

40 Watts

JCK Series



- 2:1 Input Range
- Very High Power Density
- Single and Dual Outputs
- High Efficiency – Up to 92%
- Remote On/Off
- 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
Input Reflected Ripple Current	• 20 mA pk-pk through 12 μH inductor, 5 Hz to 20 MHz
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 25 VDC for 1000 ms • 24 V models 50 VDC for 1000 ms • 48 V models 100 VDC for 1000 ms

Output

Output Voltage	• See table
Output Voltage Trim	• $\pm 10\%$ on single outputs models only, contact sales for details
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	• $\pm 5\%$ (see note 2)
Setpoint Accuracy	• $\pm 1\%$
Start Up Time	• 30 ms typical
Ripple & Noise	• 100 mV for 3V3 +5 V models, 150 mV for other models (see note 3)
Transient Response	• 3% max deviation, recovery to within 1% in $<250 \mu$s for a 25% load change
Temperature Coefficient	• $0.02\%/^{\circ}\text{C}$
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	• 115-130% of output current
Short Circuit Protection	• Trip & restart (Hiccup mode), auto recovery
Remote On/Off	• On = Logic High (>3.0) or Open • Off = Logic Low (<1.2 V) or short pin 2 to 3

General

Efficiency	• See table
Isolation	• 1600 VDC Input to Output • 1600 VDC Input to Case • 1600 VDC Output to Case
Isolation Capacitance	• 1000 pF typical
Switching Frequency	• 270 kHz typical
Power Density	• 50 W/in³
MTBF	• 330 kHrs min to MIL-HDBK-217F at 25 $^{\circ}\text{C}$, GB

Environmental

Operating Temperature	• -40°C to $+70^{\circ}\text{C}$, derate from 100% load at 55 $^{\circ}\text{C}$ to 60% load at 70 $^{\circ}\text{C}$
Case Temperature	• $+105^{\circ}\text{C}$ max
Cooling	• Convection-cooled
Operating Humidity	• 5-95% RH, non-condensing
Storage Temperature	• -40°C to $+125^{\circ}\text{C}$

EMC

Emissions	• EN55022 class B conducted & radiated with external components, see application note
ESD Immunity	• EN61000-4-2, 4 kV contact discharge, Perf Criteria B
Radiated Immunity	• EN61000-4-3, 3 V/m, Perf Criteria A
EFT/Burst	• EN61000-4-4, level 1, Perf Criteria A*
Surge	• EN61000-4-5, level 1, Perf Criteria A
Conducted Immunity	• EN61000-4-6, 3 Vrms, 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

JCK40 **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 V	8.00 A	100 mA	2444 mA	21000 μ F	90%	JCK4012S3V3 [†] ^
	5.0 V	8.00 A	150 mA	3663 mA	13000 μ F	91%	JCK4012S05 [†] ^
	12.0 V	3.33 A	40 mA	3663 mA	2000 μ F	91%	JCK4012S12 [†] ^
	15.0 V	2.67 A	50 mA	3663 mA	1500 μ F	91%	JCK4012S15 [†] ^
	± 12.0 V	± 1.67 A	30 mA	3663 mA	± 1200 μ F	91%	JCK4012D12 [†] ^
18-36 VDC	3.3 V	8.00 A	60 mA	1208 mA	21000 μ F	91%	JCK4024S3V3 [†] ^
	5.0 V	8.00 A	80 mA	1811 mA	13000 μ F	92%	JCK4024S05 [†] ^
	12.0 V	3.33 A	30 mA	1831 mA	2000 μ F	91%	JCK4024S12 [†] ^
	15.0 V	2.67 A	40 mA	1811 mA	1500 μ F	92%	JCK4024S15 [†] ^
	± 12.0 V	± 1.67 A	50 mA	1831 mA	± 1200 μ F	91%	JCK4024D12 [†] ^
36-75 VDC	3.3 V	8.00 A	40 mA	604 mA	21000 μ F	91%	JCK4048S3V3 [†] ^
	5.0 V	8.00 A	60 mA	905 mA	13000 μ F	92%	JCK4048S05 [†] ^
	12.0 V	3.33 A	20 mA	915 mA	2000 μ F	91%	JCK4048S12 [†] ^
	15.0 V	2.67 A	20 mA	905 mA	1500 μ F	92%	JCK4048S15 [†] ^
	± 12.0 V	± 1.67 A	30 mA	906 mA	± 1200 μ F	92%	JCK4048D12 [†] ^
	± 15.0 V	± 1.33 A	40 mA	906 mA	± 750 μ F	92%	JCK4048D15 [†] ^

Notes

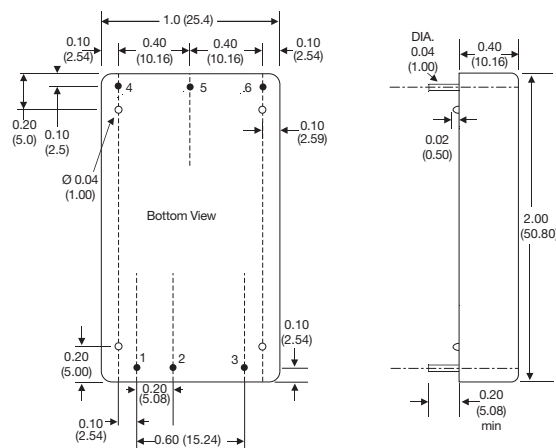
1. Input current specified at nominal input.
2. Cross regulation for duals is $\pm 5\%$ when one output is at 100% and the other is varied between 25% and 100%.

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

3. Measured with 1 μ F ceramic capacitor in parallel with a 10 μ F electrolytic across output rails.

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

Mechanical Details



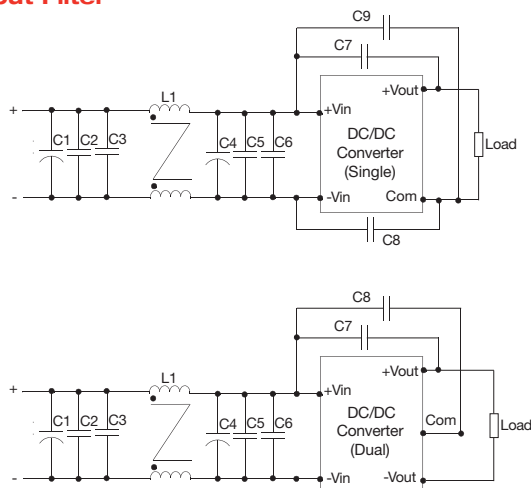
PIN CONNECTIONS		
Pin	Single	Dual
1	+Vin	+Vin
2	-Vin	-Vin
3	Remote On/Off	Remote On/Off
4	+Vout	+Vout
5	Com	Com
6	Trim	-Vout

Notes

1. All dimensions are in inches (mm).
2. Weight: 0.07 lbs (30 g) approx
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

Input Filter



JCK40 Single	C1	L1	C2/C3/C5/C6	C4
12 V	220 μ F, 100 V	Common Mode Choke 68 μ H	6.8 μ F, 50 V	330 μ F, 100 V
24 V			4.7 μ F, 50 V	220 μ F, 100 V
48 V			1.5 μ F, 1000 V	220 μ F, 100 V
JCK40 Dual	C1	L1	C2/C3/C5/C6	C4
12 V	220 μ F, 100 V	Common Mode Choke 68 μ H	6.8 μ F, 50 V	330 μ F, 100 V
24 V			4.7 μ F, 50 V	220 μ F, 100 V
48 V			1.5 μ F, 1000 V	220 μ F, 100 V

JCK40 Single	C7	C8	C9
12 V	1000 pF, 2 kV	1000 pF, 2 kV	1000 pF, 2 kV
24 V			
48 V			
JCK40 Dual	C7	C8	
12 V	1000 pF, 2 kV	1000 pF, 2 kV	
24 V	1000 pF, 2 kV	1000 pF, 2 kV	
48 V	1000 pF, 2 kV	1000 pF, 2 kV	

External Output Trim



Output can be externally trimmed using this method.

Contact sales for details.