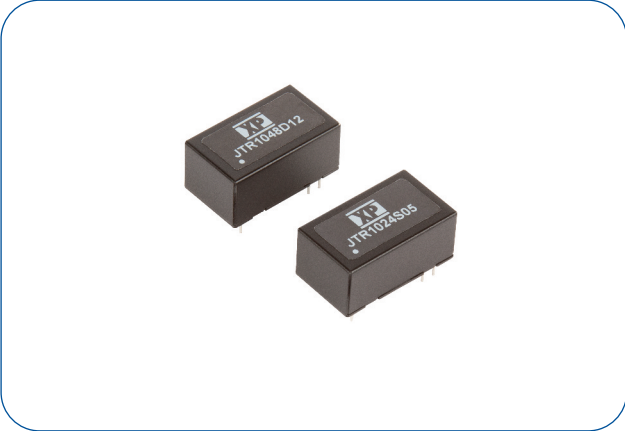


### 10 Watts

- Regulated single outputs from 3.3 to 30VDC, dual outputs  $\pm 12$  &  $\pm 15$ VDC
- Wide 4:1 DC input range 9 to 36 or 18 to 75VDC
- DIP16 metal case
- Output voltage trim  $\pm 10\%$  (single output models)
- High efficiency up to 87%
- IEC/UL/cUL 62368-1 safety approvals (pending)
- Complies with EN55032 class A with no external components
- $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$  operating temperature
- Full power to  $+70^{\circ}\text{C}$
- MTBF >500 khrs (MIL-HDBK-217F,  $+25^{\circ}\text{C}$  GB)
- 3 year warranty



#### Dimensions:

##### JTR10:

0.94 x 0.54 x 0.41" (23.8 x 13.7 x 10.3 mm)

### Models & Ratings

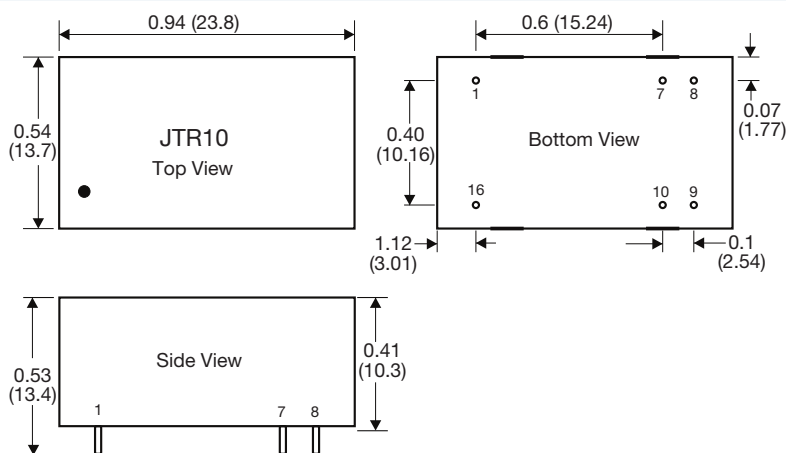
Input voltage	Output voltage	Output current (full load)	Input current <sup>(1)</sup>		Max. Capacitive Load	Efficiency	Model number
			No load	Full load			
24V (9-36V)	3.3V	2700 mA	10 mA	464 mA	2600 $\mu\text{F}$	80%	JTR1024S3V3
	5.0V	2000 mA		502 mA	1300 $\mu\text{F}$	83%	JTR1024S05
	12.0V	833 mA		479 mA	560 $\mu\text{F}$	87%	JTR1024S12
	15.0V	666 mA		479 mA	560 $\mu\text{F}$	87%	JTR1024S15
	$\pm 12.0\text{V}$	$\pm 416\text{ mA}$		478 mA	$\pm 390\ \mu\text{F}$	87%	JTR1024D12
	$\pm 15.0\text{V}$	$\pm 333\text{ mA}$		478 mA	$\pm 220\ \mu\text{F}$	87%	JTR1024D15
48V (18-75V)	3.3V	2700 mA	7 mA	232 mA	2600 $\mu\text{F}$	80%	JTR1048S3V3
	5.0V	2000 mA		251 mA	1300 $\mu\text{F}$	83%	JTR1048S05
	12.0V	833 mA		239 mA	560 $\mu\text{F}$	87%	JTR1048S12
	15.0V	666 mA		239 mA	560 $\mu\text{F}$	88%	JTR1048S15
	$\pm 12.0\text{V}$	$\pm 416\text{ mA}$		239 mA	$\pm 390\ \mu\text{F}$	87%	JTR1048D12
	$\pm 15.0\text{V}$	$\pm 333\text{ mA}$		239 mA	$\pm 220\ \mu\text{F}$	87%	JTR1048D15

### Notes

1. Input currents measured at nominal input voltage.

2. Standard tube quantity: 20

### Mechanical Details



Pin Connections		
Pin	Single	Dual
1	-Vin	-Vin
7	Trim	No Connection
8	No Connection	Common
9	+Vout	+Vout
10	-Vout	-Vout
16	+Vin	+Vin

### Notes

1. All dimensions are in inches (mm)
2. Weight: 0.0022 lbs (10 g) approx.
3. Tolerance: X.XX $\pm$ 0.01 (X.X $\pm$ 0.25), X.XXX $\pm$ 0.005 (X.XX $\pm$ 0.13)

4. Pin Diameter: 0.02 (0.5)
5. Pin Tolerance:  $\pm 0.002$  ( $\pm 0.05$ )

### Input

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Input Voltage Range	9.0		36	VDC	24 V nominal
	18.0		75	VDC	48 V nominal
Input Filter	Internal Pi type				
Undervoltage Lockout	ON at 8.8 V, OFF at 7.0 V				24 V models
	ON at 17.8 V, OFF at 16.0 V				48 V models
Input Surge			50	VDC	24 V models for 100 ms max
			100		48 V models for 100 ms max

### Output

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Output Voltage	3.3		30	VDC	See Models and Ratings table
Initial Set Accuracy			±1.0	%	At full load
Output Voltage Balance			±1.0	%	For dual output with balanced loads
Minimum Load					No minimum load required
Line Regulation			±0.5	%	From minimum to maximum input at full load
Load Regulation			±1.0	%	From 0 to full load
Cross Regulation			±5.0	%	On dual output models when one load is varied between 25% and 100% and other is fixed at 100%
Transient Response		3	5	% deviation	Recovery within 1% in less than 250 µs for a 25% load change.
Ripple & Noise			60	mV pk-pk	3V3, 5 V output models: 20 MHz bandwidth. Measured using 1 µF ceramic capacitor and 10 µF electrolytic capacitor
			80		Other models: 20 MHz bandwidth. Measured using 1 µF ceramic capacitor and 10 µF electrolytic capacitor
Overload Protection		160		%	
Short Circuit Protection					Continuous Trip & Restart (Hiccup mode), with auto recovery
Maximum Capacitive Load					See Models and Ratings table
Temperature Coefficient			0.02	%/°C	

### General

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Efficiency		87		%	See Models and Ratings table
Isolation: Input to Output	1500			VDC	60 s functional
Isolation Resistance	10 <sup>9</sup>			Ω	At 500 VDC
Isolation Capacitance		1500		pF	
Switching Frequency		370		kHz	
Case Material	Black coated copper with non conductive plastic base UL94V-0 rated				
Potting Material	Epoxy UL94V-0				
Pin Material	Brass, solder coated				
Solder Profile	260 °C max. 1.5mm from case 10s maximum.				
Power Density			48	W/in <sup>3</sup>	
Mean Time Between Failure	500			KHrs	MIL-HDBK-217F, +25 °C GB
Weight		0.0022 (10)		lb (g)	

### Environmental

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Operating Temperature	-40		+85	°C	See Derating Curve
Storage Temperature	-55		+125	°C	
Case Temperature			+105	°C	
Humidity			95	%RH	Non-condensing
Cooling	Natural convection				

### Safety Approvals

Safety Agency	Safety Standard	Notes & Conditions
CB Report	IEC62368-1	Information Technology. Pending.
UL	UL/cUL62368-1	Information Technology. Pending.

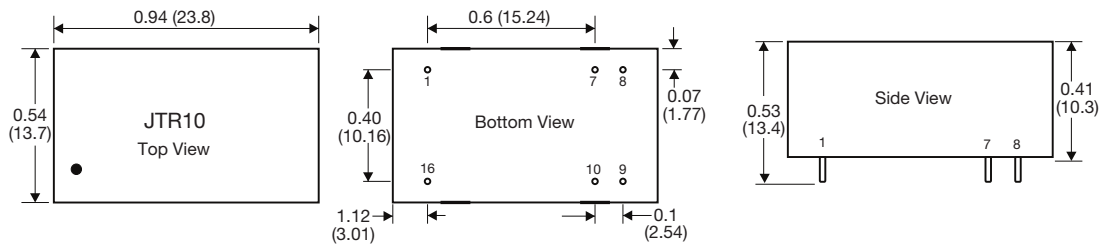
### EMC: Emissions

Phenomenon	Standard	Test Level	Notes & Conditions
Conducted & Radiated	EN55032	Class A	No external components required

### EMC: Immunity

Phenomenon	Standard	Test Level	Criteria	Notes & Conditions
ESD	EN61000-4-2	±8 kV air discharge, ±6 kV contact	A	
Radiated	EN61000-4-3	20 V/m	A	
EFT/Burst	EN61000-4-4	±2 kV	A	With external capacitor and TVS. See applications notes.
Surge	EN61000-4-5	±1 kV	A	With external capacitor and TVS. See applications notes.
Conducted	EN61000-4-6	10 V rms	A	
Magnetic Fields	EN61000-4-8	100 A/m	A	

### Mechanical Details



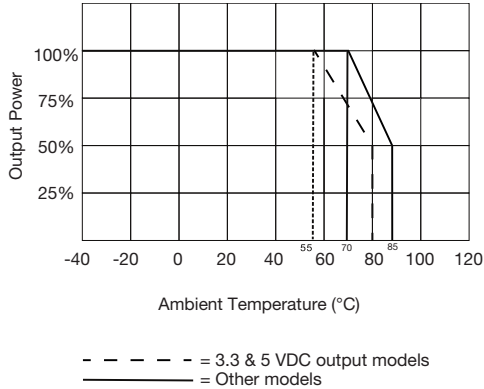
Pin	Single	Dual
1	-Vin	-Vin
7	Trim	No Connection
8	No Connection	Common
9	+Vout	+Vout
10	-Vout	-Vout
16	+Vin	+Vin

#### Notes

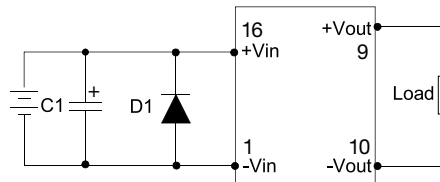
- All dimensions are in inches (mm)
- Weight: 0.0022 lbs (10 g) approx.
- Tolerance: X.XX±0.01 (X.X±0.25)  
X.XXX±0.005 (X.XX±0.13)
- Pin Diameter: 0.02 (0.5)
- Pin Tolerance: ±0.002 (±0.05)

### Application Notes

#### Derating Curve



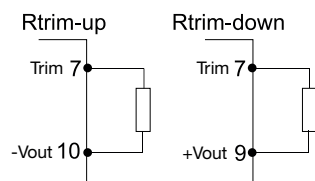
#### EFT & Surge



	C1	D1
JTR1024	220 µF, 100 V	TVS, 58 V, 3 kW
JTR1048	220 µF, 100 V	TVS, 120 V, 3 kW

#### Output Trim

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



Trim Down %	Nominal Vout	1	2	3	4	5	6	7	8	9	10
Rd kΩ	3V3	194.3	116.4	80.2	59	45.6	36	29	23.5	19.2	15.6
	5	217.2	101.8	63.3	44	32.6	24.9	19.4	15.2	12	9.5
	12	181.2	75.9	45.8.3	315.8	232.8	178.3	140	111.3	89.2	71.7
	15	176.5	738.5	445	306	225	172	134.5	106.6	85	67.9
	24	119.1	53.2	325.2	224	164	124.3	96	75	58.6	45.5
Trim Up %	Nominal Vout	1	2	3	4	5	6	7	8	9	10
Ru kΩ	3V3	117.8	237.3	127.2	84.6	62	47.9	38.3	31.4	26.1	22
	5	442.3	217.8	142.3	105.5	83	68	57.3	49.3	43.1	38.1
	12	923.4	479.9	312.4	224.7	170.7	134.1	107.8	87.8	72.1	59.6
	15	957.2	496.7	324	233.5	177.8	140.1	112.9	92.3	76.1	63.2
	24	726.5	353.5	222.4	155.5	114.8	87.6	68	53.3	41.8	32.6