



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 91%
- Remote On/Off Control
- 4:1 Ultra Wide Input Voltage Ranges
- Six-Sided Continuous Shielding
- Ultra Low Quiescent Current
- No Minimum Load Requirements
- Single and Dual Outputs
- Fixed Switching Frequency
- Built-in EN55022 Class B Filter
- 10 Watts Maximum Output Power
- Short Circuit, Over Voltage, Over Load, & Under-Voltage Protection
- Wide Operating Temperature Range: -40°C to +85°C
- Compliant to RoHS EU Directive 2011/65/EU
- UL60950-1, EN60950-1, & IEC60950-1 Safety Approvals
- CE Mark meets 2006/95/EC, 2011/95/EC, and 2004/108/EC
- Optional Heatsink Available (Suffix "HC")

DESCRIPTION

The JFCW10 series of DC/DC power converters provides 10 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 ultra wide input voltage ranges of 9-36VDC and 18-75VDC. Some features include high efficiency up to 91%, 1600VDC I/O isolation, six-sided shielding, and remote on/off control. These converters are also protected against short circuit, over voltage, over load, and under-voltage. 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, telecom/datacom, industry control systems, measurement equipment, 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					
JFCW24S33-10	24 VDC (9 – 36 VDC)	3.3 VDC	0mA	3000mA	40mVp-p	6mA	9.9W	85%	3500µF
JFCW24S05-10		5 VDC	0mA	2000mA	40mVp-p	6mA	10W	87%	2500µF
JFCW24S12-10		12 VDC	0mA	830mA	60mVp-p	6mA	10W	90%	430µF
JFCW24S15-10		15 VDC	0mA	670mA	60mVp-p	6mA	10W	91%	350µF
JFCW24S24-10		24 VDC	0mA	416mA	60mVp-p	6mA	10W	90%	125µF
JFCW48S33-10	48 VDC (18 – 75 VDC)	3.3 VDC	0mA	3000mA	40mVp-p	4mA	9.9W	85%	3500µF
JFCW48S05-10		5 VDC	0mA	2000mA	40mVp-p	4mA	10W	87%	2500µF
JFCW48S12-10		12 VDC	0mA	830mA	60mVp-p	4mA	10W	90%	430µF
JFCW48S15-10		15 VDC	0mA	670mA	60mVp-p	4mA	10W	90%	350µF
JFCW48S24-10		24 VDC	0mA	416mA	60mVp-p	4mA	10W	90%	125µF
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					
JFCW24D05-10	24 VDC (9 – 36 VDC)	±5 VDC	0mA	±1000mA	40mVp-p	6mA	10W	87%	±1440µF
JFCW24D12-10		±12 VDC	0mA	±416mA	60mVp-p	6mA	10W	89%	±250µF
JFCW24D15-10		±15 VDC	0mA	±333mA	60mVp-p	6mA	10W	89%	±180µF
JFCW48D05-10	48 VDC (18 – 75 VDC)	±5 VDC	0mA	±1000mA	40mVp-p	4mA	10W	87%	±1440µF
JFCW48D12-10		±12 VDC	0mA	±416mA	60mVp-p	4mA	10W	89%	±250µF
JFCW48D15-10		±15 VDC	0mA	±333mA	60mVp-p	4mA	10W	89%	±180µF

NOTES

1. 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.
2. An external input filter capacitor is required if the module has to meet EN61000-4-4, EN61000-4-5. The filter capacitor suggested is Nippon chemi-con KY series, 220µF/100V.
3. The JFCW10 series standard modules meet EN55022 Class A without external components and meets Class B with external components. See page 4 for more details.
4. 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: JFCW24S05-10R).
5. There are several different options available for this series. Please see the "Model Number Setup" on page 5 for all options and ordering information.
6. 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.*

TECHNICAL SPECIFICATIONS: JFCW10 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		9	24	36	VDC
	48VDC nominal input models		18	48	75	
Start-Up Voltage	24VDC nominal input models				9	VDC
	48VDC nominal input models				18	
Shutdown Voltage	24VDC nominal input models			8		VDC
	48VDC nominal input models			16		
Input Surge Voltage (1sec, max.)	24VDC nominal input models				50	VDC
	48VDC nominal input models				100	
Input Reflected Ripple Current				30		mAp-p
Input Current	No Load		See Table			
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	-0.2		+0.2	%
		Dual Output Models	-0.5		+0.5	
Load Regulation	No load to full load	Single Output Models	-0.2		+0.2	%
		Dual Output Models	-1.0		+1.0	
	10% load to 90% load	Single Output Models	-0.1		+0.1	%
		Dual Output Models	-0.8		+0.8	
Cross Regulation (Dual Output Models)	Asymmetrical load 25% / 100% FL		-5.0		+5.0	%
Voltage Adjustability (See Note 1)	Single Output Models	3.3V & 12V Output Models	-10		+10	%
		Others	-10		+20	
Output Power	Rated				10	W
	With Trim up 10%				11	
	With Trim up 20%				12	
Output Current			See Table			
Minimum Load			0			%
Maximum Capacitive Load	Minimum input and constant resistive load		See Table			
Ripple & Noise (20MHz BW)	With 10µF/25V X7R 1206 MLCC		3.3V & 5V Output Models		40	mVp-p
	With 10µF/25V X7R 1206 MLCC		12V & 15V Output Models		60	
	With 1µF/50V X7R 1206 MLCC		24V Output Models		60	
	With 10µF/25V X7R 1206 MLCC for each output		±5V Output Models		40	
	With 10µF/25V X7R 1206 MLCC for each output		±12V & ±15V Output Models		60	
Transient Response Recovery Time	25% load step change			250		µs
Start-Up Time	Nom. input and constant resistive load	Power Up			30	ms
		Remote ON/OFF			30	
Temperature Coefficient			-0.02		+0.02	%/°C
PROTECTION						
Short Circuit Protection			continuous, automatic recovery			
Over Load Protection	% of rated full load at nominal input			150		%
Over Voltage Protection	Zener diode clamp	3.3V Output Models	3.7		5.4	VDC
		5V Output Models	6.3		7.4	
		12V Output Models	13.5		19.6	
		15V Output Models	18.3		22.0	
		24V Output Models	29.1		32.5	
GENERAL SPECIFICATIONS						
Efficiency	Nominal input voltage and full load		See Table			
Switching Frequency	3.3V & 5V Output Models		297	330	363	kHz
Isolation Voltage	1 minute	Input to Output	1600			VDC
		Input to Case	1000			
		Output to Case	1000			
Isolation Resistance	500VDC		1			GΩ
Isolation Capacitance					1500	pF

TECHNICAL SPECIFICATIONS: JFCW10 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)	The CTRL pin is referenced to -Input pin	DC/DC ON	Open or $3V < V_r < 15$ VDC		
		DC/DC OFF	Short or $0V < V_r < 1.2$ VDC		
Negative Logic (optional)	The CTRL pin is referenced to -Input pin	DC/DC ON	Short or $0V < V_r < 1.2$ VDC		
		DC/DC OFF	Open or $3V < V_r < 15$ VDC		
Input Current of Remote Control Pin	Nominal V_{in}	-0.5		1.0	mA
Remote OFF State Input Current	Nominal V_{in}		2.5		mA
ENVIRONMENTAL SPECIFICATIONS					
Operating Ambient Temperature	With derating	-40		+85	°C
Maximum Case Temperature				+105	°C
Storage Temperature		-55		+125	°C
Thermal Impedance (See Note 6)	Natural Convection		Without Heatsink 16.18		°C/W
			With Heatsink 15.13		
Relative Humidity		5		95	% RH
Thermal Shock		MIL-STD-810F			
Vibration		MIL-STD-810F			
MTBF	MIL-HDBK-217F $T_a=25^\circ\text{C}$, full load	3,376,000 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		UL60950-1, IEC60950-1, EN60950-1			
EMI (See Note 3)	EN55022	Class A, Class B			
ESD	EN61000-4-2	Air ± 8 kV Contact ± 6 kV	Perf. Criteria A		
Radiated Immunity	EN61000-4-3	10 V/m	Perf. Criteria A		
Fast Transient (See Note 2)	EN61000-4-4	± 2 kV	Perf. Criteria A		
Surge (See Note 2)	EN61000-4-5	± 1 kV	Perf. Criteria A		
Conducted Immunity	EN61000-4-6	3 Vrms	Perf. Criteria A		

MECHANICAL DRAWING

SIDE VIEW

0.39 (9.9) height, 0.22 (5.6) height, DIA. 0.04 (1.0) diameter, 1.00 (25.4) length, 0.800 (20.32) width.

BOTTOM VIEW

1.00 (25.4) length, 0.500 (12.7) width, 0.400 (10.16) width, 0.400 (10.16) width, 0.100 (2.54) width, 0.200 (5.08) width.

PIN CONNECTIONS		
PIN	SINGLE	DUAL
1	+INPUT	+INPUT
2	-INPUT	-INPUT
3	CTRL	CTRL
4	+OUTPUT	+OUTPUT
5	TRIM	COMMON
6	-OUTPUT	-OUTPUT

PRODUCT OPTIONS	
OPTION	SUFFIX
Positive Logic Remote On/Off	None
Negative Logic Remote On/Off	R
Without CTRL Pin	D
Without CTRL and TRIM Pins	G
Positive Logic without TRIM Pin	F
Negative Logic without TRIM Pin	RF
Heatsink	HC

NOTES

- Unit: inches (mm)
- Tolerance: X.XX \pm 0.02 (X.X \pm 0.5)
X.XXX \pm 0.01 (X.XX \pm 0.25)
- Pin Pitch Tolerance: \pm 0.01 (\pm 0.25)
- Pin Dimension Tolerance: \pm 0.004 (\pm 0.1)
- All dimensions are for reference only

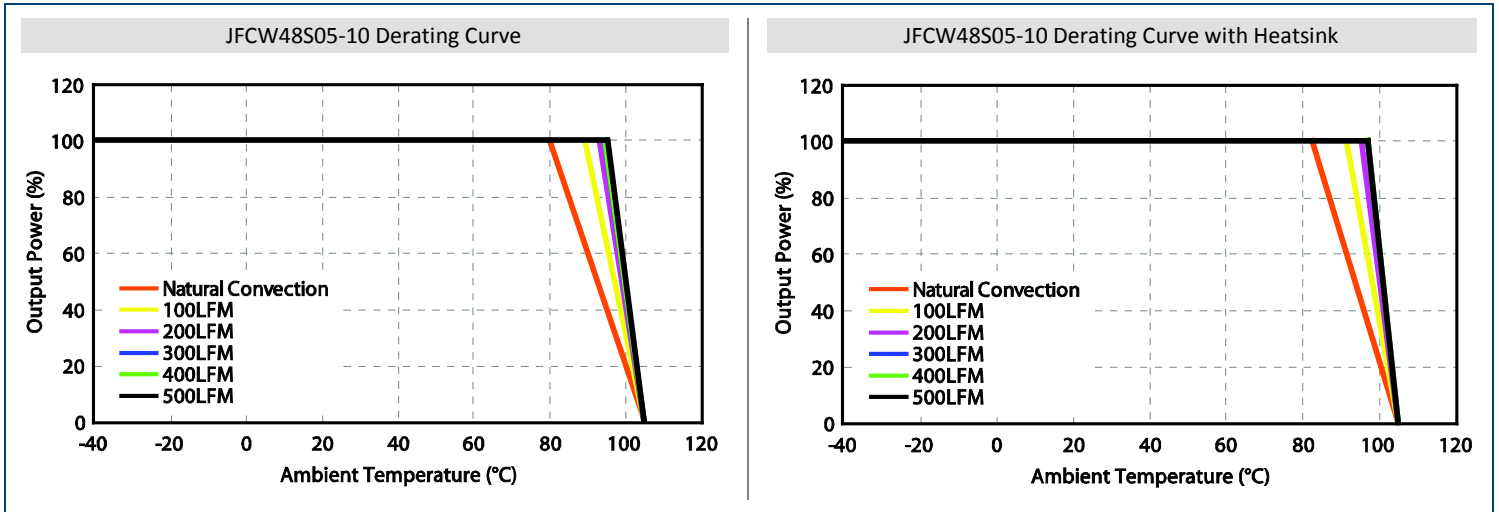
EXTERNAL OUTPUT TRIMMING

Output can be externally trimmed by using the method shown below

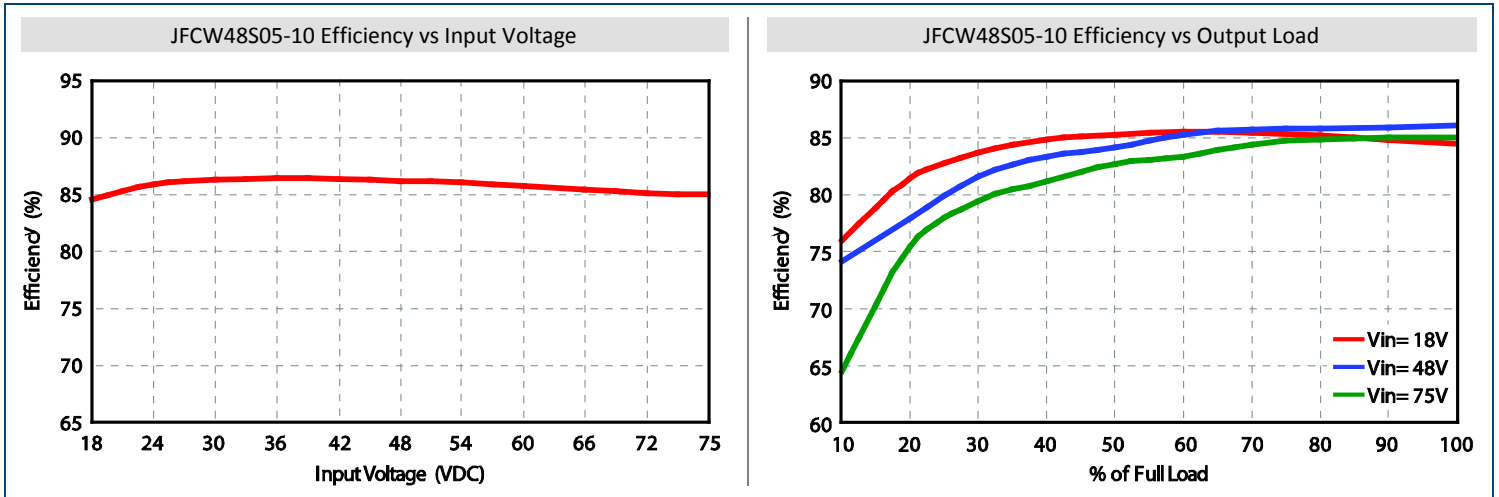
TRIM UP

TRIM DOWN

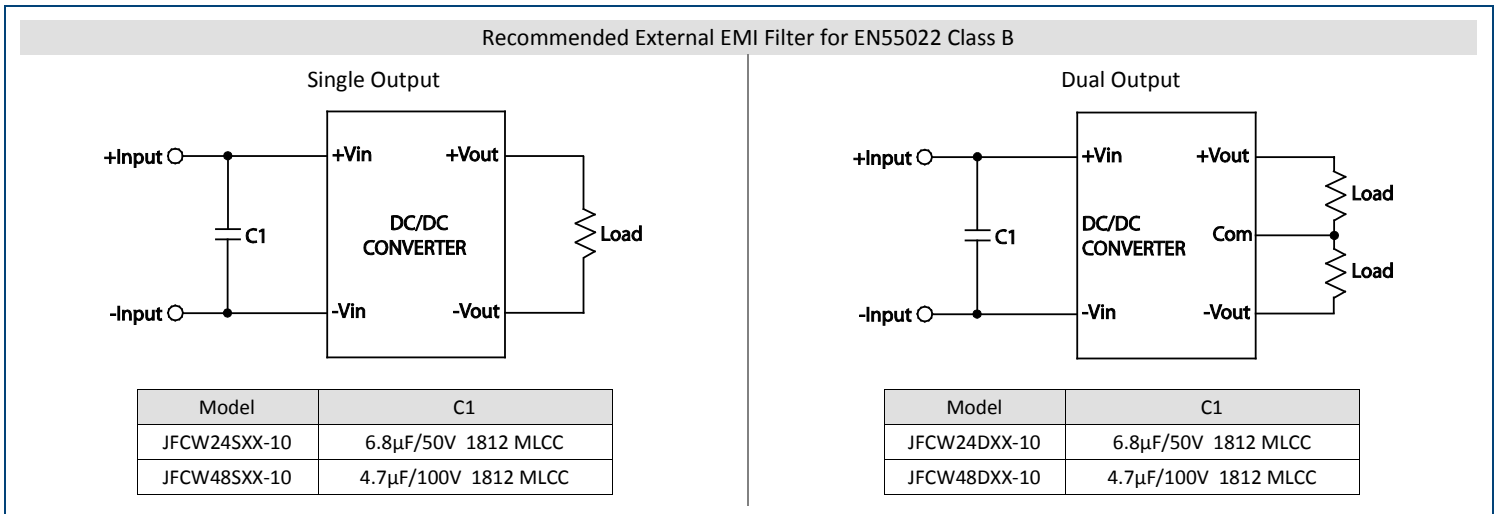
DERATING CURVES



EFFICIENCY CURVES



EMI CONSIDERATIONS



MODEL NUMBER SETUP

JFCW	24	S	05	-	10	R	H
Series Name	Input Voltage	Output Quantity	Output Voltage		Output Power	Remote ON/OFF, CTRL, and TRIM Pins	Heatsink
	24: 9-36 VDC 48: 18-75 VDC	S: Single Output D: Dual Output	33: 3.3 VDC 05: 5 VDC 12: 12 VDC 15: 15 VDC 24: 24 VDC 05: ±5 VDC 12: ±12 VDC 15: ±15 VDC		10: 10 Watts	None: Positive Logic Remote On/Off R: Negative Logic Remote On/Off D: Without CTRL Pin G: Without CTRL and TRIM Pins F: Positive Logic without TRIM Pin RF: Negative Logic without TRIM Pin	None: No Heatsink HC: Heatsink

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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