

JTK15-20 SERIES

DC/DC Single & Dual Output: 15-20 Watts



Features

- Very High Power Density
- Wide 4:1 Input Range
- Operating Temperature $-40\text{ }^{\circ}\text{C}$ to $+100\text{ }^{\circ}\text{C}$
- Single & Dual Outputs
- 1600 VDC Isolation
- High Efficiency – up to 89%
- 3 Year Warranty

Specification

Input

Input Voltage Range	<ul style="list-style-type: none">• 24 V (9-36 VDC)• 48 V (18-75 VDC)
Input Current	<ul style="list-style-type: none">• See table
Input Filter	<ul style="list-style-type: none">• Pi network
Input Reflected Ripple Current	<ul style="list-style-type: none">• JTK15: 20 mA pk-pk• JTK20: 30 mA pk-pk through 12 μH inductor and 47 μF capacitor, 5 Hz to 20 MHz
Input Surge	<ul style="list-style-type: none">• 24 V models: 50 VDC for 100 ms• 48 V models: 100 VDC for 100 ms

Output

Output Voltage	<ul style="list-style-type: none">• See table
Output Trim	<ul style="list-style-type: none">• $\pm 10\%$ max on single output
Minimum Load	<ul style="list-style-type: none">• No minimum load required
Initial Set Accuracy	<ul style="list-style-type: none">• $\pm 1\%$ max
Start Up Delay	<ul style="list-style-type: none">• 20 ms typical
Line Regulation	<ul style="list-style-type: none">• JTK15: $\pm 0.2\%$ max, JTK20: $\pm 0.5\%$ max
Load Regulation	<ul style="list-style-type: none">• $\pm 0.5\%$ max single, $\pm 1.0\%$ max dual
Cross Regulation	<ul style="list-style-type: none">• $\pm 5\%$ on dual output models, (see note 2)
Transient Response	<ul style="list-style-type: none">• $< 3\%$ max deviation, recovery to within 1% in 250 μs for a 25% load change
Ripple & Noise	<ul style="list-style-type: none">• 100 mV pk-pk, 20 MHz bandwidth, (see note 3)
Overload Protection	<ul style="list-style-type: none">• JTK15: 170% of full load typical, JTK20: 150% of full load typical
Overvoltage Protection	<ul style="list-style-type: none">• 3.3 V models: 3.9 V typical• 5 V models: 6.2 V typical• 12 V models: 15 V typical• 15 V models: 18 V typical• ± 5 V models: ± 6.2 V typical• ± 12 V models: ± 15 V typical• ± 15 V models: ± 18 V typical
Short Circuit Protection	<ul style="list-style-type: none">• Trip & restart (hiccup) with auto recovery
Maximum Capacitive Load	<ul style="list-style-type: none">• See table
Temperature Coefficient	<ul style="list-style-type: none">• $\pm 0.02/^{\circ}\text{C}$ max
Remote On/Off	<ul style="list-style-type: none">• On > 3.0 VDC or open circuit• Off < 1.2 VDC or short circuit pins 2 & 3

General

Efficiency	<ul style="list-style-type: none">• See table
Isolation	<ul style="list-style-type: none">• 1600 VDC Input to Output• 1600 VDC Input to Case• 1600 VDC Output to Case
Isolation Capacitance	<ul style="list-style-type: none">• JTK15: 1200 pF max• JTK20: 1000 pF max
Switching Frequency	<ul style="list-style-type: none">• JTK15: 375 kHz typical• JTK20: 330 kHz typical
Power Density	<ul style="list-style-type: none">• JTK15: 38.4 W/in³,• JTK20: 51.3 W/in³
MTBF	<ul style="list-style-type: none">• > 560 Khrs to MIL-STD-217F at 25 $^{\circ}\text{C}$, GB

Environmental

Operating Temperature	<ul style="list-style-type: none">• $-40\text{ }^{\circ}\text{C}$ to $+100\text{ }^{\circ}\text{C}$, JTK15: derate from 100% load at $+65\text{ }^{\circ}\text{C}$ to no load at $+100\text{ }^{\circ}\text{C}$, JTK20: derate from 100% load at $+55\text{ }^{\circ}\text{C}$ to no load at $+100\text{ }^{\circ}\text{C}$
Case Temperature	<ul style="list-style-type: none">• $+105\text{ }^{\circ}\text{C}$ max
Storage Temperature	<ul style="list-style-type: none">• $-40\text{ }^{\circ}\text{C}$ to $+125\text{ }^{\circ}\text{C}$
Humidity	<ul style="list-style-type: none">• Up to 90%, non-condensing
Cooling	<ul style="list-style-type: none">• Natural convection

EMC

Emissions	<ul style="list-style-type: none">• EN55022, Level A conducted & radiated with external components - see applications note
ESD Immunity	<ul style="list-style-type: none">• EN61000-4-2, Level 2 Perf Criteria A
Radiated Immunity	<ul style="list-style-type: none">• EN61000-4-3, 3 V/m Perf Criteria A
EFT/Burst	<ul style="list-style-type: none">• EN61000-4-4, Level 3 Perf Criteria A*
Conducted Immunity	<ul style="list-style-type: none">• EN61000-4-6, 3 V rms Perf Criteria A
Magnetic Fields	<ul style="list-style-type: none">• EN61000-4-8, 1 A/m Perf Criteria A

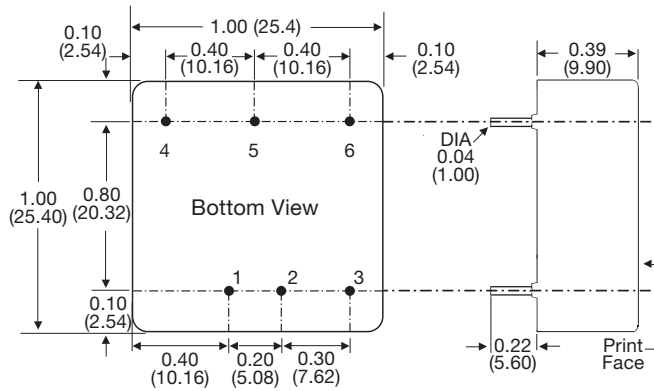
*External input capacitor required 220 μF / 100 V.

Input Voltage	Output Voltage	Output Current	Input Current ⁽¹⁾		Maximum Capacitive Load	Efficiency	Model Number
			No Load	Full Load			
9-36 V	3.3 V	4.000 A	15 mA	647 mA	1000 μ F	86%	JTK1524S3V3 \uparrow^{\wedge}
	5.0 V	3.000 A	15 mA	727 mA	1000 μ F	87%	JTK1524S05 \uparrow^{\wedge}
	12.0 V	1.300 A	15 mA	747 mA	330 μ F	88%	JTK1524S12 \uparrow^{\wedge}
	15.0 V	1.000 A	15 mA	710 mA	220 μ F	89%	JTK1524S15 \uparrow^{\wedge}
	± 5.0 V	± 1.500 A	15 mA	744 mA	± 470 μ F	85%	JTK1524D05 \uparrow^{\wedge}
	± 12.0 V	± 0.625 A	15 mA	720 mA	± 220 μ F	88%	JTK1524D12 \uparrow^{\wedge}
18-75 V	3.3 V	4.000 A	10 mA	331 mA	1000 μ F	84%	JTK1548S3V3 \uparrow^{\wedge}
	5.0 V	3.000 A	10 mA	368 mA	1000 μ F	86%	JTK1548S05 \uparrow^{\wedge}
	12.0 V	1.300 A	10 mA	378 mA	330 μ F	87%	JTK1548S12 \uparrow^{\wedge}
	15.0 V	1.000 A	10 mA	360 mA	220 μ F	88%	JTK1548S15 \uparrow^{\wedge}
	± 5.0 V	± 1.500 A	10 mA	377 mA	± 470 μ F	84%	JTK1548D05 \uparrow^{\wedge}
	± 12.0 V	± 0.625 A	10 mA	363 mA	± 220 μ F	87%	JTK1548D12 \uparrow^{\wedge}
9-36 V	3.3 V	4.500 A	50 mA	720 mA	10000 μ F	86%	JTK2024S3V3 \uparrow^{\wedge}
	5.0 V	4.000 A	50 mA	936 mA	5000 μ F	89%	JTK2024S05 \uparrow^{\wedge}
	12.0 V	1.670 A	22 mA	936 mA	850 μ F	89%	JTK2024S12 \uparrow^{\wedge}
	15.0 V	1.330 A	22 mA	936 mA	700 μ F	89%	JTK2024S15 \uparrow^{\wedge}
	± 12.0 V	± 0.833 A	25 mA	936 mA	± 470 μ F	89%	JTK2024D12 \uparrow^{\wedge}
	± 15.0 V	± 0.667 A	25 mA	936 mA	± 330 μ F	89%	JTK2024D15 \uparrow^{\wedge}
18-75 V	3.3 V	4.500 A	30 mA	309 mA	10000 μ F	86%	JTK2048S3V3 \uparrow^{\wedge}
	5.0 V	4.000 A	30 mA	468 mA	5000 μ F	89%	JTK2048S05 \uparrow^{\wedge}
	12.0 V	1.670 A	15 mA	468 mA	850 μ F	89%	JTK2048S12 \uparrow^{\wedge}
	15.0 V	1.330 A	15 mA	468 mA	700 μ F	90%	JTK2048S15 \uparrow^{\wedge}
	± 12.0 V	± 0.833 A	15 mA	468 mA	± 470 μ F	89%	JTK2048D12 \uparrow^{\wedge}
	± 15.0 V	± 0.667 A	15 mA	468 mA	± 330 μ F	89%	JTK2048D15 \uparrow^{\wedge}

Notes

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

Mechanical Details



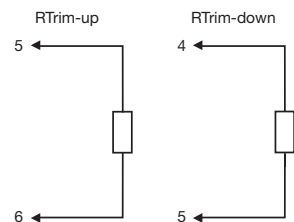
Pin	Pin Connections	
	Single	Dual
1	+Vin	+Vin
2	-Vin	-Vin
3	Remote On/Off	Remote On/Off
4	+Vout	+Vout
5	Trim	Com
6	-Vout	-Vout

Notes

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

Application Notes

Output Trim



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

Approximate values.

Output can be externally trimmed by using this method. (Single output models only). For variable trimming, use 100 k Ω potentiometer. Contact sales for details.

Input Filter

