

4/6 Watts JTC Series



- 4:1 Input Range
- DIP-24 Metal Package
- Operating Temperature -40°C to $+100^{\circ}\text{C}$
- Single & Dual Outputs
- Continuous Short Circuit Protection
- 1500 VDC Isolation, 3500 VDC Option
- 3 Year Warranty

Specification

Input

Input Voltage Range	• 24 V (9-36 VDC) • 48 V (18-72 VDC)
Input Current	• See table
Input Filter	• Pi network
Input Reflected Ripple	• 35 mA pk-pk through 12 μH inductor
Input Surge	• 24 V models 40 VDC for 100 ms • 48 V models 80 VDC for 100 ms
Undervoltage Lockout	• None
Input Reverse Voltage Protection	• None

Output

Output Voltage	• See table
Output Voltage Balance	• $\pm 1\%$ max, dual output models
Minimum Load	• No minimum load required
Initial Set Accuracy	• $\pm 1\%$ max
Start Up Delay	• < 800 ms
Start Up Rise Time	• < 10 ms
Line Regulation	• $\pm 0.5\%$ max
Load Regulation	• $\pm 0.5\%$ max, $\pm 1.5\%$ max for 3.3 V and ± 3.3 V models
Cross Regulation	• $\pm 5\%$ on dual output models (see note 4)
Transient Response	• $< 1.5\%$ max deviation, recovery to within 1% in 200 μs for a 50% load change
Ripple & Noise	• 60 mV pk-pk for 3.3 V to 15 V models, 100 mV pk-pk for 18 V models, 150 mV pk-pk for 24 V models, 20 MHz bandwidth
Short Circuit Protection	• Trip & restart (Hiccup mode), auto recovery
Maximum Capacitive Load	• See tables
Temperature Coefficient	• $\pm 0.02/^{\circ}\text{C}$ max

General

Efficiency	• See tables
Isolation Voltage	• 1500 VDC Input to Output, for optional high isolation version 3500 VDC input to output add suffix '-H' to model number • 1000 VDC Input to Case • 1000 VDC Output to Case
Isolation Resistance	• $10^9\Omega$
Switching Frequency	• 266 kHz typical
Power Density	• JTC04: 10 W/in³, JTC06: 15 W/in³
MTBF	• > 1.0 Mhrs to MIL-HDBK-217F at 25°C, GB

Environmental

Operating Temperature	• -40°C to $+100^{\circ}\text{C}$, derate from 100% load at $+85^{\circ}\text{C}$ to no load at $+100^{\circ}\text{C}$
Case Temperature	• $+100^{\circ}\text{C}$ max
Storage Temperature	• -40°C to $+125^{\circ}\text{C}$
Humidity	• Up to 95%, non-condensing
Cooling	• Natural convection

EMC

Emissions	• EN55022 class A conducted with external components - see application note
ESD Immunity	• EN61000-4-2, 8 kV air discharge Perf Criteria A, 4 kV contact discharge Perf Criteria A
EFT/Burst	• EN61000-4-4, level 1, Perf Criteria A
Conducted Immunity	• EN61000-4-6, 3 Vrms, Perf Criteria A
Magnetic Fields	• EN61000-4-8, 1 A/m, Perf Criteria A

Models and Ratings

JTC04/06 **XP**

Input Voltage	Output Voltage	Output Current	Input Current ⁽²⁾		Maximum Capacitive Load ⁽³⁾	Efficiency	Model Number ⁽¹⁾
			No Load	Full Load			
9-36 V	3.3 V	1200 mA	12 mA	220 mA	1000 μ F	75%	JTC0424S3V3
	5.0 V	800 mA	15 mA	211 mA	1000 μ F	79%	JTC0424S05
	9.0 V	445 mA	12 mA	201 mA	220 μ F	83%	JTC0424S09
	12.0 V	333 mA	15 mA	203 mA	100 μ F	82%	JTC0424S12
	15.0 V	267 mA	15 mA	203 mA	220 μ F	82%	JTC0424S15
	18.0 V	223 mA	15 mA	203 mA	10 μ F	82%	JTC0424S18
	24.0 V	167 mA	18 mA	203 mA	220 μ F	82%	JTC0424S24
	± 3.3 V	± 606 mA	12 mA	222 mA	± 470 μ F	75%	JTC0424D03
	± 5.0 V	± 400 mA	15 mA	211 mA	± 100 μ F	79%	JTC0424D05
	± 9.0 V	± 222 mA	18 mA	208 mA	± 47 μ F	80%	JTC0424D09
	± 12.0 V	± 167 mA	15 mA	203 mA	± 47 μ F	82%	JTC0424D12
	± 15.0 V	± 134 mA	20 mA	208 mA	± 10 μ F	80%	JTC0424D15
	± 24.0 V	± 84 mA	18 mA	208 mA	± 22 μ F	80%	JTC0424D24
18-72 V	3.3 V	1200 mA	10 mA	110 mA	1000 μ F	76%	JTC0448S3V3
	5.0 V	800 mA	8 mA	106 mA	470 μ F	79%	JTC0448S05
	9.0 V	445 mA	10 mA	100 mA	330 μ F	83%	JTC0448S09
	12.0 V	333 mA	12 mA	104 mA	1000 μ F	80%	JTC0448S12
	15.0 V	267 mA	10 mA	99 mA	47 μ F	84%	JTC0448S15
	18.0 V	223 mA	10 mA	99 mA	10 μ F	84%	JTC0448S18
	24.0 V	167 mA	15 mA	102 mA	22 μ F	82%	JTC0448S24
	± 3.3 V	± 606 mA	10 mA	107 mA	± 680 μ F	78%	JTC0448D03
	± 5.0 V	± 400 mA	15 mA	106 mA	± 330 μ F	79%	JTC0448D05
	± 9.0 V	± 222 mA	15 mA	104 mA	± 47 μ F	80%	JTC0448D09
	± 12.0 V	± 167 mA	12 mA	102 mA	± 100 μ F	82%	JTC0448D12
	± 15.0 V	± 134 mA	15 mA	104 mA	± 100 μ F	80%	JTC0448D15
	± 24.0 V	± 84 mA	15 mA	104 mA	± 10 μ F	80%	JTC0448D24

Input Voltage	Output Voltage	Output Current	Input Current ⁽²⁾		Maximum Capacitive Load ⁽³⁾	Efficiency	Model Number ⁽¹⁾
			No Load	Full Load			
9-36 V	3.3 V	1400 mA	12 mA	253 mA	1000 μ F	76%	JTC0624S3V3
	5.0 V	1200 mA	10 mA	312 mA	1000 μ F	80%	JTC0624S05
	9.0 V	667 mA	12 mA	301 mA	220 μ F	83%	JTC0624S09
	12.0 V	500 mA	15 mA	301 mA	1000 μ F	83%	JTC0624S12
	15.0 V	400 mA	18 mA	301 mA	470 μ F	83%	JTC0624S15
	18.0 V	334 mA	15 mA	301 mA	47 μ F	83%	JTC0624S18
	24.0 V	250 mA	18 mA	305 mA	47 μ F	82%	JTC0624S24
	± 3.3 V	± 909 mA	12 mA	338 mA	± 470 μ F	74%	JTC0624D03
	± 5.0 V	± 600 mA	10 mA	312 mA	± 680 μ F	80%	JTC0624D05
	± 9.0 V	± 333 mA	18 mA	309 mA	± 100 μ F	81%	JTC0624D09
	± 12.0 V	± 250 mA	20 mA	301 mA	± 330 μ F	83%	JTC0624D12
	± 15.0 V	± 200 mA	22 mA	305 mA	± 100 μ F	82%	JTC0624D15
	± 24.0 V	± 125 mA	18 mA	312 mA	± 22 μ F	80%	JTC0624D24
18-72 V	3.3 V	1400 mA	15 mA	126 mA	1000 μ F	76%	JTC0648S3V3
	5.0 V	1200 mA	8 mA	156 mA	1000 μ F	80%	JTC0648S05
	9.0 V	667 mA	10 mA	153 mA	220 μ F	82%	JTC0648S09
	12.0 V	500 mA	10 mA	151 mA	1000 μ F	83%	JTC0648S12
	15.0 V	400 mA	10 mA	149 mA	100 μ F	84%	JTC0648S15
	18.0 V	334 mA	10 mA	151 mA	10 μ F	83%	JTC0648S18
	24.0 V	250 mA	12 mA	151 mA	22 μ F	83%	JTC0648S24
	± 3.3 V	± 909 mA	10 mA	162 mA	± 330 μ F	77%	JTC0648D03
	± 5.0 V	± 600 mA	10 mA	158 mA	± 470 μ F	79%	JTC0648D05
	± 9.0 V	± 333 mA	15 mA	154 mA	± 100 μ F	81%	JTC0648D09
	± 12.0 V	± 250 mA	10 mA	152 mA	± 100 μ F	82%	JTC0648D12
	± 15.0 V	± 200 mA	15 mA	149 mA	± 47 μ F	84%	JTC0648D15
	± 24.0 V	± 125 mA	15 mA	154 mA	± 22 μ F	81%	JTC0648D24

Notes

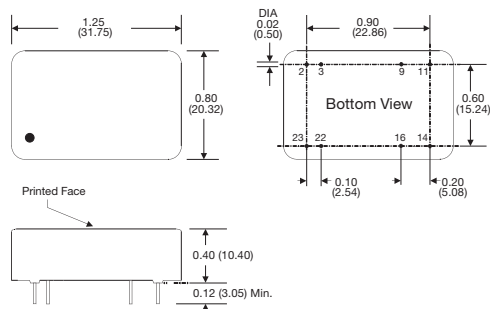
1. For optional 3500 VDC isolation add suffix '-H' to model number. For optional plastic case, add suffix '-P' to model number. For both options add suffix '-HP' to model number.

2. Input current measured at nominal input voltage.

3. Maximum capacitive load is per output.

4. Cross regulation for duals is $\pm 5\%$ when one output is at 100% and the other is varied between 25% and 100%.

Mechanical Details and Application Note



Pin	Single	Dual
2	-Vin	-Vin
3	-Vin	-Vin
9	No Pin	Common
11	N.C.	-Vout
14	+Vout	+Vout
16	-Vout	Common
22	+Vin	+Vin
23	+Vin	+Vin

1. All dimensions are in inches (mm)
2. Weight: 0.04 lbs (17 g) approx.
3. Pin diameter: 0.02 $\pm$ 0.002 (0.5 $\pm$ 0.005)
4. Pin pitch tolerance: $\pm$ 0.014 ($\pm$ 0.35)
5. Case tolerance: $\pm$ 0.02 ($\pm$ 0.5)

Input Filter

