JTK20 series

20W Convection cooled

DC-DC converters

The JTK20 series is housed in a 25.4 x 25.4 x 9.9mm (1” x 1” x 0.39”) metal case. Featuring a 4:1 input voltage range of 9 to 36VDC or 18 to 75VDC with both single and dual outputs, singles have 3.3, 5, 12 or 15VDC with duals having either ±12 or ±15VDC. Single output models are adjustable ±10% with a trim resistor.

The JTK20 provides 1.6kVDC isolation between input and output. Operating temperature range is from -40°C to +100°C, with derating above +55°C. Remote on/off is standard.

Features

- Regulated single outputs 3.3 to 15VDC
- Regulated dual outputs ±12 & ±15VDC
- 4:1 input range
- 25.4 x 25.4mm (1” x 1”) footprint, 9.9mm profile
- Output trim ±10% (single O/P)
- 1.6kVDC isolation
- Remote On/Off
- -40°C to +100°C operating temperature
- Full power to +55°C
- 3 year warranty

Applications

Autonomous equipment

Industrial

Technology

Instrumentation

Robotics

Dimensions

25.5 x 25.4 x 9.9mm (1.00” x 1.00” x 0.39”)

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	
JTK2024S3V3	9-36VDC	3.3VDC	4.500A	86%	50mA	720mA	10000µF
JTK2024S05		5.0VDC	4.000A	89%	50mA	936 mA	5000µF
JTK2024S12		12.0VDC	1.670A	89%	22mA	936 mA	850µF
JTK2024S15		15.0VDC	1.330A	89%	22mA	936 mA	700µF
JTK2024D12		±12.0 VDC	±0.833A	89%	25mA	936 mA	±470µF
JTK2024D15		±15.0VDC	±0.667A	89%	25mA	936 mA	±330µF

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Notes:

1. Input current measured at nominal 24VDC and 48VDC input.
2. When one output is set to 100% load, and the other varies between 25% and 100% load.
3. Measured with 1µF ceramic capacitor and 10µF tantalum capacitor across output rails.

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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	
JTK2048S3V3	36-75VDC	3.3VDC	4.500A	86%	25mA	360mA	7000µF
JTK2048S05		5.0VDC	4.000A	89%	25mA	468mA	5000µF
JTK2048S12		12.0VDC	1.670A	89%	15mA	468mA	850µF
JTK2048S15		15.0VDC	1.330A	90%	15mA	468mA	700µF
JTK2048D12		±12.0 VDC	±0.833A	89%	20mA	468mA	±470µF
JTK2048D15		±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/cm³ (W/in³)	
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		36	VDC	24VDC nominal
	18		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		50		VDC	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	%	
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 and 10µF tantalum capacitor across output rails.
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		+100	°C	Derate from 100% load at +55°C to no load at +100°C
Storage temperature	-40		+125	°C	
Case temperature			+105	°C	
Cooling	Natural convection				

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

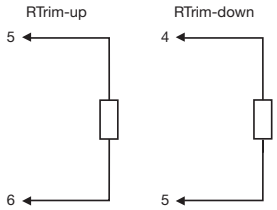
Phenomenon	Standard	Test level	Notes & conditions
Conducted	EN55022	A	See application notes
Radiated	EN55022	A	

Immunity - EMC

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

Application notes

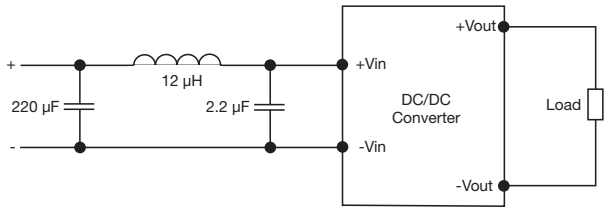
Output trim



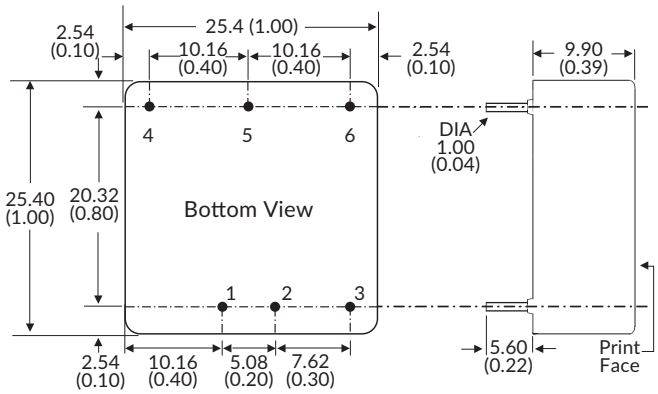
Trim resistor values		
Model Number	Trim up 10%	Trim down 10%
JTK-S3V3	8kΩ	12kΩ
JTK-S05	10kΩ	5kΩ
JTK-S12	20kΩ	7kΩ
JTK-S15	20kΩ	6kΩ

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

Input filter



Mechanical details



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