

AFC461 SERIES

ADVANCED ANALOG EMI FILTER

Description

The AFC461 EMI filter will reduce the input line reflected ripple current of the AHV, ATO, ATW, ATR, and AHF line of DC/DC converters to levels below the CEO3 limits of MIL-STD-461.

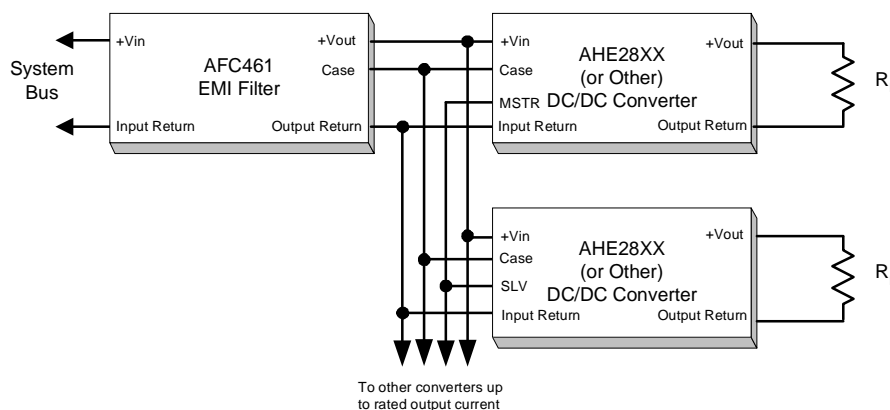
These EMI filters are manufactured in a facility certified to MIL-PRF-38534. All purposes used to manufacture these filters have been qualified to enable Advanced Analog to deliver compliant devices. Three standards temperature grades are offered with screening options. Refer to Part Number section. The CH grade filters are fully compliant to MIL-PRF-38534 for class H. The HB grade converters are processed to MIL-PRF-38534 screening but do not have class H element evaluation as required by MIL-PRF-38534. Two grades are fully tested and operate over the full military temperature range without derating of output power. A commercial grade is also available.



Features

- 4.0 amp Input Current - max.
- 40 dB Noise Reduction min. @100 KHz
- -55°C to +125°C Operation
- Military Screening
- Compatible with ATW, AHE, ATO, ATR and AHF Series DC/DC Converters
- No Derating for -55°C to +125°C Operation
- No Tantalum Capacitors for High Reliability

Typical Application



AFC461 Series

International
IRF Rectifier

Specifications

Parameter	Condition	Min	Typ	Max	Unit
Input Voltage	Steady State	0	28	40	VDC
Input Current	DC Ripple			4.0 1.0	Amps Amps RMS
Input Clamping Voltage	-55°C +25°C +125°C	38.9 42.3 44.9	43.2 47.0 49.9	47.5 51.7 54.8	VDC VDC VDC
Output Voltage ¹	Steady State	$V_{OUT} = V_{IN} - I_{IN} (R_{DC})$			VDC
Output Current	Steady State			4.0	Amps
DC Resistance (R _{DC})	Steady State	0.07	0.10	0.15	Ohms
Power Dissipation	Max. DC Current			1.6	Watts
Noise Reduction	100 KHz to 50 MHz	40			dB
Capacitance	Any pin to case			4200	pF
Isolation	Any pin to case 500VDC	100			MΩ
Operating Temperature	Case	-55		+125	°C
Storage Temperature	Case	-65		+150	°C
Weight				39	grams

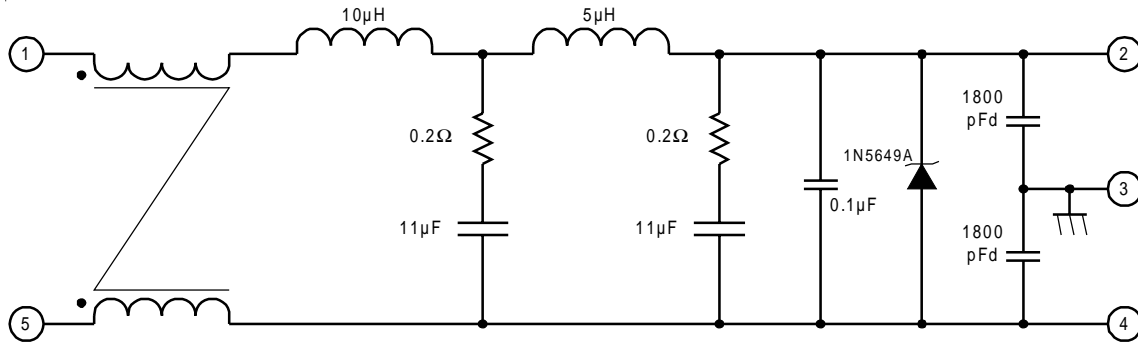
1. Typical Applications result in Vout within 2 % of Vin

Available Screening Levels and Process Variations for AFC461 Series

Requirement	MIL-STD-883 Method	No Suffix	ES Suffix	HB Suffix	CH Suffix
Temperature Range		-20 to +85°C	-55°C to +125°C	-55°C to +125°C	-55°C to +125°C
Element Evaluation					MIL-PRF-38534
Internal Visual	2017	*	Yes	Yes	Yes
Temperature Cycle	1010		Cond B	Cond C	Cond C
Constant Acceleration	2001		500g	Cond A	Cond A
Burn-in	1015	48hrs @ 85° C	48hrs @ 125°C	160hrs @ 125°C	160hrs @ 125°C
Final Electrical (Group A)	MIL-PRF-38534	25°C	25°C	-55, +25, +125°C	-55, +25, +125°C
Seal, Fine & Gross	1014	*	Cond A, C	Cond A, C	Cond A, C
External Visual	2009	*	Yes	Yes	Yes

* Per Commercial Standards

AFC461 Block Diagram



Refer to last page for Pin Desination

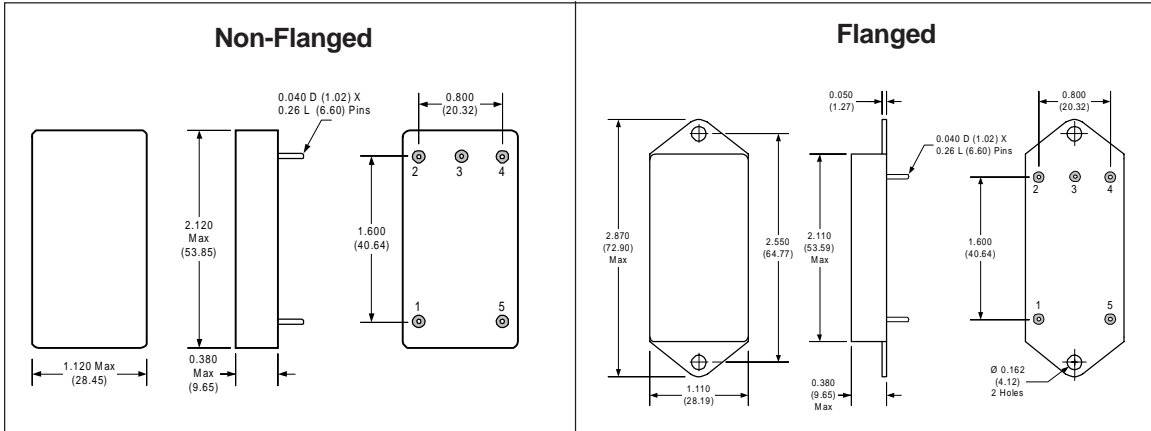
Device Synchronization

Whenever multiple DC/DC converters are utilized in a single system, significant low frequency noise may be generated due to slight difference in the switching frequencies of the converters (beat frequency noise). Because of the low frequency nature of this noise (typically less than 10KHz), it is difficult to filter out and may interfere with proper operation of sensitive systems (communications, radar or telemetry). Advanced Analog offers an option, which provides synchronization of multiple AHE/ATW type converters, thus eliminating this type of noise. To take advantage of this capability, the system designer must assign one of the converters as the master. Then, by definition, the remaining converters become slaves and will operate at the masters' switching frequency. The user should be aware that the synchronization

system is fail-safe; that is, the slaves will be continue operating should the master frequency be interrupted for any reason. The layout must be such that the synchronization output of the master device is connected to the synchronization input of each slave device. It is advisable to keep this run short to minimize the possibility of radiating the 250KHz switching frequency. A typical connection is illustrated on the cover sheet of this document.

The appropriate converters must be ordered to take advantage of this feature. After selecting the converters required for the system, a 'MSTR' suffix is added for the master converter part number and an 'SLV' suffix is added for slave part number. See Part Number section of the applicable converter data sheets.

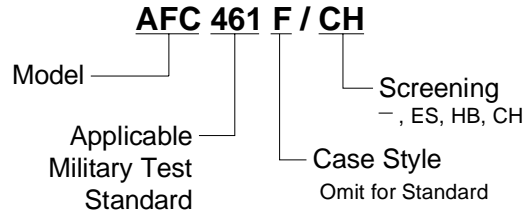
AFC461 Case Outlines



Pin Designation

Pin No.	Designation
1	+ Vin
2	+ Vout
3	Case
4	Output Return
5	Input Return

Part Numbering



Available Standard Military Drawing (SMD) Cross Reference

Standard Military Drawing PIN	Vendor CAGE Code	Vendor Similar PIN
91020-01HXA	52467	AFC461/CH
91020-01HZA	52467	AFC461F/CH