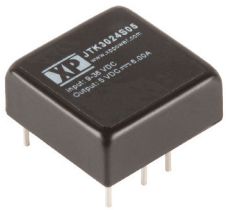
JTK30 Series

DC-DC Converter

XP Power

30 Watts

- Single and Dual Outputs
- 1″ x 1″ Footprint
- -40 °C to +100 °C Operation
- Full Load at 55 °C Ambient
- 1600 VDC Isolation
- Output Trim ±10%
- Remote On/Off
- MTBF 370 kHrs
- 3 Year Warranty



Dimensions:

JTK30:
1.0 x 1.0 x 0.43″ (25.4 x 25.0 x 10.9 mm)

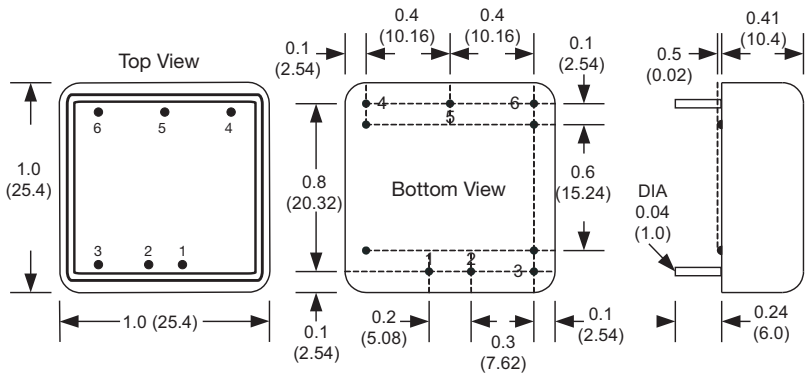
Models & Ratings

Input Voltage	Output Voltage	Output Current	Input Current[1]		OVP setting	Efficiency	Max. capacitive load[2]	Model Number[3]
			No Load	Full Load				
9-36 V	3.3 V	7.0 A	10 mA	1095 mA	3.9 V	88%	10000 µF	JTK3024S3V3
	5.0 V	6.0 A	10 mA	1405 mA	6.2 V	89%	7200 µF	JTK3024S05
	12.0 V	2.5 A	10 mA	1405 mA	15.0 V	89%	1200 µF	JTK3024S12
	15.0 V	2.0 A	10 mA	1375 mA	18.0 V	91%	1000 µF	JTK3024S15
	±12.0 V	±1.25 A	10 mA	1405 mA	±15.0 V	89%	±750 µF	JTK3024D12
	±15 V	±1.0 A	10 mA	1375 mA	±18.0 V	91%	±500 µF	JTK3024D15
18-75 V	3.3 V	7.0 A	8 mA	540 mA	3.9 V	89%	10000 µF	JTK3048S3V3
	5 V	6.0 A	8 mA	695 mA	6.2 V	90%	7200 µF	JTK3048S05
	12 V	2.5 A	8 mA	695 mA	15.0 V	90%	1200 µF	JTK3048S12
	15 V	2.0 A	8 mA	680 mA	18.0 V	92%	1000 µF	JTK3048S15
	±12 V	±1.25 A	8 mA	695 mA	±15.0 V	90%	±750 µF	JTK3048D12
	±15 V	±1.0 A	8 mA	685 mA	±18.0 V	91%	±500 µF	JTK3048D15

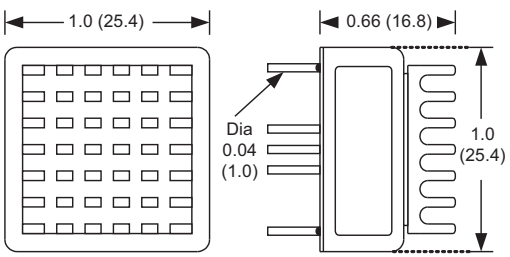
Notes

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

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 inches (mm)
2. Weight: 0.042 lbs (19 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)

Input

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Input Voltage Range	9		36	VDC	24 V nominal
	18		75	VDC	48 V nominal
Input Reflected Ripple Current		30		mA pk-pk	Through 12 µH inductor and 47 µF capacitor
Input Surge			50	VDC for 100 ms	24 V models
			100	VDC for 100 ms	48 V models

Output

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Output Voltage	3.3		30	VDC	See Models and Ratings table
Output 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 with 10 µF/25 V X7R MLCC on output Dual output with 10 µF/25 V X7R MLCC on each output measured using 20 MHz bandwidth
Overload Protection		170		%	
Short Circuit Protection					Trip and Restart (hiccup), with auto recovery
Maximum Capacitive Load					See Models and Ratings table
Temperature Coefficient			0.02	%/°C	
Overvoltage Protection					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 (<1.2 VDC)				

General

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Efficiency		90		%	See Models and Ratings table
Isolation: Input to Output	1600			VDC	
Isolation: Input to Case	1600			VDC	
Switching Frequency		330		kHz	
Isolation Resistance	10^9			Ω	
Isolation Capacitance			2000	pF	
Power Density			73	W/in³	
Mean Time Between Failure	370			kHrs	MIL-HDBK-217F, +25 °C GB
Weight		0.042 (19.0)		lb (g)	

Environmental

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Operating Temperature	-40		+100	°C	Derate from 100% load at +55 °C to 50% load at +80 °C or from 100% load at 60 °C to 50% load at 85 °C with optional heatsink
Storage Temperature	-55		+125	°C	
Case Temperature			+105	°C	
Humidity			95	%RH	Non-condensing
Cooling					Natural convection

EMC: Emissions

Phenomenon	Standard	Test Level	Notes & Conditions
Conducted	EN55032	Class A	See Application Note
Radiated	EN55032	Class A	

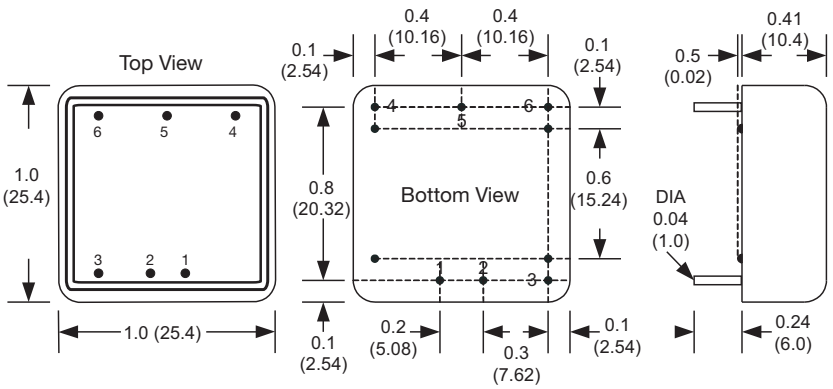
EMC: Immunity

Phenomenon	Standard	Test Level	Criteria	Notes & Conditions
ESD Immunity	EN61000-4-2	±6 kV / ±8 kV	A	Contact Discharge / Air Discharge
Radiated Immunity	EN61000-4-3	20 Vrms	A	
EFT/Burst	EN61000-4-4	2 kV	A	External input filter required, see applications note
Surge	EN61000-4-5	2 kV	A	External input filter required, see applications note
Conducted Immunity	EN61000-4-6	10 V rms	A	
Magnetic Fields	EN61000-4-8	100 A/m	A	

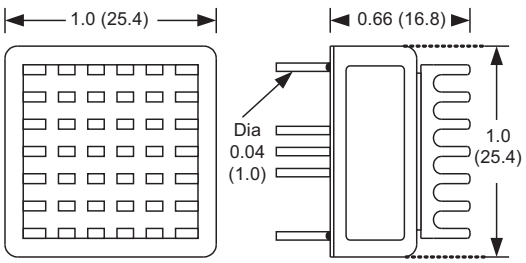
Safety Approvals

Safety Agency	Safety Standard	Notes & Conditions
UL	UL60950-1, UL62368-1	
CSA	CAN/CSA C22.2 No.60950-1	

Mechanical Details



Optional Heatsink (-HK)



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Notes

1. All dimensions are in inches (mm)
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3. Pin diameter: 0.04±0.002 (1.0±0.05)
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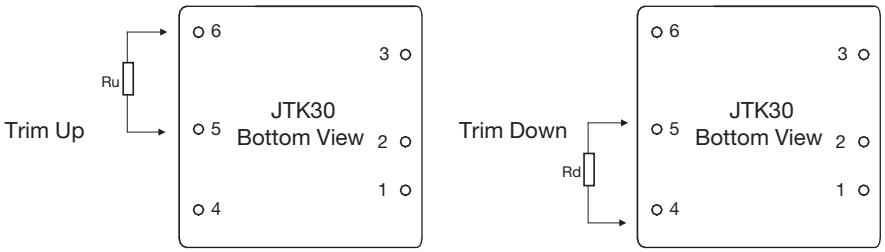
Application Notes

External Output Trimming



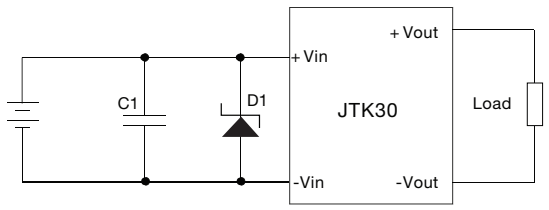
Trim Down Resistor Values (Rd)

Models	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
3V3	817.54 k	362.23 k	215.45 k	142.96 k	99.75 k	71.06 k	50.62 k	35.33 k	23.45 k	13.96 k
5V	117.89 k	61.63 k	38.39 k	25.69 k	17.68 k	12.18 k	8.16 k	5.10 k	2.68 k	0.74 k
12V	345.03 k	164.83 k	98.86 k	64.65 k	43.71 k	29.57 k	19.39 k	11.7 k	5.70 k	0.87 k
15V	174.37 k	91.10 k	56.59 k	37.71 k	25.8 k	17.6 k	11.61 k	7.05 k	3.45 k	0.55 k

Trim Up Resistor Values (Ru)

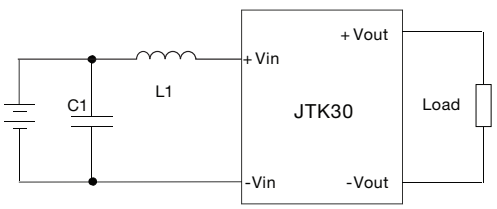
Models	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%
	Voutx1.01	Voutx1.02	Voutx1.03	Voutx1.04	Voutx1.05	Voutx1.06	Voutx1.07	Voutx1.08	Voutx1.09	Voutx1.10
3V3	567.59 k	263.17 k	158.47 k	105.50 k	73.51 k	52.10 k	36.76 k	25.24 k	16.26 k	9.07 k
5V	616.02 k	221.40 k	131.34 k	91.43 k	68.9 k	54.43 k	44.35 k	36.93 k	31.24 k	26.73 k
12V	1015.59 k	448.88 k	280.56 k	199.79 k	152.36 k	121.16 k	99.08 k	82.63 k	69.89 k	59.75 k
15V	661.51 k	231.25 k	134.02 k	91.04 k	66.82 k	51.27 k	40.45 k	32.48 k	26.36 k	21.52 k

External Filter for Surge and EFT



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

External EMI Filter



Models	C1	L1
JTK3024	335 k / 50 V, X7R 1206	0.82 µH
JTK3048	105 k / 50 V, X7R 1206	2.2 µ/H