

4W

Convection cooled

DC-DC converters

The JCD04 series is housed in a DIP24 PCB mount metal case. Featuring a 2:1 input voltage range of 4.5 to 9VDC, 9 to 18VDC, 18 to 36VDC or 36 to 75VDC with regulated single outputs of 3.3, 5, 9, 12, 15 & 24VDC and dual outputs $\pm 3.3 \pm 5$, ± 9 , ± 12 , ± 15 or ± 24 VDC.

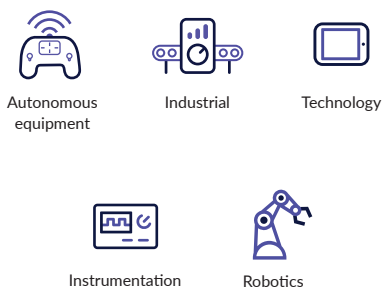
The 4W JCD04 has 1.6kVDC isolation (3.5kV optional) between input and output, overload & short circuit protection are standard. The operating temperature range is from -40°C to +100°C, with derating above +60°C.



Features

- ▶ Regulated single & dual outputs
- ▶ 2:1 input range
- ▶ Single outputs 3.3 to 24VDC
- ▶ Dual outputs ± 3.3 to ± 24 VDC
- ▶ DIP24 metal case
- ▶ 1.6kVDC isolation, 3.5kVDC option
- ▶ Continuous short circuit protection
- ▶ -40°C to +100°C operating temperature
- ▶ Full power to +60°C
- ▶ 3 year warranty

Applications



Dimensions

31.7 x 20.3 x 10.4mm (1.25" x 0.8" x 0.40")

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Models & ratings

Model number	Input voltage	Output voltage	Output current	Efficiency	Input current ⁽¹⁾		Maximum capacitive load
					No load	Full load	
JCD0405S3V3 ⁽⁵⁾	4.5-9.0VDC	3.3VDC	1200mA	73%	25mA	1084mA	3300μF
JCD0405S05 ⁽⁵⁾		5.0VDC	800mA	78%	25mA	1026mA	1000μF
JCD0405S12 ⁽⁵⁾		12.0VDC	333mA	82%	30mA	974mA	220μF
JCD0405S15 ⁽⁵⁾		15.0VDC	266mA	82%	30mA	973mA	100μF
JCD0405D03 ⁽⁵⁾		± 3.3 VDC	± 600 mA	76%	25mA	1042mA	± 680 μF
JCD0405D05 ⁽⁵⁾		± 5.0 VDC	± 400 mA	79%	30mA	1012mA	± 470 μF
JCD0405D12 ⁽⁵⁾		± 12.0 VDC	± 166 mA	83%	35mA	963mA	± 100 μF
JCD0405D15 ⁽⁵⁾		± 15.0 VDC	± 133 mA	81%	40mA	985mA	± 47 μF

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Notes:

- When one output is set at 100% load, the other varies between 25% & 100% load.
- Measured with 20MHz bandwidth and 1μF ceramic capacitor across output rails.
- Input current specified at nominal 5VDC, 12VDC, 24VDC or 48VDC input.
- For optional 3500VDC isolation add suffix -H to part number e.g. JCD0424S12-H
- Not recommended for new designs, will be end of life from 31st December 2025

Models & ratings

Model number	Input voltage	Output voltage	Output current	Efficiency	Input current ⁽¹⁾		Maximum capacitive load
					No load	Full load	
JCD0412S3V3	9-18VDC	3.3VDC	1200mA	74%	30mA	445mA	680μF
JCD0412S05		5.0VDC	800mA	78%	30mA	427mA	1000μF
JCD0412S09		9.0VDC	444mA	80%	30mA	416mA	470μF
JCD0412S12		12.VDC	333mA	82%	30mA	406mA	100μF
JCD0412S15		15.0VDC	266mA	83%	30mA	401mA	100μF
JCD0412S24		24.0VDC	166mA	82%	30mA	406mA	22μF
JCD0412D03		±3.3VDC	±600mA	76%	30mA	438mA	±680μF
JCD0412D05		±5.0VDC	±400mA	78%	30mA	427mA	±470μF
JCD0412D09		±9.0VDC	±220mA	80%	30mA	416mA	±220μF
JCD0412D12		±12.0VDC	±166mA	78%	30mA	427mA	±47μF
JCD0412D15		±15.0VDC	±133mA	80%	30mA	416mA	±150μF
JCD0412D24		±24.0VDC	±83mA	80%	30mA	416mA	±10μF
JCD0424S3V3	18-36VDC	3.3VDC	1200mA	77%	20mA	216mA	1000μF
JCD0424S05		5.0VDC	800mA	80%	20mA	208mA	1000μF
JCD0424S09		9.0VDC	444mA	82%	20mA	203mA	470μF
JCD0424S12		12.VDC	333mA	84%	20mA	198mA	330μF
JCD0424S15		15.0VDC	266mA	82%	20mA	203mA	330μF
JCD0424S24		24.0VDC	166mA	83%	20mA	200mA	1000μF
JCD0424D03		±3.3VDC	±600mA	77%	20mA	216mA	±1000μF
JCD0424D05		±5.0VDC	±400mA	80%	20mA	208mA	±330μF
JCD0424D09		±9.0VDC	±220mA	83%	20mA	200mA	±220μF
JCD0424D12		±12.0VDC	±166mA	83%	20mA	200mA	±68μF
JCD0424D15		±15.0VDC	±133mA	82%	20mA	203mA	±220μF
JCD0424D24		±24.0VDC	±83mA	79%	20mA	210mA	±47μF
JCD0448S3V3	36-72VDC	3.3VDC	1200mA	76%	15mA	108mA	1000μF
JCD0448S05		5.0VDC	800mA	80%	15mA	104mA	1000μF
JCD0448S09		9.0VDC	444mA	83%	15mA	100mA	470μF
JCD0448S12		12.VDC	333mA	84%	15mA	99mA	330μF
JCD0448S15		15.0VDC	266mA	81%	15mA	102mA	68μF
JCD0448S24		24.0VDC	166mA	85%	15mA	98mA	68μF
JCD0448D03		±3.3VDC	±600mA	76%	15mA	109mA	±1000μF
JCD0448D05		±5.0VDC	±400mA	80%	15mA	104mA	±470μF
JCD0448D09		±9.0VDC	±220mA	83%	15mA	100mA	±220μF
JCD0448D12		±12.0VDC	±166mA	83%	15mA	100mA	±220μF
JCD0448D15		±15.0VDC	±133mA	83%	15mA	100mA	±47μF
JCD0448D24		±24.0VDC	±83mA	79%	15mA	105mA	±100μF

Notes:

- When one output is set at 100% load, the other varies between 25% & 100% load.
- Measured with 20MHz bandwidth and 1μF ceramic capacitor across output rails.
- Input current specified at nominal 5VDC, 12VDC, 24VDC or 48VDC input.
- For optional 3500VDC isolation add suffix -H to part number e.g. JCD0424S12-H

General

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Efficiency	See models & ratings table				
Isolation: input to output		1600		VDC	For optional high isolation versions 3500 VDC Input to Output add suffix -H to model number
Isolation: input to case		1600		VDC	
Isolation: output to case		1600		VDC	
Isolation capacitance		500		pF	
Isolation resistance		10 ⁹		Ω	
Switching frequency		266		kHz	
Power density		163.87 (10)		W/cm ³ (W/in ³)	
Mean time between failure		>1.1		Mhrs	MIL-HDBK-217F, +25°C GB

Input

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Input voltage range	4.5		9	VDC	5VDC nominal
	9		18		12VDC nominal
	18		36		24VDC nominal
	36		72		48VDC nominal
Input current	See models & ratings table				
Input reflected ripple current		35		mA/rms	12μH inductor
Input filter	Pi network				
Input surge		15		VDC	5VDC models (for 100ms)
		24			12VDC models (for 100ms)
		40			24VDC models (for 100ms)
		80			48VDC models (for 100ms)

Output

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Output voltage	See models & ratings table				
Setpoint accuracy		±2		%	For JCD0412/24/48S3V3 & D03 models
Voltage balance		±1		%	±2% D03 models
Minimum load	0			%	No minimum load required
Line regulation		±0.5		%	
Load regulation		±0.5		%	Single outputs
		±1.5			S3V3 & D03 models
Cross regulation		±5.0		%	See models and ratings note 1
Start up delay		20		ms	5VDC input models, 500 ms typical for 12/24/48VDC input models
Transient Response			3	%	Recovery to within 1% in 250μs for a 25% load change, (5% & 300μs for JCD0412/24/48S3V3 & D03 models)
Start up rise time		3.5		ms	
Ripple & noise		60		mV pk-pk	Measured with 20MHz bandwidth
Overload protection		150		%	Of full load on 5V input models only
Short circuit protection	Continuous with auto recovery				
Temperature coefficient		±0.02		%/ °C	

Environmental

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Operating temperature	-40		+100	°C	See derating curve
Storage temperature	-55		+125	°C	
Case temperature			+100	°C	
Cooling	Convection cooled				
Operating humidity			95	%	RH, non condensing

Safety approvals

Certification	Standard	Notes & conditions
UL	UL60950-1, CAN/CSA C22.2 No.60950-1, UL62368-1	
CE	Meets all applicable directives	
UKCA	Meets all applicable legislation	

Emissions - EMC

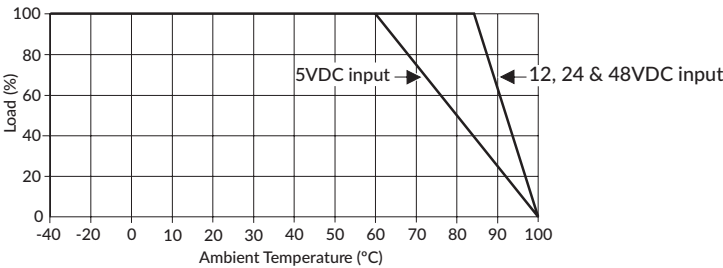
Phenomenon	Standard	Test level	Notes & conditions
Conducted	EN55022	Class A	With external components, see application note
Radiated	EN55022		

Immunity - EMC

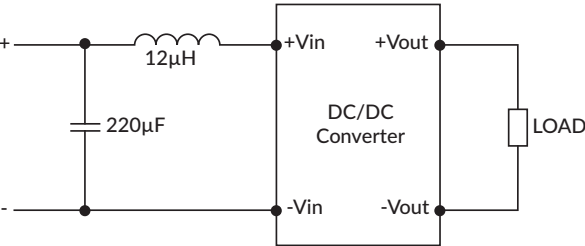
Phenomenon	Standard	Test level	Criteria	Notes & conditions
ESD immunity	EN61000-4-2	Level 3	B	External input capacitor required, 220µF/100V
Radiated immunity	EN61000-4-3	10V/m	A	
EFT/Burst	EN61000-4-4	Level 3	B	
Surge	EN61000-4-5	Level 2	A	
Conducted immunity	EN61000-4-6	10Vrms	B	
Magnetic fields	EN61000-4-8	1A/m	B	

Application notes

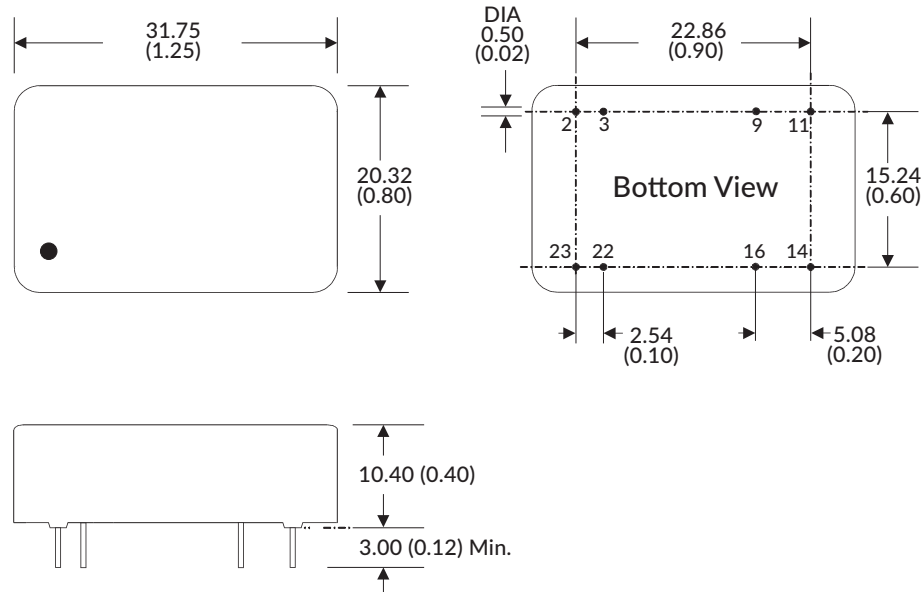
Derating Curve



Input filter



Mechanical details



Pin connections		
Pin	Single	Dual
2	-Vin	-Vin
3	-Vin	-Vin
9	No pin	Common
11	N/C	-Vout
14	+Vout	+Vout
16	-Vout	Common
22	+Vin	+Vin
23	+Vin	+Vin

Notes:

1. All dimensions in inches (mm)
2. Weight: 18g (0.04lbs)
3. Pin diameter tolerance: 0.5 ±0.005 (0.02 ±0.002)
4. Pin pitch tolerance: ±0.35 (±0.014)
5. Case tolerance: ±0.5 (±0.02)
6. Package: 24 pin DIL nickel-coated copper