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
- 2:1 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 JFC10 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 2:1 wide input voltage ranges of 9-18VDC, 18-36VDC, and 36-75VDC. 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					
JFC12S33-10	12 VDC (9 – 18 VDC)	3.3 VDC	0mA	3000mA	40mVp-p	10mA	9.9W	83%	3500µF
JFC12S05-10		5 VDC	0mA	2000mA	40mVp-p	10mA	10W	86%	2500µF
JFC12S12-10		12 VDC	0mA	830mA	60mVp-p	10mA	10W	89%	430µF
JFC12S15-10		15 VDC	0mA	670mA	60mVp-p	10mA	10W	90%	350µF
JFC12S24-10		24 VDC	0mA	416mA	60mVp-p	10mA	10W	91%	125µF
JFC24S33-10	24 VDC (18 – 36 VDC)	3.3 VDC	0mA	3000mA	40mVp-p	6mA	9.9W	85%	3500µF
JFC24S05-10		5 VDC	0mA	2000mA	40mVp-p	6mA	10W	86%	2500µF
JFC24S12-10		12 VDC	0mA	830mA	60mVp-p	6mA	10W	91%	430µF
JFC24S15-10		15 VDC	0mA	670mA	60mVp-p	6mA	10W	90%	350µF
JFC24S24-10		24 VDC	0mA	416mA	60mVp-p	6mA	10W	91%	125µF
JFC48S33-10	48 VDC (36 – 75 VDC)	3.3 VDC	0mA	3000mA	40mVp-p	4mA	9.9W	85%	3500µF
JFC48S05-10		5 VDC	0mA	2000mA	40mVp-p	4mA	10W	87%	2500µF
JFC48S12-10		12 VDC	0mA	830mA	60mVp-p	4mA	10W	90%	430µF
JFC48S15-10		15 VDC	0mA	670mA	60mVp-p	4mA	10W	90%	350µF
JFC48S24-10		24 VDC	0mA	416mA	60mVp-p	4mA	10W	91%	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					
JFC12D05-10	12 VDC (9 – 18 VDC)	±5 VDC	0mA	±1000mA	40mVp-p	10mA	10W	86%	±1440µF
JFC12D12-10		±12 VDC	0mA	±416mA	60mVp-p	10mA	10W	89%	±250µF
JFC12D15-10		±15 VDC	0mA	±333mA	60mVp-p	10mA	10W	90%	±180µF
JFC24D05-10	24 VDC (18 – 36 VDC)	±5 VDC	0mA	±1000mA	40mVp-p	6mA	10W	86%	±1440µF
JFC24D12-10		±12 VDC	0mA	±416mA	60mVp-p	6mA	10W	90%	±250µF
JFC24D15-10		±15 VDC	0mA	±333mA	60mVp-p	6mA	10W	90%	±180µF
JFC48D05-10	48 VDC (36 – 75 VDC)	±5 VDC	0mA	±1000mA	40mVp-p	4mA	10W	87%	±1440µF
JFC48D12-10		±12 VDC	0mA	±416mA	60mVp-p	4mA	10W	91%	±250µF
JFC48D15-10		±15 VDC	0mA	±333mA	60mVp-p	4mA	10W	90%	±180µF

SPECIFICATIONS: JFC10 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	12VDC nominal input models		9	12	18	VDC
	24VDC nominal input models		18	24	36	
	48VDC nominal input models		36	48	75	
Start-Up Voltage	12VDC nominal input models				9	VDC
	24VDC nominal input models				18	
	48VDC nominal input models				36	
Shutdown Voltage	12VDC nominal input models			8		VDC
	24VDC nominal input models			16		
	48VDC nominal input models			33		
Input Surge Voltage (1sec, max.)	12VDC nominal input models				25	VDC
	24VDC nominal input models				50	
	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

SPECIFICATIONS: JFC10 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 < Vr < 15 VDC			
		DC/DC OFF	Short or 0V < Vr < 1.2 VDC			
Negative Logic (optional)	The CTRL pin is referenced to –Input pin	DC/DC ON	Short or 0V <Vr < 1.2 VDC			
		DC/DC OFF	Open or 3V < Vr < 15 VDC			
Input Current of Remote Control Pin	Nominal Vin		-0.5		1.0	mA
Remote OFF State Input Current	Nominal Vin			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 Ta=25°C, full load		3,308,000 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[7], IEC60950-1, EN60950-1			
EMI (See Note 3)	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 2)	EN61000-4-4	±2kV	Perf. Criteria A			
Surge (See Note 2)	EN61000-4-5	±1kV	Perf. Criteria A			
Conducted Immunity	EN61000-4-6	3 Vrms	Perf. Criteria A			

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 JFC10 series standard modules meet EN55022 Class A without external components and meet Class B with external components. For more details please call factory.

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: JFC24S05-10R).

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.

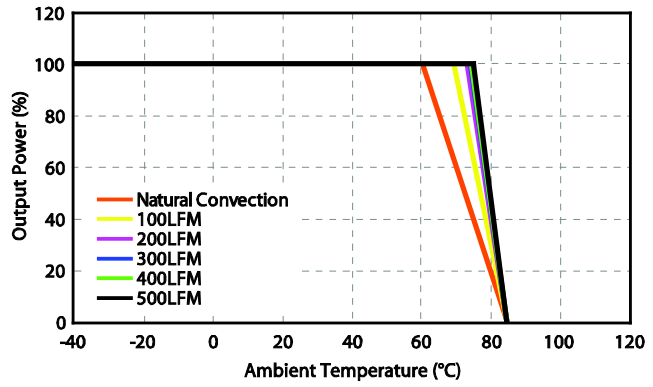
6. Optional heatsink is available. Please call factory for more information.

7. This product is Listed to applicable standards and requirements by UL.

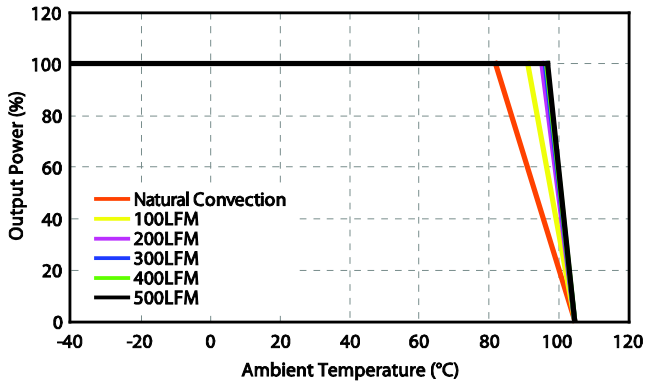
CAUTION: This power module is not internally fused. An input line fuse must always be used.
**Due to advances in technology, specifications subject to change without notice.*

DERATING & EFFICIENCY CURVES

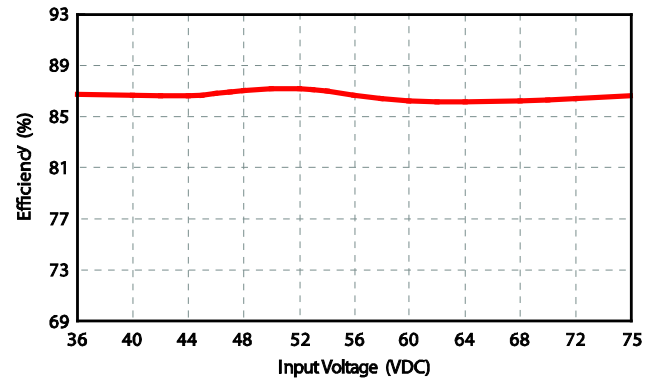
JFC48S05-10 Derating Curve



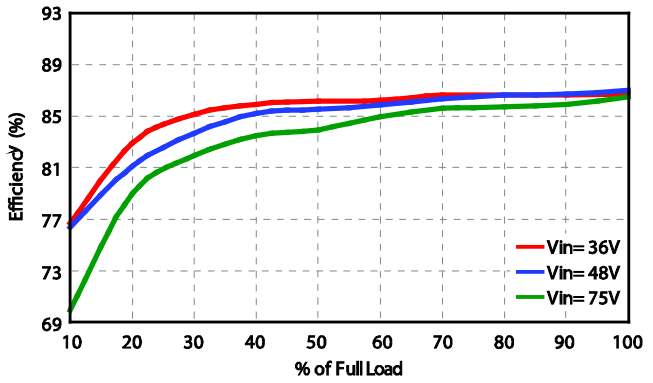
JFC48S05-10 Derating Curve with Heatsink



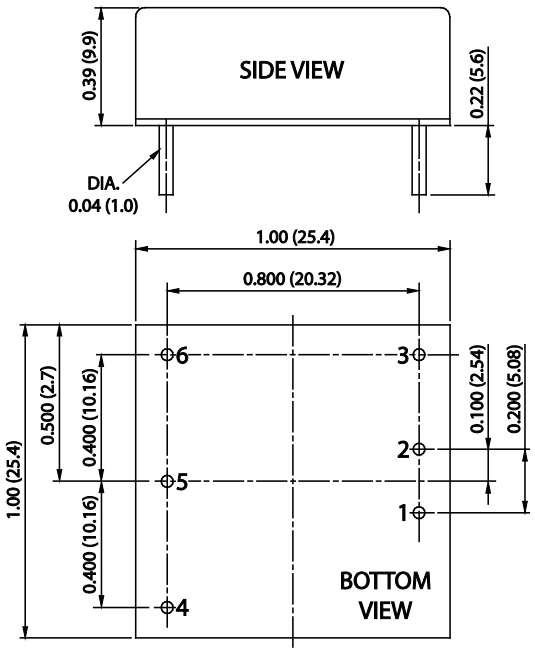
JFC48S05-10 Efficiency vs Input Voltage



JFC48S05-10 Efficiency vs Output Load



MECHANICAL DRAWING



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

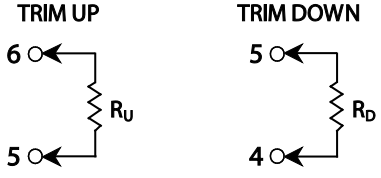
NOTES

1. Unit: inches (mm)
2. Tolerance: X.XX±0.02 (X.X±0.5)
   X.XXX±0.01 (X.XX±0.25)
3. Pin Pitch Tolerance: ±0.01 (±0.25)
4. Pin Dimension Tolerance: ±0.004 (±0.1)
5. All dimensions are for reference only

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

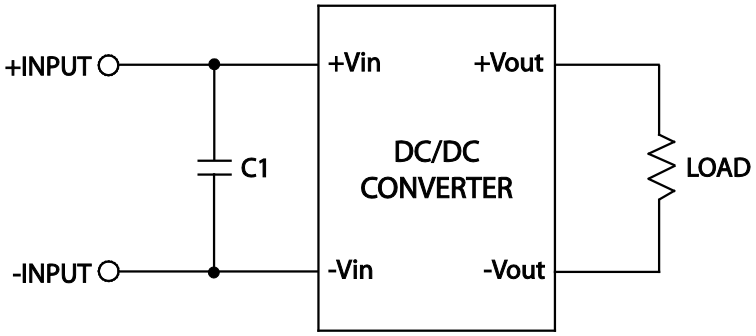
EXTERNAL OUTPUT TRIMMING

Output can be externally trimmed by using the method shown below



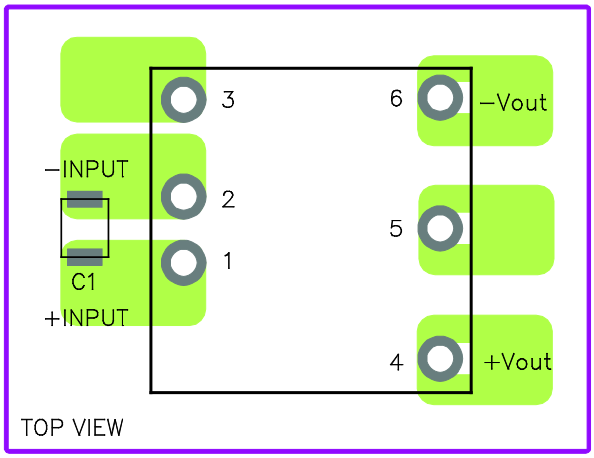
EMI CONSIDERATIONS

Suggested Schematic for EN55022 Conducted & Radiated Emissions



Component	Value	Voltage	Reference
C1	10µF	25V	1812 MLCC

Recommended Layout with Input Filter



MODEL NUMBER SETUP

JFC	24	S	05	-	10	R	H
Series Name	Input Voltage	Output Quantity	Ouptut Voltage		Output Power	Remote ON/OFF, CTRL, and TRIM Pins	Heatsink
	12: 9-18 VDC **24:** 18-36 VDC **48:** 36-75 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: 2015 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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