

JCK Series



- 2:1 Input Range
- -40 °C to +100 °C Operating Temperature
- Single & Dual Outputs
- Remote On/Off
- High Efficiency – up to 93%
- 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 Surge | <ul style="list-style-type: none"> • 12 V models 36 VDC for 100 ms • 24 V models 50 VDC for 100 ms • 48 V models 100 VDC for 100 ms |

Output

| | |
|--------------------------|--|
| Output Voltage | <ul style="list-style-type: none"> • See table |
| Output Voltage Trim | <ul style="list-style-type: none"> • $\pm 10\%$ max on single outputs |
| 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"> • $\pm 5\%$ for dual outputs (see note 2) |
| Setpoint Accuracy | <ul style="list-style-type: none"> • $\pm 1\%$ max |
| Start Up Delay | <ul style="list-style-type: none"> • <20 ms |
| Start Up Rise Time | <ul style="list-style-type: none"> • <5 ms |
| Ripple & Noise | <ul style="list-style-type: none"> • 75 mV pk-pk (see note 3) |
| Transient Response | <ul style="list-style-type: none"> • $\pm 3\%$ max deviation, recovery to within 1% in 250 μs for a 25% load change |
| Temperature Coefficient | <ul style="list-style-type: none"> • 0.02%/°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 • ± 12 V models: ± 15 V typical • ± 15 V models: ± 18 V typical |
| Overload Protection | <ul style="list-style-type: none"> • >140% of full load at nominal input |
| Short Circuit Protection | <ul style="list-style-type: none"> • Trip & restart (hiccup mode), auto recovery |
| Remote On/Off | <ul style="list-style-type: none"> • On = Logic High (>3.0 V) or Open • Off = Logic Low (<1.2 V) or short pin 2 to pin 6 |
| 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"> • 1200 pF typical |
| Isolation Resistance | <ul style="list-style-type: none"> • $10^9 \Omega$ min |
| Switching Frequency | <ul style="list-style-type: none"> • 330 kHz typical |
| Power Density | <ul style="list-style-type: none"> • 25 W/in³ |
| MTBF | <ul style="list-style-type: none"> • >680 kHrs minimum to MIL-HDBK-217F at 25 °C, GB |

Environmental

| | |
|-----------------------|--|
| Operating Temperature | <ul style="list-style-type: none"> • -40 °C to +100 °C, derate from 100% load at +70 °C to 0% load at +100 °C |
| Case Temperature | <ul style="list-style-type: none"> • +100 °C max |
| Cooling | <ul style="list-style-type: none"> • Convection-cooled |
| Operating Humidity | <ul style="list-style-type: none"> • Up to 95% RH, non-condensing |
| Storage Temperature | <ul style="list-style-type: none"> • -40 °C to +125 °C |

EMC

| | |
|--------------------|--|
| Emissions | <ul style="list-style-type: none"> • EN55022, Class A conducted & radiated with external components, see application note |
| ESD Immunity | <ul style="list-style-type: none"> • EN61000-4-2, 8 kV air, 6 kV contact, Perf Criteria A |
| Radiated Immunity | <ul style="list-style-type: none"> • EN61000-4-3 10 V/m, Perf Criteria A |
| EFT/Burst | <ul style="list-style-type: none"> • EN61000-4-4 level 3, Perf Criteria B* |
| Surge | <ul style="list-style-type: none"> • EN61000-4-5 level 2, Perf Criteria B* |
| Conducted Immunity | <ul style="list-style-type: none"> • EN61000-4-6 10 V/rms, Perf Criteria A |
| Magnetic Field | <ul style="list-style-type: none"> • EN61000-4-8 1 A/m, Perf Criteria A |

*External input capacitor required 220 μ F/100 V.

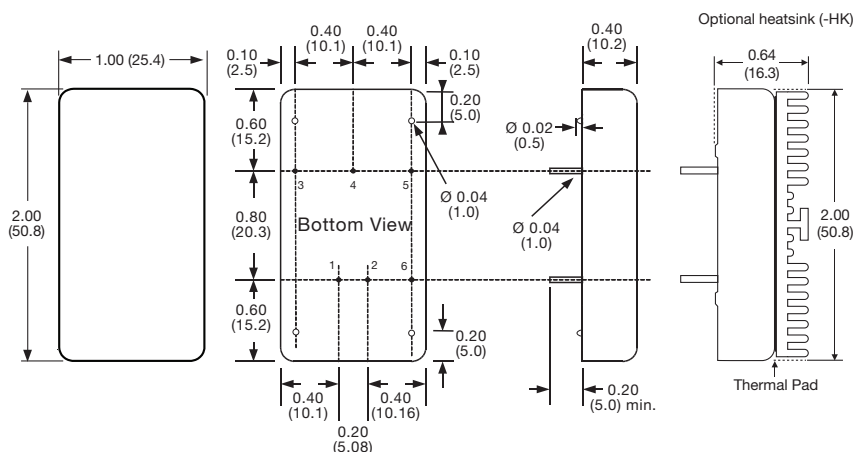
Models and Ratings

| Input Voltage | Output Voltage | Output Current | Input Current ⁽¹⁾ | | Maximum Capacitive Load | Efficiency | Model Number |
|---------------|----------------|----------------|------------------------------|-----------|-------------------------|------------|--------------|
| | | | No Load | Full Load | | | |
| 9-18 VDC | 3.3 VDC | 5.500 A | 60 mA | 1.74 A | 10,000 µF | 90% | JCK2012S3V3 |
| | 5.0 VDC | 4.000 A | 60 mA | 1.87 A | 6,800 µF | 92% | JCK2012S05 |
| | 12.0 VDC | 1.670 A | 30 mA | 1.92 A | 1,000 µF | 90% | JCK2012S12 |
| | 15.0 VDC | 1.330 A | 30 mA | 1.92 A | 680 µF | 90% | JCK2012S15 |
| | ±12.0 VDC | ±0.835 A | 30 mA | 1.94 A | ±470 µF | 89% | JCK2012D12 |
| 18-36 VDC | 3.3 VDC | 5.500 A | 35 mA | 0.86 A | 10,000 µF | 91% | JCK2024S3V3 |
| | 5.0 VDC | 4.000 A | 35 mA | 0.93 A | 6,800 µF | 93% | JCK2024S05 |
| | 12.0 VDC | 1.670 A | 25 mA | 0.95 A | 1,000 µF | 91% | JCK2024S12 |
| | 15.0 VDC | 1.330 A | 25 mA | 0.95 A | 680 µF | 91% | JCK2024S15 |
| | ±12.0 VDC | ±0.835 A | 30 mA | 0.96 A | ±470 µF | 90% | JCK2024D12 |
| 36-75 VDC | 3.3 VDC | 5.500 A | 25 mA | 0.43 A | 10,000 µF | 91% | JCK2048S3V3 |
| | 5.0 VDC | 4.000 A | 25 mA | 0.46 A | 6,800 µF | 93% | JCK2048S05 |
| | 12.0 VDC | 1.670 A | 15 mA | 0.47 A | 1,000 µF | 91% | JCK2048S12 |
| | 15.0 VDC | 1.330 A | 15 mA | 0.47 A | 680 µF | 91% | JCK2048S15 |
| | ±12.0 VDC | ±0.835 A | 20 mA | 0.48 A | ±470 µF | 90% | JCK2048D12 |
| | ±15.0 VDC | ±0.665 A | 20 mA | 0.48 A | ±330 µF | 89% | JCK2048D15 |

Notes

- Input current specified at nominal 12, 24 V or 48 V input.
- Cross regulation is ±5% when one output is at 100% and the other is varied between 25% and 100%.
- Measured with 20 MHz bandwidth and 1 µF ceramic capacitor across output rails.
- For heatsink option add '-HK' to the end of the part number.

Mechanical Details



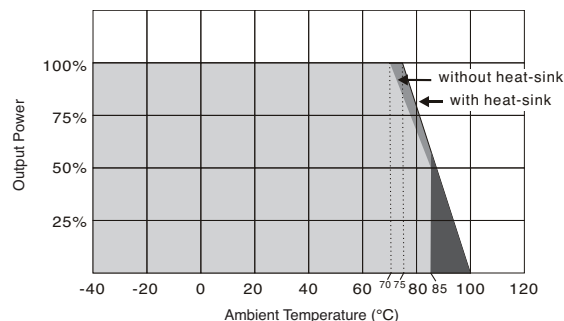
| PIN CONNECTIONS | | |
|-----------------|---------------|---------------|
| Pin | Single | Dual |
| 1 | +Vin | +Vin |
| 2 | -Vin | -Vin |
| 3 | +Vout | +Vout |
| 4 | Trim | Com |
| 5 | -Vout | -Vout |
| 6 | Remote On/Off | Remote On/Off |

Notes

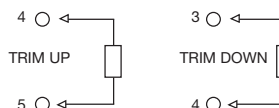
- All dimensions are in inches (mm).
- Weight: 0.07 lbs (30 g)
- Pin diameter: 0.04 ±0.002 (1.0 ±0.05)
- Pin pitch tolerance: ±0.014 (±0.35)
- Case tolerance: ±0.02 (±0.5)

Application Notes

Derating Curve

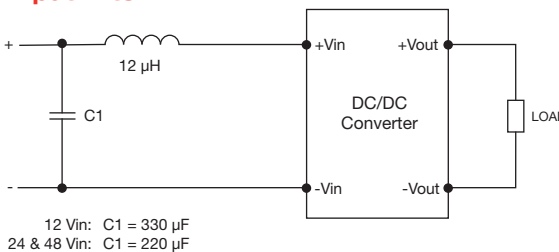


External Output Trim



- For 3.3 V output:**
Trim +10%, R = 10 k typical
Trim -10%, R = 15 k typical
- For 5 V output:**
Trim +10%, R = 10 k typical
Trim -10%, R = 5 k typical
- For 12 V output:**
Trim +10%, R = 22 k typical
Trim -10%, R = 5 k typical
- For 15 V output:**
Trim +10%, R = 20 k typical
Trim -10%, R = 5 k typical

Input Filter



Remote On/Off Control

- Output On >3.0 VDC or open circuit
Output Off <1.2 VDC or short circuit pins 2 & 6