JTD20 Series

DC-DC Converter

XP Power

20 Watts

- Single and Dual Outputs
- Wide 4:1 Input Range
- 1.6″ x 1″ Footprint
- -40 °C to +100 °C Operation
- Full Load at 65 °C Ambient
- 3000 VDC Isolation
- Output Trim ±10%
- Remote On/Off
- 3 Year Warranty

Dimensions:

JTD20:
1.6 x 1.0 x 0.41″ (40.6 x 25.4 x 10.4 mm)

Models & Ratings

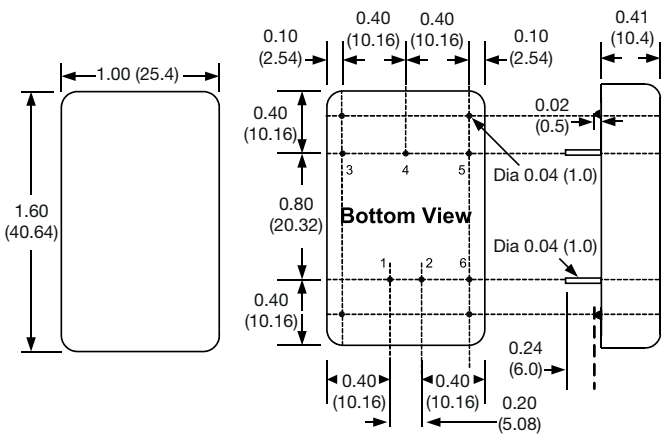
Input Voltage	Output Voltage	Output Current	Input Current[1]		Efficiency	Max. capacitive load[2]	Model Number
			No Load	Full Load			
9-36V	3.3 V	5500 mA	10 mA	850 mA	89.0%	10000 µF	JTD2024S3V3
	5 V	4000 mA	10 mA	935 mA	89.0%	6800 µF	JTD2024S05
	12 V	1670 mA	10 mA	945 mA	88.5%	1000 µF	JTD2024S12
	15 V	1330 mA	15 mA	945 mA	88.0%	680 µF	JTD2024S15
	±5 V	±2000 mA	10 mA	970 mA	86.0%	±2200 µF	JTD2024D05
	±12 V	±835 mA	15 mA	945 mA	88.5%	±470 µF	JTD2024D12
	±15 V	±665 mA	15 mA	940 mA	88.5%	±330 µF	JTD2024D15
18-75V	3.3 V	5500 mA	8 mA	425 mA	89.5%	10000 µF	JTD2048S3V3
	5 V	4000 mA	8 mA	465 mA	90.0%	6800 µF	JTD2048S05
	12 V	1670 mA	8 mA	465 mA	90.0%	1000 µF	JTD2048S12
	15 V	1330 mA	8 mA	455 mA	91.0%	680 µF	JTD2048S15
	±5 V	±2000 mA	8 mA	480 mA	87.0%	±2200 µF	JTD2048D05
	±12 V	±835 mA	8 mA	465 mA	90.0%	±470 µF	JTD2048D12
	±15 V	±665 mA	10 mA	460 mA	90.5%	±330 µF	JTD2048D15

Notes

1. Input currents measured at nominal input voltage.

2. Maximum capacitive load is per output.

Mechanical Details



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

Notes

1. All dimensions are in inches (mm)
2. Weight: 0.064 lbs (29.0 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		20		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 only, see Application Note
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
Start Up Time		30		ms	
Ripple & Noise			75/60	mV pk-pk	Single/Dual Output, Measured using 20 MHz bandwidth and 10 µF/25 V MLCC per output
Overload Protection			170	%	
Short Circuit Protection					Continuous hiccup mode, with auto recovery
Maximum Capacitive Load					See Models and Ratings table
Temperature Coefficient			0.02	%/°C	
Overvoltage Protection			140	%	
Remote On/Off	Output is on if remote on/off (pin 3) is open or high (3-12 VDC) Output turns off if remote on/off (pin 3) is low (<1.2 VDC max)				

General

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Efficiency		85		%	See Models and Ratings table
Isolation: Input to Output	3000			VDC	60 s
Isolation: Input and output to Case	1600			VDC	60 s
Switching Frequency		270/330		kHz	3V3 & 5 V models/other models
Isolation Resistance	10^9			Ω	
Isolation Capacitance		2000		pF	
Power Density			30	W/in^3	
Mean Time Between Failure	400			kHrs	MIL-HDBK-217F, +25 °C GB
Weight		0.064 (29.0)		lb (g)	

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	

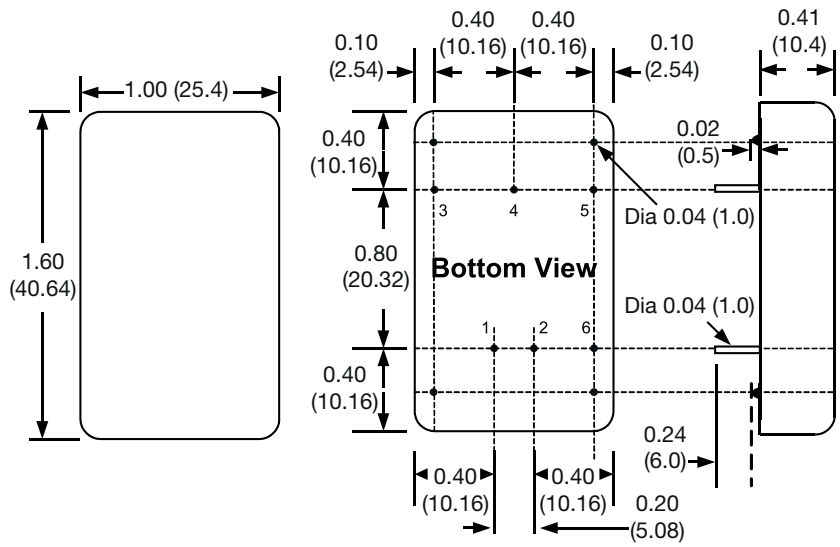
EMC: Emissions

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	±6 kV/±8 kV	B	Contact Discharge/Air Discharge
Radiated Immunity	EN61000-4-3	20 Vrms	A	
EFT/Burst	EN61000-4-4	2 kV	A	Requires 330 µF/100 V electrolytic and 3 kW TVS (SMDJ58A for 24 V input, SMDJ120A for 48 V input)
Surge	EN61000-4-5	2 kV	A	Required 330 µF/100 V electrolytic and 3 kW TVS (SMDJ58A for 24 V input, SMDJ120A for 48 V input)
Conducted Immunity	EN61000-4-6	10 V rms	A	
Magnetic Fields	EN61000-4-8	100 A/m	A	

Mechanical Details

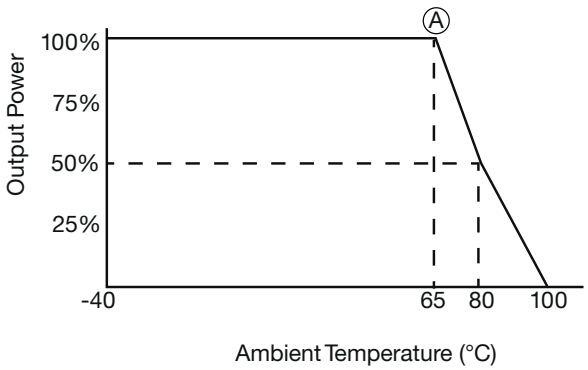


Pin Connections		
Pin	Single	Dual
1	+Vin	+Vin
2	-Vin	-Vin
3	+Vout	+Vout
4	Trim	Common
5	-Vout	-Vout
6	Remote On/Off	Remote On/Off

Notes

1. All dimensions are in inches (mm)
2. Weight: 0.042 lbs (19.0 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)

Derating Curve

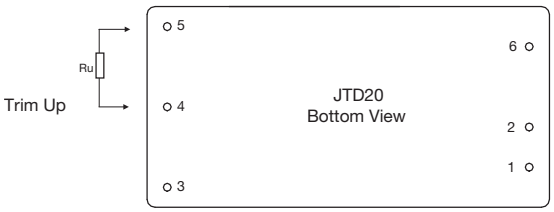


Note: Point Ⓐ is 60 °C for dual 5 V output models

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)

Models	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%
3V3	309.0 k	165.4 k	105.6 k	72.9 k	52.3 k	38.0 k	27.6 k	19.7 k	13.5 k	8.40 k
5V	119.9 k	77.70 k	50.50 k	35.2 k	25.3 k	18.4 k	13.4 k	9.50 k	6.40 k	3.90 k
12V	345.0 k	138.1 k	79.90 k	51.5 k	34.6 k	23.4 k	15.5 k	9.50 k	4.90 k	1.26 k
15V	174.4 k	91.10 k	56.60 k	37.7 k	25.8 k	17.6 k	11.6 k	7.00 k	3.50 k	0.55 k

Trim Up Resistor Values (Ru)

Models	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%
3V3	537.7 k	177.1 k	96.40 k	60.8 k	40.8 k	27.9 k	19.0 k	12.4 k	7.30 k	3.40 k
5V	635.2 k	170.0 k	92.80 k	61.1 k	43.8 k	32.9 k	25.4 k	20.0 k	15.8 k	12.5 k
12V	367.4 k	179.6 k	113.6 k	79.9 k	59.5 k	45.8 k	35.9 k	28.5 k	22.7 k	18.1 k
15V	661.5 k	231.3 k	134.0 k	91.0 k	66.8 k	51.3 k	40.4 k	32.5 k	26.4 k	21.5 k