

20W Convection cooled

DC-DC converters

The 20W JCM20 series is housed in a 25.4 x 25.4 x 10.4mm (1" x 1" x 0.41") PCB mount metal case. Featuring a 2:1 input voltage range of 9 to 18VDC or 18 to 36VDC or 36 to 75VDC with regulated single outputs of 3.3, 5, 12 & 15VDC adjustable $\pm 10\%$ with a trim resistor, dual outputs ± 12 & ± 15 VDC.

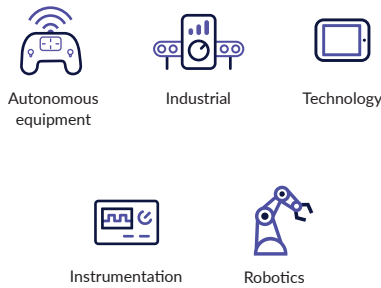
The JCM20 has 1.6kVDC isolation between input and output. Remote on/off is standard as are overload & over voltage protection. Operating temperature range is from -40°C to $+105^{\circ}\text{C}$, with derating above $+65^{\circ}\text{C}$.



Features

- ▶ Regulated single outputs from 3.3 to 15VDC
- ▶ Regulated dual outputs ± 12 & ± 15 VDC
- ▶ Input ranges 9 to 18, 18 to 36, 36 to 75VDC
- ▶ 25.4 x 25.4mm (1" x 1") package, 10.4mm profile
- ▶ 1.6kVDC isolation
- ▶ Remote On/Off
- ▶ -40°C to $+105^{\circ}\text{C}$ operating temperature
- ▶ Full power to $+65^{\circ}\text{C}$
- ▶ 3 year warranty

Applications



Dimensions

25.4 x 50.8 x 10.16mm (1.00" x 2.00" x 0.40")

Models & ratings

Model number	Input voltage	Output voltage	Output current	Efficiency	Input current ⁽¹⁾		Maximum capacitive load
					No load	Full load	
JCM2012S3V3	9-18VDC	3.3VDC	4.500A	86%	60mA	1439mA	7000 μF
JCM2012S05		5.0VDC	4.000A	90%	60mA	1852mA	5000 μF
JCM2012S12		12.0VDC	1.670A	89%	30mA	1873mA	850 μF
JCM2012S15		15.0VDC	1.330A	89%	30mA	1873mA	700 μF
JCM2012D12		± 12.0 VDC	± 0.833 A	89%	30mA	1873mA	± 470 μF
JCM2012D15		± 15.0 VDC	± 0.667 A	89%	30mA	1873mA	± 330 μF

Continued on page 2

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%.
3. Measured with $1\mu\text{F}$ ceramic capacitor in parallel with a $10\mu\text{F}$ electrolytic across output rails on single output models or $1\mu\text{F}$ ceramic capacitor only on dual output models.

Models & ratings

Model number	Input voltage	Output voltage	Output current	Efficiency	Input current ⁽¹⁾		Maximum capacitive load
					No load	Full load	
JCM2024S3V3	18-36VDC	3.3VDC	4.500A	86%	35mA	720mA	7000μF
JCM2024S05		5.0VDC	4.000A	89%	35mA	936mA	5000μF
JCM2024S12		12.0VDC	1.670A	89%	25mA	936mA	850μF
JCM2024S15		15.0VDC	1.330A	89%	25mA	936mA	700μF
JCM2024D12		±12.0 VDC	±0.833A	89%	30mA	936mA	±470μF
JCM2024D15		±15.0VDC	±0.667A	89%	30mA	936mA	±330μF
JCM2048S3V3	36-75VDC	3.3VDC	4.500A	86%	25mA	360mA	7000μF
JCM2048S05		5.0VDC	4.000A	89%	25mA	468mA	5000μF
JCM2048S12		12.0VDC	1.670A	89%	15mA	468mA	850μF
JCM2048S15		15.0VDC	1.330A	90%	15mA	468mA	700μF
JCM2048D12		±12.0 VDC	±0.833A	89%	20mA	468mA	±470μF
JCM2048D15		±15.0VDC	±0.667A	89%	20mA	468mA	±330μF

Notes:

- Input current specified at nominal input.
- Cross regulation for duals is ±5% when one output is at 100% and the other is varied between 25% and 100%.
- Measured with 1μF ceramic capacitor in parallel with a 10μF electrolytic across output rails on single output models or 1μF ceramic capacitor only on dual output models.

General

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Efficiency	See models & ratings table				
Isolation: input to output		1600		VDC	
Isolation: input to case		1600		VDC	
Isolation: output to case		1600		VDC	
Isolation capacitance			1000	pF	
Switching frequency		330		kHz	
Power density		3.1 (51.3)		W/cm ³ (W/in ³)	
Mean time between failure		>560		kHrs	MIL-HDBK-217F, +25°C GB
Water Washing	Use de-ionised water, do not soak, dry thoroughly				
Solder Profile	Wave solder profile 260°C 1.5mm from case 10s max. With iron 450°C, 5s max.				

Input

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Input voltage range	9		18	VDC	12VDC nominal
	18		36		24VDC nominal
	36		75		48VDC nominal
Input current	See models & ratings table				
Input Filter	Pi network				
Input reflected ripple current		30		mA/pk-pk	12μH inductor and 47μF capacitor, 5Hz to 20MHz
Input surge		36		VDC	12VDC models (for 100ms)
		50			24VDC models (for 100ms)
		100			48VDC models (for 100ms)

Output

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Output voltage	See models & ratings table				
Output voltage trim		±10		%	Single outputs models only
Minimum load	0			%	No minimum load required
Line regulation			±0.5	%	
Load regulation			±0.5	%	Single output
			±1		Dual outputs
Setpoint accuracy		±1		%	
Cross regulation		±5		%	Dual outputs when one output is at 100% and the other is varied between 25% and 100%.
Transient response			<3	%	Deviation, recovery to within 1% in <250µs for a 25% load change
Start up time		30		ms	
Ripple & noise		100		mV pk-pk	Measured with 1µF ceramic capacitor in parallel with a 10µF electrolytic across output rails on single output models or 1µF ceramic capacitor only on dual output models
Short circuit protection	Trip & restart (hiccup mode), auto recovery				
Temperature coefficient		±0.02		%/°C	
Overload protection		150		%	Full load
Remote on/off	On = Logic High (>3.0VDC) or Open				
	Off = Logic Low (<1.2VDC) or short pin 2 to 3				
Overvoltage protection		3.9		VDC	3.3VDC models
		6.2			5VDC models
		15			12VDC models
		18			15VDC models
		±6.2			±5VDC models
		±15			±12VDC models
		±18			±15VDC models
Maximum capacitive load	See models and ratings table				

Environmental

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Operating temperature	-40		+105	°C	Derate from 100% load at +55°C to no load at 105°C
Storage temperature	-40		+125	°C	
Case temperature			+105	°C	
Cooling	Natural convection				
Humidity			90	%	Non condensing

Safety approvals

Safety agency	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

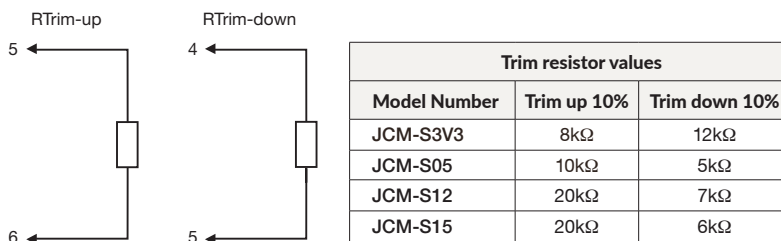
Phenomenon	Standard	Test level	Notes & conditions
Conducted	EN55032	Class A	See application notes
Radiated	EN55032	Class A	

Immunity - EMC

Phenomenon	Standard	Test level	Criteria	Notes & conditions
ESD immunity	EN61000-4-2		A	6kV contact discharge, 8kV air discharge
Radiated immunity	EN61000-4-3	10V/m	A	
EFT/Burst	EN61000-4-4	2	A	220µF/250V capacitor across the input is required in order to meet EN61000-4-4 and EN61000-4-5.
Surge	EN61000-4-5	2	A	
Conducted immunity	EN61000-4-6	10Vrms	A	
Magnetic fields	EN61000-4-8	1A/m	A	

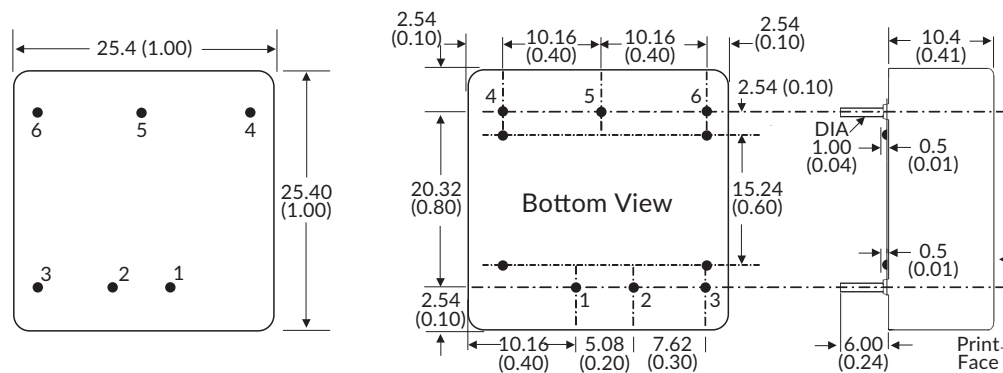
Application notes

Output trim



Approximate values. Output can be externally trimmed by using the method above. (Single output models only). For variable trimming, use 100 kΩ potentiometer

Mechanical details



Pin connections

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

Notes:

- All dimensions are in mm (inches)
- Weight: 20g (0.04lbs) approx.
- Pin diameter: 1.0 ±0.05 (0.04 ±0.002)

- Pin pitch tolerance: ±0.35 (±0.014)
- Case tolerance: ±0.5 (±0.02)

Specifications subject to change without notice.