

## JTC04/06 Series



- 4:1 Input Range
- DIP-24 Metal Package
- Operating Temperature -40 °C to +100 °C
- Single & Dual Outputs
- Continuous Short Circuit Protection
- 1500 VDC Isolation
- 3000 VDC Isolation Optional

## Specification

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### Input

|                        |  |
|------------------------|--|
| Input Voltage Range    | <ul style="list-style-type: none"> <li>• 24 V (9-36 VDC)</li> <li>• 48 V (18-72 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 | <ul style="list-style-type: none"> <li>• 35 mA pk-pk through 12 <math>\mu</math>H inductor, 5 Hz to 20 MHz</li> </ul>      |
| Input Surge            | <ul style="list-style-type: none"> <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>   |
| Output Voltage Balance   | <ul style="list-style-type: none"> <li>• <math>\pm 1\%</math> max, dual output models</li> </ul>  |
| Minimum Load             | <ul style="list-style-type: none"> <li>• No minimum load required</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>• &lt;800 ms</li> </ul>  |
| Start Up Rise Time       | <ul style="list-style-type: none"> <li>• &lt;10 ms</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</li> </ul>  |
| Cross Regulation         | <ul style="list-style-type: none"> <li>• <math>\pm 5\%</math> on dual output models</li> </ul>  |
| Transient Response       | <ul style="list-style-type: none"> <li>• &lt;1.5% max deviation, recovery to within 1% in 200 <math>\mu</math>s for a 50% load change</li> </ul>                |
| Ripple & Noise           | <ul style="list-style-type: none"> <li>• 60 mV pk-pk for 3.3 V to 15 V models, 100 mV pk-pk for 18 V models, 150 mV pk-pk for 24 V models, 20 MHz BW</li> </ul> |
| Short Circuit Protection | <ul style="list-style-type: none"> <li>• Trip &amp; restart (hiccup) with auto recovery</li> </ul>  |
| Maximum Capacitive Load  | <ul style="list-style-type: none"> <li>• See tables</li> </ul>  |
| Temperature Coefficient  | <ul style="list-style-type: none"> <li>• <math>\pm 0.02/^\circ\text{C}</math> max</li> </ul>  |

### General

|                       |   |
|-----------------------|---|
| Efficiency            | <ul style="list-style-type: none"> <li>• See tables</li> </ul>  |
| Isolation             | <ul style="list-style-type: none"> <li>• 1500 VDC Input to Output, for optional high isolation version 3000 VDC input to output add suffix '-H' to model number</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>• 500 pF max</li> </ul>  |
| Switching Frequency   | <ul style="list-style-type: none"> <li>• 266 kHz typical</li> </ul>   |
| MTBF                  | <ul style="list-style-type: none"> <li>• &gt;1 Mhrs to MIL-STD-217F</li> </ul>  |

### Environmental

|                       |  |
|-----------------------|--|
| Operating Temperature | <ul style="list-style-type: none"> <li>• -40 °C to +100 °C, derate from 100% load at +85 °C to no 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>• -40 °C to +125 °C</li> </ul>  |
| Humidity              | <ul style="list-style-type: none"> <li>• Up to 90%, non-condensing</li> </ul>  |
| Cooling               | <ul style="list-style-type: none"> <li>• Natural convection</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, 8 kV air discharge Perf Criteria A, 4 kV contact discharge Perf Criteria A</li> </ul> |
| Radiated Immunity | <ul style="list-style-type: none"> <li>• EN61000-4-6 Level 2 3 V/m Perf Criteria A</li> </ul>   |

| Input Voltage | Output Voltage | Output Current | Input Current <sup>(2)</sup> |           | Maximum Capacitive Load <sup>(3)</sup> | Efficiency | Model Number <sup>(1)</sup> |
|---------------|----------------|----------------|------------------------------|-----------|--|------------|-----------------------------|
|               |                |                | No Load                      | Full Load |  |            |                             |
| 9-36 V        | 3.3 V          | 1200 mA        | 12 mA                        | 220 mA    | 1000 µF                                | 75%        | JTC0424S3V3                 |
|               | 5.0 V          | 800 mA         | 15 mA                        | 211 mA    | 1000 µF                                | 79%        | JTC0424S05                  |
|               | 9.0 V          | 445 mA         | 12 mA                        | 203 mA    | 220 µF                                 | 79%        | JTC0424S09                  |
|               | 12.0 V         | 333 mA         | 15 mA                        | 203 mA    | 220 µF                                 | 82%        | JTC0424S12                  |
|               | 15.0 V         | 267 mA         | 15 mA                        | 203 mA    | 220 µF                                 | 82%        | JTC0424S15                  |
|               | 18.0 V         | 223 mA         | 15 mA                        | 203 mA    | 10 µF                                  | 82%        | JTC0424S18                  |
|               | 24.0 V         | 167 mA         | 18 mA                        | 203 mA    | 220 µF                                 | 82%        | JTC0424S24                  |
|               | ±3.3 V         | ±606 mA        | 12 mA                        | 220 mA    | 470 µF                                 | 75%        | JTC0424D03                  |
|               | ±5.0 V         | ±400 mA        | 15 mA                        | 211 mA    | 100 µF                                 | 79%        | JTC0424D05                  |
|               | ±9.0 V         | ±222 mA        | 15 mA                        | 208 mA    | 47 µF                                  | 80%        | JTC0424D09                  |
|               | ±12.0 V        | ±167 mA        | 15 mA                        | 203 mA    | 47 µF                                  | 82%        | JTC0424D12                  |
|               | ±15.0 V        | ±134 mA        | 20 mA                        | 208 mA    | 10 µF                                  | 80%        | JTC0424D15                  |
| ±24.0 V       | ±84 mA         | 18 mA          | 208 mA                       | 22 µF     | 80%                                    | JTC0424D24 |                             |
| 18-72 V       | 3.3 V          | 1200 mA        | 10 mA                        | 110 mA    | 1000 µF                                | 76%        | JTC0448S3V3                 |
|               | 5.0 V          | 800 mA         | 8 mA                         | 106 mA    | 470 µF                                 | 79%        | JTC0448S05                  |
|               | 9.0 V          | 445 mA         | 10 mA                        | 100 mA    | 330 µF                                 | 83%        | JTC0448S09                  |
|               | 12.0 V         | 333 mA         | 12 mA                        | 104 mA    | 1000 µF                                | 80%        | JTC0448S12                  |
|               | 15.0 V         | 267 mA         | 10 mA                        | 99 mA     | 47 µF                                  | 84%        | JTC0448S15                  |
|               | 18.0 V         | 223 mA         | 10 mA                        | 99 mA     | 10 µF                                  | 84%        | JTC0448S18                  |
|               | 24.0 V         | 167 mA         | 15 mA                        | 99 mA     | 22 µF                                  | 82%        | JTC0448S24                  |
|               | ±3.3 V         | ±606 mA        | 10 mA                        | 107 mA    | 680 µF                                 | 78%        | JTC0448D03                  |
|               | ±5.0 V         | ±400 mA        | 15 mA                        | 106 mA    | 330 µF                                 | 79%        | JTC0448D05                  |
|               | ±9.0 V         | ±222 mA        | 18 mA                        | 104 mA    | 47 µF                                  | 80%        | JTC0448D09                  |
|               | ±12.0 V        | ±167 mA        | 12 mA                        | 102 mA    | 100 µF                                 | 82%        | JTC0448D12                  |
|               | ±15.0 V        | ±134 mA        | 15 mA                        | 104 mA    | 100 µF                                 | 80%        | JTC0448D15                  |
| ±24.0 V       | ±84 mA         | 15 mA          | 103 mA                       | 33 µF     | 81%                                    | JTC0448D24 |                             |

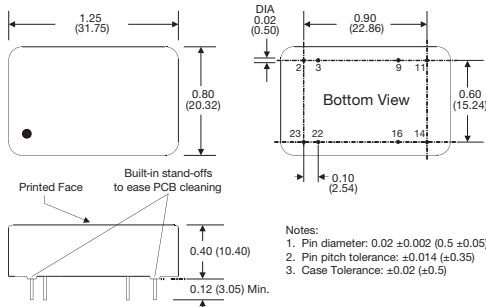
| Input Voltage | Output Voltage | Output Current | Input Current <sup>(2)</sup> |           | Maximum Capacitive Load <sup>(3)</sup> | Efficiency | Model Number <sup>(1)</sup> |
|---------------|----------------|----------------|------------------------------|-----------|--|------------|-----------------------------|
|               |                |                | No Load                      | Full Load |  |            |                             |
| 9-36 V        | 3.3 V          | 1400 mA        | 12 mA                        | 253 mA    | 1000 µF                                | 76%        | JTC0624S3V3                 |
|               | 5.0 V          | 1200 mA        | 10 mA                        | 312 mA    | 1000 µF                                | 80%        | JTC0624S05                  |
|               | 9.0 V          | 667 mA         | 12 mA                        | 301 mA    | 220 µF                                 | 83%        | JTC0624S09                  |
|               | 12.0 V         | 500 mA         | 15 mA                        | 301 mA    | 1000 µF                                | 83%        | JTC0624S12                  |
|               | 15.0 V         | 400 mA         | 18 mA                        | 301 mA    | 470 µF                                 | 83%        | JTC0624S15                  |
|               | 18.0 V         | 334 mA         | 15 mA                        | 301 mA    | 47 µF                                  | 83%        | JTC0624S18                  |
|               | 24.0 V         | 250 mA         | 18 mA                        | 305 mA    | 47 µF                                  | 82%        | JTC0624S24                  |
|               | ±3.3 V         | ±900 mA        | 12 mA                        | 338 mA    | 470 µF                                 | 74%        | JTC0624D03                  |
|               | ±5.0 V         | ±600 mA        | 10 mA                        | 312 mA    | 680 µF                                 | 80%        | JTC0624D05                  |
|               | ±9.0 V         | ±330 mA        | 18 mA                        | 309 mA    | 100 µF                                 | 81%        | JTC0624D09                  |
|               | ±12.0 V        | ±250 mA        | 20 mA                        | 301 mA    | 330 µF                                 | 83%        | JTC0624D12                  |
|               | ±15.0 V        | ±200 mA        | 22 mA                        | 305 mA    | 100 µF                                 | 82%        | JTC0624D15                  |
| ±24.0 V       | ±125 mA        | 18 mA          | 312 mA                       | 22 µF     | 80%                                    | JTC0624D24 |                             |
| 18-72 V       | 3.3 V          | 1400 mA        | 15 mA                        | 126 mA    | 1000 µF                                | 76%        | JTC0648S3V3                 |
|               | 5.0 V          | 1200 mA        | 8 mA                         | 156 mA    | 1000 µF                                | 80%        | JTC0648S05                  |
|               | 9.0 V          | 667 mA         | 10 mA                        | 153 mA    | 220 µF                                 | 82%        | JTC0648S09                  |
|               | 12.0 V         | 500 mA         | 10 mA                        | 151 mA    | 1000 µF                                | 83%        | JTC0648S12                  |
|               | 15.0 V         | 400 mA         | 10 mA                        | 149 mA    | 100 µF                                 | 84%        | JTC0648S15                  |
|               | 18.0 V         | 334 mA         | 10 mA                        | 151 mA    | 10 µF                                  | 83%        | JTC0648S18                  |
|               | 24.0 V         | 250 mA         | 12 mA                        | 151 mA    | 22 µF                                  | 83%        | JTC0648S24                  |
|               | ±3.3 V         | ±900 mA        | 10 mA                        | 162 mA    | 330 µF                                 | 77%        | JTC0648D03                  |
|               | ±5.0 V         | ±600 mA        | 10 mA                        | 158 mA    | 470 µF                                 | 79%        | JTC0648D05                  |
|               | ±9.0 V         | ±330 mA        | 15 mA                        | 154 mA    | 100 µF                                 | 81%        | JTC0648D09                  |
|               | ±12.0 V        | ±250 mA        | 10 mA                        | 152 mA    | 100 µF                                 | 82%        | JTC0648D12                  |
|               | ±15.0 V        | ±200 mA        | 15 mA                        | 149 mA    | 47 µF                                  | 84%        | JTC0648D15                  |
| ±24.0 V       | ±125 mA        | 15 mA          | 156 mA                       | 22 µF     | 80%                                    | JTC0648D24 |                             |

**Notes**

- For optional 3000 VDC isolation add suffix '-H' to model number.
- Input current measured at nominal input voltage.
- Maximum capacitive load is per output.

**Mechanical Details and Application Note**

All dimensions are in inches (mm) Weight: 0.04 lbs (20 g) approx.



| 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   |

**Input Filter**

