

15W

DC-DC
converters 

The JTD15 series is housed in a 40.64 x 25.4 x 10.2 mm (1.6" x 1" x 0.41") metal case. Featuring a 4:1 input voltage range of 9 to 36VDC or 18 to 72VDC with both single and dual outputs, singles have 3.3, 5, 12 or 15VDC with duals having ± 5 , ± 12 or ± 15 VDC. Single output models are adjustable $\pm 10\%$ with a trim resistor.

The JTD15 has regulated outputs and provides 3.0kVDC isolation between input and output, remote on/off, overload & short circuit protection are standard.

Operating temperature range is from -40°C to $+100^{\circ}\text{C}$, with derating above $+70^{\circ}\text{C}$.



Features

- ▶ Regulated single outputs 3.3 to 15VDC
- ▶ Regulated dual outputs ± 5 , ± 12 & ± 15 VDC
- ▶ 4:1 input range
- ▶ Output trim $\pm 10\%$ for single output models
- ▶ 40.6 x 25.4mm (1.6" x 1") footprint, 10.4mm (0.41") profile
- ▶ 3.0kVDC isolation
- ▶ Remote On/Off
- ▶ -40°C to $+100^{\circ}\text{C}$ operating temperature
- ▶ Full power to $+70^{\circ}\text{C}$
- ▶ 3 year warranty

Applications



Dimensions

40.6 x 25.4 x 10.4mm (1.6" x 1.0" x 0.41")

Models & ratings

Model number	Input voltage	Output voltage	Output current	Efficiency	Input current ⁽¹⁾		Maximum capacitive load ⁽²⁾
					No load	Full load	
JTD1524S3V3	9-36VDC	3.3VDC	3000mA	82%	10mA	515mA	3300 μF
JTD1524S05		5VDC	3000mA	85%	10mA	755mA	3300 μF
JTD1524S12		12VDC	1250mA	88%	10mA	735mA	680 μF
JTD1524S15		15VDC	1000mA	89%	10mA	725mA	470 μF
JTD1524D05		± 5 VDC	± 1500 mA	85%	10mA	755mA	± 2200 μF
JTD1524D12		± 12 VDC	± 625 mA	88%	10mA	735mA	± 470 μF
JTD1524D15		± 15 VDC	± 500 mA	89%	15mA	725mA	± 330 μF

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Notes:

1. Input currents measured at nominal input voltage.

2. Maximum capacitive load is per output.

Models & ratings

Model number	Input voltage	Output voltage	Output current	Efficiency	Input current ⁽¹⁾		Maximum capacitive load ⁽²⁾
					No load	Full load	
JTD1548S3V3	18-75VDC	3.3VDC	3000mA	82%	10mA	255mA	3300μF
JTD1548S05		5VDC	3000mA	85%	10mA	375mA	3300μF
JTD1548S12		12VDC	1250mA	87%	10mA	365mA	680μF
JTD1548S15		15VDC	1000mA	88%	10mA	365mA	470μF
JTD1548D05		±5VDC	±1500mA	88%	8mA	375mA	±2200μF
JTD1548D12		±12VDC	±625mA	90%	8mA	375mA	±470μF
JTD1548D15		±15VDC	±500mA	88%	10mA	365mA	±330μF

Notes:

1. Input currents measured at nominal input voltage.

2. Maximum capacitive load is per output.

Input

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Input voltage range	9		36	VDC	24VDC nominal
	18		75		48VDC nominal
Inrush reflected ripple current		20		mA pk-pk	Through 12μH inductor and 47μF capacitor
Input surge			50	VDC for 100ms	24VDC nominal
			100		48VDC nominal

Output

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Output voltage	3.3		30	VDC	See models & ratings table
Output trim	±10			%	Single output only, see application note
Initial set accuracy			±1	%	At full load
Minimum load	0			%	No minimum load required
Line regulation			±0.5	%	From min to max input voltage
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
Start up time		30		ms	
Ripple & noise			75/60	mV pk-pk	Single/dual output, measured using 20MHz bandwidth and 10μF/25VDC MLCC per output
Overload protection			170	%	
Short circuit protection	Continuous, hiccup mode with auto recovery				
Maximum capacitive load	See models & ratings table				
Temperature coefficient			0.02	%/ °C	
Remote on/off	Output is on if remote on/off (pin 6) is open or high (3-12VDC) Output turns off if remote on/off (pin 6) is low (<1.2VDC max), e.g. short pin 6 to pin 2 -Vin.				

General

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Efficiency		85		%	See models & ratings table
Isolation: input to output	3000			VDC	60s Functional
Isolation: input and output to case	1600			VDC	60s
Switching frequency		270/330		kHz	3V3 & 5VDC models/other models
Isolation resistance	10 ⁹			Ω	
Isolation capacitance		2000		pF	
Power density			1.34 (22)	W/cm ³ (W/in ³)	
Mean time between failure	600			khrs	MIL-HDBK-217F, +25°C GB
Weight		29.0 (0.064)		g (lb)	
Solder profile			260	°C	1.5mm from case, 10s max
Case material	Copper, Base plastic UL94V-0				
Potting material	Epoxy, UL94V-0 rated				
Pin material	Brass, Solder coated				
Solder profile	260°C max, 1.5mm from case, 10s max				

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	
Humidity			95	%RH	Non-condensing
Cooling	Natural convection				
Thermal impedance to air	12			°C/W	

Safety approvals

Safety agency	Standard	Notes & conditions
UL	UL/cUL60950-1, 62368-1	
CE	Meets all applicable directives	
UKCA	Meets all applicable legislation	

EMC: emissions

Phenomenon	Standard	Test level	Notes & conditions
Conducted	EN55032	Class A	No external components required
Radiated	EN55032	Class A	No external components required

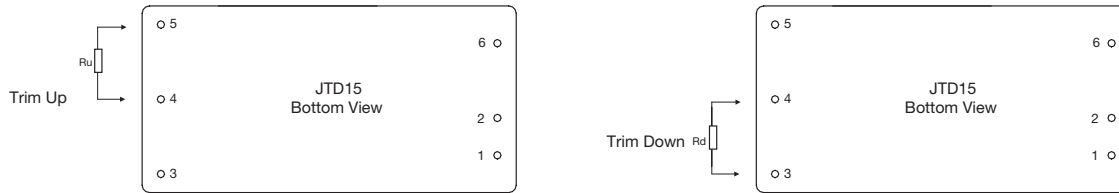
EMC: immunity

Phenomenon	Standard	Test Level	Criteria	Notes & conditions
ESD immunity	EN61000-4-2	$\pm 6\text{kV}$	A	Contact
		$\pm 8\text{kV}$		Air
Radiated immunity	EN61000-4-3	20V/m	A	
EFT/Burst	EN61000-4-4	2kV	A	Requires 330 μF /100VDC electrolytic and 3kW TVS (SMDJ58A for 24VDC input, SMDJ120A for 48VDC input), see application notes.
Surge	EN61000-4-5	2kV	A	Requires 330 μF /100VDC electrolytic and 3kW TVS (SMDJ58A for 24VDC input, SMDJ120A for 48VDC input), see application notes.
Conducted immunity	EN61000-4-6	10Vrms	A	
Magnetic fields	EN61000-4-8	100A/m	A	

Application notes

External output trimming

Output can be externally trimmed by using the method as below, (single output models only)



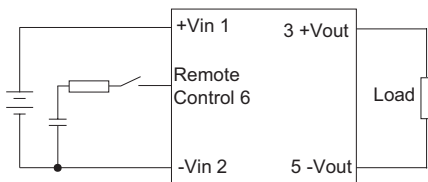
Trim down resistor values (Rd)

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	309.0k Ω	165.4k Ω	105.6k Ω	72.9k Ω	52.3k Ω	38.0k Ω	27.6k Ω	19.7k Ω	13.5k Ω	8.40k Ω
5VDC	119.9k Ω	77.70k Ω	50.50k Ω	35.2k Ω	25.3k Ω	18.4k Ω	13.4k Ω	9.50k Ω	6.40k Ω	3.90k Ω
12VDC	345.0k Ω	138.1k Ω	79.90k Ω	51.5k Ω	34.6k Ω	23.4k Ω	15.5k Ω	9.50k Ω	4.90k Ω	1.26k Ω
15VDC	174.4k Ω	91.10k Ω	56.60k Ω	37.7k Ω	25.8k Ω	17.6k Ω	11.6k Ω	7.00k Ω	3.50k Ω	0.55k Ω

Trim up resistor values (Ru)

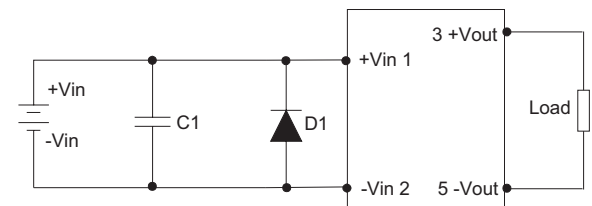
Model	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%
	Voutx0.99	Voutx0.98	Voutx0.97	Voutx0.96	Voutx0.95	Voutx0.94	Voutx0.93	Voutx0.92	Voutx0.91	Voutx0.90
3V3DC	537.7k Ω	177.1k Ω	96.40k Ω	60.8k Ω	40.8k Ω	27.9k Ω	19.0k Ω	12.4k Ω	7.30k Ω	3.40k Ω
5VDC	635.2k Ω	170.0k Ω	92.80k Ω	61.1k Ω	43.8k Ω	32.9k Ω	25.4k Ω	20.0k Ω	15.8k Ω	12.5k Ω
12VDC	367.4k Ω	179.6k Ω	113.6k Ω	79.9k Ω	59.5k Ω	45.8k Ω	35.9k Ω	28.5k Ω	22.7k Ω	18.1k Ω
15VDC	661.5k Ω	231.3k Ω	134.0k Ω	91.0k Ω	66.8k Ω	51.3k Ω	40.4k Ω	32.5k Ω	26.4k Ω	21.5k Ω

Remote on/off



The module is enabled by positive logic. Adding a switch function between the remote control pin 6 and -Vin pin 2.

EFT surge filter



Model	C1	D1
JTD1524	330 μF , 100V	TVS, 58V, 3kW
JTD1548	330 μF , 100V	TVS, 120V, 3kW

The graph plots Output Power (%) on the y-axis (0 to 100) against Ambient Temperature (°C) on the x-axis (-40 to 100). Two lines represent the power derating characteristics:

- Single & Dual 5VDC output:** This line starts at 100% power at 70°C and decreases linearly to 0% power at 100°C.
- All other models:** This line starts at 100% power at 80°C and decreases linearly to 0% power at 100°C.

A horizontal dashed line at 50% output power intersects the derating lines at 75°C for the 5VDC models and 90°C for all other models.

Ambient Temperature (°C)	Single & Dual 5VDC output (%)	All other models (%)
70	100	100
75	75	100
80	50	100
85	25	75
90	0	50
95	0	25
100	0	0

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

Specifications subject to change without notice.