

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 $\pm 10\%$
- 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)

The JTD series offers a cost effective solution with many features including a metal case, short circuit protection, regulation, output trim and remote on/off.

Models & Ratings

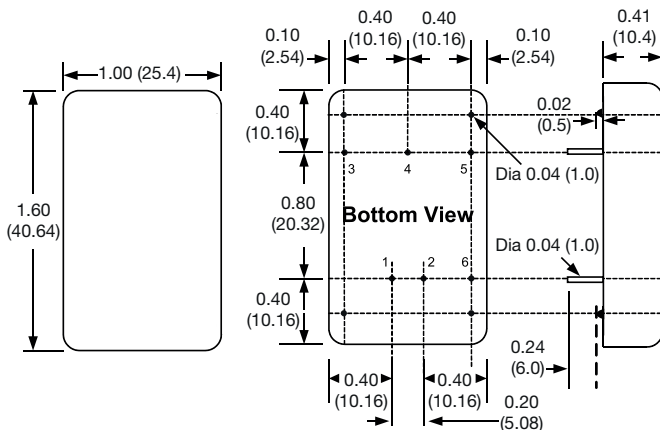
| Input Voltage | Output Voltage | Output Current | Input Current ⁽¹⁾ | | Efficiency | Max. capacitive load ⁽²⁾ | Model Number |
|---------------|----------------|----------------|------------------------------|-----------|------------|-------------------------------------|--------------|
| | | | No Load | Full Load | | | |
| 9-36V | 3.3 V | 5500 mA | 10 mA | 850 mA | 89.0% | 10000 μ F | JTD2024S3V3 |
| | 5 V | 4000 mA | 10 mA | 935 mA | 89.0% | 6800 μ F | JTD2024S05 |
| | 12 V | 1670 mA | 10 mA | 945 mA | 88.5% | 1000 μ F | JTD2024S12 |
| | 15 V | 1330 mA | 15 mA | 945 mA | 88.0% | 680 μ F | JTD2024S15 |
| | ± 5 V | ± 2000 mA | 10 mA | 970 mA | 86.0% | ± 2200 μ F | JTD2024D05 |
| | ± 12 V | ± 835 mA | 15 mA | 945 mA | 88.5% | ± 470 μ F | JTD2024D12 |
| | ± 15 V | ± 665 mA | 15 mA | 940 mA | 88.5% | ± 330 μ F | JTD2024D15 |
| 18-75V | 3.3 V | 5500 mA | 8 mA | 425 mA | 89.5% | 10000 μ F | JTD2048S3V3 |
| | 5 V | 4000 mA | 8 mA | 465 mA | 90.0% | 6800 μ F | JTD2048S05 |
| | 12 V | 1670 mA | 8 mA | 465 mA | 90.0% | 1000 μ F | JTD2048S12 |
| | 15 V | 1330 mA | 8 mA | 455 mA | 91.0% | 680 μ F | JTD2048S15 |
| | ± 5 V | ± 2000 mA | 8 mA | 480 mA | 87.0% | ± 2200 μ F | JTD2048D05 |
| | ± 12 V | ± 835 mA | 8 mA | 465 mA | 90.0% | ± 470 μ F | JTD2048D12 |
| | ± 15 V | ± 665 mA | 10 mA | 460 mA | 90.5% | ± 330 μ F | 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 μ H inductor and 47 μ F 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 μ F/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 | %/ $^{\circ}$ 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), e.g. short pin 6 to pin 2 -Vin. | | | | Idle input current 2mA typical |

General

| Characteristic | Minimum | Typical | Maximum | Units | Notes & Conditions |
|-------------------------------------|--|--------------|---------|-------------------|------------------------------------|
| Efficiency | | 85 | | % | See Models and Ratings table |
| Isolation: Input to Output | 3000 | | | VDC | 60 s Functional |
| 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 $^{\circ}$ C GB |
| Case Material | Case Material, Base plastic UL94V-0 | | | | |
| PCB Pin Material | Brass, Solder coated | | | | |
| Potting Material | Epoxy, UL84V-0 rated | | | | |
| Solder Profile | 260 $^{\circ}$ C max, 1.5mm from case, 10s max | | | | |
| Weight | | 0.064 (29.0) | | lb (g) | |

Environmental

| Characteristic | Minimum | Typical | Maximum | Units | Notes & Conditions |
|--------------------------|---------|---------|---------|----------------|--------------------|
| Operating Temperature | -40 | | +100 | $^{\circ}$ C | See Derating Curve |
| Storage Temperature | -55 | | +125 | $^{\circ}$ C | |
| Case Temperature | | | +105 | $^{\circ}$ C | |
| Humidity | | | 95 | %RH | Non-condensing |
| Cooling | | | | | Natural convection |
| Thermal Impedance to Air | 12 | | | $^{\circ}$ C/W | |

Safety Approvals

| Safety Agency | Safety Standard | Notes & Conditions |
|---------------|----------------------------------|--------------------|
| UL/cUL | UL/cUL60950-1, 62368-1 | ITE |
| CE | Meets all applicable directives | |
| UL | Meets all applicable legislation | |

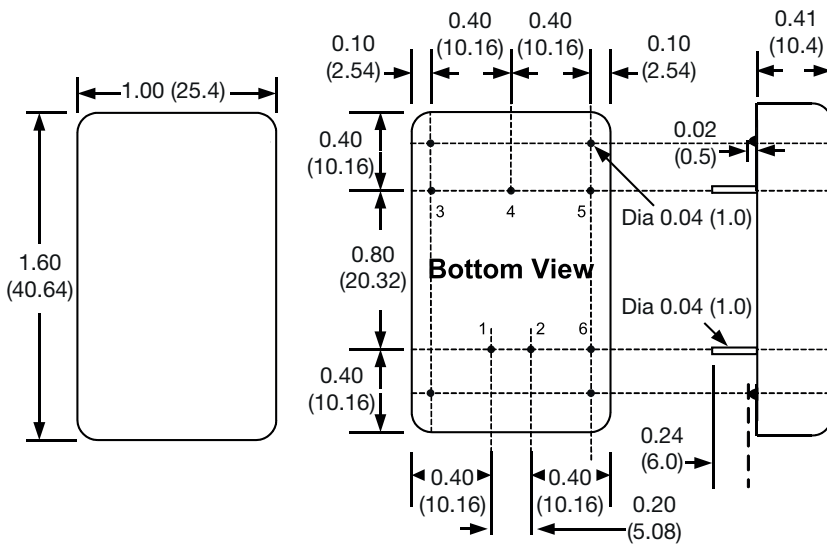
EMC: Emissions

| 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 | ±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) See application notes. |
| 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) See application notes. |
| Conducted Immunity | EN61000-4-6 | 10 V rms | A | |
| Magnetic Fields | EN61000-4-8 | 100 A/m | A | |

Mechanical Details

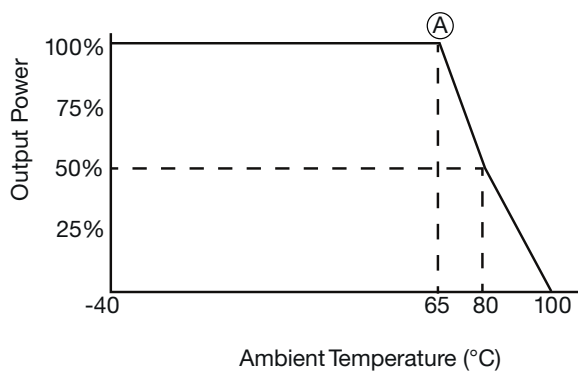


| Pin Connections | | |
|-----------------|---------------|---------------|
| Pin | Single | Dual |
| 1 | +Vin | +Vin |
| 2 | -Vin | -Vin |
| 3 | +Vout | +Vout |
| 4 | Trim | Common |
| 5 | -Vout | -Vout |
| 6 | Remote On/Off | Remote On/Off |

Notes

- All dimensions are in inches (mm)
- Weight: 0.042 lbs (19.0 g) approx.
- Pin diameter: 0.04±0.002 (1.0 ±0.05)
- Pin pitch tolerance: ±0.014 (±0.35)
- Case tolerance: ±0.02 (±0.5)

Derating Curve

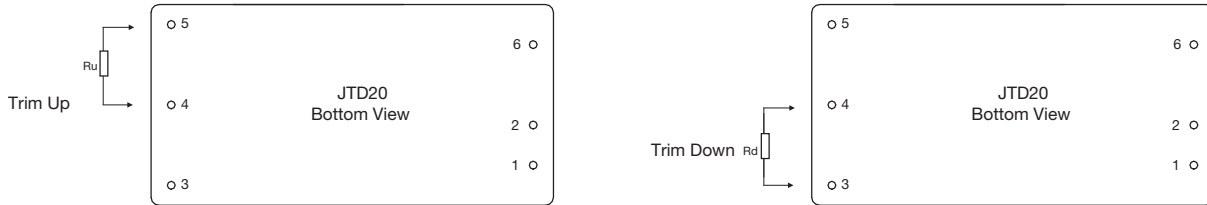


Note: Point (A) is 60 °C for dual 5 V output models

Application Notes

External Output Trimming

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



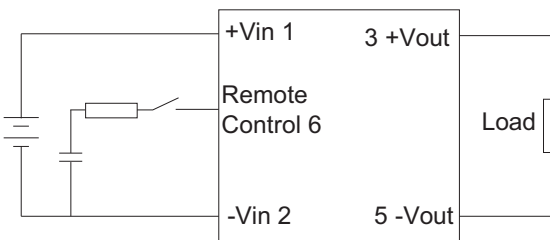
Trim Down Resistor Values (Rd)

| 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)

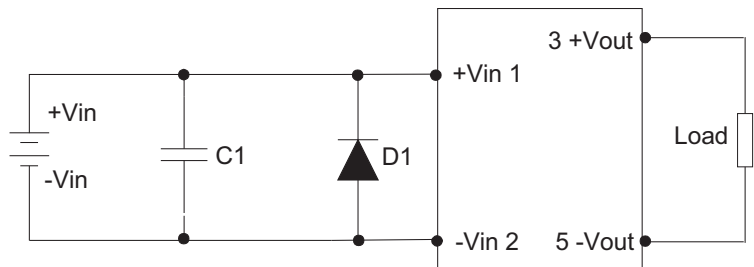
| Models | 1% | 2% | 3% | 4% | 5% | 6% | 7% | 8% | 9% | 10% |
|--------|---------|---------|---------|--------|--------|--------|--------|--------|--------|--------|
| 3V3 | 537.7 k | 177.1 k | 96.40 k | 60.8 k | 40.8 k | 27.9 k | 19.0 k | 12.4 k | 7.30 k | 3.40 k |
| 5V | 635.2 k | 170.0 k | 92.80 k | 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 |

Remote On/Off



The module is enabled by positive logic. Adding a switch function between the remote control pin 6 and -Vin pin 2 will facilitate this (open drain or open collector type)

EFT Surge Filter



| Models | C1 | D1 |
|---------|--------------------|----------------|
| JTD2024 | 330 μ F, 100 V | TVS, 58V, 3kW |
| JTD2048 | 330 μ F, 100 V | TVS, 120V, 3kW |

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