

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"> • 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.

Models and Ratings

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 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†^

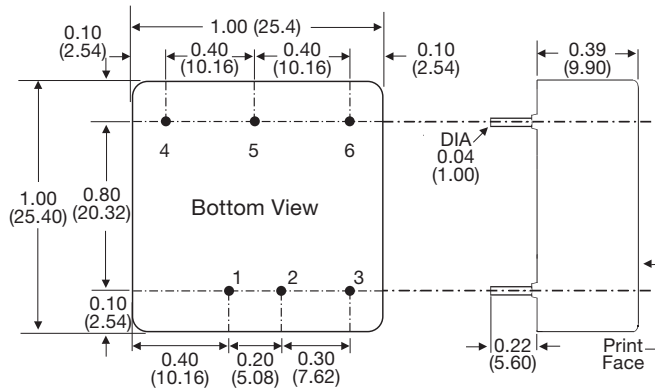
Notes

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.

† Available from Farnell & element14. See pages 284-290.

^ Available from Newark. See pages 291-296

Mechanical Details



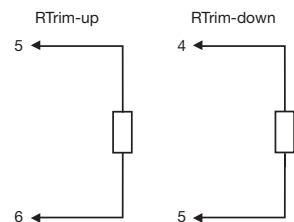
Pin	Pin Connections	
	Single	Dual
1	+Vin	+Vin
2	-Vin	-Vin
3	Remote On/Off	Remote On/Off
4	+Vout	+Vout
5	Trim	Com
6	-Vout	-Vout

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

