JCK20 series

XP Power

20W Convection cooled

DC-DC converters

The JCK20 series is housed in a 50.8 x 25.4 x 10.2 mm (2" x 1" x 0.4") 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 and dual outputs ±12 or ±15VDC. Single output models are adjustable ±10% with a trim resistor.

The 20W JCK20 has 1.6kVDC isolation between input and output, overload & short circuit protection is standard as is remote On/Off, an optional heatsink (suffix -HK) can be specified. The operating temperature range is from -40°C to +100°C, with derating above +70°C.

Features

- Regulated single outputs 3.3, 5, 12 & 15VDC
- Regulated dual outputs ±12 & ±15VDC
- 2:1 input range
- 50.8 x 25.4mm (2" x 1") footprint, 10.2mm profile
- 1.6kVDC isolation
- Single outputs trimmable ±10%
- Remote On/Off
- Continuous short circuit protection
- Optional heatsink
- -40°C to +100°C operating temperature
- Full power to +70°C
- 3 year warranty

Applications

Autonomous equipment

Industrial

Technology

Instrumentation

Robotics

Dimensions

50.8 x 25.4 x 10.2mm (2.00" x 1.00" x 0.40")

More resources

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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	
JCK2012S3V3	9-18VDC	3.3VDC	5.500	90%	60mA	1.74A	10,000µF
JCK2012S05		5.0VDC	4.00A	92%	60mA	1.87A	6,800µF
JCK2012S12		12.0VDC	1.67A	90%	30mA	1.92A	1,000µF
JCK2012S15		15.0VDC	1.33A	90%	30mA	1.92A	680µF
JCK2012D12		±12.0VDC	±0.835A	89%	30mA	1.94A	±470µF
JCK2012D15		±15.0VDC	±1.33A	89%	30mA	1.94A	±330µF

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Notes:

1. Input current specified at nominal 12, 24VDC or 48VDC input.
2. Cross regulation is ±5% when one output is at 100% and the other is varied between 25% and 100%.
3. Measured with 20MHz bandwidth and 1µF ceramic capacitor across output rails.
4. For heatsink option add '-HK' to the end of the part number.

JCK20 series

Models & ratings

Model number	Input voltage	Output voltage	Output current	Efficiency	Input current[1]		Maximum capacitive load
					No load	Full load	
JCK2024S3V3	18-36 VDC	3.3VDC	5.500A	91%	35mA	0.86A	10,000µF
JCK2024S05		5.0VDC	4.000A	92%	35mA	0.93A	6,800µF
JCK2024S12		12.0VDC	1.670A	91%	25mA	0.95A	1,000µF
JCK2024S15		15.0VDC	1.330A	92%	25mA	0.95A	680µF
JCK2024D12		±12.0VDC	±0.835A	91%	30mA	0.96A	±470µF
JCK2024D15		±15.0VDC	±0.665A	92%	30mA	0.96A	±330µF
JCK2048S3V3	36-75 VDC	3.3VDC	5.500A	91%	25mA	0.43A	10,000µF
JCK2048S05		5.0VDC	4.000A	92%	25mA	0.46A	6,800µF
JCK2048S12		12.0VDC	1.670A	91%	15mA	0.47A	1,000µF
JCK2048S15		15.0VDC	1.330A	92%	15mA	0.47A	680µF
JCK2048D12		±12.0VDC	±0.835A	92%	20mA	0.48A	±470µF
JCK2048D15		±15.0VDC	±0.665A	92%	20mA	0.48A	±330µF

Notes:

1. Input current specified at nominal 12, 24VDC or 48VDC input.
2. Cross regulation is ±5% when one output is at 100% and the other is varied between 25% and 100%.
3. Measured with 20MHz bandwidth and 1µF ceramic capacitor across output rails.
4. For heatsink option add '-HK' to the end of the part number.

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		1200		pF	
Isolation resistance	10^9			Ω	
Switching frequency		330		kHz	
Power density		246.7 (25.0)		W/cm^3 (W/in^3)	

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 surge		36		VDC	12VDC models (for 1000ms)
		50			24VDC models (for 1000ms)
		100			48VDC models (for 1000ms)
Undervoltage lockout	On at 8.6VDC Off at 7.9VDC				12VDC models
	On at 17.8VDC Off at 16VDC				24VDC models
	On at 33.5VDC Off at 30.5VDC				48VDC models

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		%	
Transient response			3	%	Deviation, recovery to within 1% in <250µs for a 25% load change
Start up delay		<20		ms	
Start up rise time		<5		ms	
Ripple & noise		75		mV	Measured with 20MHz bandwidth and 1µF ceramic capacitor across output rails.
Short circuit protection	Trip & restart (hiccup mode), auto recovery				
Temperature coefficient		0.02		%/ ˚C	
Overload protection	115		130	%	
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
		±15			±12VDC models
		±18			±15VDC models

Environmental

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Operating temperature	-40		+100	°C	Derate from 100% load at +70°C to 0% load at +100°C
Storage temperature	-40		+125	°C	
Case temperature			+100	°C	
Cooling	Convection cooled				
Operating humidity			95	%	RH, non condensing

JCK20 series

Safety approvals

Safety agency	Standard	Notes & conditions
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
Radiated	EN55022	Class A	

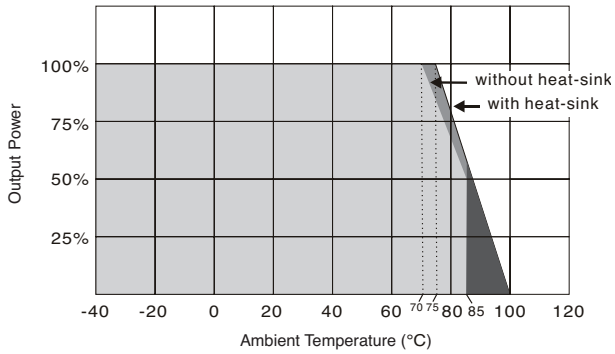
Immunity - EMC

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

Application notes

Derating curve

12VDC input



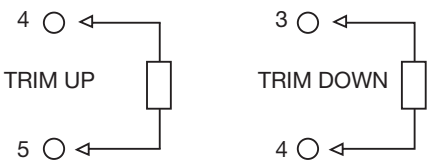
External output trim

For 3.3VDC output:
Trim +10%, R = 10kΩ typical
Trim - 10%, R = 15kΩ typical

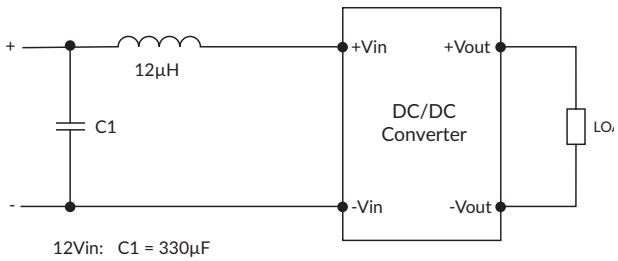
For 12VDC output:
Trim +10%, R = 22kΩ typical
Trim - 10%, R = 5kΩ typical

For 5VDC output:
Trim +10%, R = 10kΩ typical
Trim - 10%, R = 5kΩ typical

For 15VDC output:
Trim +10%, R = 20kΩ typical
Trim - 10%, R = 5kΩ typical



Input filter

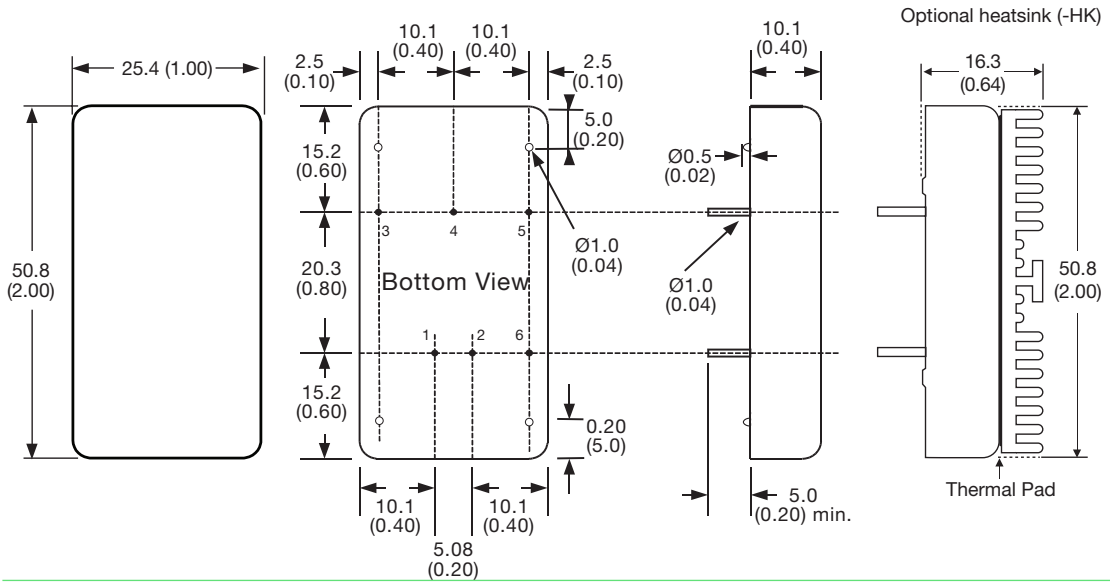


12Vin: C1 = 330µF
24 & 48Vin: C1 = 220µF

Remote on/off control

Output On >3.0VDC or open circuit
Output Off <1.2VDC or short circuit pins 2 & 6

Mechanical details



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

Notes:

1. All dimensions are in (mm (inches).
2. Weight: 30g (0.07lbs) 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)