

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 ± 15 VDC. Single output models are adjustable $\pm 10\%$ with a trim resistor.

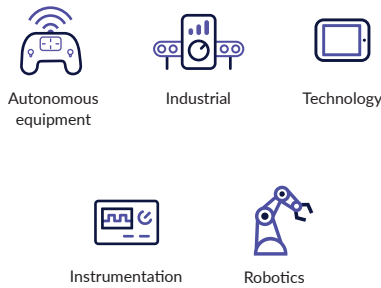
The JTK20 provides 1.6kVDC isolation between input and output. Operating temperature range is from -40°C to $+100^{\circ}\text{C}$, with derating above $+55^{\circ}\text{C}$. Remote on/off is standard.



Features

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

Applications



Dimensions

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

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	10000 μF
JTK2024S05		5.0VDC	4.000A	89%	50mA	936 mA	5000 μF
JTK2024S12		12.0VDC	1.670A	89%	22mA	936 mA	850 μF
JTK2024S15		15.0VDC	1.330A	89%	22mA	936 mA	700 μF
JTK2024D12		± 12.0 VDC	± 0.833 A	89%	25mA	936 mA	± 470 μF
JTK2024D15		± 15.0 VDC	± 0.667 A	89%	25mA	936 mA	± 330 μF

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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 1 μF ceramic capacitor and 10 μF tantalum capacitor across output rails.

Models & ratings

Model number	Input voltage	Output voltage	Output current	Efficiency	Input current ⁽⁴⁾		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:

- 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		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		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)

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

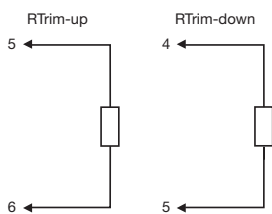
Phenomenon	Standard	Test level	Notes & conditions
Conducted	EN55022	A	See application notes
Radiated	EN55022	A	

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 220 μ F/100V
Conducted immunity	EN61000-4-6	3Vrms	A	
Magnetic fields	EN61000-4-8	1A/m	A	

Application notes

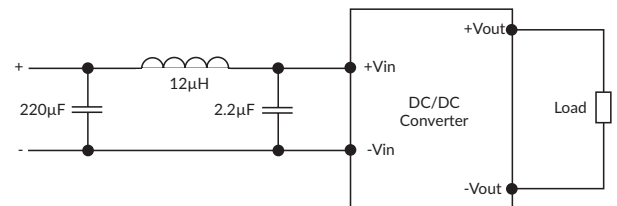
Output trim



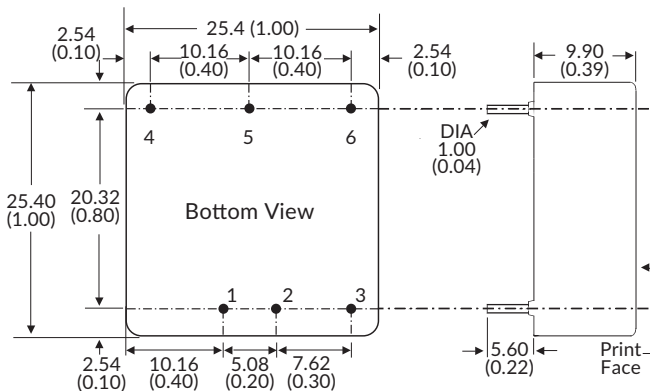
Trim resistor values		
Model Number	Trim up 10%	Trim down 10%
JTK-S3V3	8k Ω	12k Ω
JTK-S05	10k Ω	5k Ω
JTK-S12	20k Ω	7k Ω
JTK-S15	20k Ω	6k Ω

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

- All dimensions are in mm (inches)
- Weight: 20g (0.04lbs) approx.
- Pin diameter: 1.0 \pm 0.05 (0.04 \pm 0.002)
- Pin pitch tolerance: \pm 0.35 (\pm 0.014)
- Case tolerance: \pm 0.5 (\pm 0.02)

Specifications subject to change without notice.