JTC04-06 SERIES

DC/DC Single & Dual Output: 4 - 6 Watts

HELIOS POWER SOLUTIONS

Features

- 4:1 Input Range
- DIP–24 Metal Package
- Operating Temperature –40 °C to +100 °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	• ±1% max, dual output models
Minimum Load	• No minimum load required
Initial Set Accuracy	• ±1% max
Start Up Delay	• <800 ms
Start Up Rise Time	• <10 ms
Line Regulation	• ±0.5% max
Load Regulation	• ±0.5% max, ±1.5% max for 3.3 V and ±3.3 V models
Cross Regulation	• ±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	• ±0.02/°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/in ^{3}, JTC06: 15 W/in ^{3}
MTBF	• >1.0 MHrs to MIL-HDBK-217F at 25 °C, GB

Environmental

Operating Temperature	• -40 °C to +100 °C, derate from 100% load at +85 °C to no load at +100 °C
Case Temperature	• +100 °C max
Storage Temperature	• -40 °C to +125 °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

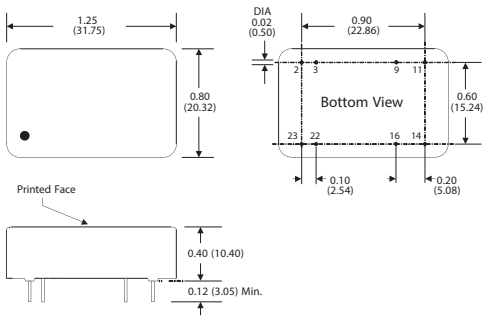
Input Voltage	Output Voltage	Output Current	Input Current [2]		Maximum Capacitive Load [3]	Efficiency	Model Number [1]
			No Load	Full Load			
9-36 V	3.3 V	1200 mA	12 mA	220 mA	1000 µF	75%	JTC0424S3V3 †^
	5.0 V	800 mA	15 mA	211 mA	1000 µF	79%	JTC0424S05 †^
	9.0 V	445 mA	12 mA	201 mA	220 µF	83%	JTC0424S09
	12.0 V	333 mA	15 mA	203 mA	100 µF	82%	JTC0424S12 †^
	15.0 V	267 mA	15 mA	203 mA	220 µF	82%	JTC0424S15 †^
	18.0 V	223 mA	15 mA	203 mA	10 µF	82%	JTC0424S18
	24.0 V	167 mA	18 mA	203 mA	220 µF	82%	JTC0424S24
	±3.3 V	±606 mA	12 mA	222 mA	±470 µF	75%	JTC0424D03 †^
	±5.0 V	±400 mA	15 mA	211 mA	±100 µF	79%	JTC0424D05 †^
	±9.0 V	±222 mA	18 mA	208 mA	±47 µF	80%	JTC0424D09
	±12.0 V	±167 mA	15 mA	203 mA	±47 µF	82%	JTC0424D12 †^
	±15.0 V	±134 mA	20 mA	208 mA	±10 µF	80%	JTC0424D15 †^
	±24.0 V	±84 mA	18 mA	208 mA	±22 µF	80%	JTC0424D24
18-72 V	3.3 V	1200 mA	10 mA	110 mA	1000 µF	76%	JTC0448S3V3 †^
	5.0 V	800 mA	8 mA	106 mA	470 µF	79%	JTC0448S05 †^
	9.0 V	445 mA	10 mA	100 mA	330 µF	83%	JTC0448S09
	12.0 V	333 mA	12 mA	104 mA	1000 µF	80%	JTC0448S12 †^
	15.0 V	267 mA	10 mA	99 mA	47 µF	84%	JTC0448S15 †^
	18.0 V	223 mA	10 mA	99 mA	10 µF	84%	JTC0448S18
	24.0 V	167 mA	15 mA	102 mA	22 µF	82%	JTC0448S24
	±3.3 V	±606 mA	10 mA	107 mA	±680 µF	78%	JTC0448D03 †^
	±5.0 V	±400 mA	15 mA	106 mA	±330 µF	79%	JTC0448D05 †^
	±9.0 V	±222 mA	15 mA	104 mA	±47 µF	80%	JTC0448D09
	±12.0 V	±167 mA	12 mA	102 mA	±100 µF	82%	JTC0448D12 †^
	±15.0 V	±134 mA	15 mA	104 mA	±100 µF	80%	JTC0448D15 †^
	±24.0 V	±84 mA	15 mA	104 mA	±10 µF	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 µF	76%	JTC0624S3V3 †^
	5.0 V	1200 mA	10 mA	312 mA	1000 µF	80%	JTC0624S05 †^
	9.0 V	667 mA	12 mA	301 mA	220 µF	83%	JTC0624S09
	12.0 V	500 mA	15 mA	301 mA	1000 µF	83%	JTC0624S12 †^
	15.0 V	400 mA	18 mA	301 mA	470 µF	83%	JTC0624S15 †^
	18.0 V	334 mA	15 mA	301 mA	47 µF	83%	JTC0624S18
	24.0 V	250 mA	18 mA	305 mA	47 µF	82%	JTC0624S24
	±3.3 V	±909 mA	12 mA	338 mA	±470 µF	74%	JTC0624D03 †^
	±5.0 V	±600 mA	10 mA	312 mA	±680 µF	80%	JTC0624D05 †^
	±9.0 V	±333 mA	18 mA	309 mA	±100 µF	81%	JTC0624D09
	±12.0 V	±250 mA	20 mA	301 mA	±330 µF	83%	JTC0624D12 †^
	±15.0 V	±200 mA	22 mA	305 mA	±100 µF	82%	JTC0624D15 †^
	±24.0 V	±125 mA	18 mA	312 mA	±22 µF	80%	JTC0624D24
18-72 V	3.3 V	1400 mA	15 mA	126 mA	1000 µF	76%	JTC0648S3V3 †^
	5.0 V	1200 mA	8 mA	156 mA	1000 µF	80%	JTC0648S05 †^
	9.0 V	667 mA	10 mA	153 mA	220 µF	82%	JTC0648S09
	12.0 V	500 mA	10 mA	151 mA	1000 µF	83%	JTC0648S12 †^
	15.0 V	400 mA	10 mA	149 mA	100 µF	84%	JTC0648S15 †^
	18.0 V	334 mA	10 mA	151 mA	10 µF	83%	JTC0648S18
	24.0 V	250 mA	12 mA	151 mA	22 µF	83%	JTC0648S24
	±3.3 V	±909 mA	10 mA	162 mA	±330 µF	77%	JTC0648D03 †^
	±5.0 V	±600 mA	10 mA	158 mA	±470 µF	79%	JTC0648D05 †^
	±9.0 V	±333 mA	15 mA	154 mA	±100 µF	81%	JTC0648D09
	±12.0 V	±250 mA	10 mA	152 mA	±100 µF	82%	JTC0648D12 †^
	±15.0 V	±200 mA	15 mA	149 mA	±47 µF	84%	JTC0648D15 †^
	±24.0 V	±125 mA	15 mA	154 mA	±22 µF	81%	JTC0648D24

Notes

1. For optional 3500 VDC isolation add suffix '-H' to model number.
2. Input current measured at nominal input voltage.
3. Maximum capacitive load is per output.
4. Cross regulation for duals is ±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 ±0.002 (0.5 ±0.005)
4. Pin pitch tolerance: ±0.014 (±0.35)
5. Case tolerance: ±0.02 (±0.5)

Input Filter