

5W

Convection cooled

DC-DC converters



The JCD05 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 ± 3.3 , ± 5 , ± 9 , ± 12 , ± 15 or ± 24 VDC.

The 5W JCD05 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



Autonomous equipment



Industrial



Technology



Instrumentation



Robotics

Dimensions

31.7 x 20.3 x 10.4mm (1.25" x 0.8" x 0.4")

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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	
JCD0505S3V3	4.5-9.0VDC	3.3VDC	1300mA	74%	25mA	1159mA	1000μF
JCD0505S05		5.0VDC	1000mA	77%	25mA	1298mA	1000μF
JCD0505S12		12.0VDC	417mA	82%	30mA	1220mA	330μF
JCD0505S15		15.0VDC	333mA	82%	30mA	1218mA	220μF
JCD0505D03		± 3.3 VDC	± 750 mA	76%	25mA	1302mA	± 680 μF
JCD0505D05		± 5.0 VDC	± 500 mA	79%	30mA	1265mA	± 330 μF
JCD0505D12		± 12.0 VDC	± 208 mA	82%	35mA	1217mA	± 100 μF
JCD0505D15		± 15.0 VDC	± 167 mA	82%	40mA	1221mA	± 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. JCD0524S12-H

Models & ratings

Model number	Input voltage	Output voltage	Output current	Efficiency	Input current ⁽¹⁾		Maximum capacitive load
					No load	Full load	
JCD0512S3V3	9-18VDC	3.3VDC	1300mA	74%	30mA	483mA	1000μF
JCD0512S05		5.0VDC	1000mA	77%	30mA	541mA	1000μF
JCD0512S09		9.0VDC	555mA	80%	30mA	520mA	470μF
JCD0512S12		12.VDC	417mA	82%	30mA	508mA	330μF
JCD0512S15		15.0VDC	333mA	82%	30mA	508mA	100μF
JCD0512S24		24.0VDC	208mA	82%	30mA	508mA	68μF
JCD0512D03		±3.3VDC	±750mA	70%	30mA	595mA	±1000μF
JCD0512D05		±5.0VDC	±500mA	77%	30mA	541mA	±1000μF
JCD0512D09		±9.0VDC	±278mA	79%	30mA	527mA	±330μF
JCD0512D12		±12.0VDC	±208mA	80%	30mA	520mA	±47μF
JCD0512D15		±15.0VDC	±167mA	79%	30mA	527mA	±47μF
JCD0512D24		±24.0VDC	±104mA	81%	30mA	514mA	±10μF
JCD0524S3V3	18-36VDC	3.3VDC	1300mA	75%	20mA	239mA	1000μF
JCD0524S05		5.0VDC	1000mA	80%	20mA	261mA	1000μF
JCD0524S09		9.0VDC	555mA	82%	20mA	254mA	470μF
JCD0524S12		12.VDC	417mA	83%	20mA	251mA	1000μF
JCD0524S15		15.0VDC	333mA	84%	20mA	248mA	220μF
JCD0524S24		24.0VDC	208mA	84%	20mA	248mA	1000μF
JCD0524D03		±3.3VDC	±750mA	76%	20mA	274mA	±470μF
JCD0524D05		±5.0VDC	±500mA	79%	20mA	263mA	±680μF
JCD0524D09		±9.0VDC	±278mA	83%	20mA	251mA	±220μF
JCD0524D12		±12.0VDC	±208mA	83%	20mA	251mA	±220μF
JCD0524D15		±15.0VDC	±167mA	83%	20mA	251mA	±22μF
JCD0524D24		±24.0VDC	±104mA	82%	20mA	254mA	±22μF
JCD0548S3V3	36-72VDC	3.3VDC	1300mA	76%	12mA	117mA	1000μF
JCD0548S05		5.0VDC	1000mA	80%	12mA	130mA	1000μF
JCD0548S09		9.0VDC	555mA	84%	12mA	124mA	100μF
JCD0548S12		12.VDC	417mA	80%	12mA	132mA	470μF
JCD0548S15		15.0VDC	333mA	82%	12mA	127mA	330μF
JCD0548S24		24.0VDC	208mA	85%	12mA	122mA	220μF
JCD0548D03		±3.3VDC	±750mA	74%	12mA	140mA	±1000μF
JCD0548D05		±5.0VDC	±500mA	80%	12mA	130mA	±470μF
JCD0548D09		±9.0VDC	±278mA	82%	12mA	127mA	±220μF
JCD0548D12		±12.0VDC	±208mA	84%	12mA	124mA	±100μF
JCD0548D15		±15.0VDC	±167mA	81%	12mA	128mA	±220μF
JCD0548D24		±24.0VDC	±104mA	81%	12mA	128mA	±22μF

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. JCD0524S12-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		204.8 (2.5)		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		±1		%	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, 500ms typical for 12/24/48VDC input models
Transient Response			3	%	Recovery to within 1% in 250μs for a 25% load change
Start up rise time		3.5		ms	
Ripple & noise		60		mV pk-pk	Measured with 20MHz bandwidth
Overload protection		150		%	Of full load on 5VDC 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

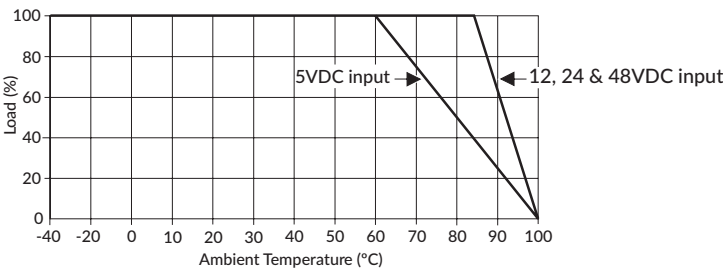
Phenomenon	Standard	Test level	Notes & conditions
Conducted	EN55022	Class A	With external components, see application note
Radiated	EN55022		

Immunity - EMC

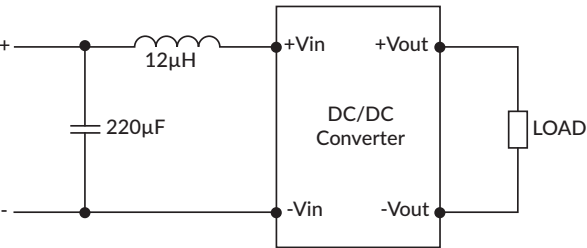
Phenomenon	Standard	Test level	Criteria	Notes & conditions
ESD immunity	EN61000-4-2	Level 3	B	External input capacitor required, 220µF/100V
Radiated immunity	EN61000-4-3	10V/m	A	
EFT/Burst	EN61000-4-4	Level 3	B	
Surge	EN61000-4-5	Level 2	A	
Conducted immunity	EN61000-4-6	10Vrms	B	
Magnetic fields	EN61000-4-8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

Application notes

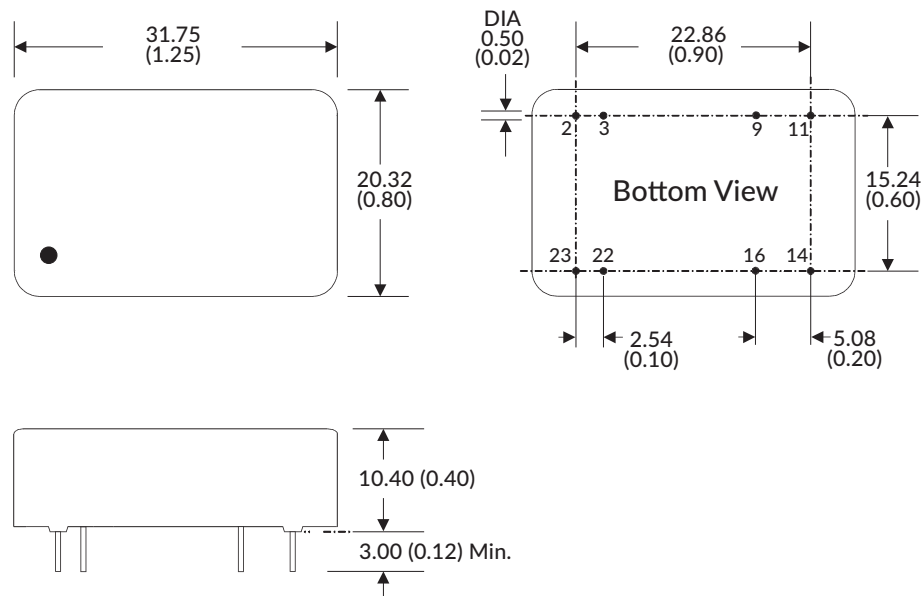
Derating Curve



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