



**THE DATASHEET OF  
JTH1524S12**



## JTH Series



- 4:1 Input Range
- 1500 VDC Isolation
- Efficiency up to 86%
- -40 °C to +100 °C Operating Temperature
- UL Approved
- Optional Remote On/Off
- Single & Dual Outputs
- 3 Year Warranty

## Specification

## Input

Input Voltage Range	<ul style="list-style-type: none"> <li>• 24 V (9-36 VDC)</li> <li>• 48 V (18-72 VDC)</li> </ul>
Input Current	<ul style="list-style-type: none"> <li>• See table</li> </ul>
Input Filter	<ul style="list-style-type: none"> <li>• Pi network</li> </ul>
Input Reflected Ripple Current	<ul style="list-style-type: none"> <li>• 35 mA rms through 12 <math>\mu</math>H inductor</li> </ul>
Input Surge	<ul style="list-style-type: none"> <li>• 24 V models 40 VDC for 100 ms</li> <li>• 48 V models 80 VDC for 100 ms</li> </ul>
Undervoltage Lockout	<ul style="list-style-type: none"> <li>• 24 V models ON 8.6 V, OFF 8 VDC typical</li> <li>• 48 V models ON 16.0 V, OFF 14 V typical</li> </ul>

## Output

Output Voltage	<ul style="list-style-type: none"> <li>• See table</li> </ul>
Minimum Load	<ul style="list-style-type: none"> <li>• No minimum load required</li> </ul>
Line Regulation	<ul style="list-style-type: none"> <li>• <math>\pm 0.5\%</math></li> </ul>
Load Regulation	<ul style="list-style-type: none"> <li>• <math>\pm 0.5\%</math> 10-100% load,</li> <li>• <math>\pm 1.0\%</math> 10% load</li> </ul>
Cross Regulation	<ul style="list-style-type: none"> <li>• <math>\pm 5\%</math> on dual output models (see note 3)</li> </ul>
Setpoint Accuracy	<ul style="list-style-type: none"> <li>• <math>\pm 1\%</math></li> </ul>
Start Up Delay	<ul style="list-style-type: none"> <li>• &lt;10 ms</li> </ul>
Start Up Rise Time	<ul style="list-style-type: none"> <li>• &lt;20 ms</li> </ul>
Ripple & Noise	<ul style="list-style-type: none"> <li>• 75 mV pk-pk 20 MHz bandwidth</li> </ul>
Transient Response	<ul style="list-style-type: none"> <li>• 3% max deviation, recovery to within 1% in 200 <math>\mu</math>s for 25% load change</li> </ul>
Temperature Coefficient	<ul style="list-style-type: none"> <li>• 0.02%/°C</li> </ul>
Overvoltage Protection	<ul style="list-style-type: none"> <li>• None</li> </ul>
Overcurrent Protection	<ul style="list-style-type: none"> <li>• 140% typical of full load at nominal input</li> </ul>
Short Circuit Protection	<ul style="list-style-type: none"> <li>• Trip &amp; restart (hiccup mode), auto recovery</li> </ul>
Remote On/Off	<ul style="list-style-type: none"> <li>• Optional (see application note)</li> </ul>
Maximum Capacitive Load	<ul style="list-style-type: none"> <li>• See table</li> </ul>

## General

Efficiency	<ul style="list-style-type: none"> <li>• See table</li> </ul>
Isolation	<ul style="list-style-type: none"> <li>• 1500 VDC Input to Output</li> <li>• 1000 VDC Input to Case</li> <li>• 1000 VDC Output to Case</li> </ul>
Isolation Resistance	<ul style="list-style-type: none"> <li>• 10<math>^9\Omega</math></li> </ul>
Isolation Capacitance	<ul style="list-style-type: none"> <li>• 1200 pF typical</li> </ul>
Switching Frequency	<ul style="list-style-type: none"> <li>• 300 kHz typical</li> </ul>
Power Density	<ul style="list-style-type: none"> <li>• 18.75 W/in<math>^3</math></li> </ul>
MTBF	<ul style="list-style-type: none"> <li>• &gt;1.21 Mhrs to MIL-HDBK-217F at 25 °C, GB</li> </ul>

## Environmental

Operating Temperature	<ul style="list-style-type: none"> <li>• -40 °C to +100 °C, derate from 100% load at +60 °C to 0% load at +100 °C</li> </ul>
Case Temperature	<ul style="list-style-type: none"> <li>• 100 °C max</li> </ul>
Cooling	<ul style="list-style-type: none"> <li>• Convection-cooled</li> </ul>
Operating Humidity	<ul style="list-style-type: none"> <li>• Up to 95% RH, non-condensing</li> </ul>
Storage Temperature	<ul style="list-style-type: none"> <li>• -40 °C to +125 °C</li> </ul>

## EMC

Emissions	<ul style="list-style-type: none"> <li>• EN55022 class A conducted &amp; radiated with external components, see application note</li> </ul>
ESD Immunity	<ul style="list-style-type: none"> <li>• EN61000-4-2, 8 kV air discharge Perf Criteria A, 4 kV contact discharge Perf Criteria A</li> </ul>
EFT/Burst Surge	<ul style="list-style-type: none"> <li>• EN61000-4-4, level 1 Perf Criteria A*</li> <li>• EN61000-4-5, installation class 1, Perf Criteria A*</li> </ul>
Conducted Immunity	<ul style="list-style-type: none"> <li>• EN61000-4-6, 3 Vrms Perf Criteria A</li> </ul>
Magnetic Field	<ul style="list-style-type: none"> <li>• EN61000-4-8, 1 A/m Perf Criteria A</li> </ul>

## Safety

Safety Approvals	<ul style="list-style-type: none"> <li>• UL60950-1, CAN/CSA C22.2 No.60950-1, UL62368-1</li> </ul>
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\*External input capacitor required 220  $\mu$ F/100V

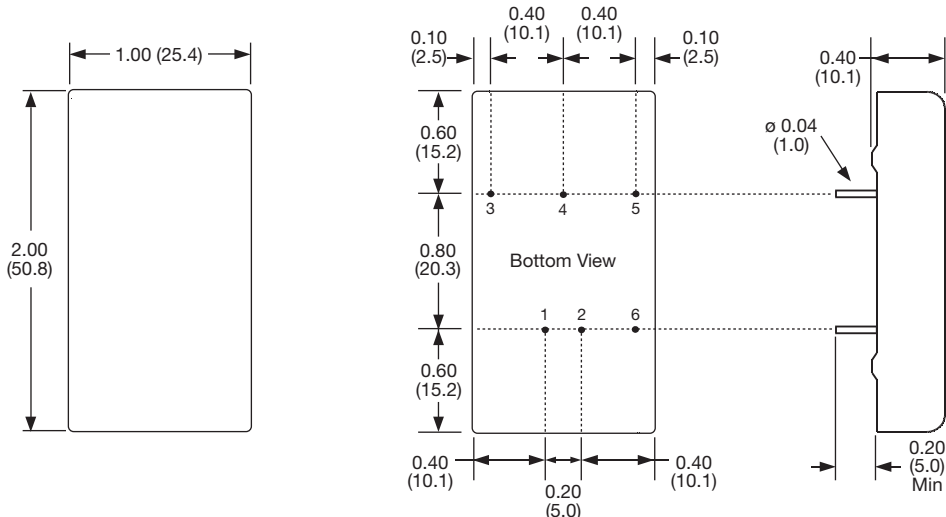
## Models and Ratings

Input Voltage Range	Output Voltage	Output Current	Input Current <sup>(1)</sup>		Efficiency	Max. Capacitive Load	Model Number <sup>(2)</sup>
			No Load	Full Load			
9-36 VDC	3.3 V	3000 mA	25 mA	515 mA	80%	3300 $\mu$ F	JTH1524S3V3
	5.0 V	3000 mA	25 mA	753 mA	83%	3300 $\mu$ F	JTH1524S05
	12.0 V	1250 mA	25 mA	735 mA	85%	680 $\mu$ F	JTH1524S12
	15.0 V	1000 mA	25 mA	726 mA	86%	470 $\mu$ F	JTH1524S15
	$\pm 5.0$ V	$\pm 1500$ mA	25 mA	753 mA	83%	$\pm 2200$ $\mu$ F	JTH1524D05
	$\pm 12.0$ V	$\pm 625$ mA	25 mA	735 mA	85%	$\pm 470$ $\mu$ F	JTH1524D12
	$\pm 15.0$ V	$\pm 500$ mA	25 mA	726 mA	86%	$\pm 330$ $\mu$ F	JTH1524D15
18-72 VDC	3.3 V	3000 mA	20 mA	257 mA	80%	3300 $\mu$ F	JTH1548S3V3
	5.0 V	3000 mA	20 mA	376 mA	83%	3300 $\mu$ F	JTH1548S05
	12.0 V	1250 mA	20 mA	367 mA	85%	680 $\mu$ F	JTH1548S12
	15.0 V	1000 mA	20 mA	363 mA	86%	470 $\mu$ F	JTH1548S15
	$\pm 5.0$ V	$\pm 1500$ mA	20 mA	376 mA	83%	$\pm 2200$ $\mu$ F	JTH1548D05
	$\pm 12.0$ V	$\pm 625$ mA	20 mA	367 mA	85%	$\pm 470$ $\mu$ F	JTH1548D12
	$\pm 15.0$ V	$\pm 500$ mA	20 mA	363 mA	86%	$\pm 330$ $\mu$ F	JTH1548D15

### Notes

1. Measured at nominal input voltage.
2. For optional Remote On/Off, add suffix '-R' to model number.
3. Cross regulations is  $\pm 5\%$  when one output is at 100% and the other is varied between 25% and 100%.

## Mechanical Details



PIN CONNECTIONS		
Pin	Single	Dual
1	+Vin	+Vin
2	-Vin	-Vin
3	+Vout	+Vout
4	No pin	Common
5	-Vout	-Vout
6*	ROF*	ROF*

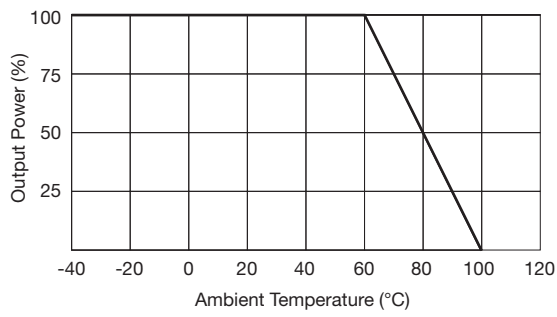
\* Pin 6 only present with optional Remote On/Off

### Notes

1. All dimensions are in inches (mm).
2. Weight: 0.07 lbs (30 g)
3. Pin diameter: 0.04  $\pm$  0.002 (1.0  $\pm$  0.05)
4. Pin pitch tolerance:  $\pm$  0.014 ( $\pm$  0.35)
5. Case tolerance:  $\pm$  0.02 ( $\pm$  0.5)

## Application Notes

### Derating Curve

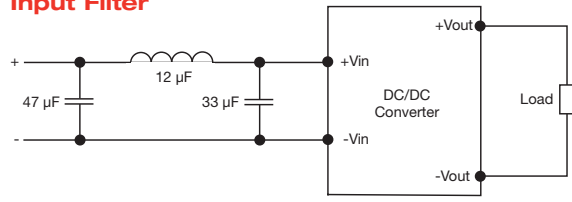


### Optional Remote On/Off

On = +2.5 to +5.5 VDC on pin 6 WRT pin 2 or open circuit  
 Off = -0.7 to +0.8 VDC on pin 6 WRT pin 2 or short circuit pin 2 & 6



Input current is typically 2.5 mA when output is remotely switched off.

### Input Filter



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