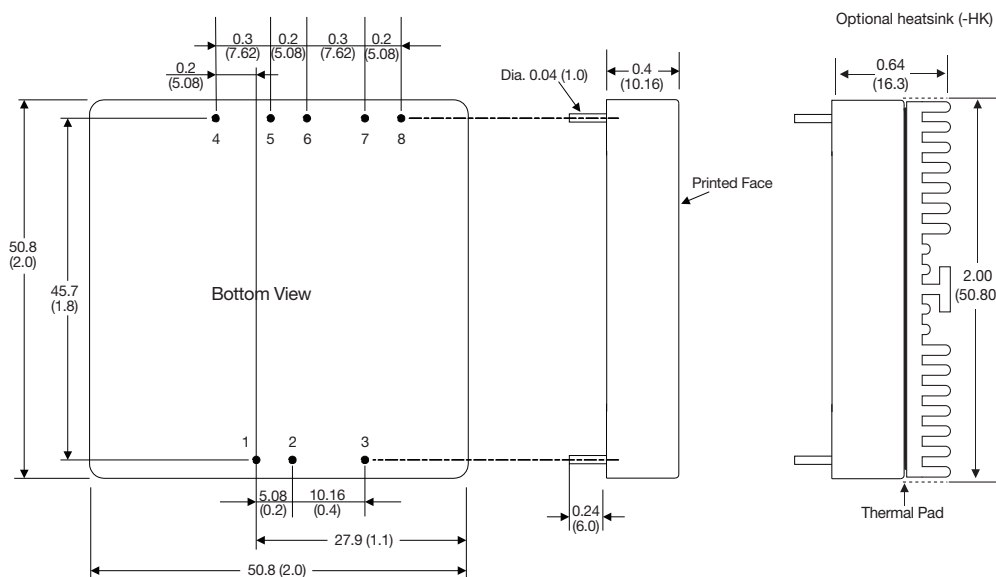
## Models and Ratings

Input Voltage	Output Voltage	Output Current	Input Current <sup>(1)</sup>		Maximum Capacitive Load	Efficiency	Model Number
			No Load	Full Load			
18-36VDC	3.3V	14.0A	80mA	2151mA	36000µF	91%	JCK6024S3V3
	5.0V	12.0A	100mA	2762mA	20400µF	92%	JCK6024S05
	12.0V	5.0A	40mA	2793mA	3550µF	91%	JCK6024S12
	15.0V	4.0A	40mA	2793mA	2300µF	91%	JCK6024S15
36-75VDC	3.3V	14.0A	50mA	1075mA	36000µF	91%	JCK6048S3V3
	5.0V	12.0A	60mA	1389mA	20400µF	92%	JCK6048S05
	12.0V	5.0A	40mA	1397mA	3550µF	91%	JCK6048S12
	15.0V	4.0A	40mA	1397mA	2300µF	91%	JCK6048S15

### Notes

1. Input current specified at nominal input.
2. Measured with 1 µF ceramic capacitor in parallel with a 10 µF electrolytic across output rails and 20 MHz bandwidth.
3. For heatsink option, add '-HK' to the end of the part number

## Mechanical Details



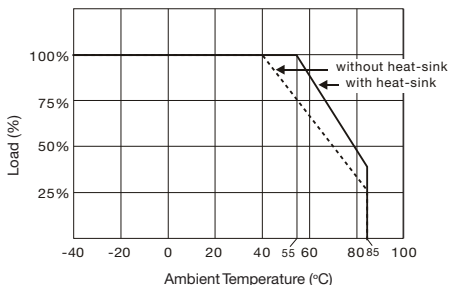
PIN CONNECTIONS	
Pin	Single
1	+Vin
2	-Vin
3	Remote On/Off
4	-Sense
5	+Sense
6	+Vout
7	-Vout
8	Trim

### Notes

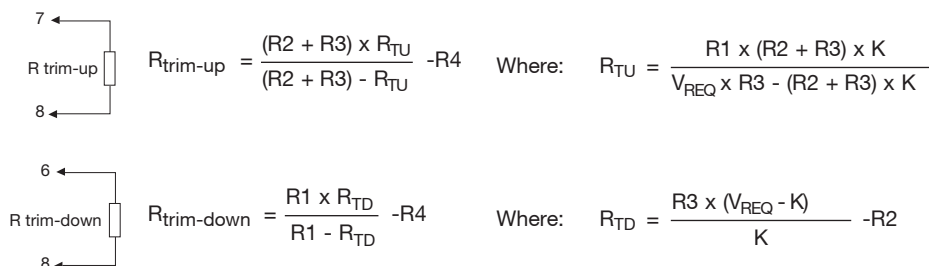
1. All dimensions are in inches (mm).
2. Weight: 0.154 lbs (70 g) approx
3. Pin diameter: 0.04 ±0.002 (1.0 ±0.05)
4. Pin pitch tolerance: ±0.014 (±0.35)
5. Case tolerance: ±0.02 (±0.5)

## Application Notes

### Derating Curve



### External Output Trim



Model	R1	R2	R3	R4	K
JCK60XXS3V3	8200	330	5100	24000	1.24
JCK60XXS05	5100	22	5100	15000	2.495
JCK60XXS12	7500	6200	3600	20000	2.495
JCK60XXS15	8200	6800	3000	24000	2.495

### Remote Sense

If Remote Sense is not required, the +Sense and -Sense pins should be locally connected to +Vout and -Vout respectively. Remote sense can compensate for a total volt drop of 10%. When remote sense is used, output power must not exceed rated power.