

## JCL30 Series



- 2:1 Input Range
- High Efficiency up to 91%
- -40 °C to +100 °C Operating Temperature
- Fixed 270 kHz Switching Frequency
- Regulated Single & Dual Outputs
- Continuous Short Circuit Protection
- Standard Remote On/Off

## Specification

## Input

Input Voltage Range	<ul style="list-style-type: none"> <li>• 12 VDC (9-18 VDC)</li> <li>• 24 VDC (18-36 VDC)</li> <li>• 48 VDC (36-75 VDC)</li> </ul>
Input Current	<ul style="list-style-type: none"> <li>• See table</li> </ul>
Input Filter	<ul style="list-style-type: none"> <li>• Pi network</li> </ul>
Undervoltage Lockout	<ul style="list-style-type: none"> <li>• Turn on &gt;71% nominal input, Turn off &lt;63% nominal input</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>

## Output

Output Voltage	<ul style="list-style-type: none"> <li>• See table</li> </ul>
Output Voltage Adj	<ul style="list-style-type: none"> <li>• <math>\pm 10\%</math> via trim pin</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>• <math>\pm 0.5\%</math> max from 10% to full load</li> </ul>
Setpoint Accuracy	<ul style="list-style-type: none"> <li>• <math>\pm 1.0\%</math> max</li> </ul>
Cross Regulation	<ul style="list-style-type: none"> <li>• <math>\pm 5.0\%</math>, see note 2</li> </ul>
Ripple & Noise	<ul style="list-style-type: none"> <li>• 75 mV pk-pk max, see note 3</li> </ul>
Transient Response	<ul style="list-style-type: none"> <li>• 3% max deviation, recovery to within 1% in 200 <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, 5.0 V models 6.2 V typical, 12.0 V models 15.0 V typical, 15.0 V models 18.0 V typical, <math>\pm 12.0</math> V models <math>\pm 15.0</math> V typical, <math>\pm 15.0</math> V models <math>\pm 18.0</math> V typical</li> </ul>
Overcurrent Protection	<ul style="list-style-type: none"> <li>• 120% typical</li> </ul>
Short Circuit Protection	<ul style="list-style-type: none"> <li>• Trip &amp; restart (hiccup mode)</li> </ul>
Remote On/Off	<ul style="list-style-type: none"> <li>• ON &gt;2.5 VDC or open circuit</li> <li>• OFF &lt;0.8 VDC or short circuit pin 2 &amp; 3</li> </ul>
Thermal Protection	<ul style="list-style-type: none"> <li>• Shuts down when case measures +110 °C typical</li> </ul>

## General

Efficiency	<ul style="list-style-type: none"> <li>• See table</li> </ul>
Isolation Voltage	<ul style="list-style-type: none"> <li>• 1500 VDC Input to Output</li> <li>• 1000 VDC Input to Case</li> <li>• 1000 VDC Output to Case</li> </ul>
Isolation Capacitance	<ul style="list-style-type: none"> <li>• 1200 pF typical</li> </ul>
Switching Frequency	<ul style="list-style-type: none"> <li>• 270 kHz typical</li> </ul>
MTBF	<ul style="list-style-type: none"> <li>• 1 Mhrs to MIL-STD-217F</li> </ul>

## Environmental

Operating Temperature	<ul style="list-style-type: none"> <li>• -40 °C to +100 °C (see derating curve)</li> </ul>
Case Temperature	<ul style="list-style-type: none"> <li>• +100 °C max</li> </ul>
Storage Temperature	<ul style="list-style-type: none"> <li>• -40 °C to +125 °C</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 90%, non-condensing</li> </ul>
Shock	<ul style="list-style-type: none"> <li>• 30 g, half sine wave 18 ms pulse applied 3 times on each of 6 axes</li> </ul>
Vibration	<ul style="list-style-type: none"> <li>• 5-500 Hz, 3 g, for 10 mins on each of 3 axes</li> </ul>

## EMC

Emissions	<ul style="list-style-type: none"> <li>• EN55022, Level A conducted &amp; radiated with external components - see application note</li> </ul>
ESD Immunity	<ul style="list-style-type: none"> <li>• EN61000-4-2, Level 2 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 3 Perf Criteria A*</li> </ul>
Surge	<ul style="list-style-type: none"> <li>• EN61000-4-5, Level 3 Perf Criteria A*</li> </ul>
Conducted Immunity	<ul style="list-style-type: none"> <li>• EN61000-4-6, 3 V rms Perf Criteria A</li> </ul>
Magnetic Fields	<ul style="list-style-type: none"> <li>• EN61000-4-8, 1 A/m Perf Criteria A</li> </ul>

\*See note 4

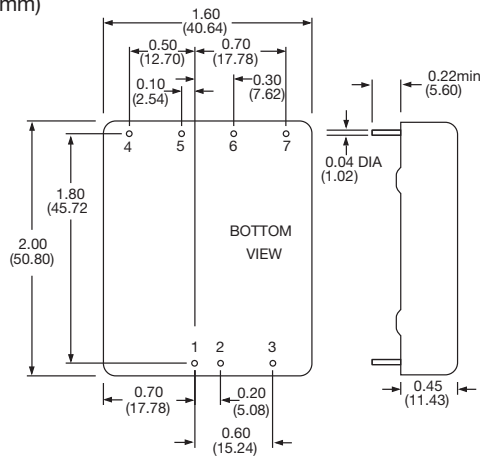
Input Voltage	Output Voltage	Output Current	Input Current <sup>(1)</sup>		Efficiency	Max Capacitive Load	Model Number
			No Load	Full Load			
9-18 VDC	3.3 VDC	5.50 A	30 mA	1.87 A	83%	15000 µF	JCL3012S3V3
	5.0 VDC	5.00 A	30 mA	2.48 A	86%	10000 µF	JCL3012S05
	12.0 VDC	2.50 A	30 mA	2.84 A	90%	2200 µF	JCL3012S12
	15.0 VDC	2.00 A	30 mA	2.84 A	90%	1000 µF	JCL3012S15
	±12.0 VDC	±1.25 A	30 mA	2.84 A	90%	±1000 µF	JCL3012D12
	±15.0 VDC	±1.00 A	30 mA	2.84 A	90%	±680 µF	JCL3012D15
18-36 VDC	3.3 VDC	5.50 A	25 mA	0.92 A	84%	15000 µF	JCL3024S3V3
	5.0 VDC	5.00 A	25 mA	1.23 A	87%	10000 µF	JCL3024S05
	12.0 VDC	2.50 A	25 mA	1.40 A	91%	2200 µF	JCL3024S12
	15.0 VDC	2.00 A	25 mA	1.40 A	91%	1000 µF	JCL3024S15
	±12.0 VDC	±1.25 A	25 mA	1.40 A	91%	±1000 µF	JCL3024D12
	±15.0 VDC	±1.00 A	25 mA	1.40 A	91%	±680 µF	JCL3024D15
36-75 VDC	3.3 VDC	5.50 A	20 mA	0.46 A	84%	15000 µF	JCL3048S3V3
	5.0 VDC	5.00 A	20 mA	0.61 A	87%	10000 µF	JCL3048S05
	12.0 VDC	2.50 A	20 mA	0.70 A	91%	2200 µF	JCL3048S12
	15.0 VDC	2.00 A	20 mA	0.70 A	91%	1000 µF	JCL3048S15
	±12.0 VDC	±1.25 A	20 mA	0.71 A	91%	±1000 µF	JCL3048D12
	±15.0 VDC	±1.00 A	20 mA	0.71 A	91%	±680 µF	JCL3048D15

Notes

1. Input currents specified at nominal 12 V, 24 V or 48 V input.
2. Cross regulation is ±5% when one output is at 100% and other is varied between 25% and 100%.
3. Measured with 20 MHz bandwidth and 1 µF ceramic capacitor.
4. External input capacitor required, Nichicon FW series 1000 µF / 100 V or equivalent.

Mechanical Details

All dimensions are in inches (mm)  
Weight: 0.11 lbs (48 g)



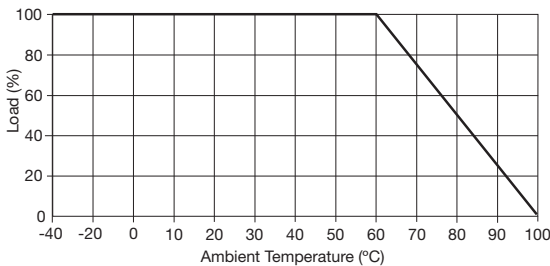
PIN CONNECTIONS		
Pin	Single	Dual
1	+Vin	+Vin
2	-Vin	-Vin
3	Remote On/Off	Remote On/Off
4	No Pin	+Vout
5	+Vout	Com
6	-Vout	-Vout
7	Trim	Trim

Notes

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

Application Notes

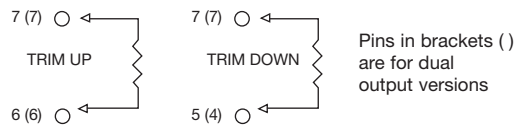
Derating Curve



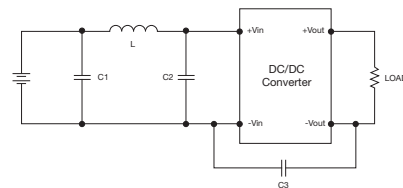
Remote On/Off Control

Standard ROF logic is positive.  
Output On >2.5 VDC or open circuit  
Output Off <0.8 VDC or short circuit pins 2 & 3

External Output Trim



Input Filter



Model	C1	L	C2	C3
12 VDC	330 µF, 100 V	12 µH	100 µF, 100 V	N/A
24 VDC	330 µF, 100 V	12 µH	100 µF, 100 V	N/A
48 VDC	330 µF, 100 V	12 µH	100 µF, 100 V	1000 pF/2k V