



**Size:**  
1.00 x 1.00 x 0.39 inches  
(25.4 x 25.4 x 9.9 mm)

#### Options

- Negative Logic Remote ON/OFF
- Without Trim pin
- Without CTRL Pin
- Heatsink

## FEATURES

- High Efficiency up to 92%
- Remote ON/OFF Control
- 4:1 Wide Input Voltage Ranges
- Six-Sided Continuous Shielding
- Ultra Low Quiescent Current
- No Minimum Load Requirements
- Single and Dual Outputs
- 30 Watts Maximum Output Power
- 1600VDC I/O Isolation
- Short Circuit, Over Voltage, Over Load, & Over Temp. Protection
- Wide Operating Temperature Range: -40°C to +100°C
- Compliant to RoHS & Reach
- UL60950-1, EN60950-1, & IEC60950-1 Safety Approvals
- Optional Heatsink Available (Suffix "HC")

## DESCRIPTION

The JFCW30 series of DC/DC power converters provides 30 Watts of output power in an industry standard 1.00" x 1.00" x 0.39" package and footprint. This series has single and dual output models with 4:1 wide input voltage ranges of 9-36VDC and 18-75VDC. Some features include high efficiency up to 92%, 1600VDC I/O isolation, six-sided shielding, and remote ON/OFF control. These converters are also protected against short circuit, over load, over voltage, and over temperature conditions. All models are RoHS compliant and have UL60950-1, EN60950-1, and IEC60950-1 safety approvals. This series is best suited for use in wireless networks, industry control systems, telecom/datacom, and semiconductor equipment.

## MODEL SELECTION TABLE

### SINGLE OUTPUT MODELS

| Model Number | Input Voltage Range     | Output Voltage | Output Current |          | Output Ripple & Noise | No Load Input Current | Output Power | Efficiency | Maximum Capacitive Load |
|--------------|-------------------------|----------------|----------------|----------|-----------------------|-----------------------|--------------|------------|-------------------------|
|              |                         |                | Min Load       | Max Load |                       |                       |              |            |                         |
| JFCW24S33-30 | 24 VDC<br>(9 - 36 VDC)  | 3.3 VDC        | 0mA            | 7A       | 75mVp-p               | 10mA                  | 23.1W        | 88%        | 10000µF                 |
| JFCW24S05-30 |                         | 5 VDC          | 0mA            | 6A       | 75mVp-p               | 10mA                  | 30W          | 89%        | 7200µF                  |
| JFCW24S12-30 |                         | 12 VDC         | 0mA            | 2.5A     | 75mVp-p               | 10mA                  | 30W          | 89%        | 1200µF                  |
| JFCW24S15-30 |                         | 15 VDC         | 0mA            | 2A       | 75mVp-p               | 10mA                  | 30W          | 89%        | 1000µF                  |
| JFCW24S24-30 |                         | 24 VDC         | 0mA            | 1.25A    | 75mVp-p               | 10mA                  | 30W          | 90%        | 375µF                   |
| JFCW48S33-30 | 48 VDC<br>(18 - 75 VDC) | 3.3 VDC        | 0mA            | 7A       | 75mVp-p               | 10mA                  | 23.1W        | 88%        | 10000µF                 |
| JFCW48S05-30 |                         | 5 VDC          | 0mA            | 6A       | 75mVp-p               | 10mA                  | 30W          | 90%        | 7200µF                  |
| JFCW48S12-30 |                         | 12 VDC         | 0mA            | 2.5A     | 75mVp-p               | 8mA                   | 30W          | 90%        | 1200µF                  |
| JFCW48S15-30 |                         | 15 VDC         | 0mA            | 2A       | 75mVp-p               | 8mA                   | 30W          | 91%        | 1000µF                  |
| JFCW48S24-30 |                         | 24 VDC         | 0mA            | 1.25A    | 75mVp-p               | 8mA                   | 30W          | 92%        | 375µF                   |

### DUAL OUTPUT MODELS

| Model Number | Input Voltage Range     | Output Voltage | Output Current |          | Output Ripple & Noise | No Load Input Current | Output Power | Efficiency | Maximum Capacitive Load |
|--------------|-------------------------|----------------|----------------|----------|-----------------------|-----------------------|--------------|------------|-------------------------|
|              |                         |                | Min Load       | Max Load |                       |                       |              |            |                         |
| JFCW24D12-30 | 24 VDC<br>(9 - 36 VDC)  | ±12 VDC        | 0mA            | ±1.25A   | 60mVp-p               | 10mA                  | 30W          | 89%        | ±750µF                  |
| JFCW24D15-30 |                         | ±15 VDC        | 0mA            | ±1.0A    | 60mVp-p               | 10mA                  | 30W          | 91%        | ±500µF                  |
| JFCW24D24-30 |                         | ±24 VDC        | 0mA            | ±0.625A  | 75mVp-p               | 12mA                  | 30W          | 91%        | ±180µF                  |
| JFCW48D12-30 | 48 VDC<br>(18 - 75 VDC) | ±12 VDC        | 0mA            | ±1.25A   | 60mVp-p               | 8mA                   | 30W          | 91%        | ±750µF                  |
| JFCW48D15-30 |                         | ±15 VDC        | 0mA            | ±1.0A    | 60mVp-p               | 8mA                   | 30W          | 92%        | ±500µF                  |
| JFCW48D24-30 |                         | ±24 VDC        | 0mA            | ±0.625A  | 75mVp-p               | 10mA                  | 30W          | 92%        | ±180µF                  |

**SPECIFICATIONS: JFCW30 SERIES**

All specifications are based on 25°C, Nominal Input Voltage, and Maximum Output Current unless otherwise noted.  
 We reserve the right to change specifications based on technological advances.

| SPECIFICATION                      | TEST CONDITIONS                                          |                                                                                                       | Min                                | Typ        | Max                                | Unit  |
|------------------------------------|----------------------------------------------------------|-------------------------------------------------------------------------------------------------------|------------------------------------|------------|------------------------------------|-------|
| INPUT SPECIFICATIONS               |                                                          |                                                                                                       |                                    |            |                                    |       |
| Input Voltage Range                | 24VDC nominal input models<br>48VDC nominal input models |                                                                                                       | 9<br>18                            | 24<br>48   | 36<br>75                           | VDC   |
| Start-Up Voltage                   | 24VDC nominal input models<br>48VDC nominal input models |                                                                                                       |                                    |            | 9<br>18                            | VDC   |
| Shutdown Voltage                   | 24VDC nominal input models<br>48VDC nominal input models |                                                                                                       |                                    | 8<br>16    |                                    | VDC   |
| Input Surge Voltage (1sec, max.)   | 24VDC nominal input models<br>48VDC nominal input models |                                                                                                       |                                    |            | 50<br>100                          | VDC   |
| Input Reflected Ripple Current     | Nominal Input and Full Load                              |                                                                                                       |                                    | 30         |                                    | mAp-p |
| Input Current                      | No Load                                                  |                                                                                                       | See Table                          |            |                                    |       |
| Input Filter                       |                                                          |                                                                                                       | Pi type                            |            |                                    |       |
| OUTPUT SPECIFICATIONS              |                                                          |                                                                                                       |                                    |            |                                    |       |
| Output Voltage                     |                                                          |                                                                                                       | See Table                          |            |                                    |       |
| Voltage Accuracy                   |                                                          |                                                                                                       | -1.0                               |            | +1.0                               | %     |
| Line Regulation                    | Low line to high line at full load                       | Single Output Models<br>Dual Output Models                                                            | -0.2<br>-0.5                       |            | +0.2<br>+0.5                       | %     |
| Load Regulation                    | No load to full load                                     | Single Output Models<br>Dual Output Models                                                            | -0.2<br>-1.0                       |            | +0.2<br>+1.0                       | %     |
|                                    | 10% load to 90% load                                     | Single Output Models<br>Dual Output Models                                                            | -0.1<br>-0.8                       |            | +0.1<br>+0.8                       | %     |
| Cross Regulation                   | Asymmetrical load 25% / 100% FL, Dual Outputs            |                                                                                                       | -5.0                               |            | +5.0                               | %     |
| Voltage Adjustability (See Note 1) | Single Output Models                                     | 15V & 24V Output Models<br>Others                                                                     | -10<br>-10                         |            | +20<br>+10                         | %     |
| Output Power                       |                                                          |                                                                                                       | See Table                          |            |                                    |       |
| Output Current                     |                                                          |                                                                                                       | See Table                          |            |                                    |       |
| Minimum Load                       |                                                          |                                                                                                       | 0                                  |            |                                    | %     |
| Maximum Capacitive Load            | Minimum input and constant resistive load                |                                                                                                       | See Table                          |            |                                    |       |
| Ripple & Noise (20MHz BW)          | With 22µF/25V X7R 1812 MLCC                              | 3.3V & 5V Output Models                                                                               |                                    | 75         |                                    | mVp-p |
|                                    | With two 22µF/25V X7R 1812 MLCC                          | 12V & 15V Output Models                                                                               |                                    | 75         |                                    |       |
|                                    | With two 6.8µF/50V X7R 1812 MLCC                         | 24V Output Models                                                                                     |                                    | 75         |                                    |       |
|                                    | With 10µF/25V X7R 1812 MLCC for each output              | ±12V & ±15V Output Models                                                                             |                                    | 60         |                                    |       |
|                                    | With 6.8µF/50V X7R 1812 MLCC for each output             | ±24V Output Models                                                                                    |                                    | 75         |                                    |       |
| Transient Response Recovery Time   | 25% load step change                                     |                                                                                                       |                                    | 250        |                                    | µs    |
| Start-Up Time                      | Constant resistive load                                  | Power Up<br>Remote ON/OFF                                                                             |                                    |            | 30<br>30                           | ms    |
| Temperature Coefficient            |                                                          |                                                                                                       | -0.02                              |            | +0.02                              | %/°C  |
| PROTECTION                         |                                                          |                                                                                                       |                                    |            |                                    |       |
| Short Circuit Protection           |                                                          |                                                                                                       | Continuous, automatic recovery     |            |                                    |       |
| Over Load Protection               | % of rated full load at nominal input                    |                                                                                                       |                                    | 170        |                                    | %     |
| Over Voltage Protection            | Zener diode clamp                                        | 3.3V Output Models<br>5V Output Models<br>12V Output Models<br>15V Output Models<br>24V Output Models | 3.7<br>5.6<br>13.5<br>18.3<br>29.1 |            | 5.4<br>7.0<br>19.6<br>22.0<br>32.5 | VDC   |
| Over Temperature Protection        |                                                          |                                                                                                       |                                    | +115       |                                    | °C    |
| GENERAL SPECIFICATIONS             |                                                          |                                                                                                       |                                    |            |                                    |       |
| Efficiency                         | Nominal input voltage and full load                      |                                                                                                       | See Table                          |            |                                    |       |
| Switching Frequency                | 3.3V & 5V Output Models<br>Others                        |                                                                                                       | 248<br>297                         | 275<br>330 | 303<br>363                         | kHz   |
| Isolation Voltage                  | 1 minute                                                 | Input to Output<br>Input to Case<br>Output to Case                                                    | 1600<br>1000<br>1000               |            |                                    | VDC   |
| Isolation Resistance               | 500VDC                                                   |                                                                                                       | 1                                  |            |                                    | GΩ    |
| Isolation Capacitance              |                                                          |                                                                                                       |                                    |            | 1500                               | pF    |

**SPECIFICATIONS: JFCW30 SERIES**

All specifications are based on 25°C, Nominal Input Voltage, and Maximum Output Current unless otherwise noted.  
 We reserve the right to change specifications based on technological advances.

| SPECIFICATION                       | TEST CONDITIONS                                  |                                     | Min                                    | Typ  | Max  | Unit |
|-------------------------------------|--------------------------------------------------|-------------------------------------|----------------------------------------|------|------|------|
| REMOTE ON/OFF (See Note 4)          |                                                  |                                     |                                        |      |      |      |
| Positive Logic (standard)           | Referenced to –Input pin                         | DC/DC ON                            | Open or 3 ~ 15 VDC                     |      |      |      |
|                                     |                                                  | DC/DC OFF                           | Short or 0 ~ 1.2 VDC                   |      |      |      |
| Negative Logic (optional)           | Referenced to –Input pin                         | DC/DC ON                            | Short or 0 ~ 1.2 VDC                   |      |      |      |
|                                     |                                                  | DC/DC OFF                           | Open or 3 ~ 15 VDC                     |      |      |      |
| Input Current of Remote Control Pin | Nominal Vin                                      |                                     | -0.5                                   |      | 1.0  | mA   |
| Remote OFF State Input Current      | Nominal Vin                                      |                                     |                                        | 2.0  |      | mA   |
| ENVIRONMENTAL SPECIFICATIONS        |                                                  |                                     |                                        |      |      |      |
| Operating Ambient Temperature       | Vertical direction by natural convection (20LFM) | Without derating                    | -40                                    |      | +50  | °C   |
|                                     |                                                  | With derating                       | +50                                    |      | +100 |      |
| Maximum Case Temperature            |                                                  |                                     |                                        |      | +105 | °C   |
| Storage Temperature                 |                                                  |                                     | -55                                    |      | +125 | °C   |
| Thermal Impedance (See Note 6)      | Natural Convection (20LFM)                       | Without Heatsink                    |                                        | 15.0 |      | °C/W |
|                                     |                                                  | With Heatsink                       |                                        | 13.8 |      |      |
| Relative Humidity                   |                                                  |                                     | 5                                      |      | 95   | % RH |
| Thermal Shock                       |                                                  |                                     | MIL-STD-810F                           |      |      |      |
| Vibration                           |                                                  |                                     | MIL-STD-810F                           |      |      |      |
| MTBF                                | MIL-HDBK0217F, Full Load                         |                                     | 1,259,000 Hours                        |      |      |      |
| PHYSICAL SPECIFICATIONS             |                                                  |                                     |                                        |      |      |      |
| Weight                              |                                                  |                                     | 0.58oz (16.5g)                         |      |      |      |
| Dimensions (L x W x H)              |                                                  |                                     | 1.00x1.00x0.39 inch (25.4x25.4x9.9 mm) |      |      |      |
| Case Material                       |                                                  |                                     | Copper                                 |      |      |      |
| Base Material                       |                                                  |                                     | FR4 PCB                                |      |      |      |
| Potting Material                    |                                                  |                                     | Silicon (UL94-V0)                      |      |      |      |
| Shielding                           |                                                  |                                     | Six-sided                              |      |      |      |
| SAFETY & EMC CHARACTERISTICS        |                                                  |                                     |                                        |      |      |      |
| Safety Approvals                    | IEC60950-1, UL60950-1, EN60950-1                 |                                     | UL: E193009<br>CB: UL (Demko)          |      |      |      |
| EMI (See Note 2)                    | EN55022                                          |                                     | Class A, Class B                       |      |      |      |
| ESD                                 | EN61000-4-2                                      | Air ±8kV, Contact ±6kV              | Perf. Criteria A                       |      |      |      |
| Radiated Immunity                   | EN61000-4-3                                      | 10 V/m                              | Perf. Criteria A                       |      |      |      |
| Fast Transient (See Note 3)         | EN61000-4-4                                      | ±2kV                                | Perf. Criteria A                       |      |      |      |
| Surge (See Note 3)                  | EN61000-4-5                                      | ±2kV                                | Perf. Criteria A                       |      |      |      |
| Conducted Immunity                  | EN61000-4-6                                      | 10 Vrms                             | Perf. Criteria A                       |      |      |      |
| Power Frequency Magnetic Field      | EN61000-4-8                                      | 100A/m continuous; 1000A/m 1 second | Perf. Criteria A                       |      |      |      |

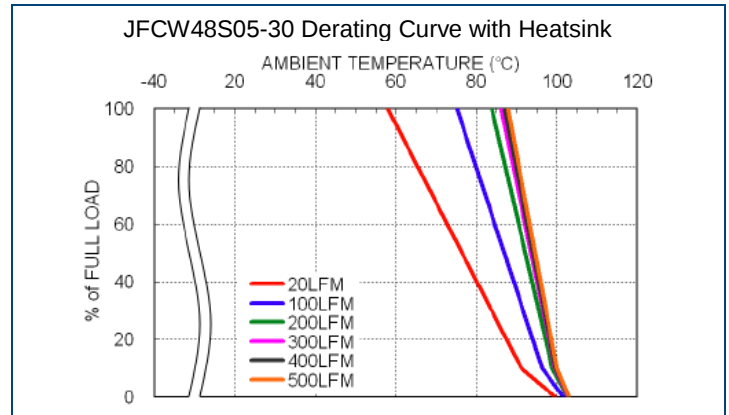
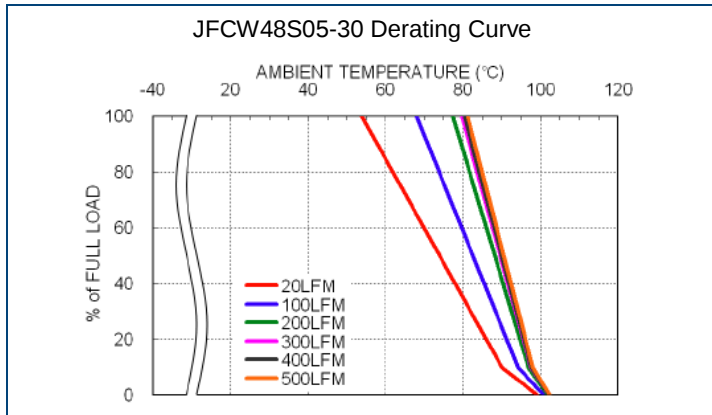
**NOTES**

- Trimming allows the user to increase or decrease the output voltage set point of the module. This is accomplished by connecting an external resistor between the TRIM pin and either the +Vout pin or the –Vout pin.
- The JFCW30 series can only meet EMI Class A or Class B with external components added. See page 5 for more details.
- An external input filter capacitor is required if the module has to meet EN61000-4-4, EN61000-4-5.  
 -For 24VDC nominal input models we recommend connecting an aluminum electrolytic capacitor (Nippon chemi-con KY series, 220µF/100V) and a TVS (SMDJ58A, 58V, 3000 Watt peak pulse power) diode in parallel.  
 - For 48VDC nominal input models we recommend an aluminum electrolytic capacitor (Nippon chemi-con KY series, 220µF/100V).
- Both positive logic and negative logic remote ON/OFF control is available. Positive logic remote ON/OFF comes standard; for negative logic remote ON/OFF add the suffix "R" to the model number (Ex: JFCW24S05-30R).
- There are several different options available for this series. Please see the "Model Number Setup" on page 5 for all options and ordering information.
- Optional heatsink is available. Please call factory for more information.

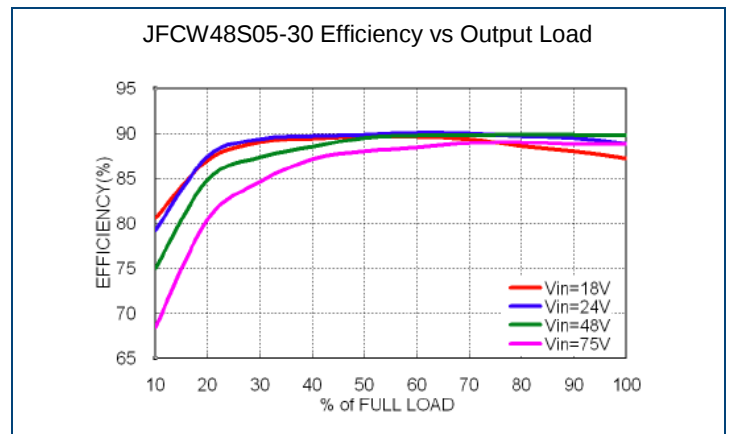
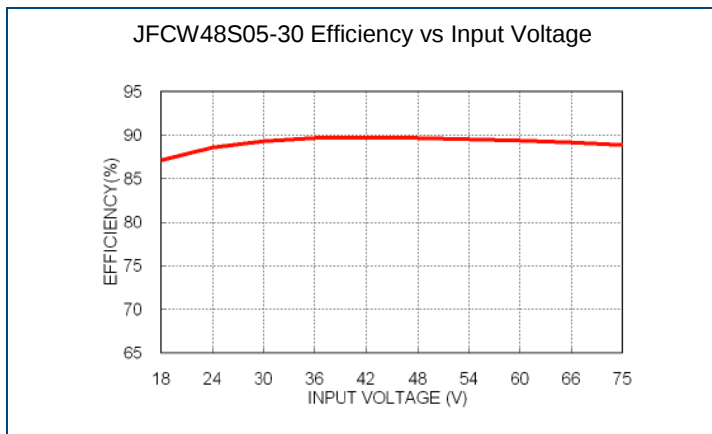
**CAUTION:** This power module is not internally fused. An input line fuse must always be used.

*Due to advances in technology, specifications subject to change without notice.*

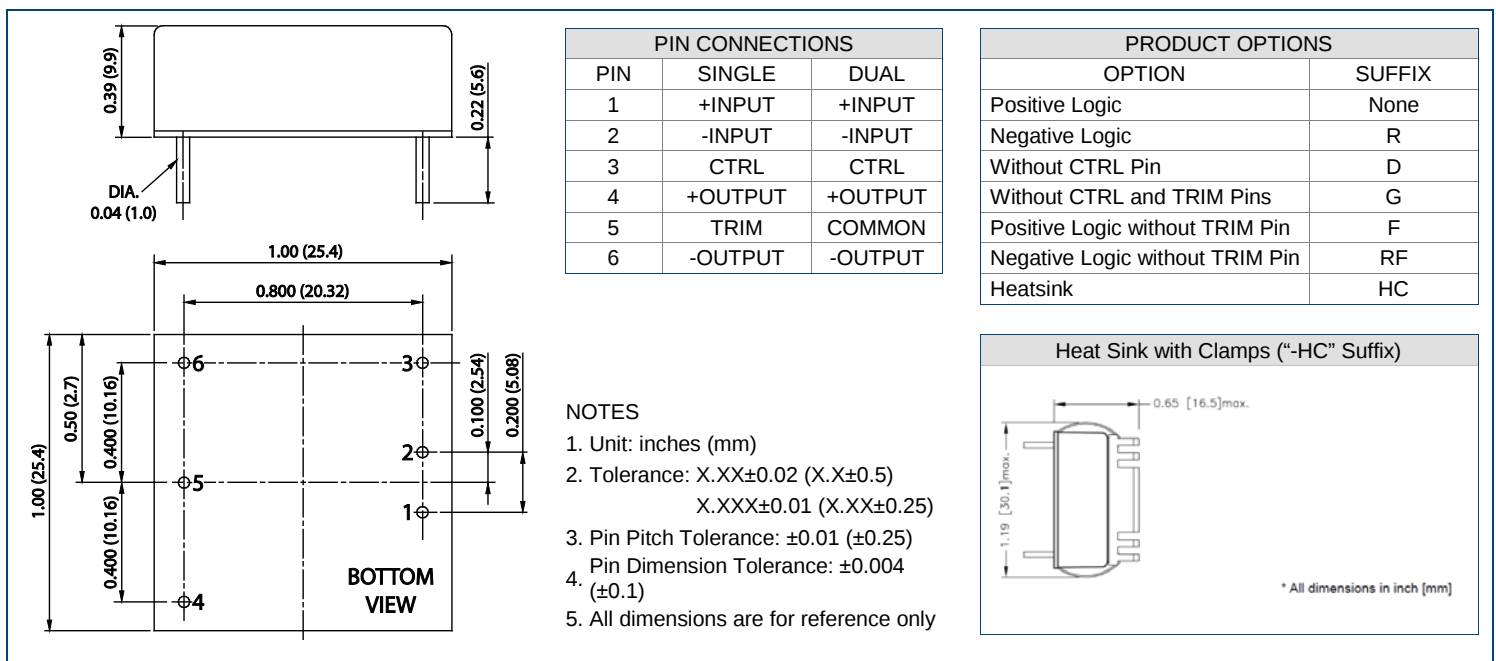
## DERATING CURVES



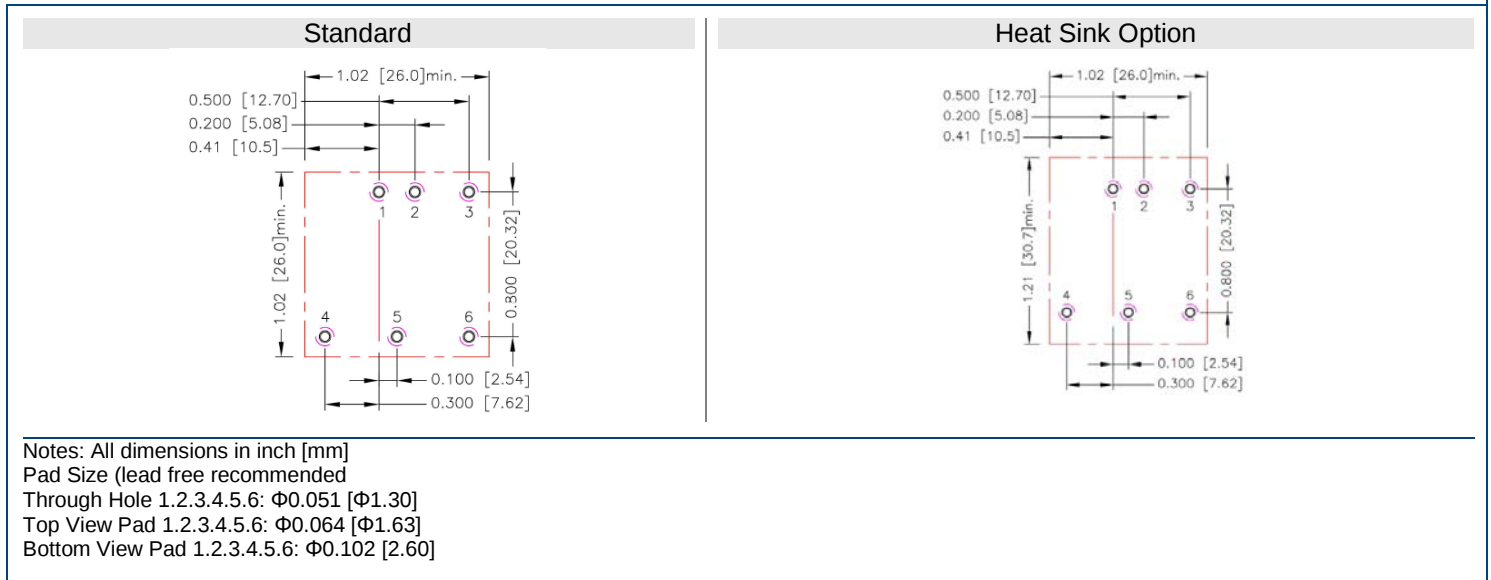
## EFFICIENCY CURVES



## MECHANICAL DRAWING

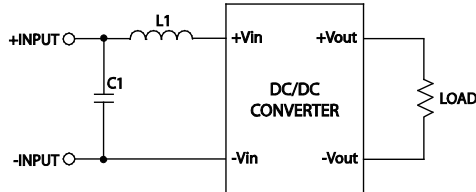


## RECOMMENDED PAD LAYOUT



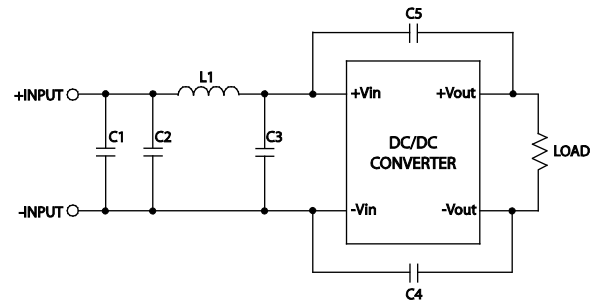
## EMI CONSIDERATIONS

### Recommended Filter for EN55022 Class A Compliance



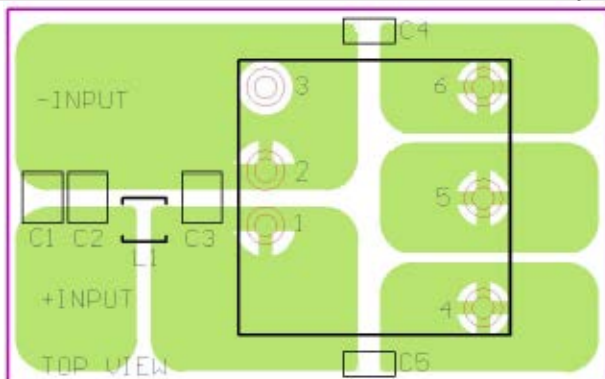
| Model        | C1                            | L1                                     |
|--------------|-------------------------------|----------------------------------------|
| JFCW24SXX-30 | 4.7 $\mu$ F/50V<br>1812 MLCC  | 2.2 $\mu$ F<br>SMD Inductor<br>PMT-097 |
| JFCW48SXX-30 | 4.7 $\mu$ F/100V<br>1812 MLCC | 10 $\mu$ F<br>SMD Inductor<br>PMT-070  |

### Recommended Filter for EN55022 Class B Compliance

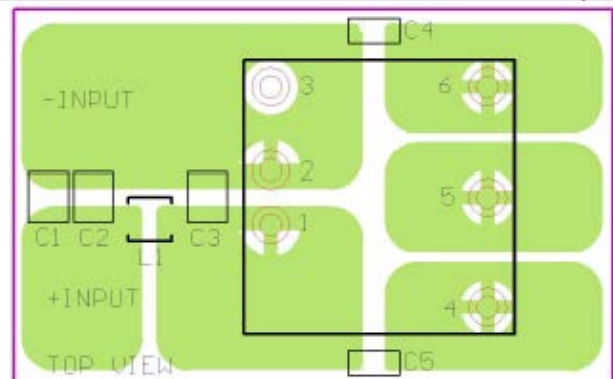


| Model        | C1                            | C2                            | C3                            | C4 & C5                 | L1                                     |
|--------------|-------------------------------|-------------------------------|-------------------------------|-------------------------|----------------------------------------|
| JFCW24SXX-30 | 4.7 $\mu$ F/50V<br>1812 MLCC  | 4.7 $\mu$ F/50V<br>1812 MLCC  | 4.7 $\mu$ F/50V<br>1812 MLCC  | 1000pF/2kV<br>1206 MLCC | 2.2 $\mu$ F<br>SMD Inductor<br>PMT-097 |
| JFCW48SXX-30 | 4.7 $\mu$ F/100V<br>1812 MLCC | 4.7 $\mu$ F/100V<br>1812 MLCC | 4.7 $\mu$ F/100V<br>1812 MLCC | 2200pF/2kV<br>1206 MLCC | 10 $\mu$ F<br>SMD Inductor<br>PMT-070  |

### Recommended EN55022 Class A Filter Circuit Layout



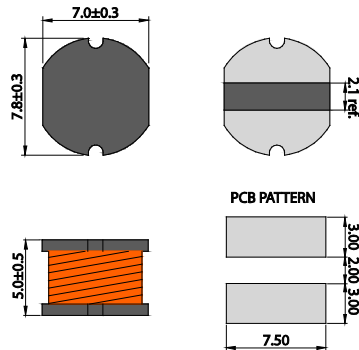
### Recommended EN55022 Class B Filter Circuit Layout



## COMMON MODE CHOKES

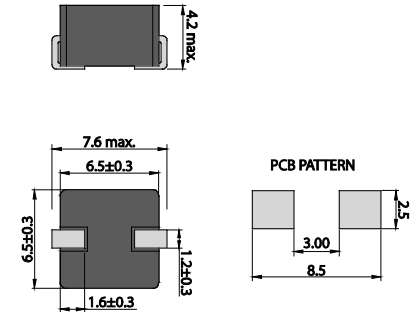
### PMT-070

Inductance:  $10\mu\text{H}\pm 20\%$  Unit: mm  
Impedance:  $40\text{m}\Omega$   
Rated Current: 2.6A



### PMT-097

Inductance:  $2.2\mu\text{H}\pm 20\%$  Unit: mm  
Impedance:  $12\text{m}\Omega$   
Rated Current: 11A



## FUSE CONSIDERATIONS

This power module is not internally fused. An input line fuse must always be used.

This encapsulated power module can be used in a wide variety of applications, ranging from simple stand-alone operations to an integrated part of sophisticated power architecture.

To maximum flexibility, internal fusing is not included; however to achieve maximum safety and system protection, always use an input line fuse.

The suggested input line fuse is:

| Model                      | Fuse Rating (A) | Fuse Type |
|----------------------------|-----------------|-----------|
| 24VDC Nominal Input Models | 6A              | Slow-Blow |
| 48VDC Nominal Input Models | 2A              | Slow-Blow |

The table is based on information provided in the data sheet on inrush energy and maximum DC input current at low  $V_{in}$ .

## THERMAL CONSIDERATIONS

This power module operates in a variety of thermal environments.

However, sufficient cooling should be provided to help ensure reliable operation of the unit.

Heat is removed by conduction, convection, and radiation to the surrounding environment.

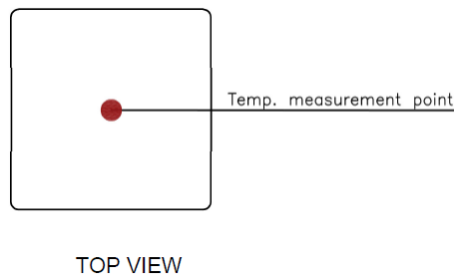
Proper cooling can be verified by measuring the point as shown in the figure below.

The temperature at this location should not exceed  $105^{\circ}\text{C}$ .

When operating, adequate cooling must be provided to maintain the test point temperature at or below  $105^{\circ}\text{C}$ .

Although the maximum point temperature of the power modules is  $105^{\circ}\text{F}$ , you can limit this temperature to a lower value for extremely high reliability.

Thermal test condition with vertical direction by natural convection (20LFM).



## OUTPUT VOLTAGE ADJUSTMENT

Output voltage set point adjustment allows the user to increase or decrease the output voltage set point of the module. This is accomplished by connecting an external resistor between the Trim pin and either the +Output or –Output pins.

With external resistor between the Trim and –Output pin, the output voltage set increases.

With an external resistor between the Trim and +Output pin, the output voltage set point decreases.

The external Trim resistor needs to be at least 1/16W of rated power.

### Trim Up Equation

$$R_U = \left[ \frac{G \times L}{(V_{O,up} - L - K)} - H \right] \Omega$$

Trim Constants

| Module       | G     | H     | K    | L   |
|--------------|-------|-------|------|-----|
| JFCWxxS33-30 | 5110  | 2050  | 0.8  | 2.5 |
| JFCWxxS05-30 | 5110  | 2050  | 2.5  | 2.5 |
| JFCWxxS12-30 | 10000 | 5110  | 9.5  | 2.5 |
| JFCWxxS15-30 | 10000 | 5110  | 12.5 | 2.5 |
| JFCWxxS24-30 | 56000 | 13000 | 21.5 | 2.5 |

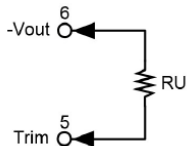
### Trim Down Equation

$$R_D = \left[ \frac{(V_{O,down} - L) \times G}{(V_O - V_{O,down})} - H \right] \Omega$$

### External Output Trimming

Output can be externally trimmed using the method shown below

#### Trim Up



#### 3.3VDC Single Output Models

| ΔV (%)   | 1       | 2       | 3       | 4      | 5      | 6      | 7      | 8      | 9      | 10     |
|----------|---------|---------|---------|--------|--------|--------|--------|--------|--------|--------|
| Vout (V) | 3.333   | 3.366   | 3.399   | 3.432  | 3.465  | 3.498  | 3.531  | 3.564  | 3.597  | 3.630  |
| RU (kΩ)  | 385.071 | 191.511 | 126.990 | 94.730 | 75.374 | 62.470 | 53.253 | 46.340 | 40.963 | 36.662 |

#### 5VDC Single Output Models

| ΔV (%)   | 1       | 2       | 3      | 4      | 5      | 6      | 7      | 8      | 9      | 10     |
|----------|---------|---------|--------|--------|--------|--------|--------|--------|--------|--------|
| Vout (V) | 5.050   | 5.100   | 5.150  | 5.200  | 5.250  | 5.300  | 5.350  | 5.400  | 5.450  | 5.500  |
| RU (kΩ)  | 253.450 | 125.700 | 83.117 | 61.825 | 49.050 | 40.533 | 34.450 | 29.888 | 26.339 | 23.500 |

#### 12VDC Single Outputs Models

| ΔV (%)   | 1       | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9      | 10     |
|----------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Vout (V) | 12.120  | 12.240 | 12.360 | 12.480 | 12.600 | 12.720 | 12.840 | 12.960 | 13.080 | 13.200 |
| RU (kΩ)  | 203.223 | 99.057 | 64.334 | 46.973 | 36.557 | 29.612 | 24.652 | 20.932 | 18.038 | 15.723 |

#### 15VDC Single Output Models

| ΔV (%)   | 1       | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9      | 10     |
|----------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Vout (V) | 15.150  | 15.300 | 15.450 | 15.600 | 15.750 | 15.900 | 16.050 | 16.200 | 16.350 | 16.500 |
| RU (kΩ)  | 161.557 | 78.223 | 50.446 | 36.557 | 28.223 | 22.668 | 18.700 | 15.723 | 13.409 | 11.557 |

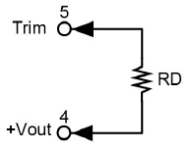
| ΔV (%)   | 11     | 12     | 13     | 14     | 15     | 19     | 17     | 18     | 19     | 20    |
|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------|
| Vout (V) | 16.650 | 16.800 | 16.950 | 17.100 | 17.250 | 17.400 | 17.550 | 17.700 | 17.850 | 18.00 |
| RU (kΩ)  | 10.042 | 8.779  | 7.711  | 6.795  | 6.001  | 5.307  | 4.694  | 4.149  | 3.662  | 3.223 |

#### 24VDC Single Output Models

| ΔV (%)   | 1       | 2       | 3       | 4       | 5       | 6      | 7      | 8      | 9      | 10     |
|----------|---------|---------|---------|---------|---------|--------|--------|--------|--------|--------|
| Vout (V) | 24.240  | 24.480  | 24.720  | 24.960  | 25.200  | 25.440 | 25.680 | 25.920 | 26.160 | 26.400 |
| RU (kΩ)  | 570.333 | 278.667 | 181.444 | 132.833 | 103.667 | 84.222 | 70.333 | 59.917 | 51.815 | 45.333 |

| ΔV (%)   | 11     | 12     | 13     | 14     | 15     | 19     | 17     | 18     | 19     | 20     |
|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Vout (V) | 26.640 | 26.880 | 27.120 | 27.360 | 27.600 | 27.840 | 28.080 | 28.320 | 28.560 | 28.800 |
| RU (kΩ)  | 40.030 | 35.611 | 31.872 | 28.667 | 25.889 | 23.458 | 21.314 | 19.407 | 17.702 | 16.167 |

Trim Down



3.3VDC Single Output Models

| $\Delta V$ (%)   | 1       | 2      | 3      | 4      | 5      | 6      | 7      | 8     | 9     | 10    |
|------------------|---------|--------|--------|--------|--------|--------|--------|-------|-------|-------|
| Vout (V)         | 3.267   | 3.234  | 3.201  | 3.168  | 3.135  | 3.102  | 3.069  | 3.036 | 3.003 | 2.970 |
| RU (k $\Omega$ ) | 116.719 | 54.779 | 34.133 | 23.810 | 17.616 | 13.486 | 10.537 | 8.325 | 6.604 | 5.228 |

5VDC Single Output Models

| $\Delta V$ (%)   | 1       | 2       | 3      | 4      | 5      | 6      | 7      | 8      | 9      | 10     |
|------------------|---------|---------|--------|--------|--------|--------|--------|--------|--------|--------|
| Vout (V)         | 4.950   | 4.900   | 4.850  | 4.800  | 4.750  | 4.700  | 4.650  | 4.600  | 4.550  | 4.500  |
| RU (k $\Omega$ ) | 248.340 | 120.590 | 78.007 | 56.715 | 43.940 | 35.423 | 29.340 | 24.778 | 21.229 | 18.390 |

12VDC Single Output Models

| $\Delta V$ (%)   | 1       | 2       | 3       | 4       | 5       | 6       | 7      | 8      | 9      | 10     |
|------------------|---------|---------|---------|---------|---------|---------|--------|--------|--------|--------|
| Vout (V)         | 11.880  | 11.760  | 11.640  | 11.520  | 11.400  | 11.280  | 11.160 | 11.040 | 10.920 | 10.800 |
| RU (k $\Omega$ ) | 776.557 | 380.723 | 248.779 | 182.807 | 143.223 | 116.834 | 97.985 | 83.848 | 72.853 | 64.057 |

15VDC Single Output Models

| $\Delta V$ (%)   | 1       | 2       | 3       | 4       | 5       | 6       | 7       | 8      | 9      | 10     |
|------------------|---------|---------|---------|---------|---------|---------|---------|--------|--------|--------|
| Vout (V)         | 14.850  | 14.700  | 14.550  | 14.400  | 14.250  | 14.100  | 13.950  | 13.800 | 13.650 | 13.500 |
| RU (k $\Omega$ ) | 818.223 | 401.557 | 262.668 | 193.223 | 151.557 | 123.779 | 103.938 | 89.057 | 77.483 | 68.223 |

24VDC Single Output Models

| $\Delta V$ (%)   | 1        | 2        | 3        | 4        | 5       | 6       | 7       | 8       | 9       | 10      |
|------------------|----------|----------|----------|----------|---------|---------|---------|---------|---------|---------|
| Vout (V)         | 23.760   | 23.520   | 23.280   | 23.040   | 22.800  | 22.560  | 22.320  | 22.080  | 21.840  | 21.600  |
| RU (k $\Omega$ ) | 49473667 | 2439.333 | 1603.222 | 1185.167 | 934.333 | 767.111 | 647.667 | 558.083 | 488.407 | 432.667 |

MODEL NUMBER SETUP

| JFCW        | 24                                    | S                                                    | 05                                                                                                                                                                                | - | 30             | R                                                                                                                                                                                                                    | H                                               |
|-------------|---------------------------------------|------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|
| Series Name | Input Voltage                         | Output Quantity                                      | Output Voltage                                                                                                                                                                    |   | Output Power   | Remote ON/OFF, CTRL, and TRIM Pins                                                                                                                                                                                   | Heatsink                                        |
|             | <b>24:</b> 9-36V<br><b>48:</b> 18-75V | <b>S:</b> Single Output<br><br><b>D:</b> Dual Output | <b>33:</b> 3.3VDC<br><b>05:</b> 5VDC<br><b>12:</b> 12VDC<br><b>15:</b> 15VDC<br><b>24:</b> 24VDC<br><b>12:</b> $\pm 12$ VDC<br><b>15:</b> $\pm 15$ VDC<br><b>24:</b> $\pm 24$ VDC |   | <b>30:</b> 30W | <b>None:</b> Positive Logic<br><b>R:</b> Negative Logic<br><b>D:</b> Without CTRL Pin<br><b>G:</b> Without CTRL and TRIM Pins<br><b>F:</b> Positive Logic w/out TRIM Pin<br><b>RF:</b> Negative Logic w/out TRIM Pin | <b>None:</b> No Heatsink<br><b>HC:</b> Heatsink |

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## COMPANY INFORMATION

Wall Industries, Inc. has created custom and modified units for over 50 years. Our in-house research and development engineers will provide a solution that exceeds your performance requirements on-time and on budget. Our ISO9001-2008 certification is just one example of our commitment to producing a high quality, well-documented product for our customers.

Our past projects demonstrate our commitment to you, our customer. Wall Industries, Inc. has a reputation for working closely with its customers to ensure each solution meets or exceeds form, fit and function requirements. We will continue to provide ongoing support for your project above and beyond the design and production phases. Give us a call today to discuss your future projects.

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