

FEATURES

- Six-Sided Shielding
- Input to Output Isolation
- High Efficiency up to 88%
- Fixed Switching Frequency
- 2:1 Wide Input Voltage Range
- 15 Watts Maximum Output Power
- ISO9001 Certified Manufacturing Facilities
- Compliant to RoHS EU Directive 2002/95/EC
- Industry Standard Pin-Out DM Series Compatible
- Small Size and Low Profile: 1.0 x 1.0 x 0.39 Inches
- UL60950-1, EN60950-1, and IEC60950-1 Licensed
- CE Mark Meets 2006/95/EC, 93/68/EEC, and 2004/108/EC
- Options: Positive Logic Remote On/Off, Without Trim, Without On/Off pin

APPLICATIONS

- Measurement
- Wireless Network
- Telecom/Datacom
- Industry Control System
- Semiconductor Equipment



SPECIFICATIONS: JFC Series

All specifications apply @ 25°C ambient unless otherwise noted

INPUT SPECIFICATIONS

Input Voltage Range	12V nominal input	9 - 18VDC
	24V nominal input	18 - 36VDC
	48V nominal input	36 - 75VDC
Input Voltage Variation	dv/dt	5V/ms max (Complies with EST300 132 part 4.4)
Input Surge Voltage (100ms max)	12V input	36VDC
	24V input	50VDC
	48V input	100VDC
Reflected Ripple Current (nominal Vin and full load)		30mA _{p-p}
Start Up Time (nominal Vin and constant resistive load)		
Power Up		30ms max.
Remote ON/OFF		30ms max.
Start-Up Voltage	12V input	9VDC
	24V input	17VDC
	48V input	33VDC
Shutdown Voltage	12V input	8VDC
	24V input	14.5VDC
	48V input	30.5VDC
Remote ON/OFF (See Note 7)		
Positive Logic	DC-DC ON	Open or 3V < Vr < 12V
(option)	DC-DC OFF	Short or 0V < Vr < 1.2V
Negative Logic	DC-DC ON	Short or 0V < Vr < 1.2V
(standard)	DC-DC OFF	Open or 3V < Vr < 12V

Input Current of Remote Control Pin (nominal Vin)	-0.5mA ~ 1.0mA
Remote Off State Input Current (nominal Vin)	2.5mA

OUTPUT SPECIFICATIONS

Output Voltage	see table
Voltage Accuracy (full load and nominal Vin)	±1%
Voltage Adjustability (See Note 6)	±10%
Output Current	see table
Output Power	15 watts max.
Line Regulation (LL to HL at FL)	±0.2%
Load Regulation (no load to full load)	±0.2%
Minimum Load	0%
Ripple/Noise (20 MHz BW)	see table (measured with a 1μF M/C and a 10μF T/C)
Temperature Coefficient	±0.02% / °C max.
Transient Response Recovery Time (25% load step)	250us

PROTECTION SPECIFICATIONS

Over Voltage Protection	3.3V output	3.7V - 5.4V
	5V output	5.6V - 7.0V
	12V output	13.5V - 19.6V
	15V output	16.8V - 20.5V
Over Load Protection (% of FL at nominal input)		150% typ.
Short Circuit Protection		Hiccup, automatic recovery

GENERAL SPECIFICATIONS

Efficiency	see table
Switching Frequency	400KHz typ.
Isolation Voltage	
Input to Output	1600VDC min.
Input to Case	1000VDC min.
Output to Case.....	1000VDC min.
Isolation Resistance	10GΩ min.
Isolation Capacitance	1000pF max.

ENVIRONMENTAL SPECIFICATIONS

Operating Temperature	-40°C ~ +85°C (with derating)
Storage Temperature	-55°C ~ +125°C
Maximum Case Temperature	105°C
Relative Humidity	5% to 95% RH
Thermal Impedance (See Note 8)	
Natural Convection	18.2°C / Watt
Natural Convection with heat-sink	15.8°C / Watt
Thermal Shock	MIL-STD-810F
Vibration	10~55Hz, 2G, 3 min period, 30 min along X, Y, and Z
MTBF (See Note 1)	
BELLCORE TR-NWT-000332	1.330 x 10 ⁶ hours
MIL-HDBK-217F	5.630 x 10 ⁵ hours

PHYSICAL SPECIFICATIONS

Weight	15g
Dimensions	1.0 x 1.0 x 0.39 inches (25.4 x 25.4 x 9.9 mm)
Case Material	Nickel-coated copper
Base Material	Non-conductive black FR4
Potting Material	Epoxy (UL94-V0)
Shielding	six - sided

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

SAFETY & EMC

Approvals and Standards..... IEC60950-1, UL60950-1, EN60950-1

EMI (See Note 9) EN55022 Class A

ESD..... EN61000-4-2..... Air ± 8KV Perf. Criteria B
Contact ± 6KV

Radiated Immunity.....	EN61000-4-3.....	10V/m	Perf. Criteria A
Fast Transient.....	EN61000-4-4.....	±2KV	Perf. Criteria B
Surge (See Note 10).....	EN61000-4-5.....	±0.5KV	Perf. Criteria B
Conducted Immunity.....	EN61000-4-6.....	10 Vrms	Perf. Criteria A

OUTPUT VOLTAGE / CURRENT RATING CHART

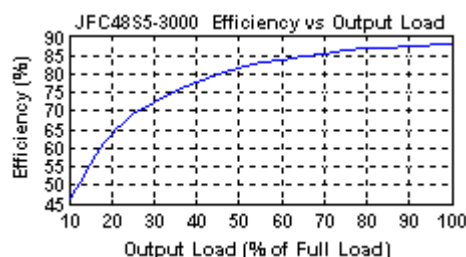
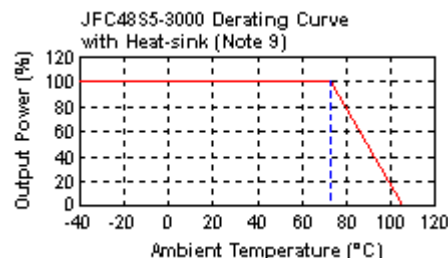
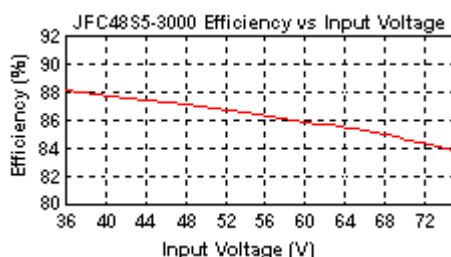
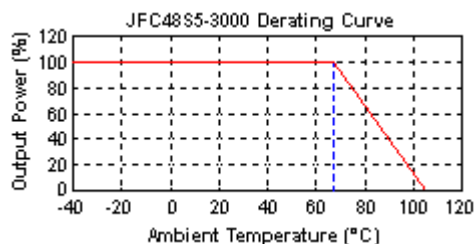
Model Number	Input Range	Output Voltage	Output Current	Ripple & Noise ⁽⁴⁾	Input Current		Efficiency ⁽⁴⁾	Max Capacitor Load ⁽⁵⁾
					No Load ⁽³⁾	Full Load ⁽²⁾		
JFC12S3.3-4000	12VDC (9 – 18 VDC)	3.3 VDC	4000mA	75mVp-p	120mA	1375mA	84%	1000uF
JFC12S5-3000		5 VDC	3000mA	75mVp-p	90mA	1524mA	86%	1000uF
JFC12S12-1300		12 VDC	1300mA	100mVp-p	40mA	1605mA	85%	330uF
JFC12S15-1000		15 VDC	1000mA	100mVp-p	40mA	1506mA	87%	220uF
JFC24S3.3-4000	24VDC (18 – 36 VDC)	3.3 VDC	4000mA	75mVp-p	50mA	671mA	86%	1000uF
JFC24S5-3000		5 VDC	3000mA	75mVp-p	65mA	763mA	86%	1000uF
JFC24S12-1300		12 VDC	1300mA	100mVp-p	20mA	792mA	86%	330uF
JFC24S15-1000		15 VDC	1000mA	100mVp-p	20mA	744mA	88%	220uF
JFC48S3.3-4000	48VDC (36 – 75 VDC)	3.3 VDC	4000mA	75mVp-p	40mA	336mA	86%	1000uF
JFC48S5-3000		5 VDC	3000mA	75mVp-p	40mA	372mA	88%	1000uF
JFC48S12-1300		12 VDC	1300mA	100mVp-p	15mA	387mA	88%	330uF
JFC48S15-1000		15 VDC	1000mA	100mVp-p	15mA	372mA	88%	220uF

*****See Product Standard Table for suffix options*****

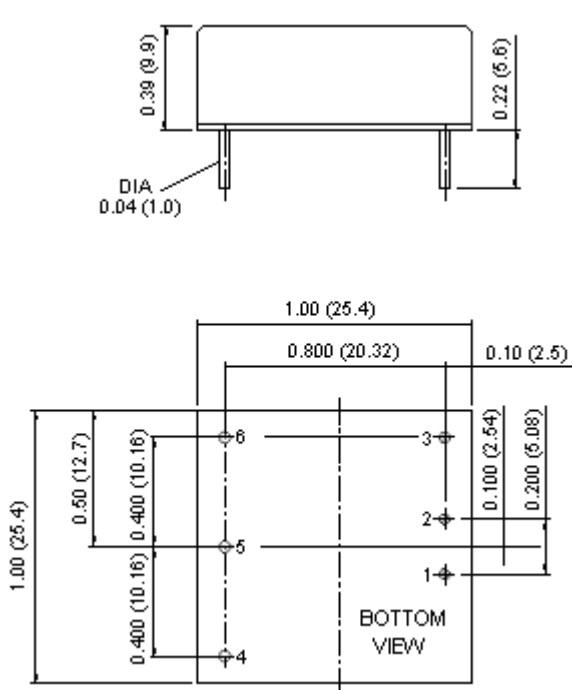
NOTES

1. BELLCORE TR-NWT-000332. Case 1: 50% Stress, Temperature at 40°C.
MIL-HDBK-217F Notice2 @Ta=25 °C, Full load (Ground fixed and controlled environment).
2. Maximum value at nominal input voltage and full load.
3. Typical value at nominal input voltage and no load.
4. Typical value at nominal input voltage and full load.
5. Test by minimum Vin and constant resistive load.
6. 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.
7. The ON/OFF control pin voltage is referenced to -Vin. (See the "Product Standard Table" below for suffix options).
8. Heat Sink is optional. Consult factory for ordering details.
9. The JFC Series can meet EN55022 Class A with external capacitors connected in parallel to the input pins.
Recommended: 12Vin: 10uF/25V
24Vin: 6.8uF/50V
48Vin: 2.2uF/100 * 2 pcs
10. An external filter capacitor is required if the module has to meet EN61000-4-5. The filter capacitor Wall Industries suggests: Nippon chemi-con KY Series, 220uF/100V, ESR 48mΩ.

DERATING CURVES & EFFICIENCY GRAPHS



MECHANICAL DRAWING



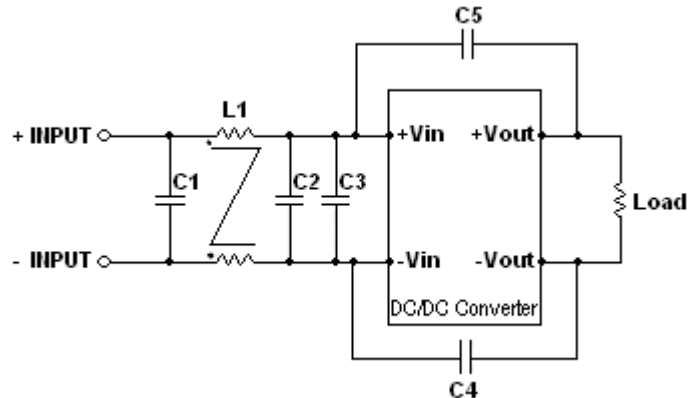
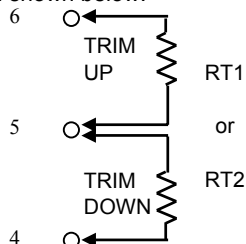
NOTES:

- All dimensions in inches (mm)
Tolerance: X.XX±0.02 (X.X±0.5)
X.XXX±0.01 (X.XX±0.25)
- Pin pitch tolerance: ±0.01 (0.25)

PIN CONNECTION	
PIN	JFC SERIES
1	+INPUT
2	-INPUT
3	ON/OFF
4	+Vout
5	TRIM
6	-Vout

EXTERNAL OUTPUT TRIMMING

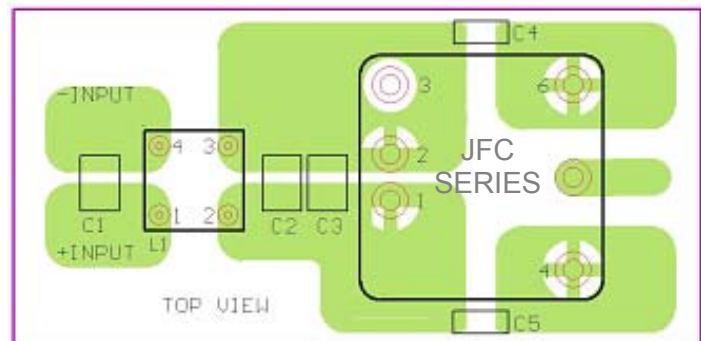
Output can be externally trimmed by using the method shown below.



Recommended Filter for EN55022 Class B Compliance

The components used in Figure 1, together with the manufacturers' part numbers for these components, are as follows:

	C1	C2	C3	C4 & C5	L1
JFC12Sxx-xxxx	10uF/25V	10uF/25V	N/A	470pF/2KV	145uH Common Choke
JFC24Sxx-xxxx	6.8uF/50V	6.8uF/50V	N/A	470pF/2KV	325uH Common Choke
JFC48Sxx-xxxx	2.2uF/100V	2.2uF/100V	2.2uF/100V	470pF/2KV	620uH Common Choke



Recommended EN55022 Class B Filter Circuit Layout

PRODUCT STANDARD TABLE

Option	Suffix
Negative Remote ON/OFF	R
Positive Remote ON/OFF	Blank
Without ON/OFF pin	D
Without ON/OFF & TRIM pin	G
Negative Remote ON/OFF without TRIM pin	RF
Positive Remote ON/OFF without TRIM pin	F