

## JCA Series



- Compact 1.0" x 0.8" Metal Package
- Industry Standard Pin Out
- 2:1 Input Range
- Single & Dual Outputs
- Operating Temperature -40 °C to +100 °C
- UL, CB, & TUV Approval
- 3 Year Warranty

## Specification

## Input

|                                |                                                                                                                                                                                                             |
|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Input Voltage Range            | <ul style="list-style-type: none"> <li>• 5 V (4.5-9.0 VDC)</li> <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>                                                                                                                                               |
| Input Filter                   | <ul style="list-style-type: none"> <li>• Pi network</li> </ul>                                                                                                                                              |
| Input Reflected Ripple Current | <ul style="list-style-type: none"> <li>• 80 mA, 5 V input models, 30 mA all others</li> <li>• 12 <math>\mu</math>H inductor, 5 Hz to 20 MHz</li> </ul>                                                      |
| Input Surge                    | <ul style="list-style-type: none"> <li>• 5 V models 10 V for 1 s max,</li> <li>• 12 V models 25 V for 1 s max,</li> <li>• 24 V models 50 V for 1 s max,</li> <li>• 48 V models 100 V for 1 s max</li> </ul> |

## Output

|                          |                                                                                                                                                                          |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Output Voltage           | <ul style="list-style-type: none"> <li>• See table</li> </ul>                                                                                                            |
| Initial Set Accuracy     | <ul style="list-style-type: none"> <li>• <math>\pm 1\%</math> max</li> </ul>                                                                                             |
| Start Up Delay           | <ul style="list-style-type: none"> <li>• 30 ms max</li> </ul>                                                                                                            |
| Start Up Rise Time       | <ul style="list-style-type: none"> <li>• 3.5 ms typical</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 0.3\%</math></li> </ul>                                                                                               |
| Load Regulation          | <ul style="list-style-type: none"> <li>• <math>\pm 1\%</math></li> </ul>                                                                                                 |
| Cross Regulation         | <ul style="list-style-type: none"> <li>• <math>\pm 5\%</math> on dual output models with one output at 5% load and other varied from 5% to 100%</li> </ul>               |
| Transient Response       | <ul style="list-style-type: none"> <li>• 4% max deviation, recovery to within 1% in <math>&lt; 500 \mu</math>s for a 25% load change at 1 A/<math>\mu</math>s</li> </ul> |
| Ripple & Noise           | <ul style="list-style-type: none"> <li>• 50 mV pk-pk, 20 MHz bandwidth</li> </ul>                                                                                        |
| Overcurrent Protection   | <ul style="list-style-type: none"> <li>• 150% typical, trip and restart (hiccup mode)</li> </ul>                                                                         |
| Short Circuit Protection | <ul style="list-style-type: none"> <li>• Continuous with auto recovery</li> </ul>                                                                                        |
| Overvoltage Protection   | <ul style="list-style-type: none"> <li>• 150% typical, Recycle input to reset</li> </ul>                                                                                 |
| Temperature Coefficient  | <ul style="list-style-type: none"> <li>• <math>\pm 0.05\%/^{\circ}\text{C}</math></li> </ul>                                                                             |

## General

|                     |                                                                                                                                                                   |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Efficiency          | <ul style="list-style-type: none"> <li>• See table</li> </ul>                                                                                                     |
| Isolation           | <ul style="list-style-type: none"> <li>• 1500 VDC Input to Output, basic insulation</li> <li>• 500 VDC Input to Case</li> <li>• 500 VDC Output to Case</li> </ul> |
| Switching Frequency | <ul style="list-style-type: none"> <li>• 300 kHz typical</li> </ul>                                                                                               |
| Power Density       | <ul style="list-style-type: none"> <li>• 31.25 W/in<sup>3</sup></li> </ul>                                                                                        |
| MTBF                | <ul style="list-style-type: none"> <li>• <math>&gt; 950</math> kHrs to MIL-HDBK-217F at 25 °C, GB</li> </ul>                                                      |
| Case                | <ul style="list-style-type: none"> <li>• Five sided metal case with plastic base, silicone potted UL94V-0</li> </ul>                                              |
| Water Wash          | <ul style="list-style-type: none"> <li>• Use de-ionised water and dry thoroughly</li> </ul>                                                                       |
| Solder Profile      | <ul style="list-style-type: none"> <li>• Waveflow 260 °C max, 0.05" (1.5 mm) from case, 10 seconds max.</li> </ul>                                                |
| Pin Material        | <ul style="list-style-type: none"> <li>• Brass with matte copper and tin plating</li> </ul>                                                                       |

## Environmental

|                       |                                                                                                                                                    |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| Operating Temperature | <ul style="list-style-type: none"> <li>• -40 °C to +100 °C output power derates from 100% load at +70 °C linearly to 0% load at +100 °C</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>• -55 °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 &amp; Safety

|                    |                                                                                                                                                           |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Emissions          | <ul style="list-style-type: none"> <li>• EN55032, level A conducted (level B with external components, see application note), level B radiated</li> </ul> |
| ESD Immunity       | <ul style="list-style-type: none"> <li>• EN61000-4-2, level 2 Perf Criteria A</li> </ul>                                                                  |
| Radiated Immunity  | <ul style="list-style-type: none"> <li>• EN61000-4-3, 3 V/m 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, 10 A/m, Perf Criteria A</li> </ul>                                                                  |
| Safety Approvals   | <ul style="list-style-type: none"> <li>• IEC62368-1, EN62368-1, UL62368-1, CE &amp; UKCA meets all applicable directives &amp; legislation</li> </ul>     |

## Models and Ratings

JCA10 **XP**

| Input Voltage <sup>(1)</sup> | Output Voltage | Output Current | Input Current <sup>(2)</sup> |           | Efficiency | Max. Capacitive Load | Model Number |
|------------------------------|----------------|----------------|------------------------------|-----------|------------|----------------------|--------------|
|                              |                |                | No Load                      | Full Load |            |                      |              |
| 4.5-9.0 VDC                  | 3.3 VDC        | 2.42 A         | 100 mA                       | 1.905 A   | 82%        | 3300 $\mu$ F         | JCA1005S03   |
|                              | 5.0 VDC        | 1.60 A         | 84 mA                        | 1.839 A   | 86%        | 2200 $\mu$ F         | JCA1005S05   |
|                              | 12.0 VDC       | 0.83 A         | 126 mA                       | 2.324 A   | 85%        | 1000 $\mu$ F         | JCA1005S12   |
|                              | 15.0 VDC       | 0.66 A         | 120 mA                       | 2.271 A   | 86%        | 940 $\mu$ F          | JCA1005S15   |
|                              | $\pm 5.0$ VDC  | $\pm 0.80$ A   | 129 mA                       | 1.918 A   | 82%        | 1000 $\mu$ F         | JCA1005D01   |
|                              | $\pm 12.0$ VDC | $\pm 0.42$ A   | 126 mA                       | 2.388 A   | 84%        | 470 $\mu$ F          | JCA1005D02   |
| 9-18 VDC                     | $\pm 15.0$ VDC | $\pm 0.33$ A   | 105 mA                       | 2.297 A   | 85%        | 470 $\mu$ F          | JCA1005D03   |
|                              | 3.3 VDC        | 2.42 A         | 52 mA                        | 0.784 A   | 84%        | 3300 $\mu$ F         | JCA1012S03   |
|                              | 5.0 VDC        | 1.60 A         | 49 mA                        | 0.745 A   | 89%        | 2200 $\mu$ F         | JCA1012S05   |
|                              | 12.0 VDC       | 0.83 A         | 42 mA                        | 0.930 A   | 89%        | 1000 $\mu$ F         | JCA1012S12   |
|                              | 15.0 VDC       | 0.66 A         | 42 mA                        | 0.916 A   | 89%        | 940 $\mu$ F          | JCA1012S15   |
|                              | $\pm 5.0$ VDC  | $\pm 0.80$ A   | 45 mA                        | 0.778 A   | 85%        | 1000 $\mu$ F         | JCA1012D01   |
| 18-36 VDC                    | $\pm 12.0$ VDC | $\pm 0.42$ A   | 44 mA                        | 0.944 A   | 88%        | 470 $\mu$ F          | JCA1012D02   |
|                              | $\pm 15.0$ VDC | $\pm 0.33$ A   | 44 mA                        | 0.915 A   | 89%        | 470 $\mu$ F          | JCA1012D03   |
|                              | 3.3 VDC        | 2.42 A         | 28 mA                        | 0.388 A   | 85%        | 3300 $\mu$ F         | JCA1024S03   |
|                              | 5.0 VDC        | 1.60 A         | 27 mA                        | 0.375 A   | 88%        | 2200 $\mu$ F         | JCA1024S05   |
|                              | 12.0 VDC       | 0.83 A         | 19 mA                        | 0.461 A   | 89%        | 1000 $\mu$ F         | JCA1024S12   |
|                              | 15.0 VDC       | 0.66 A         | 18 mA                        | 0.455 A   | 90%        | 940 $\mu$ F          | JCA1024S15   |
| 36-75 VDC                    | $\pm 5.0$ VDC  | $\pm 0.80$ A   | 16 mA                        | 0.387 A   | 85%        | 1000 $\mu$ F         | JCA1024D01   |
|                              | $\pm 12.0$ VDC | $\pm 0.42$ A   | 22 mA                        | 0.469 A   | 89%        | 470 $\mu$ F          | JCA1024D02   |
|                              | $\pm 15.0$ VDC | $\pm 0.33$ A   | 25 mA                        | 0.455 A   | 90%        | 470 $\mu$ F          | JCA1024D03   |
|                              | 3.3 VDC        | 2.42 A         | 13 mA                        | 0.199 A   | 82%        | 3300 $\mu$ F         | JCA1048S03   |
|                              | 5.0 VDC        | 1.60 A         | 11 mA                        | 0.186 A   | 89%        | 2200 $\mu$ F         | JCA1048S05   |
|                              | 12.0 VDC       | 0.83 A         | 7 mA                         | 0.231 A   | 89%        | 1000 $\mu$ F         | JCA1048S12   |
|                              | 15.0 VDC       | 0.66 A         | 9 mA                         | 0.229 A   | 89%        | 940 $\mu$ F          | JCA1048S15   |
|                              | $\pm 5.0$ VDC  | $\pm 0.80$ A   | 5 mA                         | 0.194 A   | 85%        | 1000 $\mu$ F         | JCA1048D01   |
|                              | $\pm 12.0$ VDC | $\pm 0.42$ A   | 9 mA                         | 0.236 A   | 89%        | 470 $\mu$ F          | JCA1048D02   |
|                              | $\pm 15.0$ VDC | $\pm 0.33$ A   | 10 mA                        | 0.229 A   | 89%        | 470 $\mu$ F          | JCA1048D03   |

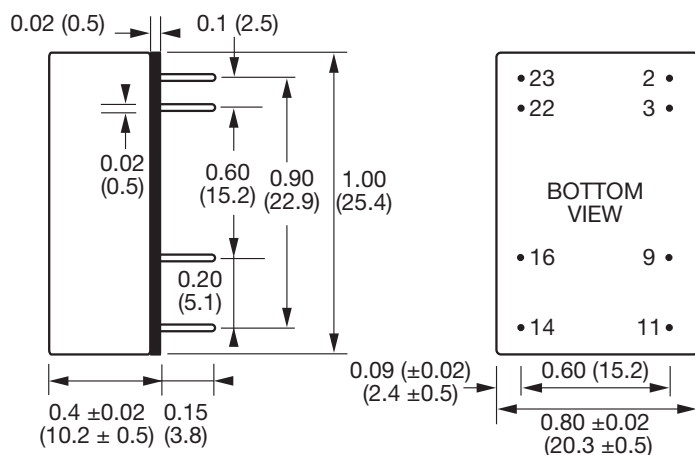
## Notes

1. Nominal input voltage 5, 12, 24 or 48 VDC.

2. Input current is at nominal input voltage.

3. Efficiency is measured at nominal input and full load at 25 °C.

## Mechanical Details



| PIN CONNECTIONS |               |             |
|-----------------|---------------|-------------|
| Pin             | Single Output | Dual Output |
| 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        |

1. All dimensions in inches (mm)
2. Weight: 0.03 lbs (12 g)
3. Pin diameter tolerance:  $\pm 0.00079$  ( $\pm 0.02$ )
4. Pin pitch tolerance:  $\pm 0.01$  ( $\pm 0.25$ )
5. Case tolerance:  $\pm 0.02$  ( $\pm 0.5$ )

## Application Note

## Input Filter

To meet level B conducted emissions.

