

20 Watts

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	• 12 V (9-18 VDC) • 24 V (18-36 VDC) • 48 V (36-75 VDC)
Input Current	• See table
Undervoltage Lockout	• 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	• 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	• See table
Output Voltage Trim	• $\pm 10\%$ max on single outputs
Minimum Load	• No minimum load required
Line Regulation	• $\pm 0.5\%$ max
Load Regulation	• Single output models: $\pm 0.5\%$ max • Dual output models: $\pm 1\%$ max balanced outputs
Cross Regulation	• $\pm 5\%$ for dual outputs (see note 2)
Setpoint Accuracy	• $\pm 1\%$ max
Start Up Delay	• <20 ms
Start Up Rise Time	• <5 ms
Ripple & Noise	• 75 mV pk-pk (see note 3)
Transient Response	• $\pm 3\%$ max deviation, recovery to within 1% in 250 μs for a 25% load change
Temperature Coefficient	• 0.02%/°C
Overvoltage Protection	• 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	• >140% of full load at nominal input
Short Circuit Protection	• Trip & restart (hiccup mode), auto recovery
Remote On/Off	• On = Logic High (>3.0 V) or Open • Off = Logic Low (<1.2 V) or short pin 2 to pin 6
Capacitive Load	• See table

General

Efficiency	• See table
Isolation	• 1600 VDC Input to Output • 1600 VDC Input to Case • 1600 VDC Output to Case
Isolation Capacitance	• 1200 pF typical
Isolation Resistance	• $10^9 \Omega$ min
Switching Frequency	• 330 kHz typical
Power Density	• 25 W/in³
MTBF	• >680 kHrs minimum to MIL-HDBK-217F at 25 °C, GB

Environmental

Operating Temperature	• -40 °C to +100 °C, derate from 100% load at +70 °C to 0% load at +100 °C
Case Temperature	• +100 °C max
Cooling	• Convection-cooled
Operating Humidity	• Up to 95% RH, non-condensing
Storage Temperature	• -40 °C to +125 °C

EMC

Emissions	• EN55022, Class A conducted & radiated with external components, see application note
ESD Immunity	• EN61000-4-2, 8 kV air, 6 kV contact, Perf Criteria A
Radiated Immunity	• EN61000-4-3 10 V/m, Perf Criteria A
EFT/Burst	• EN61000-4-4 level 3, Perf Criteria B*
Surge	• EN61000-4-5 level 2, Perf Criteria B*
Conducted Immunity	• EN61000-4-6 10 V/rms, Perf Criteria A
Magnetic Field	• EN61000-4-8 1 A/m, Perf Criteria A

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

Models and Ratings

JCK20 **XP**

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 μ F	90%	JCK2012S3V3 [†] [^]
	5.0 VDC	4.000 A	60 mA	1.87 A	6,800 μ F	92%	JCK2012S05 [†] [^]
	12.0 VDC	1.670 A	30 mA	1.92 A	1,000 μ F	90%	JCK2012S12 [†] [^]
	15.0 VDC	1.330 A	30 mA	1.92 A	680 μ F	90%	JCK2012S15 [†] [^]
	± 12.0 VDC	± 0.835 A	30 mA	1.94 A	± 470 μ F	89%	JCK2012D12 [†] [^]
18-36 VDC	3.3 VDC	5.500 A	35 mA	0.86 A	10,000 μ F	91%	JCK2024S3V3 [†] [^]
	5.0 VDC	4.000 A	35 mA	0.93 A	6,800 μ F	93%	JCK2024S05 [†] [^]
	12.0 VDC	1.670 A	25 mA	0.95 A	1,000 μ F	91%	JCK2024S12 [†] [^]
	15.0 VDC	1.330 A	25 mA	0.95 A	680 μ F	91%	JCK2024S15 [†] [^]
	± 12.0 VDC	± 0.835 A	30 mA	0.96 A	± 470 μ F	90%	JCK2024D12 [†] [^]
36-75 VDC	3.3 VDC	5.500 A	25 mA	0.43 A	10,000 μ F	91%	JCK2048S3V3 [†] [^]
	5.0 VDC	4.000 A	25 mA	0.46 A	6,800 μ F	93%	JCK2048S05 [†] [^]
	12.0 VDC	1.670 A	15 mA	0.47 A	1,000 μ F	91%	JCK2048S12 [†] [^]
	15.0 VDC	1.330 A	15 mA	0.47 A	680 μ F	91%	JCK2048S15 [†] [^]
	± 12.0 VDC	± 0.835 A	20 mA	0.48 A	± 470 μ F	90%	JCK2048D12 [†] [^]
	± 15.0 VDC	± 0.665 A	20 mA	0.48 A	± 330 μ F	89%	JCK2048D15 [†] [^]

Notes

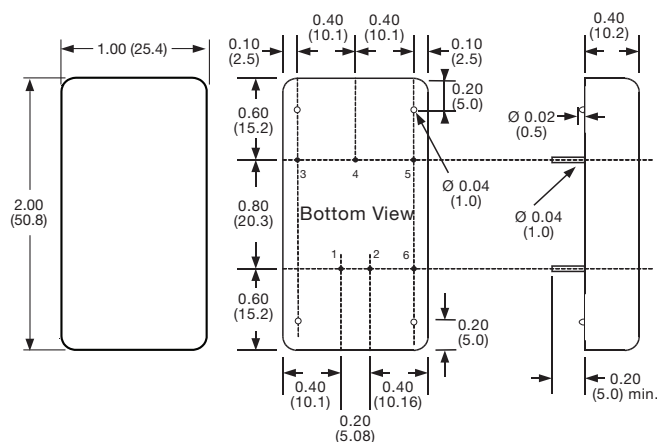
1. Input current specified at nominal 12, 24 V or 48 V input.
2. Cross regulation is $\pm 5\%$ when one output is at 100% and the other is varied between 25% and 100%.

3. Measured with 20 MHz bandwidth and 1 μ F ceramic capacitor across output rails.

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

[^] Available from Newark. See pages 291-296

Mechanical Details



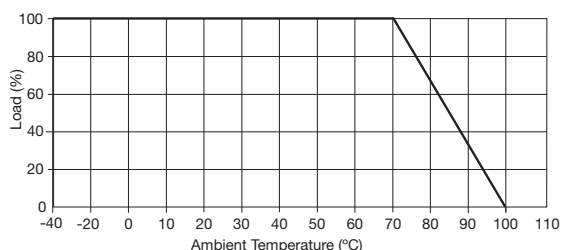
PIN CONNECTIONS		
Pin	Single	Dual
1	+Vin	+Vin
2	-Vin	-Vin
3	+Vout	+Vout
4	Trim	Com
5	-Vout	-Vout
6	Remote On/Off	Remote On/Off

Notes

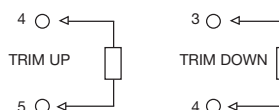
1. All dimensions are in inches (mm).
2. Weight: 0.07 lbs (30 g)
3. Pin diameter: 0.04 ± 0.002 (1.0 ± 0.05)
4. Pin pitch tolerance: ± 0.014 (± 0.35)
5. Case tolerance: ± 0.02 (± 0.5)

Application Notes

Derating Curve

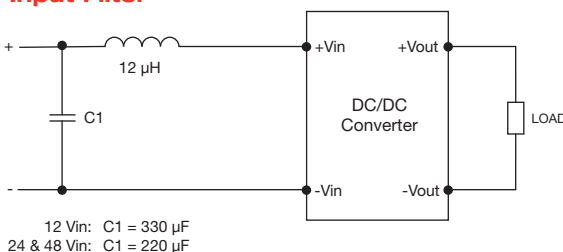


External Output Trim



- 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