

# 15 / 20 Watts

## JTK Series



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

#### Output

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

#### General

Efficiency	<ul style="list-style-type: none"><li>• See table</li></ul>
Isolation	<ul style="list-style-type: none"><li>• 1600 VDC Input to Output</li><li>• 1600 VDC Input to Case</li><li>• 1600 VDC Output to Case</li></ul>
Isolation Capacitance	<ul style="list-style-type: none"><li>• JTK15: 1200 pF max</li><li>• JTK20: 1000 pF max</li></ul>
Switching Frequency	<ul style="list-style-type: none"><li>• JTK15: 375 kHz typical</li><li>• JTK20: 330 kHz typical</li></ul>
Power Density	<ul style="list-style-type: none"><li>• JTK15: 38.4 W/in<sup>3</sup>,</li><li>• JTK20: 51.3 W/in<sup>3</sup></li></ul>
MTBF	<ul style="list-style-type: none"><li>• <math>&gt; 560\text{ K}</math>Hrs to MIL-STD-217F at 25 <math>^{\circ}\text{C}</math>, GB</li></ul>

#### Environmental

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

#### EMC

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

\*External input capacitor required 220  $\mu\text{F}$  / 100 V.

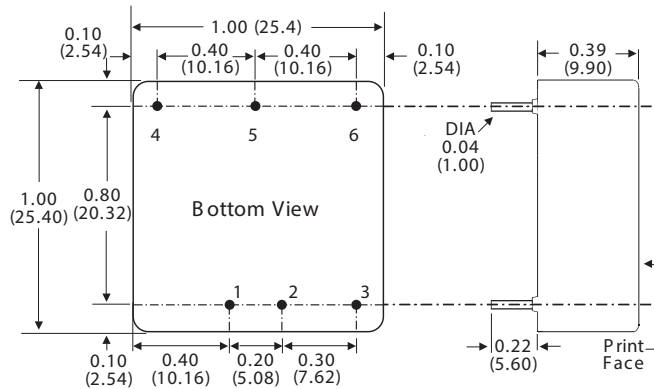
Models and Ratings

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

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

Mechanical Details



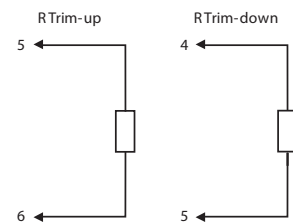
Pin	Pin Connections	
	Single	Dual
1	+Vin	+Vin
2	-Vin	-Vin
3	Remote On/Off	Remote On/Off
4	+Vout	+Vout
5	Trim	Com
6	-Vout	-Vout

Notes

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

Input Filter

