

JCK Series



- 2:1 Input Range
- Operating Temperature $-40\text{ }^{\circ}\text{C}$ to $+105\text{ }^{\circ}\text{C}$
- Single and Dual Outputs
- High Efficiency – Up to 92%
- Remote On/Off
- 1600 VDC Isolation
- 3 Year Warranty

Specification

Input

| | |
|--------------------------------|--|
| Input Voltage Range | <ul style="list-style-type: none"> • 12 V (9-18 VDC), 24 V (18-36 VDC), 48 V (36-75 VDC) |
| Input Current | <ul style="list-style-type: none"> • See table |
| Undervoltage Lockout | <ul style="list-style-type: none"> • 12 V models: ON 8.6 V, OFF 7.9 V typical • 24 V models: ON 17.8 V, OFF 16 V typical • 48 V models: ON 33.5 V, OFF 30.5 V typical |
| Input Reflected Ripple Current | <ul style="list-style-type: none"> • 20 mA pk-pk through 12 μH inductor |
| Input Surge | <ul style="list-style-type: none"> • 12 V models 25 VDC for 100 ms • 24 V models 50 VDC for 100 ms • 48 V models 100 VDC for 100 ms |
| Input Filter | <ul style="list-style-type: none"> • Pi network |

Output

| | |
|--------------------------|---|
| Output Voltage | <ul style="list-style-type: none"> • See table |
| Output Voltage Trim | <ul style="list-style-type: none"> • $\pm 10\%$ on single outputs models only |
| Start Up Delay | <ul style="list-style-type: none"> • 30 ms max |
| Minimum Load | <ul style="list-style-type: none"> • No minimum load required |
| Line Regulation | <ul style="list-style-type: none"> • $\pm 0.5\%$ max |
| Load Regulation | <ul style="list-style-type: none"> • Single output models: $\pm 0.5\%$ max • Dual output models: $\pm 1\%$ max balanced outputs |
| Cross Regulation | <ul style="list-style-type: none"> • $\pm 5\%$ (see note 2) |
| Setpoint Accuracy | <ul style="list-style-type: none"> • $\pm 1\%$ |
| Ripple & Noise | <ul style="list-style-type: none"> • 100 mV pk-pk, 20 MHz bandwidth (see note 3) |
| Transient Response | <ul style="list-style-type: none"> • 3% max deviation, recovery to within 1% in $<250\text{ }\mu\text{s}$ for a 25% load change |
| Temperature Coefficient | <ul style="list-style-type: none"> • $0.02\%/^{\circ}\text{C}$ |
| Overvoltage Protection | <ul style="list-style-type: none"> • 3.3 V models: 3.9 V typical • 5 V models: 6.2 V typical • 12 V models: 15 V typical • 15 V models: 18 V typical • $\pm 5\text{ V}$ models: $\pm 6.2\text{ V}$ typical • $\pm 12\text{ V}$ models: $\pm 15\text{ V}$ typical • $\pm 15\text{ V}$ models: $\pm 18\text{ V}$ typical |
| Overload Protection | <ul style="list-style-type: none"> • $>150\%$ of full load |
| Short Circuit Protection | <ul style="list-style-type: none"> • Trip & restart (Hiccup mode), auto recovery |
| Remote On/Off | <ul style="list-style-type: none"> • See application notes |
| Maximum Capacitive Load | <ul style="list-style-type: none"> • See table |

General

| | |
|-----------------------|---|
| Efficiency | <ul style="list-style-type: none"> • See table |
| Isolation | <ul style="list-style-type: none"> • 1600 VDC Input to Output • 1600 VDC Input to Case • 1600 VDC Output to Case |
| Isolation Capacitance | <ul style="list-style-type: none"> • 1500 pF typical |
| Switching Frequency | <ul style="list-style-type: none"> • 330 kHz typical |
| Power Density | <ul style="list-style-type: none"> • 37.5 W/in^3 |
| MTBF | <ul style="list-style-type: none"> • 430 kHrs min to MIL-HDBK-217F at $25\text{ }^{\circ}\text{C}$, GB |

Environmental

| | |
|-----------------------|---|
| Operating Temperature | <ul style="list-style-type: none"> • $-40\text{ }^{\circ}\text{C}$ to $105\text{ }^{\circ}\text{C}$, derate from 100% load at $50\text{ }^{\circ}\text{C}$ to no load at $105\text{ }^{\circ}\text{C}$ |
| Case Temperature | <ul style="list-style-type: none"> • $+105\text{ }^{\circ}\text{C}$ max |
| Cooling | <ul style="list-style-type: none"> • Convection-cooled |
| Operating Humidity | <ul style="list-style-type: none"> • 5-95% RH, non-condensing |
| Storage Temperature | <ul style="list-style-type: none"> • $-40\text{ }^{\circ}\text{C}$ to $+125\text{ }^{\circ}\text{C}$ |

EMC

| | |
|--------------------|--|
| Emissions | <ul style="list-style-type: none"> • EN55022 level A conducted & radiated with external components, see application notes |
| ESD Immunity | <ul style="list-style-type: none"> • EN61000-4-2, level 3, Perf Criteria A |
| EFT/Burst | <ul style="list-style-type: none"> • EN61000-4-4, level 3, Perf Criteria A⁽⁴⁾ |
| Surge | <ul style="list-style-type: none"> • EN61000-4-5, installation class 3, Perf Criteria A⁽⁴⁾ |
| Conducted Immunity | <ul style="list-style-type: none"> • EN61000-4-6, 10 Vrms, Perf Criteria A |
| Magnetic Field | <ul style="list-style-type: none"> • EN61000-4-8, 1 A/m, Perf Criteria A |

Models and Ratings

| Input Voltage | Output Voltage | Output Current | Input Current ⁽¹⁾ | | Maximum Capacitive Load | Efficiency | Model Number |
|---------------|----------------|----------------|------------------------------|-----------|-------------------------|--------------|---------------|
| | | | No Load | Full Load | | | |
| 9-18 VDC | 3.3 V | 8.00 A | 80 mA | 2426 mA | 20000 µF | 89% | JCK3012S3V3†^ |
| | 5.0 V | 6.00 A | 180 mA | 2874 mA | 14000 µF | 91% | JCK3012S05†^ |
| | 5.1 V | 6.00 A | 160 mA | 2874 mA | 14000 µF | 92% | JCK3012S5V1 |
| | 12.0 V | 2.50 A | 30 mA | 2809 mA | 2000 µF | 91% | JCK3012S12†^ |
| | 15.0 V | 2.00 A | 30 mA | 2809 mA | 2000 µF | 92% | JCK3012S15†^ |
| | ±5.0 V | ±3.00 A | 180 mA | 2874 mA | ±3000 µF | 89% | JCK3012D05†^ |
| | ±12.0 V | ±1.25 A | 50 mA | 2874 mA | ±1250 µF | 90% | JCK3012D12†^ |
| ±15.0 V | ±1.00 A | 50 mA | 2874 mA | ±1000 µF | 91% | JCK3012D15†^ | |
| 18-36 VDC | 3.3 V | 8.00 A | 70 mA | 1185 mA | 20000 µF | 91% | JCK3024S3V3†^ |
| | 5.0 V | 6.00 A | 100 mA | 1420 mA | 14000 µF | 92% | JCK3024S05†^ |
| | 5.1 V | 6.00 A | 100 mA | 1448 mA | 14000 µF | 92% | JCK3024S5V1 |
| | 12.0 V | 2.50 A | 20 mA | 1436 mA | 2000 µF | 92% | JCK3024S12†^ |
| | 15.0 V | 2.00 A | 40 mA | 1420 mA | 2000 µF | 92% | JCK3024S15†^ |
| | ±5.0 V | ±3.00 A | 100 mA | 1437 mA | ±3000 µF | 90% | JCK3024D05†^ |
| | ±12.0 V | ±1.25 A | 40 mA | 1453 mA | ±1250 µF | 91% | JCK3024D12†^ |
| ±15.0 V | ±1.00 A | 50 mA | 1437 mA | ±1000 µF | 91% | JCK3024D15†^ | |
| 36-75 VDC | 3.3 V | 8.00 A | 50 mA | 593 mA | 20000 µF | 90% | JCK3048S3V3†^ |
| | 5.0 V | 6.00 A | 70 mA | 702 mA | 14000 µF | 91% | JCK3048S05†^ |
| | 5.1 V | 6.00 A | 70 mA | 724 mA | 14000 µF | 91% | JCK3048S5V1 |
| | 12.0 V | 2.50 A | 30 mA | 718 mA | 2000 µF | 91% | JCK3048S12†^ |
| | 15.0 V | 2.00 A | 30 mA | 710 mA | 2000 µF | 91% | JCK3048S15†^ |
| | ±5.0 V | ±3.00 A | 70 mA | 710 mA | ±3000 µF | 90% | JCK3048D05†^ |
| | ±12.0 V | ±1.25 A | 50 mA | 718 mA | ±1250 µF | 90% | JCK3048D12†^ |
| ±15.0 V | ±1.00 A | 40 mA | 718 mA | ±1000 µF | 90% | JCK3048D15†^ | |

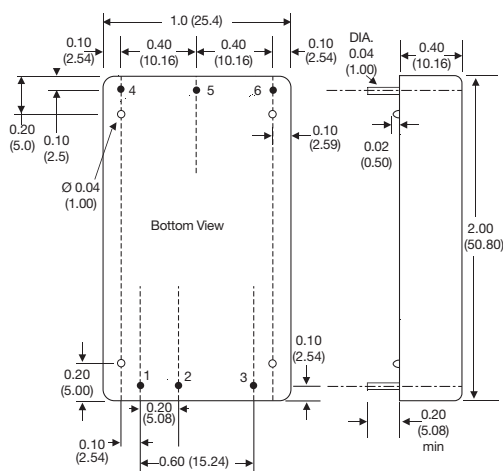
Notes

- Input current specified at nominal input.
- Cross regulation for duals is ±5% when one output is at 100% and the other is varied between 25% and 100%.
- Measured with 1 µF ceramic capacitor across output rails.
- A 220 µF/250 V capacitor across the input is required in order to meet EN61000-4-4 and EN61000-4-5.

† Available from Farnell & element14. See pages 284-290.

^ Available from Newark. See pages 291-296

Mechanical Details



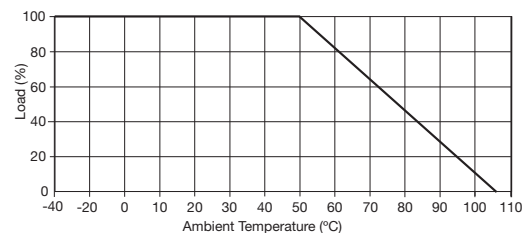
| PIN CONNECTIONS | | |
|-----------------|---------------|---------------|
| Pin | Single | Dual |
| 1 | +Vin | +Vin |
| 2 | -Vin | -Vin |
| 3 | Remote On/Off | Remote On/Off |
| 4 | +Vout | +Vout |
| 5 | Com | Com |
| 6 | Trim | -Vout |

Notes

- All dimensions are in inches (mm).
- Weight: 0.07 lbs (31 g) approx
- Pin diameter: 0.04 ±0.002 (1.0 ±0.05)
- Pin pitch tolerance: ±0.014 (±0.35)
- Case tolerance: ±0.02 (±0.5)

Application Notes

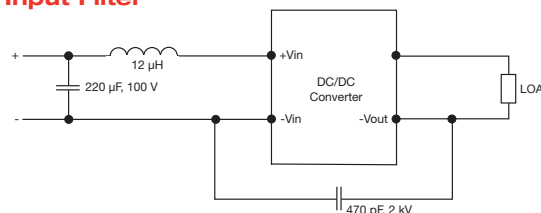
Derating Curve



Remote On/Off Control

Output On >3.0 VDC or open circuit
Output Off <1.2 VDC or short circuit pins 2 & 3

Input Filter



External Output Trim

