

## JTE Series



- 4:1 Input Range
- DIP-24 Plastic Case
- Operating Temperature  $-40\text{ }^{\circ}\text{C}$  to  $+100\text{ }^{\circ}\text{C}$
- Single & Dual Outputs
- Optional Metal Case
- 1500 VDC Isolation, 3000 VDC Option
- 3 Year Warranty

## Specification

## Input

Input Voltage Range	<ul style="list-style-type: none"> <li>• 24 V (9-36 VDC)</li> <li>• 48 V (18-75 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	<ul style="list-style-type: none"> <li>• 20 mA pk-pk through 12 <math>\mu\text{H}</math> inductor and 4.7 <math>\mu\text{F}</math> capacitor</li> </ul>
Input Surge	<ul style="list-style-type: none"> <li>• 24 V models 50 VDC for 100 ms</li> <li>• 48 V models 100 VDC for 100 ms</li> </ul>
Under Voltage Lockout	<ul style="list-style-type: none"> <li>• 24 V models on <math>&gt;8.5\text{ V}</math>, off <math>&lt;8.0\text{ V}</math></li> <li>• 48 V models on <math>&gt;16.5\text{ V}</math>, off <math>&lt;15.5\text{ V}</math></li> </ul>

## Output

Output Voltage	<ul style="list-style-type: none"> <li>• See table</li> </ul>
Output Voltage Balance	<ul style="list-style-type: none"> <li>• <math>\pm 2\%</math> max, dual output models</li> </ul>
Initial Set Accuracy	<ul style="list-style-type: none"> <li>• <math>\pm 2\%</math> max</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> max</li> </ul>
Load Regulation	<ul style="list-style-type: none"> <li>• <math>\pm 1.2\%</math> max for single output and <math>\pm 5\%</math> max for dual output from 10-100%</li> </ul>
Cross Regulation	<ul style="list-style-type: none"> <li>• <math>\pm 5\%</math> max on dual output models (see note 4)</li> </ul>
Start Up Delay	<ul style="list-style-type: none"> <li>• 20 ms typical</li> </ul>
Ripple & Noise	<ul style="list-style-type: none"> <li>• 80 mV pk-pk (100 mV for D24 models), 20 MHz bandwidth (see note 5)</li> </ul>
Transient Response	<ul style="list-style-type: none"> <li>• <math>&lt;3\%</math> max deviation, recovery to within 1% in 300 <math>\mu\text{s}</math> for a 25% load change (4% max. deviation for S3V3 models)</li> </ul>
Overload Protection	<ul style="list-style-type: none"> <li>• 135% - 185% of Full Load</li> </ul>
Short Circuit Protection	<ul style="list-style-type: none"> <li>• Trip &amp; restart (Hiccup mode), auto recovery</li> </ul>
Maximum Capacitive Load	<ul style="list-style-type: none"> <li>• See table</li> </ul>
Temperature Coefficient	<ul style="list-style-type: none"> <li>• <math>\pm 0.02/^{\circ}\text{C}</math> max</li> </ul>

## General

Efficiency	<ul style="list-style-type: none"> <li>• See table</li> </ul>
Isolation Voltage	<ul style="list-style-type: none"> <li>• 1500 VDC Input to Output, for optional high isolation version 3000 VDC input to output add suffix '-H' to model number</li> <li>• 1000 VDC Input to Case</li> <li>• 1000 VDC Output to Case</li> </ul>
Isolation Capacitance	<ul style="list-style-type: none"> <li>• 1000 pF typical input to output</li> </ul>
Isolation Resistance	<ul style="list-style-type: none"> <li>• <math>10^9\Omega</math></li> </ul>
Switching Frequency	<ul style="list-style-type: none"> <li>• 330 kHz typical</li> </ul>
Power Density	<ul style="list-style-type: none"> <li>• 15 W/in<sup>3</sup></li> </ul>
MTBF	<ul style="list-style-type: none"> <li>• <math>&gt;800\text{ kHrs}</math> to MIL-HDBK-217F at 25 <math>^{\circ}\text{C}</math>, GB</li> </ul>

## Environmental

Operating Temperature	<ul style="list-style-type: none"> <li>• <math>-40\text{ }^{\circ}\text{C}</math> to <math>+100\text{ }^{\circ}\text{C}</math>, derate from 100% load at <math>+60\text{ }^{\circ}\text{C}</math> to no load at <math>+100\text{ }^{\circ}\text{C}</math></li> </ul>
Case Temperature	<ul style="list-style-type: none"> <li>• <math>+100\text{ }^{\circ}\text{C}</math> max</li> </ul>
Storage Temperature	<ul style="list-style-type: none"> <li>• <math>-55\text{ }^{\circ}\text{C}</math> to <math>+125\text{ }^{\circ}\text{C}</math></li> </ul>
Cooling	<ul style="list-style-type: none"> <li>• Natural convection</li> </ul>
Operating Humidity	<ul style="list-style-type: none"> <li>• Up to 95%, non-condensing</li> </ul>

## EMC

Emissions	<ul style="list-style-type: none"> <li>• EN55032 class A conducted</li> </ul>
ESD Immunity	<ul style="list-style-type: none"> <li>• EN61000-4-2, Level 3</li> <li>• 8 kV air discharge Perf Criteria B,</li> <li>• 6 kV contact discharge Perf Criteria B</li> </ul>
Radiated immunity	<ul style="list-style-type: none"> <li>• EN61000-4-3, 10 V/m, Perf Criteria A</li> </ul>
EFT/Burst	<ul style="list-style-type: none"> <li>• EN61000-4-4, level 3, Perf Criteria A*</li> </ul>
Surge	<ul style="list-style-type: none"> <li>• EN61000-4-5, level 2, Perf Criteria A*</li> </ul>
Conducted Immunity	<ul style="list-style-type: none"> <li>• EN61000-4-6, 10 Vrms, Perf Criteria A</li> </ul>
Magnetic Fields	<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>• UL62368-1, CAN/CSA C22.2 No. 62368-1, CE &amp; UKCA meets all applicable directives &amp; legislation.</li> </ul>
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\* External input capacitor required, 220 $\mu\text{F}/100\text{V}$

## Models and Ratings

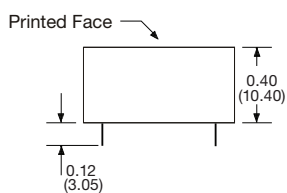
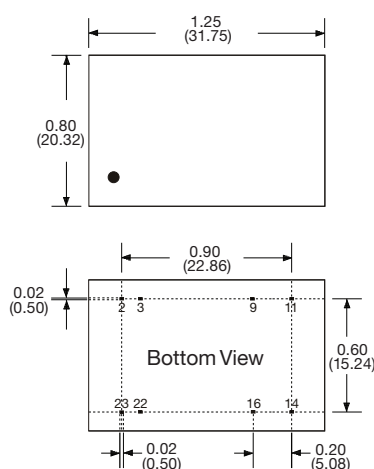
Input Voltage	Output Voltage	Output Current	Input Current <sup>(2)</sup>		Maximum Capacitive Load <sup>(3)</sup>	Efficiency	Model Number <sup>(1,4)</sup>
			No Load	Full Load			
9-36 V	3.3 V	1400 mA	10 mA	257 mA	470 $\mu$ F	76%	JTE0624S3V3
	5.0 V	1200 mA	10 mA	316 mA	470 $\mu$ F	80%	JTE0624S05
	12.0 V	500 mA	10 mA	301 mA	100 $\mu$ F	84%	JTE0624S12
	15.0 V	400 mA	10 mA	301 mA	100 $\mu$ F	84%	JTE0624S15
	24.0 V	250 mA	10 mA	301 mA	47 $\mu$ F	84%	JTE0624S24
	$\pm$ 3.3 V	$\pm$ 909 mA	10 mA	324 mA	$\pm$ 220 $\mu$ F	78%	JTE0624D03
	$\pm$ 5.0 V	$\pm$ 600 mA	10 mA	308 mA	$\pm$ 220 $\mu$ F	82%	JTE0624D05
	$\pm$ 12.0 V	$\pm$ 250 mA	10 mA	301 mA	$\pm$ 100 $\mu$ F	84%	JTE0624D12
	$\pm$ 15.0 V	$\pm$ 200 mA	15 mA	301 mA	$\pm$ 100 $\mu$ F	84%	JTE0624D15
18-75 V	$\pm$ 24.0 V	$\pm$ 125 mA	20 mA	308 mA	$\pm$ 47 $\mu$ F	82%	JTE0624D24
	3.3 V	1400 mA	7 mA	128 mA	470 $\mu$ F	76%	JTE0648S3V3
	5.0 V	1200 mA	7 mA	154 mA	470 $\mu$ F	82%	JTE0648S05
	12.0 V	500 mA	7 mA	151 mA	100 $\mu$ F	84%	JTE0648S12
	15.0 V	400 mA	7 mA	151 mA	100 $\mu$ F	84%	JTE0648S15
	24.0 V	250 mA	7 mA	151 mA	47 $\mu$ F	84%	JTE0648S24
	$\pm$ 3.3 V	$\pm$ 909 mA	7 mA	162 mA	$\pm$ 220 $\mu$ F	78%	JTE0648D03
	$\pm$ 5.0 V	$\pm$ 600 mA	7 mA	154 mA	$\pm$ 220 $\mu$ F	82%	JTE0648D05
	$\pm$ 12.0 V	$\pm$ 250 mA	7 mA	151 mA	$\pm$ 100 $\mu$ F	84%	JTE0648D12
$\pm$ 15.0 V	$\pm$ 200 mA	7 mA	151 mA	$\pm$ 100 $\mu$ F	84%	JTE0648D15	
$\pm$ 24.0 V	$\pm$ 125 mA	10 mA	158 mA	$\pm$ 47 $\mu$ F	80%	JTE0648D24	

### Notes

- For optional 3000 VDC isolation add suffix '-H' to model number.
- Input current measured at nominal input voltage.
- Maximum capacitive load is per output.
- Cross regulation for duals is  $\pm$ 5% when one output is at 100% and the other is varied between 25% and 100%.
- Ripple & Noise measured with 1 $\mu$ F ceramic capacitor across output pins.
- For optional metal case version, add suffix '-M' to part number e.g. JTE0624S12-M.

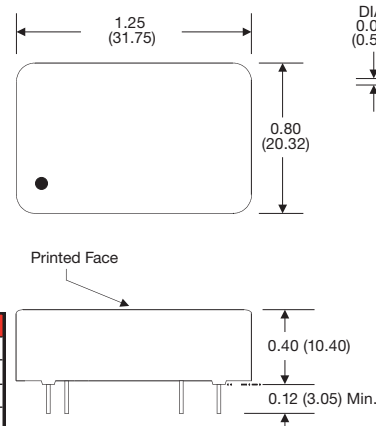
## Mechanical Details

### Plastic Case



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

### Optional Metal Case

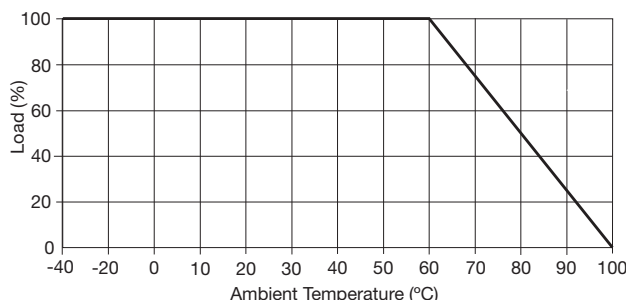


### Notes

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

## Application Note

### Derating Curve



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