JCM20 series

XP Power

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 18 to 36VDC or 36 to 75VDC with regulated single outputs of 3.3, 5, 12 & 15VDC adjustable ±10% with a trim resistor, dual outputs ±12 & ±15VDC.

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°C, with derating above +65°C.

Features

- Regulated single outputs from 3.3 to 15VDC
- Regulated dual outputs ±12 & ±15VDC
- Input ranges 9 to 18, 16 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°C operating temperature
- Full power to +65°C
- 3 year warranty

Applications

Autonomous equipment

Industrial

Technology

Instrumentation

Robotics

Dimensions

25.4 x 50.8 x 10.16mm (1.00" x 2.00" 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	
JCM2012S3V3	9-18VDC	3.3VDC	4.500A	86%	60mA	1439mA	7000µF
JCM2012S05		5.0VDC	4.000A	90%	60mA	1852mA	5000µF
JCM2012S12		12.0VDC	1.670A	89%	30mA	1873mA	850µF
JCM2012S15		15.0VDC	1.330A	89%	30mA	1873mA	700µF
JCM2012D12		±12.0 VDC	±0.833A	89%	30mA	1873mA	±470µF
JCM2012D15		±15.0VDC	±0.667A	89%	30mA	1873mA	±330µF

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Notes:

1. Input current specified at nominal input.
2. Cross regulation for duals is ±5% when one output is at 100% and the other is varied between 25% and 100%.
3. 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.

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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	
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:

1. Input current specified at nominal input.
2. Cross regulation for duals is ±5% when one output is at 100% and the other is varied between 25% and 100%.
3. 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		840.65 (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)

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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

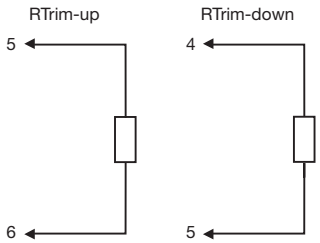
Phenomenon	Standard	Test level	Notes & conditions
Conducted	EN55032	Class A	See application notes
Radiated	EN55032	Class A	

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

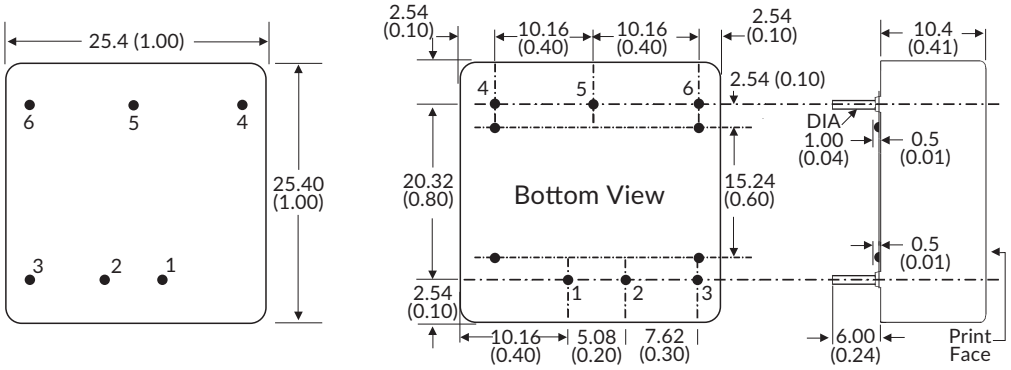
Input filter



Trim resistor values		
Model Number	**Trim up 10%**	**Trim down 10%**
JCM-S3V3	8kΩ	12kΩ
JCM-S05	10kΩ	5kΩ
JCM-S12	20kΩ	7kΩ
JCM-S15	20kΩ	6kΩ

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

Mechanical details



Pin connections					
Pin	**Single**	**Dual**	**Pin**	**Single**	**Dual**
1	+Vin	+Vin	4	**+Vout**	+Vout
2	-Vin	-Vin	5	**Trim**	No Pin
3	Remote On/Off	Remote On/Off	6	**-Vout**	-Vout

Notes:

1. All dimensions are in mm (inches)
2. Weight: 20g (0.04lbs) approx.
3. Pin diameter: 1.0 ±0.05 (0.04 ±0.002)
4. Pin pitch tolerance: ±0.35 (±0.014)
5. Case tolerance: ±0.5 (±0.02)