

### 50 Watts

- Regulated Single Output
- Wide 4:1 Input Range
- 2" x 1" Package
- 1500 VDC Isolation
- Operating Temperature -40 °C to +105 °C
- ITE Safety Approvals
- Remote On/Off
- High Power Density
- Optional Heatsink
- Six-sided Metal Case
- 3 Year Warranty



#### Dimensions:

##### JWL50:

2.00 x 1.00 x 0.43" (50.8 x 25.4 x 11.0 mm)

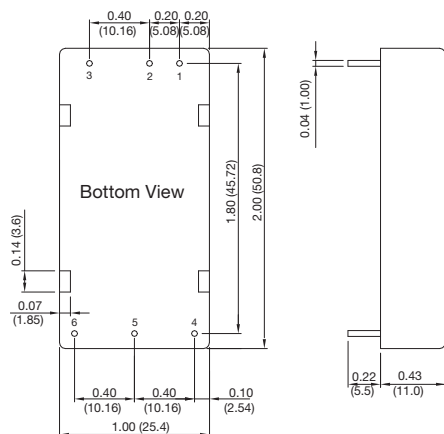
### Models & Ratings

| Input voltage | Output voltage | Output current | Input current <sup>(1,2)</sup> |           | Overvoltage Protection | Maximum capacitive load <sup>(3)</sup> | Efficiency | Model number <sup>(4)</sup> |
|---------------|----------------|----------------|--------------------------------|-----------|------------------------|--|------------|-----------------------------|
|               |                |                | No load                        | Full load |                        |  |            |                             |
| 9-36V         | 3V3            | 10.00 A        | 80 mA                          | 1.53 A    | 3.9 V                  | 26000 µF                               | 90%        | JWL5024S3V3                 |
|               | 5V             | 10.00 A        | 60 mA                          | 2.29 A    | 6.2 V                  | 17000 µF                               | 91%        | JWL5024S05                  |
|               | 12V            | 4.17 A         | 80 mA                          | 2.27 A    | 15.0V                  | 3000 µF                                | 92%        | JWL5024S12                  |
|               | 15V            | 3.33 A         | 80 mA                          | 2.26 A    | 18.0V                  | 2000 µF                                | 92%        | JWL5024S15                  |
|               | 24V            | 2.08 A         | 80 mA                          | 2.29 A    | 30V                    | 750 µF                                 | 91%        | JWL5024S24                  |
| 18-75V        | 3V3            | 10.00 A        | 40 mA                          | 0.76 A    | 3.9 V                  | 26000 µF                               | 90%        | JWL5048S3V3                 |
|               | 5V             | 10.00 A        | 30 mA                          | 1.15 A    | 6.2 V                  | 17000 µF                               | 91%        | JWL5048S05                  |
|               | 12V            | 4.17 A         | 60 mA                          | 1.13 A    | 15.0V                  | 3000 µF                                | 92%        | JWL5048S12                  |
|               | 15V            | 3.33 A         | 60 mA                          | 1.13 A    | 18.0V                  | 2000 µF                                | 92%        | JWL5048S15                  |
|               | 24V            | 2.08 A         | 50 mA                          | 1.14 A    | 30V                    | 750 µF                                 | 91%        | JWL5048S24                  |

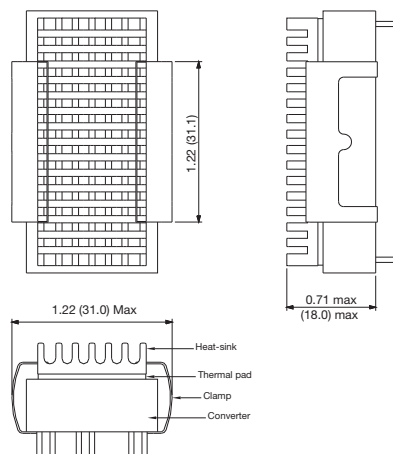
### Notes

1. Input currents measured at nominal input voltage.
2. Input current is typically 2.5 mA at nominal input voltage when output is turned off using remote on/off.
3. Maximum capacitive load is per output.
4. Add suffix "-HK" for optional heatsink.

### Mechanical Details



### Optional Heatsink (-HK)



### Pin Connections

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

### Notes

1. All dimensions are in inches (mm)
2. Weight: 0.074 lbs (34.0g) approx.
3. Tolerance: X.XX±0.01 (X.X±0.25)  
X.XXX±0.005 (X.XX±0.13)
4. Pin Tolerance: ±0.002 (±0.05)

### Input

| Characteristic      | Minimum  | Typical | Maximum | Units       | Notes & Conditions |
|---------------------|--|---------|---------|-------------|--------------------|
| Input Voltage Range | 9  |         | 36      | VDC         | 24 V nominal       |
|                     | 18   |         | 75      | VDC         | 48 V nominal       |
| Input Filter        | Internal Pi type   |         |         |             |                    |
| Input Surge         |  |         | 50      | VDC for 1 s | 24 V models        |
|                     |  |         | 100     |             | 48 V models        |
| Remote On/Off       | ON: Logic high (3.5-12 V) or open circuit<br>OFF: Logic low (<1.2 V) or short pin 2 to pin 6 |         |         |             |                    |

### 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 Trim              |         |         | ±10     | %           | See Application Notes  |
| Minimum Load             |         |         |         | A           | No minimum load required   |
| Line Regulation          |         |         | ±0.5    | %           | From minimum to maximum input at full load   |
| Load Regulation          |         |         | ±0.5    | %           | From 0 to full load  |
| Transient Response       |         | 3       | 5       | % deviation | Recovery within 1% in less than 250 µs for a 25% load change.  |
| Ripple & Noise           |         |         | 100/150 | mV pk-pk    | 3.3 & 5V output / other models. 20 MHz bandwidth. Measured using 1µF MLCC & 10µF tantalum capacitor. |
| Overload Protection      |         | 150     |         | %           |  |
| 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                 |                 | 90           |         | %                 | See Models and Ratings table |
| Isolation: Input to Output | 1500            |              |         | VDC               | 60 s                         |
| Isolation Resistance       | 10 <sup>9</sup> |              |         | Ω                 | At 500 VDC                   |
| Isolation Capacitance      |                 |              | 2200    | pF                |                              |
| Switching Frequency        |                 | 285          |         | kHz               |                              |
| Power Density              |                 |              | 58      | W/in <sup>3</sup> |                              |
| Mean Time Between Failure  |                 | 230          |         | kHrs              | MIL-HDBK-217F, +25 °C GB     |
| Weight                     |                 | 0.074 (34.0) |         | lb (g)            |                              |

### Environmental

| Characteristic           | Minimum | Typical | Maximum  | Units | Notes & Conditions          |
|--------------------------|---------|---------|----------|-------|-----------------------------|
| Operating Temperature    | -40     |         | +105     | °C    | See Derating Curve.         |
| Storage Temperature      | -50     |         | +125     | °C    |                             |
| Case Temperature         |         |         | +105     | °C    |                             |
| Humidity                 |         |         | 95       | %RH   | Non-condensing              |
| Cooling                  |         |         |          |       | Natural convection          |
| Thermal impedance to air |         |         | 12.1/9.8 | °C/W  | No heatsink / with heatsink |

### EMC: Emissions

| Phenomenon | Standard | Test Level | Notes & Conditions    |
|------------|----------|------------|-----------------------|
| Conducted  | EN55022  | Class A    | See Application Notes |

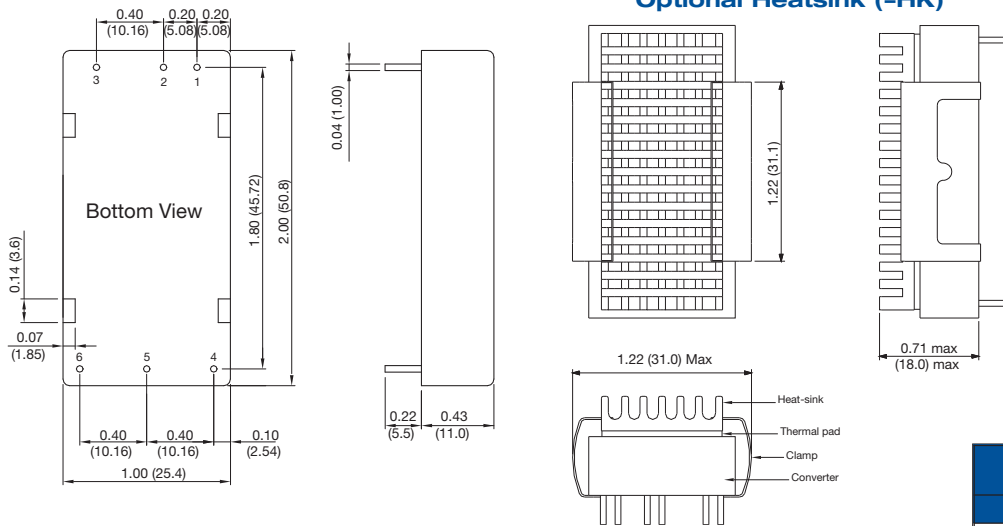
### EMC: Immunity

| Phenomenon | Standard    | Test Level                         | Criteria | Notes & Conditions   |
|------------|-------------|------------------------------------|----------|--|
| ESD        | EN61000-4-2 | ±8 kV air discharge, ±6 kV contact | A        |  |
| Radiated   | EN61000-4-3 | 10 V/m                             | A        |  |
| EFT/Burst  | EN61000-4-4 | ±2 kV                              | A        | With external capacitor, suggested part is CHEMI-CON KY 220µF/100V |
| Surge      | EN61000-4-5 | ±1 kV                              | A        | With external capacitor, suggested part is CHEMI-CON KY 220µF/100V |
| Conducted  | EN61000-4-6 | 10 V rms                           | A        |  |

### Safety Approvals

| Safety Agency | Safety Standard | Notes & Conditions     |
|---------------|-----------------|------------------------|
| CB Report     | IEC60950-1      | Information Technology |
| UL            | UL/cUL60950-1   | Information Technology |

### Mechanical Details



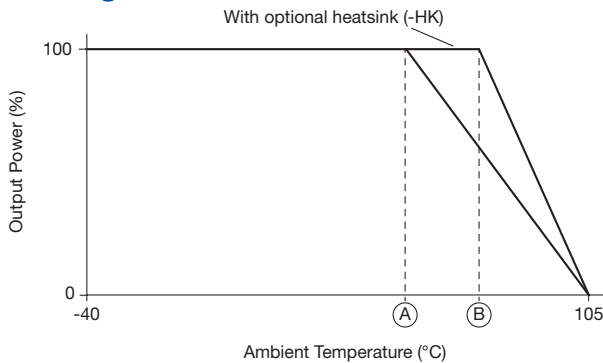
### Notes

- All dimensions are in inches (mm)
- Weight: 0.074 lbs (34.0g) approx.
- Tolerance: X.XX±0.01 (X.X±0.25)  
X.XXX±0.005 (X.XX±0.13)
- Pin Tolerance: ±0.002 (±0.05)

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

### Application Notes

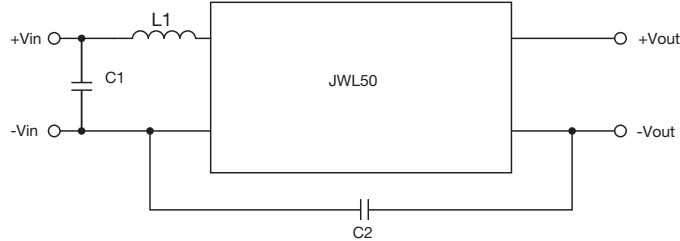
#### Derating Curve



| Models - JWL50                | Max Ambient Temperature |                   |
|-------------------------------|-------------------------|-------------------|
|                               | No Heatsink (A)         | With Heatsink (B) |
| 24S3V3, 48S3V3                | 61°C                    | 69°C              |
| 24S12, 24S15<br>48S12, 48S15  | 53°C                    | 62°C              |
| 24S05, 24S24,<br>48S05, 48S24 | 46°C                    | 57°C              |

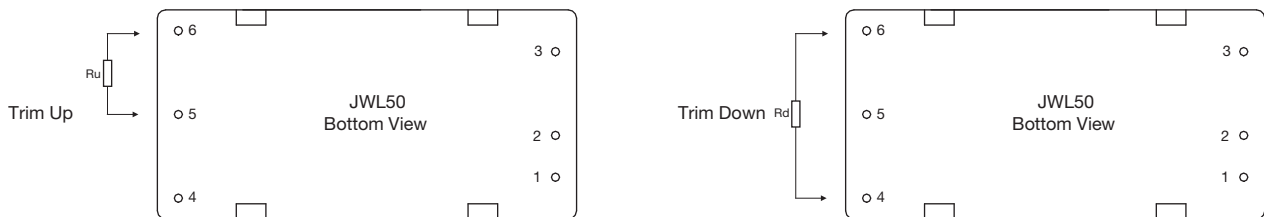
### Application Notes

#### EMI Filter for Conducted Emissions



| Class   | Model | C1                             | C2                    | L1          |
|---------|-------|--------------------------------|-----------------------|-------------|
| Class A | 24V   | 10 $\mu$ F/50V 1210 X7S MLCC   | 1000 pF/2kV 1206 MLCC | 1.5 $\mu$ H |
|         | 48V   | 3.3 $\mu$ F/100V 1210 X7S MLCC | 1000 pF/2kV 1206 MLCC | 6.8 $\mu$ H |

#### External Output Trimming



#### Trim Down Resistor Values (Rd)

| Models | 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 |
| 3V3    | 72.61 k   | 32.55 k   | 19.20 k   | 12.52 k   | 8.51 k    | 5.84 k    | 3.94 k    | 2.51 k    | 1.39 k    | 0.50 k    |
| 5V     | 138.88 k  | 62.41 k   | 36.92 k   | 24.18 k   | 16.53 k   | 11.44 k   | 7.79 k    | 5.06 k    | 2.94 k    | 1.24 k    |
| 12V    | 413.55 k  | 184.55 k  | 108.22 k  | 70.05 k   | 47.15 k   | 31.88 k   | 20.98 k   | 12.80 k   | 6.44 k    | 1.35 k    |
| 15V    | 530.73 k  | 238.61 k  | 141.24 k  | 92.56 k   | 63.35 k   | 43.87 k   | 29.96 k   | 19.53 k   | 11.41 k   | 4.92 k    |
| 24V    | 333.39 k  | 148.80 k  | 87.26 k   | 56.50 k   | 38.04 k   | 25.73 k   | 16.94 k   | 10.35 k   | 5.22 k    | 1.12 k    |

#### Trim Up Resistor Values (Ru)

| Models | 1%        | 2%        | 3%        | 4%        | 5%        | 6%        | 7%        | 8%        | 9%        | 10%       |
|--------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
|        | Voutx1.01 | Voutx1.02 | Voutx1.03 | Voutx1.04 | Voutx1.05 | Voutx1.06 | Voutx1.07 | Voutx1.08 | Voutx1.09 | Voutx1.10 |
| 3V3    | 60.84 k   | 27.40 k   | 16.25 k   | 10.68 k   | 7.34 k    | 5.11 k    | 3.51 k    | 2.32 k    | 1.39 k    | 0.65 k    |
| 5V     | 106.87 k  | 47.76 k   | 28.06 k   | 18.21 k   | 12.30 k   | 8.36 k    | 5.55 k    | 3.44 k    | 1.79 k    | 0.48 k    |
| 12V    | 351.00 k  | 157.50 k  | 93.00 k   | 60.75 k   | 41.40 k   | 28.50 k   | 19.29 k   | 12.37 k   | 7.00 k    | 2.70 k    |
| 15V    | 422.77 k  | 189.89 k  | 112.26 k  | 73.44 k   | 50.15 k   | 34.63 k   | 23.54 k   | 15.22 k   | 8.75 k    | 3.58 k    |
| 24V    | 243.70 k  | 108.50 k  | 63.43 k   | 40.90 k   | 27.38 k   | 18.37 k   | 11.93 k   | 7.10 k    | 3.34 k    | 0.34 k    |