3 Watts

JCB Series

- 2:1 Input Range
- Operating Temperature –40°C to +100°C
- Single & Dual Outputs
- 1500 VDC Isolation
- Optional Isolation to 3000 VDC
- 3 Year Warranty

Specification

Input

Input Voltage Range	• 5 V (4.5-9 VDC) 12 V (9-18 VDC) 24 V (18-36 VDC) 48 V (36-72 VDC)
Input Current	• See table
Input Filter	• Pi network
Input Reflected Ripple	• 35 mA pk-pk through 12 µH inductor
Input Surge	• 5 V models 15 VDC for 100 ms 12 V models 24 VDC for 100 ms 24 V models 40 VDC for 100 ms 48 V models 80 VDC for 100 ms
Undervoltage Lockout	• None
Reverse Voltage Protection	• None

Output

Output Voltage	• See table
Minimum Load	• Minimum load required (see note 1, models and ratings table)
Initial Set Accuracy	• ±1% max
Line Regulation	• ±0.5% max
Load Regulation	• ±0.5% max
Cross Regulation	• ±5% on dual output models (see note 2, models and ratings table)
Transient Response	• <3% deviation, recovery to within 1% in 2 ms for a 50% load change
Ripple & Noise	• 60 mV pk-pk max, 20 MHz bandwidth
Short Circuit Protection	• Continuous, with auto recovery
Overvoltage Protection	• None
Overcurrent Protection	• None
Maximum Capacitive Load	• See tables
Temperature Coefficient	• ±0.02/°C max

General

Efficiency	• See tables
Isolation Voltage	• 1500 VDC Input to Output For optional high isolation version 3000 VDC (see note 3, models and ratings table) 1500 VDC Input to Case 1500 VDC Output to Case
Switching Frequency	• 100-400 kHz variable
Isolation Resistance	• 10^9 Ω
Power Density	• 7.5 W/in^3
MTBF	• >2 MHrs to MIL-HDBK-217F at 25°C, GB

Environmental

Operating Temperature	• -40 °C to +100 °C, derate from 100% load at +85 °C to no load at +100 °C
Case Temperature	• +100 °C max
Storage Temperature	• -40 °C to +125 °C
Humidity	• Up to 95% RH, non-condensing
Cooling	• Natural convection

EMC & Safety

Emissions	• EN55022 Class A conducted & radiated, with external components, see application note
ESD Immunity	• EN61000-4-2, level 3, Perf Criteria A
EFT/Burst	• EN61000-4-4, level 3, Perf Criteria A (see note 5, models and ratings table)
Surge	• EN61000-4-5, installation class 3, Perf Criteria A (see note 5, models and ratings table)
Conducted Immunity	• EN61000-4-6, 10 V rms, Perf Criteria A
Magnetic Fields	• EN61000-4-8, 1 A/m, Perf Criteria A
Safety Approvals	• CE (Meets all applicable directives), UKCA (Meets all applicable legislation)

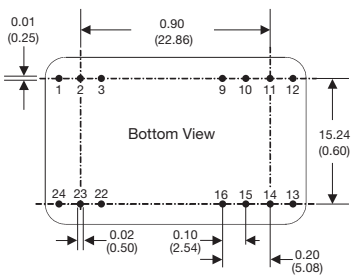
Models and Ratings

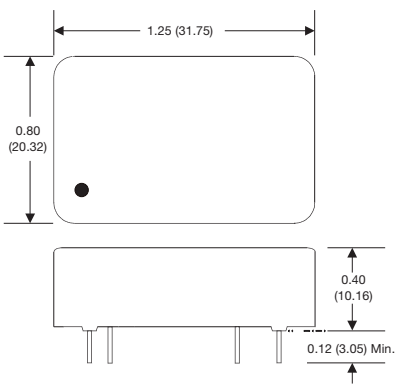
Input Voltage	Output Voltage	Output Current	Input Current[4]		Maximum Capacitive Load	Efficiency	Model Number[3]
			No Load	Full Load			
4.5-9 V	5.0 V	600 mA	40 mA	857 mA	2200 µF	70%	JCB0305S05
	9.0 V	333 mA	40 mA	833 mA	470 µF	72%	JCB0305S09
	12.0 V	250 mA	40 mA	810 mA	470 µF	74%	JCB0305S12
	15.0 V	200 mA	40 mA	810 mA	470 µF	74%	JCB0305S15
	24.0 V	125 mA	40 mA	857 mA	220 µF	70%	JCB0305S24
	±5.0 V	±300 mA	40 mA	869 mA	±1000 µF	69%	JCB0305D05
	±9.0 V	±167 mA	40 mA	857 mA	±220 µF	70%	JCB0305D09
	±12.0 V	±125 mA	40 mA	833 mA	±220 µF	72%	JCB0305D12
	±15.0 V	±100 mA	40 mA	810 mA	±220 µF	74%	JCB0305D15
	±24.0 V	±63 mA	40 mA	857 mA	±100 µF	70%	JCB0305D24
9-18 V	5.0 V	600 mA	20 mA	328 mA	2200 µF	76%	JCB0312S05
	9.0 V	333 mA	20 mA	324 mA	470 µF	77%	JCB0312S09
	12.0 V	250 mA	20 mA	316 mA	470 µF	79%	JCB0312S12
	15.0 V	200 mA	20 mA	316 mA	470 µF	79%	JCB0312S15
	24.0 V	125 mA	20 mA	316 mA	220 µF	79%	JCB0312S24
	±5.0 V	±300 mA	20 mA	324 mA	±1000 µF	77%	JCB0312D05
	±9.0 V	±167 mA	20 mA	320 mA	±220 µF	78%	JCB0312D09
	±12.0 V	±125 mA	20 mA	320 mA	±220 µF	78%	JCB0312D12
	±15.0 V	±100 mA	20 mA	320 mA	±220 µF	78%	JCB0312D15
	±24.0 V	±63 mA	20 mA	320 mA	±100 µF	78%	JCB0312D24
18-36 V	5.0 V	600 mA	12 mA	156 mA	2200 µF	80%	JCB0324S05
	9.0 V	333 mA	12 mA	156 mA	470 µF	80%	JCB0324S09
	12.0 V	250 mA	12 mA	152 mA	470 µF	82%	JCB0324S12
	15.0 V	200 mA	12 mA	152 mA	470 µF	82%	JCB0324S15
	24.0 V	125 mA	12 mA	156 mA	220 µF	80%	JCB0324S24
	±5.0 V	±300 mA	12 mA	160 mA	±1000 µF	78%	JCB0324D05
	±9.0 V	±167 mA	12 mA	158 mA	±220 µF	79%	JCB0324D09
	±12.0 V	±125 mA	12 mA	156 mA	±220 µF	80%	JCB0324D12
	±15.0 V	±100 mA	12 mA	156 mA	±220 µF	80%	JCB0324D15
	±24.0 V	±63 mA	12 mA	156 mA	±100 µF	80%	JCB0324D24
36-72 V	5.0 V	600 mA	8 mA	81 mA	2200 µF	77%	JCB0348S05
	9.0 V	333 mA	8 mA	80 mA	470 µF	78%	JCB0348S09
	12.0 V	250 mA	8 mA	78 mA	470 µF	80%	JCB0348S12
	15.0 V	200 mA	8 mA	78 mA	470 µF	80%	JCB0348S15
	24.0 V	125 mA	8 mA	78 mA	220 µF	80%	JCB0348S24
	±5.0 V	±300 mA	8 mA	80 mA	±1000 µF	78%	JCB0348D05
	±9.0 V	±167 mA	8 mA	79 mA	±220 µF	79%	JCB0348D09
	±12.0 V	±125 mA	8 mA	78 mA	±220 µF	80%	JCB0348D12
	±15.0 V	±100 mA	8 mA	78 mA	±220 µF	80%	JCB0348D15
	±24.0 V	±63 mA	8 mA	78 mA	±100 µF	80%	JCB0348D24

Notes

1. *Minimum load required to meet noise and ripple and initial set accuracy specifications. Below 25% load, noise and ripple increases to 200 mV pk-pk typical and load regulation to ±1% max.*
2. *Cross regulation is ±5% when one output is at 100% the other is varied between 25% and 100%.*
3. *For optional 3000 VDC isolation, add suffix '-H' to end of part number.*
4. *Input current measured at nominal input voltage*
5. *A 220 µF/100 V capacitor across the input is required in order to meet EN61000-4-4 & EN61000-4-5.*

Mechanical Details and Application Notes

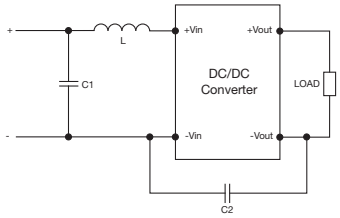




PIN CONNECTIONS				
Pin	Single	Dual	Single-H	Dual-H
1	+Vin	+Vin	N.P.	N.P.
2	N.C.	-Vout	-Vin	-Vin
3	N.C.	Common	-Vin	-Vin
9	N.P.	N.P.	N.P.	Common
10	-Vout	Common	N.P.	N.P.
11	+Vout	+Vout	N.C.	-Vout
12	-Vin	-Vin	N.P.	N.P.
13	-Vin	-Vin	N.P.	N.P.
14	+Vout	+Vout	+Vout	+Vout
15	-Vout	Common	N.P.	N.P.
16	N.P.	N.P.	-Vout	Common
22	N.C.	Common	+Vin	+Vin
23	N.C.	-Vout	+Vin	+Vin
24	+Vin	+Vin	N.P.	N.P.

N.C. - No Connection **N.P.** - No Pin

Input Filter



Model	C1	L	C2
JCB0305	220 µF/100 V	12 µH	
JCB0312	220 µF/100 V	12 µH	
JCB0324	220 µF/100 V	12 µH	470 pF/2 KV/ MLCC*
JCB0348	220 µF/100 V	12 µH	

*or higher for -H

Notes

1. All dimensions are in inches (mm)
2. Weight: 0.04 lbs (20 g) approx.
3. Pin diameter: 0.02±0.002 (0.5±0.05)
4. Pin pitch tolerance: ±0.014 (±0.35)
5. Case tolerance: ±0.02 (±0.5)