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 93%
- 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
- 30 Watts Maximum Output Power
- 1600VDC I/O Isolation
- Short Circuit, Over Voltage, Over Load, & Over Temperature Protection
- Wide Operating Temperature Range: -40°C to +100°C
- Compliant to RoHS EU Directive 2011/65/EU
- UL60950-1, EN60950-1, & IEC60950-1 Safety Approvals
- Optional Heatsink Available (Suffix “HC”)

DESCRIPTION

The JFC30 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 2:1 wide input voltage ranges of 9-18VDC, 18-36VDC, and 36-75VDC. Some features include high efficiency up to 93%, 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 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, 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					
JFC12S33-30	12 VDC (9 - 18 VDC)	3.3 VDC	0mA	7A	75mVp-p	12mA	23.1W	86%	10000µF
JFC12S05-30		5 VDC	0mA	6A	75mVp-p	12mA	30W	89%	7200µF
JFC12S12-30		12 VDC	0mA	2.5A	75mVp-p	12mA	30W	89%	1200µF
JFC12S15-30		15 VDC	0mA	2A	75mVp-p	12mA	30W	89%	1000µF
JFC12S24-30		24 VDC	0mA	1.25A	75mVp-p	12mA	30W	90%	375µF
JFC24S33-30	24 VDC (18 - 36 VDC)	3.3 VDC	0mA	7A	75mVp-p	10mA	23.1W	87%	10000µF
JFC24S05-30		5 VDC	0mA	6A	75mVp-p	10mA	30W	90%	7200µF
JFC24S12-30		12 VDC	0mA	2.5A	75mVp-p	10mA	30W	91%	1200µF
JFC24S15-30		15 VDC	0mA	2A	75mVp-p	10mA	30W	91%	1000µF
JFC24S24-30		24 VDC	0mA	1.25A	75mVp-p	10mA	30W	93%	375µF
JFC48S33-30	48 VDC (36 - 75 VDC)	3.3 VDC	0mA	7A	75mVp-p	8mA	23.1W	88%	10000µF
JFC48S05-30		5 VDC	0mA	6A	75mVp-p	8mA	30W	90%	7200µF
JFC48S12-30		12 VDC	0mA	2.5A	75mVp-p	8mA	30W	90%	1200µF
JFC48S15-30		15 VDC	0mA	2A	75mVp-p	8mA	30W	91%	1000µF
JFC48S24-30		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					
JFC12D12-30	12 VDC (9 - 18 VDC)	±12 VDC	0mA	±1.25A	60mVp-p	12mA	30W	89%	±750µF
JFC12D15-30		±15 VDC	0mA	±1.0A	60mVp-p	12mA	30W	90%	±500µF
JFC12D24-30		±24 VDC	0mA	±0.625A	75mVp-p	14mA	30W	89%	±180µF
JFC24D12-30	24 VDC (18 - 36 VDC)	±12 VDC	0mA	±1.25A	60mVp-p	10mA	30W	91%	±750µF
JFC24D15-30		±15 VDC	0mA	±1.0A	60mVp-p	10mA	30W	91%	±500µF
JFC24D24-30		±24 VDC	0mA	±0.625A	75mVp-p	14mA	30W	90%	±180µF
JFC48D12-30	48 VDC (36 - 75 VDC)	±12 VDC	0mA	±1.25A	60mVp-p	8mA	30W	91%	±750µF
JFC48D15-30		±15 VDC	0mA	±1.0A	60mVp-p	8mA	30W	92%	±500µF
JFC48D24-30		±24 VDC	0mA	±0.625A	75mVp-p	10mA	30W	91%	±180µF

SPECIFICATIONS: JFC30 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		
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	-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	15V & 24V Output Models	-10		+20	%
		Others	-10		+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	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				Hiccup, automatic recovery		
Over Load Protection	% of rated full load at nominal input			140		%
Over Voltage Protection	Zener diode clamp	3.3V Output Models	3.7		5.4	VDC
		5V Output Models	5.6		7.0	
		12V Output Models	13.5		19.6	
		15V Output Models	18.3		22.0	
		24V Output Models	29.1		32.5	
Over Temperature Protection				+115		°C
GENERAL SPECIFICATIONS						
Efficiency	Nominal input voltage and full load			See Table		
Switching Frequency	3.3V & 5V Output Models		247.5	275	302.5	kHz
	Others		297	330	363	
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: JFC30 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 3V < Vr < 15 VDC			
		DC/DC OFF	Short or 0 < Vr < 1.2 VDC			
Negative Logic (optional)	Referenced to –Input pin	DC/DC ON	Short or 0 <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			2.0		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	BELLCORE TR-NWT-000332 Case 1: 50% Stress, Ta=40°C		1,579,000 hours			
	MIL-HDBK-217F Ta=25°C, full load (G/B, controlled environment)		337,300 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			
EMI (See Note 2)	EN55022		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			

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. The JFC30 series can only meet EMI Class A or Class B with external components added. See page 5 for more details.

3. An external input filter capacitor is required if the module has to meet EN61000-4-4, EN61000-4-5.
   - For 12VDC 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 24VDC and 48VDC nominal input models we recommend an aluminum electrolytic capacitor (Nippon chemi-con KY series, 220µF/100V).

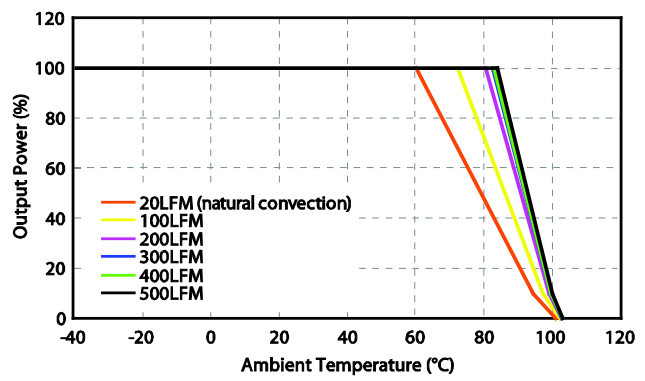
4. Both positive logic and negative logic remote ON/OFF control is available. Positive logic remote ON/OFF comes standard; for negative logic remote ON/OFF add the suffix “R” to the model number (Ex: JFC24S05-30R).

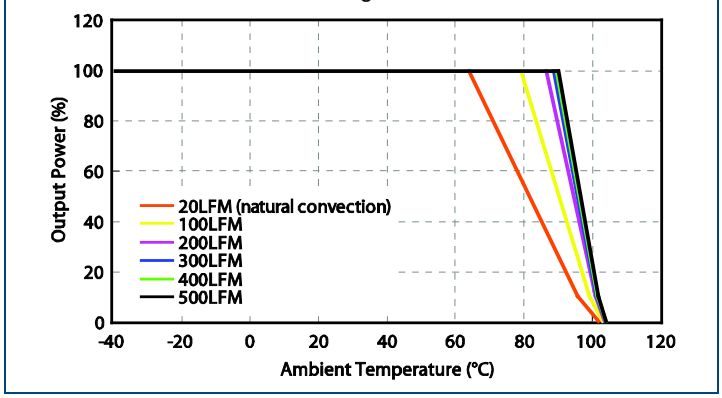
5. There are several different options available for this series. Please see the “Model Number Setup” on page 5 for all options and ordering information.

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

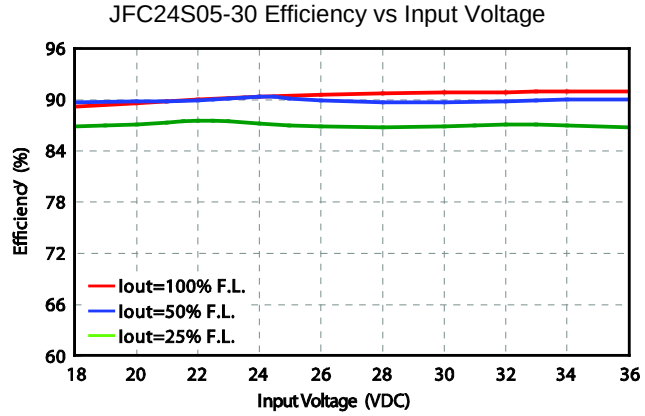
CAUTION: This power module is not internally fused. An input line fuse must always be used.
Due to advances in technology, specifications subject to change without notice.

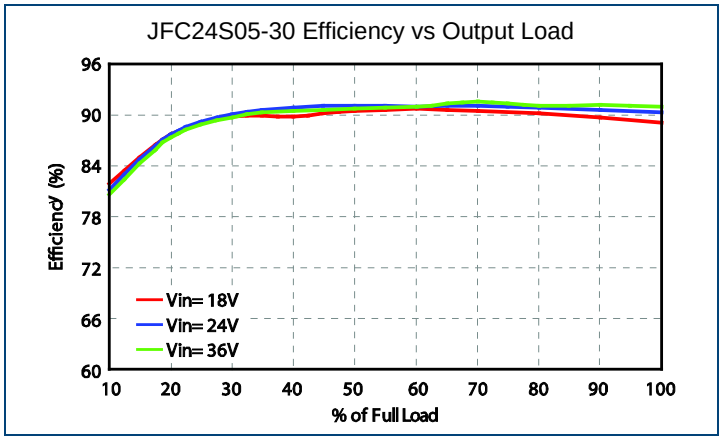
DERATING CURVES



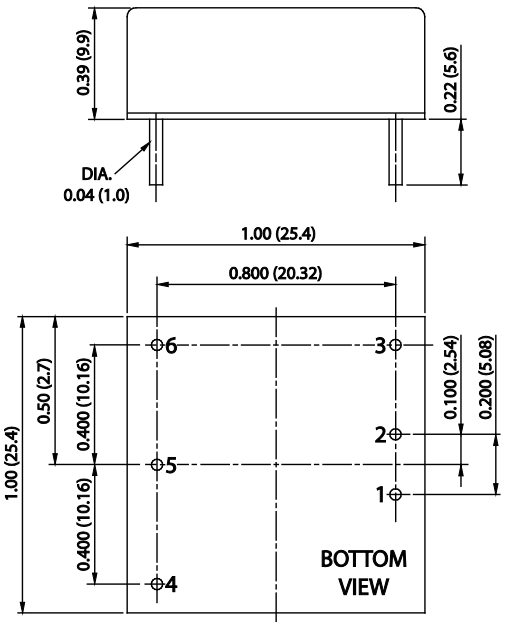


EFFICIENCY CURVES





MECHANICAL DRAWING



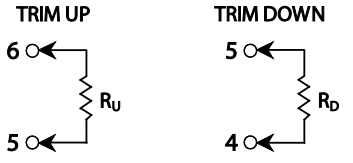
PIN CONNECTIONS		
PIN	SINGLE	DUAL
1	+INPUT	+INPUT
2	-INPUT	-INPUT
3	CTRL	CTRL
4	+OUTPUT	+OUTPUT
5	TRIM	COMMON
6	-OUTPUT	-OUTPUT

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	None
Negative Logic	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

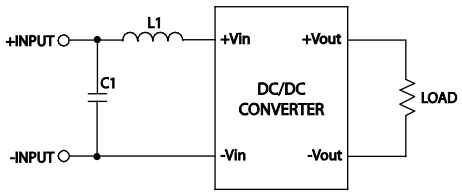
EXTERNAL OUTPUT TRIMMING

Output can be externally trimmed by using the method shown below



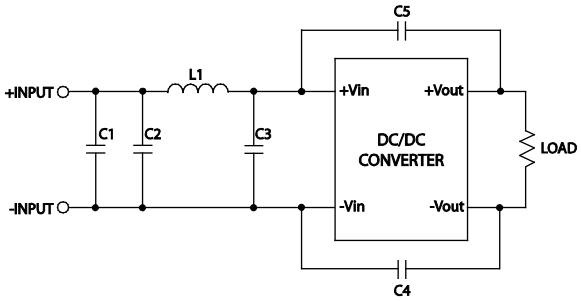
EMI CONSIDERATIONS

Recommended Filter for EN55022 Class A Compliance



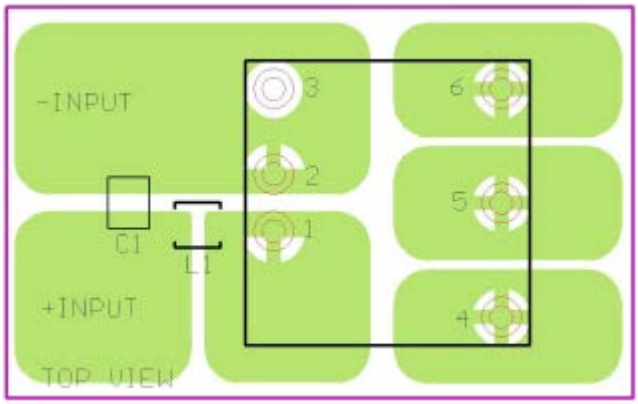
Model	C1	L1
JFC12SXX-30	4.7µF/25V 1812 MLCC	2.2µF SMD Inductor PMT-097
JFC24SXX-30	4.7µF/50V 1812 MLCC	2.2µF SMD Inductor PMT-097
JFC48SXX-30	4.7µF/100V 1812 MLCC	10µF SMD Inductor PMT-070

Recommended Filter for EN55022 Class B Compliance

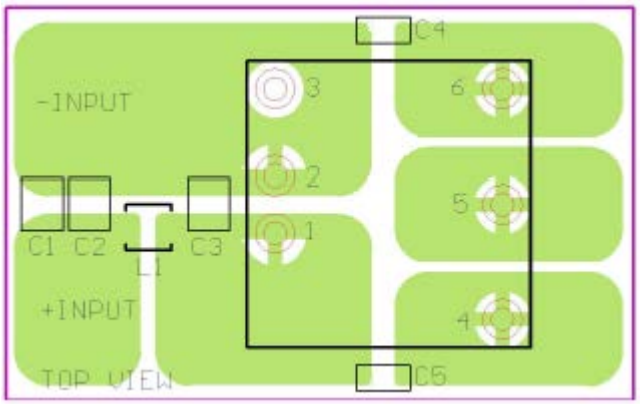


Model	C1	C2	C3	C4 & C5	L1
JFC12SXX-30	4.7µF/25V 1812 MLCC	4.7µF/25V 1812 MLCC	4.7µF/25V 1812 MLCC	1000pF/2kV 1206 MLCC	2.2µF SMD Inductor PMT-097
JFC24SXX-30	4.7µF/50V 1812 MLCC	4.7µF/50V 1812 MLCC	4.7µF/50V 1812 MLCC	1000pF/2kV 1206 MLCC	2.2µF SMD Inductor PMT-097
JFC48SXX-30	4.7µF/100V 1812 MLCC	4.7µF/100V 1812 MLCC	4.7µF/100V 1812 MLCC	2200pF/2kV 1206 MLCC	10µF SMD Inductor PMT-070

Recommended EN55022 Class A Filter Circuit Layout



Recommended EN55022 Class B Filter Circuit Layout



MODEL NUMBER SETUP

JFC	24	S	05	-	30	R	H
Series Name	Input Voltage	Output Quantity	Ouptut Voltage		Output Power	Remote ON/OFF, CTRL, and TRIM Pins	Heatsink
	12: 9-18 VDC	**S:** Single Output	**33:** 3.3 VDC		**30:** 30 Watts	**None:** Positive Logic	**None:** No Heatsink
	24: 18-36 VDC		**05:** 5 VDC			**R:** Negative Logic	**HC:** Heatsink
	48: 36-75 VDC		**12:** 12 VDC			**D:** Without CTRL Pin	
			15: 15 VDC			**G:** Without CTRL and TRIM Pins	
			24: 24 VDC			**F:** Positive Logic without TRIM Pin	
		D: Dual Output	**12:** ±12 VDC			**RF:** Negative Logic without TRIM Pin	
			15: ±15 VDC				
			24: ±24 VDC				

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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