

# 4-6 Watts

## JCD Series



- 2:1 Input Range
- Industry Standard Package
- 1600 VDC Isolation
- Continuous Short Circuit Protection
- -40 °C to +100 °C Operating Temperature
- Single & Dual Outputs
- 3 Year Warranty

### Specification

#### Input

|                                   |                                                                                                                                                                                                             |
|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Input Voltage Range               | <ul style="list-style-type: none"> <li>• 5 V (4.5-9 VDC)</li> <li>• 12 V (9-18 VDC)</li> <li>• 24 V (18-36 VDC)</li> <li>• 48 V (36-72 VDC)</li> </ul>                                                      |
| Input Current                     | <ul style="list-style-type: none"> <li>• See table</li> </ul>                                                                                                                                               |
| Input Reflected<br>Ripple Current | <ul style="list-style-type: none"> <li>• 35 mA rms through 12 <math>\mu</math>H inductor</li> </ul>                                                                                                         |
| Input Filter                      | <ul style="list-style-type: none"> <li>• Pi network</li> </ul>                                                                                                                                              |
| Input Surge                       | <ul style="list-style-type: none"> <li>• 5 V models 15 VDC for 100 ms</li> <li>• 12 V models 24 VDC for 100 ms</li> <li>• 24 V models 40 VDC for 100 ms</li> <li>• 48 V models 80 VDC for 100 ms</li> </ul> |

#### Output

|                          |                                                                                                                                                                                                                    |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Output Voltage           | <ul style="list-style-type: none"> <li>• See table</li> </ul>                                                                                                                                                      |
| Setpoint Accuracy        | <ul style="list-style-type: none"> <li>• <math>\pm 1\%</math> (<math>\pm 2\%</math> for JCD0412/24/48S3V3 &amp; D03 models)</li> </ul>                                                                             |
| Voltage Balance          | <ul style="list-style-type: none"> <li>• <math>\pm 1\%</math> (<math>\pm 2\%</math> D03 models)</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></li> </ul>                                                                                                                                         |
| Load Regulation          | <ul style="list-style-type: none"> <li>• <math>\pm 0.5\%</math> single outputs, <math>\pm 1.5\%</math> for S3V3 &amp; D03 models</li> </ul>                                                                        |
| Cross Regulation         | <ul style="list-style-type: none"> <li>• <math>\pm 5\%</math> (see note 1)</li> </ul>                                                                                                                              |
| Ripple & Noise           | <ul style="list-style-type: none"> <li>• 60 mV pk-pk, 20 MHz bandwidth. See note 2</li> </ul>                                                                                                                      |
| Start Up Delay           | <ul style="list-style-type: none"> <li>• 20 ms typical for 5 V input models, 500 ms typical for 12/24/48 V input models</li> </ul>                                                                                 |
| Transient Response       | <ul style="list-style-type: none"> <li>• 3% max deviation, recovery to within 1% in 250 <math>\mu</math>s (5% &amp; 300 <math>\mu</math>s for JCD0412/24/48S3V3 &amp; D03 models) for a 25% load change</li> </ul> |
| Temperature Coefficient  | <ul style="list-style-type: none"> <li>• 0.02%/°C</li> </ul>                                                                                                                                                       |
| Overload Protection      | <ul style="list-style-type: none"> <li>• 150% of full load on 5 V input models only</li> </ul>                                                                                                                     |
| Short Circuit Protection | <ul style="list-style-type: none"> <li>• Indefinite with auto recovery</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 Voltage     | <ul style="list-style-type: none"> <li>• 1600 VDC Input to Output</li> <li>• For optional high isolation versions 3500 VDC Input to Output add suffix -H to model number</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>• 500 pF typical input to output</li> </ul>                                                                                                                                                                       |
| Isolation Resistance  | <ul style="list-style-type: none"> <li>• <math>10^9 \Omega</math></li> </ul>                                                                                                                                                                             |
| Switching Frequency   | <ul style="list-style-type: none"> <li>• 266 kHz typical</li> </ul>                                                                                                                                                                                      |
| Power Density         | <ul style="list-style-type: none"> <li>• 4 W: 10 W/in<sup>3</sup>, 5 W: 12.5 W/in<sup>3</sup>, 6 W: 15 W/in<sup>3</sup></li> </ul>                                                                                                                       |
| MTBF                  | <ul style="list-style-type: none"> <li>• &gt;1.1 Mhrs to MIL-STD-217F at 25 °C, GB</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 95% RH, non-condensing</li> </ul>           |

#### EMC

|                    |                                                                                                                              |
|--------------------|------------------------------------------------------------------------------------------------------------------------------|
| Emissions          | <ul style="list-style-type: none"> <li>• EN55022 Class A conducted with external components, see application note</li> </ul> |
| ESD Immunity       | <ul style="list-style-type: none"> <li>• EN61000-4-2, level 3, Perf Criteria B</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 A*</li> </ul>                                   |
| Conducted Immunity | <ul style="list-style-type: none"> <li>• EN61000-4-6, 10 Vrms, Perf Criteria B*</li> </ul>                                   |
| Magnetic Field     | <ul style="list-style-type: none"> <li>• EN61000-4-8, 1 A/m, Perf Criteria B*</li> </ul>                                     |

\*External input capacitor required, 220  $\mu$ F/100 V

## Models and Ratings

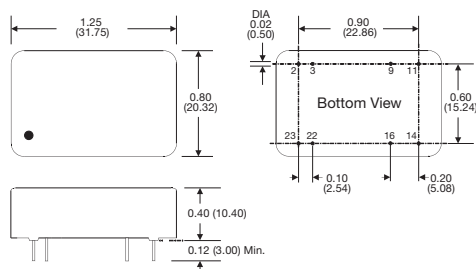
JCD04 **XP**

| Input Voltage | Output Voltage | Output Current | Input Current <sup>(1)</sup> |           | Maximum Capacitive Load | Efficiency | Model Number |
|---------------|----------------|----------------|------------------------------|-----------|-------------------------|------------|--------------|
|               |                |                | No Load                      | Full Load |                         |            |              |
| 4.5-9 VDC     | 3.3 V          | 1200 mA        | 25 mA                        | 1084 mA   | 3300 $\mu$ F            | 73%        | JCD0405S3V3  |
|               | 5.0 V          | 800 mA         | 25 mA                        | 1026 mA   | 1000 $\mu$ F            | 78%        | JCD0405S05   |
|               | 12.0 V         | 333 mA         | 30 mA                        | 974 mA    | 220 $\mu$ F             | 82%        | JCD0405S12   |
|               | 15.0 V         | 266 mA         | 30 mA                        | 973 mA    | 100 $\mu$ F             | 82%        | JCD0405S15   |
|               | $\pm 3.3$ V    | $\pm 600$ mA   | 25 mA                        | 1042 mA   | $\pm 680$ $\mu$ F       | 76%        | JCD0405D03   |
|               | $\pm 5.0$ V    | $\pm 400$ mA   | 30 mA                        | 1012 mA   | $\pm 470$ $\mu$ F       | 79%        | JCD0405D05   |
|               | $\pm 12.0$ V   | $\pm 166$ mA   | 35 mA                        | 963 mA    | $\pm 100$ $\mu$ F       | 83%        | JCD0405D12   |
| 9-18 VDC      | $\pm 15.0$ V   | $\pm 133$ mA   | 40 mA                        | 985 mA    | $\pm 47$ $\mu$ F        | 81%        | JCD0405D15   |
|               | 3.3 V          | 1200 mA        | 30 mA                        | 445 mA    | 680 $\mu$ F             | 74%        | JCD0412S3V3  |
|               | 5.0 V          | 800 mA         | 30 mA                        | 427 mA    | 1000 $\mu$ F            | 78%        | JCD0412S05   |
|               | 9.0 V          | 444 mA         | 30 mA                        | 416 mA    | 470 $\mu$ F             | 80%        | JCD0412S09   |
|               | 12.0 V         | 333 mA         | 30 mA                        | 406 mA    | 100 $\mu$ F             | 82%        | JCD0412S12   |
|               | 15.0 V         | 266 mA         | 30 mA                        | 401 mA    | 100 $\mu$ F             | 83%        | JCD0412S15   |
|               | 24.0 V         | 166 mA         | 30 mA                        | 406 mA    | 22 $\mu$ F              | 82%        | JCD0412S24   |
|               | $\pm 3.3$ V    | $\pm 600$ mA   | 30 mA                        | 438 mA    | $\pm 680$ $\mu$ F       | 76%        | JCD0412D03   |
|               | $\pm 5.0$ V    | $\pm 400$ mA   | 30 mA                        | 427 mA    | $\pm 470$ $\mu$ F       | 78%        | JCD0412D05   |
|               | $\pm 9.0$ V    | $\pm 220$ mA   | 30 mA                        | 416 mA    | $\pm 220$ $\mu$ F       | 80%        | JCD0412D09   |
|               | $\pm 12.0$ V   | $\pm 166$ mA   | 30 mA                        | 427 mA    | $\pm 47$ $\mu$ F        | 78%        | JCD0412D12   |
| 18-36 VDC     | $\pm 15.0$ V   | $\pm 133$ mA   | 30 mA                        | 416 mA    | $\pm 150$ $\mu$ F       | 80%        | JCD0412D15   |
|               | $\pm 24.0$ V   | $\pm 83$ mA    | 30 mA                        | 416 mA    | $\pm 10$ $\mu$ F        | 80%        | JCD0412D24   |
|               | 3.3 V          | 1200 mA        | 20 mA                        | 216 mA    | 1000 $\mu$ F            | 77%        | JCD0424S3V3  |
|               | 5.0 V          | 800 mA         | 20 mA                        | 208 mA    | 1000 $\mu$ F            | 80%        | JCD0424S05   |
|               | 9.0 V          | 444 mA         | 20 mA                        | 203 mA    | 470 $\mu$ F             | 82%        | JCD0424S09   |
|               | 12.0 V         | 333 mA         | 20 mA                        | 198 mA    | 330 $\mu$ F             | 84%        | JCD0424S12   |
|               | 15.0 V         | 266 mA         | 20 mA                        | 203 mA    | 330 $\mu$ F             | 82%        | JCD0424S15   |
|               | 24.0 V         | 166 mA         | 20 mA                        | 200 mA    | 1000 $\mu$ F            | 83%        | JCD0424S24   |
|               | $\pm 3.3$ V    | $\pm 600$ mA   | 20 mA                        | 216 mA    | $\pm 1000$ $\mu$ F      | 77%        | JCD0424D03   |
|               | $\pm 5.0$ V    | $\pm 400$ mA   | 20 mA                        | 208 mA    | $\pm 330$ $\mu$ F       | 80%        | JCD0424D05   |
|               | $\pm 9.0$ V    | $\pm 220$ mA   | 20 mA                        | 200 mA    | $\pm 220$ $\mu$ F       | 83%        | JCD0424D09   |
| 36-72 VDC     | $\pm 12.0$ V   | $\pm 166$ mA   | 20 mA                        | 200 mA    | $\pm 68$ $\mu$ F        | 83%        | JCD0424D12   |
|               | $\pm 15.0$ V   | $\pm 133$ mA   | 20 mA                        | 203 mA    | $\pm 220$ $\mu$ F       | 82%        | JCD0424D15   |
|               | $\pm 24.0$ V   | $\pm 83$ mA    | 20 mA                        | 210 mA    | $\pm 47$ $\mu$ F        | 79%        | JCD0424D24   |
|               | 3.3 V          | 1200 mA        | 15 mA                        | 108 mA    | 1000 $\mu$ F            | 76%        | JCD0448S3V3  |
|               | 5.0 V          | 800 mA         | 15 mA                        | 104 mA    | 1000 $\mu$ F            | 80%        | JCD0448S05   |
|               | 9.0 V          | 444 mA         | 15 mA                        | 100 mA    | 470 $\mu$ F             | 83%        | JCD0448S09   |
|               | 12.0 V         | 333 mA         | 15 mA                        | 99 mA     | 330 $\mu$ F             | 84%        | JCD0448S12   |
|               | 15.0 V         | 266 mA         | 15 mA                        | 102 mA    | 68 $\mu$ F              | 81%        | JCD0448S15   |
|               | 24.0 V         | 166 mA         | 15 mA                        | 98 mA     | 68 $\mu$ F              | 85%        | JCD0448S24   |
|               | $\pm 3.3$ V    | $\pm 600$ mA   | 15 mA                        | 109 mA    | $\pm 1000$ $\mu$ F      | 76%        | JCD0448D03   |
|               | $\pm 5.0$ V    | $\pm 400$ mA   | 15 mA                        | 104 mA    | $\pm 470$ $\mu$ F       | 80%        | JCD0448D05   |
| 36-72 VDC     | $\pm 9.0$ V    | $\pm 220$ mA   | 15 mA                        | 100 mA    | $\pm 220$ $\mu$ F       | 83%        | JCD0448D09   |
|               | $\pm 12.0$ V   | $\pm 166$ mA   | 15 mA                        | 100 mA    | $\pm 220$ $\mu$ F       | 83%        | JCD0448D12   |
|               | $\pm 15.0$ V   | $\pm 133$ mA   | 15 mA                        | 100 mA    | $\pm 47$ $\mu$ F        | 83%        | JCD0448D15   |
|               | $\pm 24.0$ V   | $\pm 83$ mA    | 15 mA                        | 105 mA    | $\pm 100$ $\mu$ F       | 79%        | JCD0448D24   |

## Notes

- When one output is set at 100% load and the other varies between 25% & 100% load.
- Measured with 20 MHz bandwidth and 1  $\mu$ F ceramic capacitor across output rails.
- Input current specified at nominal 5 V, 12 V, 24 V or 48 V input.
- For optional 3500 VDC isolation add suffix -H to part number e.g. JCD0424S12-H

## Mechanical Details



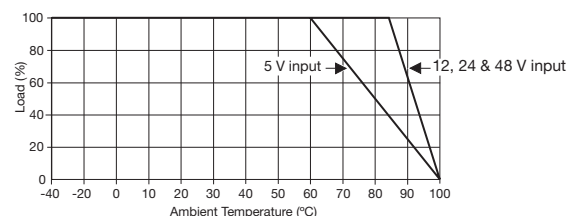
| Pin | Single | Dual   |
|-----|--------|--------|
| 2   | -Vin   | -Vin   |
| 3   | -Vin   | -Vin   |
| 9   | No Pin | Common |
| 11  | N.C.   | -Vout  |
| 14  | +Vout  | +Vout  |
| 16  | -Vout  | Common |
| 22  | +Vin   | +Vin   |
| 23  | +Vin   | +Vin   |

## Notes

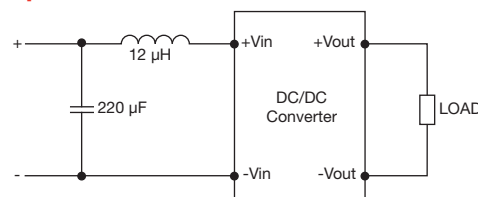
- All dimensions are in inches (mm)
- Weight: 0.04 lbs (18 g) approx.
- Pin diameter: 0.02  $\pm$  0.002 (0.5  $\pm$  0.005)
- Pin pitch and length tolerance:  $\pm$  0.014 ( $\pm$  0.35)
- Case tolerance:  $\pm$  0.02 ( $\pm$  0.5)
- Package: 24 pin DIL nickel-coated copper

## Application Notes

## Derating Curve



## Input Filter



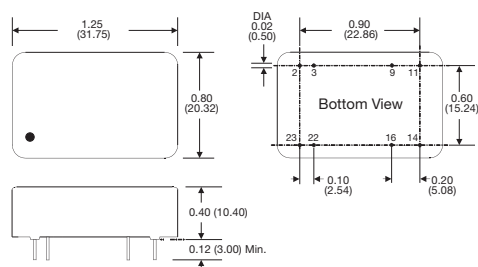
## Models and Ratings

| Input Voltage | Output Voltage | Output Current | Input Current <sup>(1)</sup> |           | Maximum Capacitive Load | Efficiency | Model Number <sup>(4)</sup> |
|---------------|----------------|----------------|------------------------------|-----------|-------------------------|------------|-----------------------------|
|               |                |                | No Load                      | Full Load |                         |            |                             |
| 4.5-9 VDC     | 3.3 V          | 1300 mA        | 25 mA                        | 1159 mA   | 1000 $\mu$ F            | 74%        | JCD0505S3V3                 |
|               | 5.0 V          | 1000 mA        | 25 mA                        | 1298 mA   | 1000 $\mu$ F            | 77%        | JCD0505S05                  |
|               | 12.0 V         | 417 mA         | 30 mA                        | 1220 mA   | 330 $\mu$ F             | 82%        | JCD0505S12                  |
|               | 15.0 V         | 333 mA         | 30 mA                        | 1218 mA   | 220 $\mu$ F             | 82%        | JCD0505S15                  |
|               | $\pm 3.3$ V    | $\pm 750$ mA   | 25 mA                        | 1302 mA   | $\pm 680$ $\mu$ F       | 76%        | JCD0505D03                  |
|               | $\pm 5.0$ V    | $\pm 500$ mA   | 30 mA                        | 1265 mA   | $\pm 330$ $\mu$ F       | 79%        | JCD0505D05                  |
|               | $\pm 12.0$ V   | $\pm 208$ mA   | 35 mA                        | 1217 mA   | $\pm 100$ $\mu$ F       | 82%        | JCD0505D12                  |
| 9-18 VDC      | $\pm 15.0$ V   | $\pm 167$ mA   | 40 mA                        | 1221 mA   | $\pm 47$ $\mu$ F        | 82%        | JCD0505D15                  |
|               | 3.3 V          | 1300 mA        | 30 mA                        | 483 mA    | 1000 $\mu$ F            | 74%        | JCD0512S3V3                 |
|               | 5.0 V          | 1000 mA        | 30 mA                        | 541 mA    | 1000 $\mu$ F            | 77%        | JCD0512S05                  |
|               | 9.0 V          | 555 mA         | 30 mA                        | 520 mA    | 470 $\mu$ F             | 80%        | JCD0512S09                  |
|               | 12.0 V         | 417 mA         | 30 mA                        | 508 mA    | 330 $\mu$ F             | 82%        | JCD0512S12                  |
|               | 15.0 V         | 333 mA         | 30 mA                        | 508 mA    | 100 $\mu$ F             | 82%        | JCD0512S15                  |
|               | 24.0 V         | 208 mA         | 30 mA                        | 508 mA    | 68 $\mu$ F              | 82%        | JCD0512S24                  |
|               | $\pm 3.3$ V    | $\pm 750$ mA   | 30 mA                        | 595 mA    | $\pm 1000$ $\mu$ F      | 70%        | JCD0512D03                  |
|               | $\pm 5.0$ V    | $\pm 500$ mA   | 30 mA                        | 541 mA    | $\pm 1000$ $\mu$ F      | 77%        | JCD0512D05                  |
|               | $\pm 9.0$ V    | $\pm 278$ mA   | 30 mA                        | 527 mA    | $\pm 330$ $\mu$ F       | 79%        | JCD0512D09                  |
|               | $\pm 12.0$ V   | $\pm 208$ mA   | 30 mA                        | 520 mA    | $\pm 47$ $\mu$ F        | 80%        | JCD0512D12                  |
| 18-36 VDC     | $\pm 15.0$ V   | $\pm 167$ mA   | 30 mA                        | 527 mA    | $\pm 47$ $\mu$ F        | 79%        | JCD0512D15                  |
|               | $\pm 24.0$ V   | $\pm 104$ mA   | 30 mA                        | 514 mA    | $\pm 10$ $\mu$ F        | 81%        | JCD0512D24                  |
|               | 3.3 V          | 1300 mA        | 20 mA                        | 239 mA    | 1000 $\mu$ F            | 75%        | JCD0524S3V3                 |
|               | 5.0 V          | 1000 mA        | 20 mA                        | 261 mA    | 1000 $\mu$ F            | 80%        | JCD0524S05                  |
|               | 9.0 V          | 555 mA         | 20 mA                        | 254 mA    | 470 $\mu$ F             | 82%        | JCD0524S09                  |
|               | 12.0 V         | 417 mA         | 20 mA                        | 251 mA    | 1000 $\mu$ F            | 83%        | JCD0524S12                  |
|               | 15.0 V         | 333 mA         | 20 mA                        | 248 mA    | 220 $\mu$ F             | 84%        | JCD0524S15                  |
|               | 24.0 V         | 208 mA         | 20 mA                        | 248 mA    | 1000 $\mu$ F            | 84%        | JCD0524S24                  |
|               | $\pm 3.3$ V    | $\pm 750$ mA   | 20 mA                        | 274 mA    | $\pm 470$ $\mu$ F       | 76%        | JCD0524D03                  |
|               | $\pm 5.0$ V    | $\pm 500$ mA   | 20 mA                        | 263 mA    | $\pm 680$ $\mu$ F       | 79%        | JCD0524D05                  |
| 36-72 VDC     | $\pm 9.0$ V    | $\pm 278$ mA   | 20 mA                        | 251 mA    | $\pm 220$ $\mu$ F       | 83%        | JCD0524D09                  |
|               | $\pm 12.0$ V   | $\pm 208$ mA   | 20 mA                        | 251 mA    | $\pm 220$ $\mu$ F       | 83%        | JCD0524D12                  |
|               | $\pm 15.0$ V   | $\pm 167$ mA   | 20 mA                        | 251 mA    | $\pm 22$ $\mu$ F        | 83%        | JCD0524D15                  |
|               | $\pm 24.0$ V   | $\pm 104$ mA   | 20 mA                        | 254 mA    | $\pm 22$ $\mu$ F        | 82%        | JCD0524D24                  |
|               | 3.3 V          | 1300 mA        | 12 mA                        | 117 mA    | 1000 $\mu$ F            | 76%        | JCD0548S3V3                 |
|               | 5.0 V          | 1000 mA        | 12 mA                        | 130 mA    | 1000 $\mu$ F            | 80%        | JCD0548S05                  |
|               | 9.0 V          | 555 mA         | 12 mA                        | 124 mA    | 100 $\mu$ F             | 84%        | JCD0548S09                  |
|               | 12.0 V         | 417 mA         | 12 mA                        | 132 mA    | 470 $\mu$ F             | 80%        | JCD0548S12                  |
|               | 15.0 V         | 333 mA         | 12 mA                        | 127 mA    | 330 $\mu$ F             | 82%        | JCD0548S15                  |
|               | 24.0 V         | 208 mA         | 12 mA                        | 122 mA    | 220 $\mu$ F             | 85%        | JCD0548S24                  |
| 36-72 VDC     | $\pm 3.3$ V    | $\pm 750$ mA   | 12 mA                        | 140 mA    | $\pm 1000$ $\mu$ F      | 74%        | JCD0548D03                  |
|               | $\pm 5.0$ V    | $\pm 500$ mA   | 12 mA                        | 130 mA    | $\pm 470$ $\mu$ F       | 80%        | JCD0548D05                  |
|               | $\pm 9.0$ V    | $\pm 278$ mA   | 12 mA                        | 127 mA    | $\pm 220$ $\mu$ F       | 82%        | JCD0548D09                  |
|               | $\pm 12.0$ V   | $\pm 208$ mA   | 12 mA                        | 124 mA    | $\pm 100$ $\mu$ F       | 84%        | JCD0548D12                  |
|               | $\pm 15.0$ V   | $\pm 167$ mA   | 12 mA                        | 128 mA    | $\pm 220$ $\mu$ F       | 81%        | JCD0548D15                  |
|               | $\pm 24.0$ V   | $\pm 104$ mA   | 12 mA                        | 128 mA    | $\pm 22$ $\mu$ F        | 81%        | JCD0548D24                  |

## Notes

- When one output is set at 100% load and the other varies between 25% & 100% load.
- Measured with 20 MHz bandwidth and 1  $\mu$ F ceramic capacitor across output rails.
- Input current specified at nominal 5 V, 12 V, 24 V or 48 V input.
- For optional 3500 VDC isolation add suffix -H to part number e.g. JCD0524S12-H

## Mechanical Details



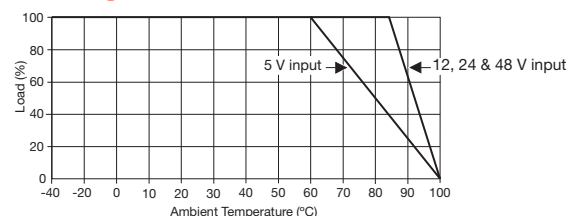
| Pin | Single | Dual   |
|-----|--------|--------|
| 2   | -Vin   | -Vin   |
| 3   | -Vin   | -Vin   |
| 9   | No Pin | Common |
| 11  | N.C.   | -Vout  |
| 14  | +Vout  | +Vout  |
| 16  | -Vout  | Common |
| 22  | +Vin   | +Vin   |
| 23  | +Vin   | +Vin   |

## Notes

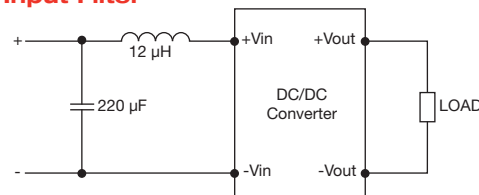
- All dimensions are in inches (mm)
- Weight: 0.04 lbs (18 g) approx.
- Pin diameter: 0.02  $\pm$  0.002 (0.5  $\pm$  0.005)
- Pin pitch and length tolerance:  $\pm$  0.014 ( $\pm$  0.35)
- Case tolerance:  $\pm$  0.02 ( $\pm$  0.5)
- Package: 24 pin DIL nickel-coated copper

## Application Notes

## Derating Curve



## Input Filter



## Models and Ratings

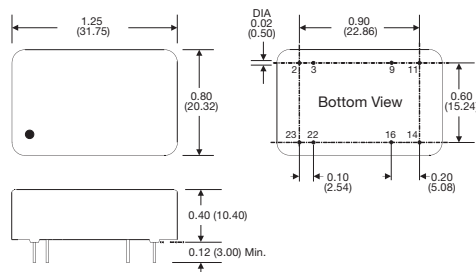
JCD06 XP

| Input Voltage | Output Voltage | Output Current | Input Current <sup>(1)</sup> |           | Maximum Capacitive Load | Efficiency | Model Number <sup>(4)</sup> |
|---------------|----------------|----------------|------------------------------|-----------|-------------------------|------------|-----------------------------|
|               |                |                | No Load                      | Full Load |                         |            |                             |
| 4.5-9 VDC     | 3.3 V          | 1400 mA        | 25 mA                        | 1232 mA   | 1000 $\mu$ F            | 75%        | JCD0605S3V3                 |
|               | 5.0 V          | 1200 mA        | 25 mA                        | 1558 mA   | 1000 $\mu$ F            | 77%        | JCD0605S05                  |
|               | 12.0 V         | 500 mA         | 25 mA                        | 1445 mA   | 330 $\mu$ F             | 83%        | JCD0605S12                  |
|               | 15.0 V         | 400 mA         | 30 mA                        | 1445 mA   | 220 $\mu$ F             | 83%        | JCD0605S15                  |
|               | $\pm 3.3$ V    | $\pm 909$ mA   | 25 mA                        | 1578 mA   | $\pm 680$ $\mu$ F       | 76%        | JCD0605D03                  |
|               | $\pm 5.0$ V    | $\pm 600$ mA   | 25 mA                        | 1500 mA   | $\pm 330$ $\mu$ F       | 80%        | JCD0605D05                  |
|               | $\pm 12.0$ V   | $\pm 250$ mA   | 35 mA                        | 1428 mA   | $\pm 100$ $\mu$ F       | 84%        | JCD0605D12                  |
|               | $\pm 15.0$ V   | $\pm 200$ mA   | 40 mA                        | 1428 mA   | $\pm 47$ $\mu$ F        | 84%        | JCD0605D15                  |
| 9-18 VDC      | 3.3 V          | 1400 mA        | 30 mA                        | 520 mA    | 220 $\mu$ F             | 74%        | JCD0612S3V3                 |
|               | 5.0 V          | 1200 mA        | 30 mA                        | 649 mA    | 1000 $\mu$ F            | 77%        | JCD0612S05                  |
|               | 9.0 V          | 666 mA         | 30 mA                        | 632 mA    | 680 $\mu$ F             | 79%        | JCD0612S09                  |
|               | 12.0 V         | 500 mA         | 30 mA                        | 617 mA    | 1000 $\mu$ F            | 81%        | JCD0612S12                  |
|               | 15.0 V         | 400 mA         | 30 mA                        | 604 mA    | 100 $\mu$ F             | 82%        | JCD0612S15                  |
|               | 24.0 V         | 250 mA         | 30 mA                        | 617 mA    | 100 $\mu$ F             | 81%        | JCD0612S24                  |
|               | $\pm 3.3$ V    | $\pm 909$ mA   | 30 mA                        | 675 mA    | $\pm 1000$ $\mu$ F      | 74%        | JCD0612D03                  |
|               | $\pm 5.0$ V    | $\pm 600$ mA   | 30 mA                        | 657 mA    | $\pm 680$ $\mu$ F       | 76%        | JCD0612D05                  |
|               | $\pm 9.0$ V    | $\pm 333$ mA   | 30 mA                        | 617 mA    | $\pm 22$ $\mu$ F        | 81%        | JCD0612D09                  |
|               | $\pm 12.0$ V   | $\pm 250$ mA   | 30 mA                        | 632 mA    | $\pm 330$ $\mu$ F       | 79%        | JCD0612D12                  |
|               | $\pm 15.0$ V   | $\pm 200$ mA   | 30 mA                        | 625 mA    | $\pm 100$ $\mu$ F       | 80%        | JCD0612D15                  |
|               | $\pm 24.0$ V   | $\pm 125$ mA   | 30 mA                        | 625 mA    | $\pm 10$ $\mu$ F        | 80%        | JCD0612D24                  |
| 18-36 VDC     | 3.3 V          | 1400 mA        | 20 mA                        | 256 mA    | 1000 $\mu$ F            | 75%        | JCD0624S3V3                 |
|               | 5.0 V          | 1200 mA        | 20 mA                        | 313 mA    | 1000 $\mu$ F            | 80%        | JCD0624S05                  |
|               | 9.0 V          | 666 mA         | 20 mA                        | 301 mA    | 680 $\mu$ F             | 83%        | JCD0624S09                  |
|               | 12.0 V         | 500 mA         | 20 mA                        | 301 mA    | 1000 $\mu$ F            | 83%        | JCD0624S12                  |
|               | 15.0 V         | 400 mA         | 20 mA                        | 301 mA    | 100 $\mu$ F             | 83%        | JCD0624S15                  |
|               | 24.0 V         | 250 mA         | 20 mA                        | 294 mA    | 470 $\mu$ F             | 85%        | JCD0624S24                  |
|               | $\pm 3.3$ V    | $\pm 909$ mA   | 20 mA                        | 328 mA    | $\pm 1000$ $\mu$ F      | 76%        | JCD0624D03                  |
|               | $\pm 5.0$ V    | $\pm 600$ mA   | 20 mA                        | 308 mA    | $\pm 680$ $\mu$ F       | 81%        | JCD0624D05                  |
|               | $\pm 9.0$ V    | $\pm 333$ mA   | 20 mA                        | 301 mA    | $\pm 220$ $\mu$ F       | 83%        | JCD0624D09                  |
|               | $\pm 12.0$ V   | $\pm 250$ mA   | 20 mA                        | 301 mA    | $\pm 470$ $\mu$ F       | 83%        | JCD0624D12                  |
|               | $\pm 15.0$ V   | $\pm 200$ mA   | 20 mA                        | 301 mA    | $\pm 100$ $\mu$ F       | 83%        | JCD0624D15                  |
|               | $\pm 24.0$ V   | $\pm 125$ mA   | 20 mA                        | 304 mA    | $\pm 100$ $\mu$ F       | 82%        | JCD0624D24                  |
| 36-72 VDC     | 3.3 V          | 1400 mA        | 12 mA                        | 128 mA    | 2200 $\mu$ F            | 75%        | JCD0648S3V3                 |
|               | 5.0 V          | 1200 mA        | 12 mA                        | 156 mA    | 1000 $\mu$ F            | 80%        | JCD0648S05                  |
|               | 9.0 V          | 666 mA         | 12 mA                        | 148 mA    | 1000 $\mu$ F            | 84%        | JCD0648S09                  |
|               | 12.0 V         | 500 mA         | 12 mA                        | 148 mA    | 470 $\mu$ F             | 84%        | JCD0648S12                  |
|               | 15.0 V         | 400 mA         | 12 mA                        | 154 mA    | 1000 $\mu$ F            | 81%        | JCD0648S15                  |
|               | 24.0 V         | 250 mA         | 12 mA                        | 147 mA    | 220 $\mu$ F             | 85%        | JCD0648S24                  |
|               | $\pm 3.3$ V    | $\pm 909$ mA   | 12 mA                        | 164 mA    | $\pm 1000$ $\mu$ F      | 76%        | JCD0648D03                  |
|               | $\pm 5.0$ V    | $\pm 600$ mA   | 12 mA                        | 156 mA    | $\pm 680$ $\mu$ F       | 80%        | JCD0648D05                  |
|               | $\pm 9.0$ V    | $\pm 333$ mA   | 12 mA                        | 150 mA    | $\pm 680$ $\mu$ F       | 83%        | JCD0648D09                  |
|               | $\pm 12.0$ V   | $\pm 250$ mA   | 12 mA                        | 148 mA    | $\pm 330$ $\mu$ F       | 84%        | JCD0648D12                  |
|               | $\pm 15.0$ V   | $\pm 200$ mA   | 12 mA                        | 152 mA    | $\pm 330$ $\mu$ F       | 82%        | JCD0648D15                  |
|               | $\pm 24.0$ V   | $\pm 125$ mA   | 12 mA                        | 150 mA    | $\pm 150$ $\mu$ F       | 83%        | JCD0648D24                  |

## Notes

- When one output is set at 100% load and the other varies between 25% & 100% load.
- Measured with 20 MHz bandwidth and 1  $\mu$ F ceramic capacitor across output rails.
- Input current specified at nominal 5 V, 12 V, 24 V or 48 V input.
- For optional 3500 VDC isolation add suffix -H to part number e.g. JCD0624S12-H

## Mechanical Details



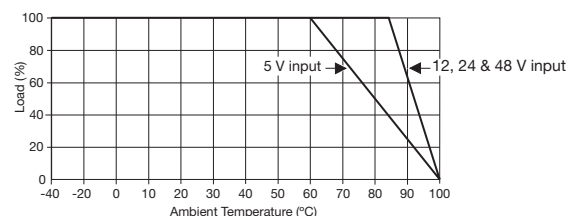
| Pin | Single | Dual   |
|-----|--------|--------|
| 2   | -Vin   | -Vin   |
| 3   | -Vin   | -Vin   |
| 9   | No Pin | Common |
| 11  | N.C.   | -Vout  |
| 14  | +Vout  | +Vout  |
| 16  | -Vout  | Common |
| 22  | +Vin   | +Vin   |
| 23  | +Vin   | +Vin   |

## Notes

- All dimensions are in inches (mm)
- Weight: 0.04 lbs (18 g) approx.
- Pin diameter: 0.02  $\pm$  0.002 (0.5  $\pm$  0.005)
- Pin pitch and length tolerance:  $\pm$  0.014 ( $\pm$  0.35)
- Case tolerance:  $\pm$  0.02 ( $\pm$  0.5)
- Package: 24 pin DIL nickel-coated copper

## Application Notes

## Derating Curve



## Input Filter

