

15 Watts

- Regulated single & dual outputs from 3.3V to 48VDC
- Wide 4:1 input range
- Chassis mount with optional DIN rail clip
- IEC/UL/cUL62368-1 safety approvals
- EN55032 class A with no external components
- Remote on/off & voltage trim function
- 3kVDC isolation
- -40°C to +100°C operating temperature
- Full power to 80°C
- 3 year warranty

Dimensions:

DTJ15:

3.00 x 1.24 x 0.77" (76.2 x 31.4 x 19.4 mm)

The DTJ series of chassis mount DC-DC power supplies allows for easy and convenient integration into a variety of industrial and commercial applications. The DC-DC power solution is constructed using lightweight materials and includes features such as short circuit protection, input reverse polarity protection and soft start. The wide input range covers nominal voltages of 12V, 24V and 48V.

Models & Ratings

| Input Voltage | Output Voltage | Output Current | Input Current ^(1,5) | | Maximum Capacitive Load ⁽⁶⁾ | Efficiency ⁽²⁾ | Model Number ^(3,4) |
|-----------------|----------------|----------------|--------------------------------|-----------|--|---------------------------|-------------------------------|
| | | | No Load | Full Load | | | |
| 24V (9-36V) | 3.3V | 3.00 A | 10 mA | 510 mA | 3300 µF | 81% | DTJ1524S3V3 |
| | 5.0V | 3.00 A | 10 mA | 744 mA | 3300 µF | 84% | DTJ1524S05 |
| | 12.0V | 1.25 A | 10 mA | 718 mA | 680 µF | 87% | DTJ1524S12 |
| | 15.0V | 1.00 A | 10 mA | 710 mA | 470 µF | 88% | DTJ1524S15 |
| | ±5.0V | ±1.50 A | 10 mA | 744 mA | ±2200 µF | 84% | DTJ1524D05 |
| | ±12.0V | ±0.63 A | 10 mA | 718 mA | ±470 µF | 87% | DTJ1524D12 |
| 48V (18-75V) | ±15.0V | ±0.50 A | 15 mA | 710 mA | ±330 µF | 88% | DTJ1524D15 |
| | 3.3V | 3.00 A | 10 mA | 254 mA | 3300 µF | 81% | DTJ1548S3V3 |
| | 5.0V | 3.00 A | 10 mA | 372 mA | 3300 µF | 84% | DTJ1548S05 |
| | 12.0V | 1.25 A | 10 mA | 363 mA | 680 µF | 86% | DTJ1548S12 |
| | 15.0V | 1.00 A | 10 mA | 359 mA | 470 µF | 87% | DTJ1548S15 |
| | ±5.0V | ±1.50 A | 8 mA | 359 mA | ±2200 µF | 87% | DTJ1548D05 |
| | ±12.0V | ±0.63 A | 8 mA | 351 mA | ±470 µF | 89% | DTJ1548D12 |
| | ±15.0V | ±0.50 A | 10 mA | 359 mA | ±330 µF | 87% | DTJ1548D15 |

Notes

1. Input current measured at nominal input voltage.
2. Typical values.
3. For optional version fitted with DIN Clip add suffix '-D' e.g. DTJ1524S12-D.
4. For optional factory fitted heatsink add suffix '-HK' e.g. DTJ1524S12-HK or DTJ1524S12-HKD with DIN clip.
5. Input current is typically 2.0mA at nominal input voltage when output is remotely turned off.
6. Per output.

Input

| Characteristic | Minimum | Typical | Maximum | Units | Notes & Conditions |
|--------------------------------|---|---------|---------|-------|---|
| Input Voltage Range | 9 | | 36 | VDC | 12 V & 24 V nominal input voltage |
| | 18 | | 75 | VDC | 24 V & 48 V nominal input voltage |
| Input Current | | | | | See Models and Ratings table |
| Inrush Current | | 35/45 | | A | DTJ1524 / DTJ1548 series |
| Reflected Ripple Current | | 20 | | mAp-p | Measured with 12µH and 47µF source values |
| Input Filter | Pi type | | | | |
| Undervoltage Lockout | On at >8.8V. Off <8.0V | | | | DTJ1524 series |
| | On at >17.5V. Off <16.0V | | | | DTJ1548 series |
| Input Surge | | | 50 | VDC | DTJ1524 series for 100 ms |
| | | | 100 | VDC | DTJ1548 series for 100 ms |
| Reverse Polarity | Integrated protection | | | | |
| Remote On/Off (positive logic) | On: Logic High (3.0-12 V) or open circuit. See application notes. | | | | |
| | Off: Logic Low (<1.2 V) or short pin 2 to pin 6. | | | | |
| | Idle Current: 2 mA, typical | | | | |

Output

| Characteristic | Minimum | Typical | Maximum | Units | Notes & Conditions |
|--------------------------|---------|---------|-----------|-------------|---|
| Output Voltage | 3V3 | | 30 | V | See models and ratings table |
| Output Voltage Trim | | | ±10 | % | See application notes |
| Initial Set Accuracy | | | ±3 | % | At full load |
| Minimum Load | 0 | | | A | No minimum load required |
| Start Up Delay | | 30 | | ms | At nominal input voltage |
| Line Regulation | | | ±0.5 | % | From minimum to maximum input voltage |
| Load Regulation | | | ±0.5/±1.0 | % | 0 - 100% load. single/dual with balanced load |
| Cross Regulation | | | ±5 | % | On dual output models with one output at 25% load and the other varied from 10% to 100% load. |
| Transient Response | | | ±8/±5 | % deviation | 3.3V single output / All other models. Recovery to within 1% in <250 µs for a 25% load change |
| Ripple & Noise | | | 75 | mV pk-pk | Single output. 20MHz bandwidth with 10µF/25V MLCC |
| | | | 60 | | Dual output. 20MHz bandwidth with 10µF/25V MLCC |
| Short Circuit Protection | | | | | Continuous. Trip (hiccup mode), auto recovery |
| Overload Protection | | 170 | | % | Trip & restart (hiccup mode) |
| Overvoltage Protection | | 140 | | %Vout | Internal voltage clamp |
| Temperature Coefficient | | | ±0.02 | %/°C | |

General

| Characteristic | Minimum | Typical | Maximum | Units | Notes & Conditions |
|-----------------------------|--|--------------|---------|--------|--|
| Efficiency | | 86 | | % | See Models and Ratings table |
| Isolation | 3000 | | | VDC | For 60 s functional |
| Isolation Resistance | 1000 | | | MΩ | |
| Input to Output Capacitance | | 2000 | | pF | |
| Switching Frequency | | 270/330 | | kHz | 3.3 & 5V single output / All other models |
| Mean Time Between Failure | 500 | | | kHrs | MIL-HDBK-217F, +25 °C GB |
| Case Material | Non conductive, black plastic UL94V-0. Power module copper case with epoxy potting UL94V-0 | | | | |
| Weight | | 0.099 (45.0) | | lb (g) | DIN rail option add 0.011lbs (5.0g) Heatsink option add 0.014lbs (6.5g) |

Environmental

| Characteristic | Minimum | Typical | Maximum | Units | Notes & Conditions |
|--------------------------|---------|---------|---------|-------|----------------------------|
| Operating Temperature | -40 | | +100 | °C | See derating curves |
| Storage Temperature | -55 | | +125 | °C | |
| Case Temperature | | | +105 | °C | |
| Thermal Impedance to Air | 12 | | | °C/W | With heatsink 11°C/W |
| Humidity | 5 | | 95 | %RH | Non-condensing |
| Cooling | | | | | Natural convection, 20 LFM |
| Altitude | | | 5000 | m | Operating |

EMC: Emissions

| Phenomenon | Standard | Test Level | Notes & Conditions |
|------------|----------|------------|--------------------|
| Conducted | EN55032 | Class A | |
| Radiated | EN55032 | Class A | |

EMC: Immunity

| Phenomenon | Standard | Test Level | Criteria | Notes & Conditions |
|--------------------|-------------|--------------------------|----------|--|
| Immunity | EN55035 | | | |
| ESD Immunity | EN61000-4-2 | ±6 kV Contact, ±8 kV Air | A | |
| Radiated Immunity | EN61000-4-3 | 10 V/m | A | |
| EFT/Burst | EN61000-4-4 | ±2 kV | A | Requires additional 330µF, 100V capacitor across input terminals |
| Surges | EN61000-4-5 | ±2 kV | A | |
| Conducted Immunity | EN61000-4-6 | 10 Vrms | A | |
| Magnetic Fields | EN61000-4-8 | 100 A/m | A | |

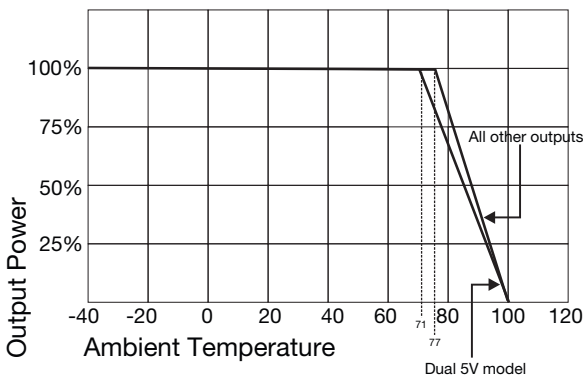
Safety Approvals

| Safety Agency | Safety Standard | Notes & Conditions |
|---------------|-----------------------|--------------------|
| CB | IEC60950-1/IEC62368-1 | |
| UL | UL60950-1/IEC62368-1 | |

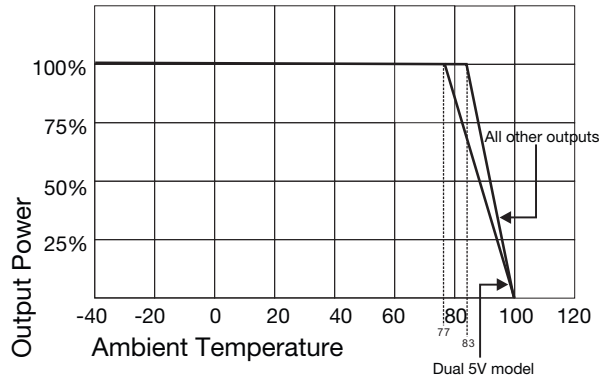
Application Notes

Derating Curve for Convection Cooling

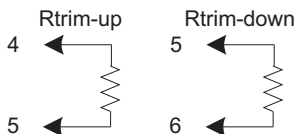
Without Heatsink



With Heatsink



External Output Trimming



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

Trim Down Resistor Values

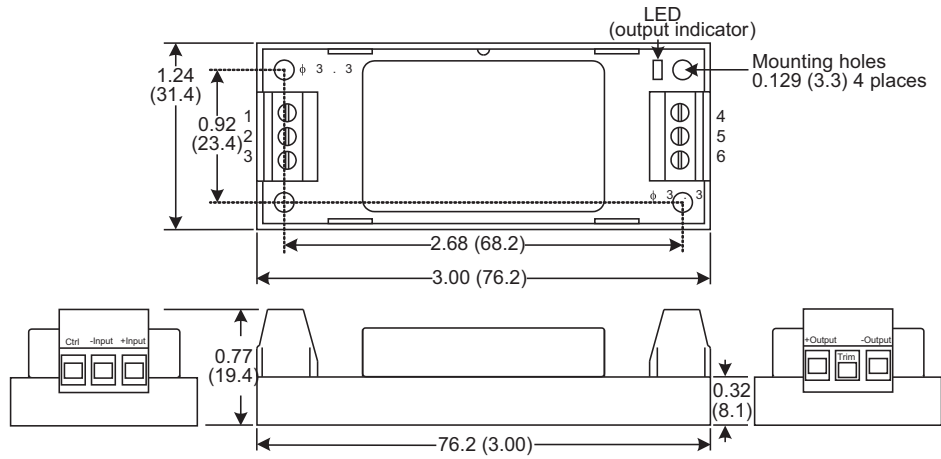
| Model | 1% | 2% | 3% | 4% | 5% | 6% | 7% | 8% | 9% | 10% |
|-------|---------|---------|---------|--------|--------|--------|--------|--------|--------|--------|
| 3V3 | 309.0 k | 165.4 k | 105.6 k | 72.9 k | 52.3 k | 38.0 k | 27.6 k | 19.7 k | 13.5 k | 8.40 k |
| 5V | 119.9 k | 77.0 k | 50.50 k | 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

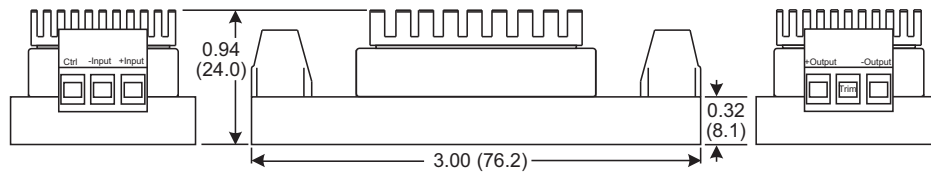
| Model | 1% | 2% | 3% | 4% | 5% | 6% | 7% | 8% | 9% | 10% |
|-------|---------|---------|---------|--------|--------|--------|--------|--------|--------|--------|
| 3V3 | 537.7 k | 177.1 k | 96.40 k | 60.8 k | 40.8 k | 27.9 k | 19.0 k | 12.4 k | 7.30 k | 3.40 k |
| 5V | 635.2 k | 170.0 k | 92.80 k |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

Mechanical Details

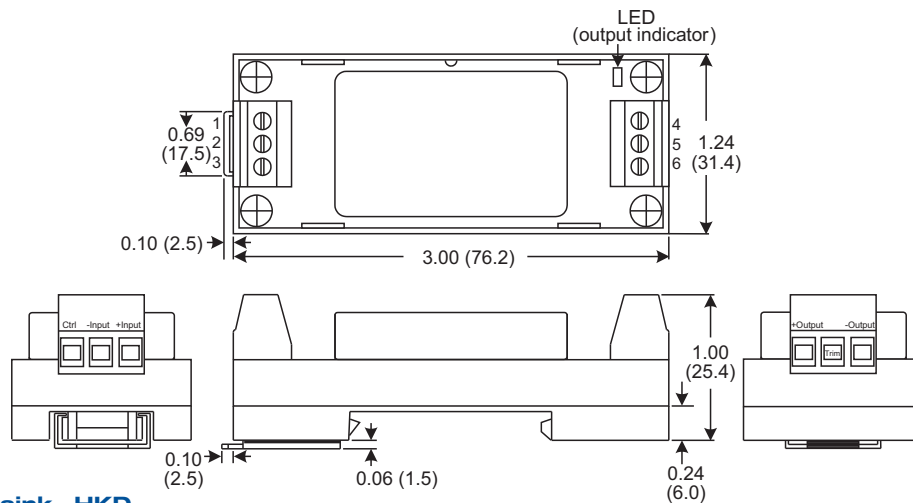
Chassis Mount



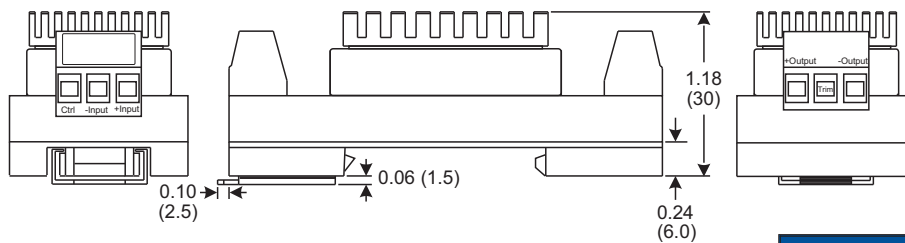
Chassis Mount with Heatsink -HK



DIN Rail -D



DIN Rail with Heatsink -HKD



Notes

- All dimensions are in inches (mm)
- Weight: 0.099 lbs (45 g) approx
- Weight for -D version: 0.121 lbs (55 g) approx
- Terminal wire size 24 ~12 AWG
- Screw terminal torque 7 lb-in (0.79 Nm)
- Case tolerance: ± 0.02 (± 0.5)
- Mounting rail: TS35
- Heatsink is aluminium black anodic
- Heatsink weight 0.014 (6.5g)

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