JTK30 series

XP Power

30W NATURAL CONVECTION

DC-DC converters

The JTK30 series is housed in a 25.4 x 25.4 x 10.9mm (1” x 1” x 0.46”) metal case.

Featuring a 4:1 input voltage range of 9 to 36VDC or 18 to 75VDC with both single and dual outputs, singles have 3.3, 5, 12 or 15VDC with duals having either ±12 or ±15VDC. Single output models are adjustable +/-10% with a trim resistor.

The JTK30 provides 1.6kVDC isolation between input and output. Operating temperature range is from -40°C to +100°C, with derating above +55°C. An optional heatsink (-HK) extends the full power operating temperature when fitted. Remote on/off is standard.



Features

- Regulated single outputs 3.3 to 15VDC
- Regulated dual outputs ±12 & ±15VDC
- 4:1 input range
- 25.4 x 25.4mm (1” x 1”) footprint, 10.9mm (0.46”) profile
- Output trim ±10% (single O/P)
- 1.6kVDC isolation
- Remote On/Off
- Optional heatsink
- -40°C to +100°C operating temperature
- Full power to +55°C
- 3 year warranty

Applications

Autonomous equipment

Industrial electronics & robotics

Technology

Dimensions

25.4 x 25.0 x 10.9mm (1.0” x 1.0” x 0.43”)

Documentation

For further information click the link or scan the code

→ xppower.com

Models & ratings

Model number[3]	Input voltage	Output voltage	Output current	Efficiency	Input current[1]		Overvoltage Protection	Maximum capacitive load[2]
					No load	Full load		
JTK3024S3V3	9-18VDC	3V3VDC	7.0A	88%	10mA	1095mA	3.9VDC	10000µF
JTK3024S05		5.0VDC	6.0A	89%	10mA	1405mA	6.2VDC	7200µF
JTK3024S12		12.0VDC	2.5A	89%	10mA	1405mA	15.0VDC	1200µF
JTK3024S15		15.0VDC	2.0A	91%	10mA	1375mA	18.0VDC	1000µF
JTK3024D12		±12.0VDC	±1.25A	89%	10mA	1405mA	±15.0VDC	±750µF
JTK3024D15		±15.0VDC	±1.0A	91%	10mA	1375mA	±18.0VDC	±500µF

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Notes:

1. Input currents measured at nominal input voltage.
2. Maximum capacitive load is per output.
3. Add suffix ‘-HK’ for optional heatsink.

JTK30 series

Models & ratings

Model number[3]	Input voltage	Output voltage	Output current	Efficiency	Input current[1]		Overvoltage Protection	Maximum capacitive load[2]
					No load	Full load		
JTK3048S3V3	18-75VDC	3V3VDC	7.0A	89%	8mA	540mA	3.9VDC	10000µF
JTK3048S05		5.0VDC	6.0A	90%	8mA	695mA	6.2VDC	7200µF
JTK3048S12		12.0VDC	2.5A	90%	8mA	695mA	15.0VDC	1200µF
JTK3048S15		15.0VDC	2.0A	92%	8mA	680mA	18.0VDC	1000µF
JTK3048D12		±12.0VDC	±1.25A	90%	8mA	695mA	±15.0VDC	±750µF
JTK3048D15		±15.0VDC	±1.0A	91%	8mA	685mA	±18.0VDC	±500µF

Notes:

1. Input currents measured at nominal input voltage.
2. Maximum capacitive load is per output.
3. Add suffix '-HK' for optional heatsink.

Input

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Input voltage range	9		36	VDC	24VDC nominal
	18		75		48VDC nominal
Input reflected ripple		30		mA pk-pk	Through 12µH inductor and 47µF capacitor
Input surge			50		24VDC models (for 1s)
			100		48VDC models (for 1s)

Output

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Output voltage	3.3		30	VDC	See models and ratings table
Output voltage trim	±10			%	Single output versions
Initial set accuracy			±1	%	At full load
Minimum load	0			%	No minimum load required
Line regulation			±0.5	%	From minimum to maximum input at full load
Load regulation			0.5/1.0	%	From 0% to full load for single/dual output
Cross regulation			±5	%	On dual output models, when one output is at 100% load and other is varied from 25% load to full load
Ripple & noise			75/60	mV pk-pk	Single output 10µF X7R MLCC Dual output with 10µF/25V X7R MLCC on each output measured using 20MHz bandwidth
Short circuit protection	Trip and restart (hiccup), with auto recovery				
Temperature coefficient			0.02	%/ °C	
Overload protection		170		%	
Over protection voltage	See models and ratings table				
Remote on/off	Output is on if remote on/off (pin 3) is open Output turns off if remote on/off (pin 3) is low (<1.2VDC)				

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General

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Efficiency		90		%	See models & ratings table
Isolation: input to output	1600			VDC	
Isolation: input to case	1600			VDC	
Isolation capacitance			2200	pF	
Isolation resistance	10^9			Ω	
		330			
Power density			4.45 (73.0)	W/cm³ (W/in³)	
Mean time between failure	370			khrs	MIL-HDBK-217F, +25°C GB
Case material	Copper with plastic non conductive base UL95V-0 rated				
Pin material	Brass solder coated				
Solder profile	260°C max 1.5mm from case 10s max				
Weight		19.0 (0.042)		g (lb)	

Environmental

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Operating temperature	-40		+100	°C	See derating curve
Storage temperature	-55		+125	°C	
Case temperature			+105	°C	
Cooling	Natural convection				
Humidity			95	%	RH, non condensing

Safety approvals

Safety agency	Standard	Notes & conditions
UL	UL60950-1, UL62368-1	
CB	IEC60950-1, IEC62368-1	
EN	EN60950-1, EN62368-1	
CE	Meets all applicable directives	
UKCA	Meets all applicable legislation	

Emissions - EMC

Phenomenon	Standard	Test level	Notes & conditions
Conducted	EN55032	Class A	See application note
Radiated	EN55032	Class A	See application note

Immunity - EMC

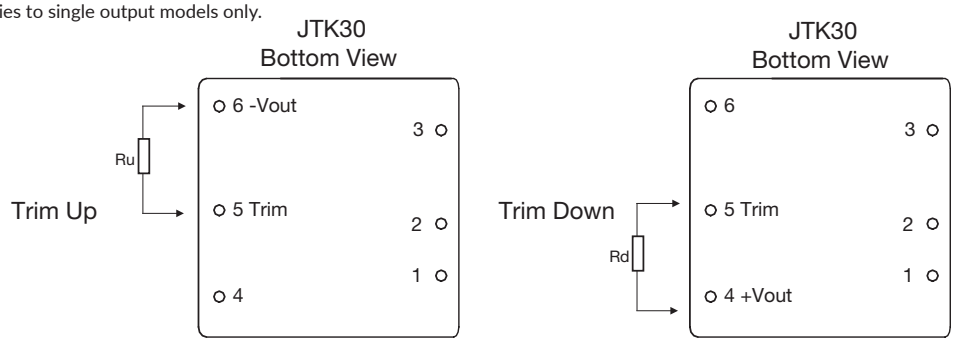
Phenomenon	Standard	Test level	Criteria	Notes & conditions
ESD immunity	EN61000-4-2	±6kV/±8kV	A	Contact discharge/air discharge
Radiated immunity	EN61000-4-3	20Vrms	A	
EFT/burst	EN61000-4-4	2kV	A	External input filter required, see applications note
Surge	EN61000-4-5	2kV	A	External input filter required, see applications note
Conducted immunity	EN61000-4-6	10Vrms	A	
Magnetic fields	EN61000-4-8	100A/m	A	

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Application notes

External output trimming

Note: Trim function applies to single output models only.



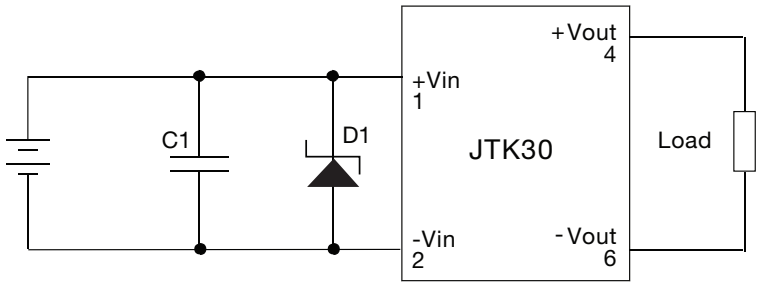
Trim down resistor values (Rd)

Model	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%
	Voutx0.99	Voutx0.98	Voutx0.97	Voutx0.96	Voutx0.95	Voutx0.94	Voutx0.93	Voutx0.92	Voutx0.91	Voutx0.90
3V3DC	817.54kΩ	362.23kΩ	215.45kΩ	142.96kΩ	99.75kΩ	71.06kΩ	50.62kΩ	35.33kΩ	23.45kΩ	13.96kΩ
5VDC	117.89kΩ	61.63kΩ	38.39kΩ	25.69kΩ	17.68kΩ	12.18kΩ	8.16kΩ	5.10kΩ	2.68kΩ	0.74kΩ
12VDC	345.03kΩ	164.83kΩ	98.86kΩ	64.65kΩ	43.71kΩ	29.57kΩ	19.39kΩ	11.7kΩ	5.70kΩ	0.87kΩ
15VDC	174.37kΩ	91.10kΩ	56.59kΩ	37.71kΩ	25.8kΩ	17.6kΩ	11.61kΩ	7.05kΩ	3.45kΩ	0.55kΩ

Trim up resistor values (Ru)

Model	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%
	Voutx0.99	Voutx0.98	Voutx0.97	Voutx0.96	Voutx0.95	Voutx0.94	Voutx0.93	Voutx0.92	Voutx0.91	Voutx0.90
3V3DC	567.59kΩ	263.17kΩ	158.47kΩ	105.50kΩ	73.51kΩ	52.10kΩ	36.76kΩ	25.24kΩ	16.26kΩ	9.07kΩ
5VDC	616.02kΩ	221.40kΩ	131.34kΩ	91.4kΩ	68.9kΩ	54.43kΩ	44.35kΩ	36.93kΩ	31.24kΩ	26.73kΩ
12VDC	1015.59kΩ	448.88kΩ	280.56kΩ	199.79kΩ	152.36kΩ	121.16kΩ	99.08kΩ	82.63kΩ	69.89kΩ	59.75kΩ
15VDC	661.51kΩ	231.25kΩ	134.02kΩ	91.04kΩ	66.82kΩ	51.27kΩ	40.45kΩ	32.48kΩ	26.36kΩ	21.52kΩ

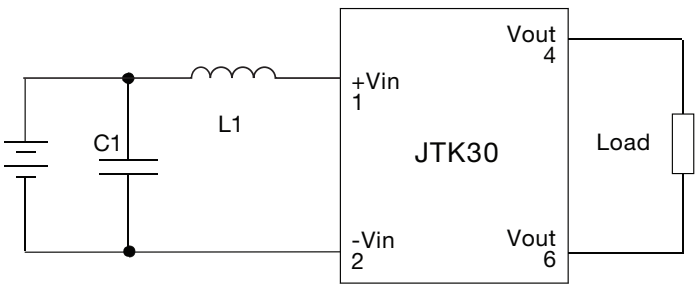
External filter for surge and EFT



Model	C1	D1
JTK3024	330µF/100VDC	TVS 58VDC 3kW
JTK3048	330µF/100VDC	TVS 120VDC 3kW

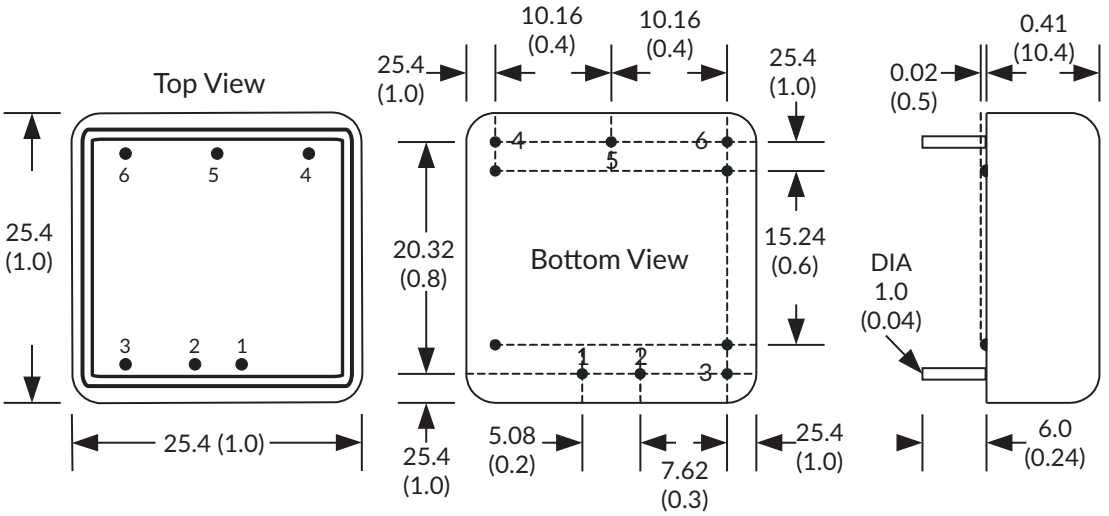
C1 is 330µF, 100VDC electrolytic capacitor
D1 is 58VDC, 3kW TVS for 24VDC input or 120VDC, 3kW TVS for 48VDC input

External EMI filter

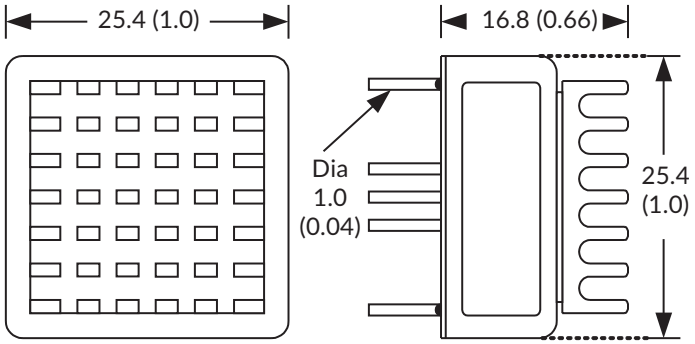


Model	C1	L1
JTK3024	1206, 3.3µF/100VDC	0.82µH
JTK3048	1206, 1µF/100VDC	2.2µ/H

Mechanical details



Optional Heatsink (-HK)



Pin connections		
Pin	**Single**	**Dual**
1	+Vin	+Vin
2	-Vin	-Vin
3	Remote On/Off	Remote On/Off
4	+Vout	+Vout
5	Trim	Common
6	-Vout	-Vout

Notes:

1. All dimensions are in mm (inches).
2. Pin diameter: 1.0 ±0.05 (0.04 ±0.002)
3. Pin pitch tolerance: ±0.35 (±0.002)
4. Weight: 19.0g (0.042lb) approx
5. Case tolerance: ±0.5 (±0.02)