

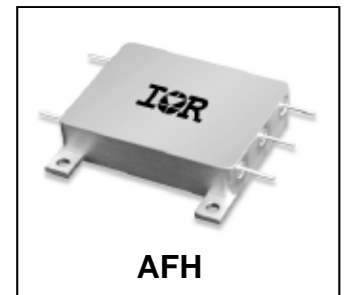
**EMI FILTER
HYBRID-HIGH RELIABILITY**

Description

The AFH Series EMI filter has been designed to provide full compliance with the input line reflected ripple current requirement specified by CE03 of MIL-STD-461C over the extended military temperature range while operating in conjunction with the corresponding AMA, AMF and AMR series of DC-DC converters. These filters are offered as part of a family of high reliability conversion products providing single, dual and triple output voltages while operating from nominal +28 volt input line. Other converters operating with a similar switching frequency will also benefit by use of this device.

These EMI filters are hermetically packaged in a seam welded enclosure utilizing axially oriented copper-core pins which minimize resistive DC losses. This package has been configured to complement the AMA, AMF and AMR packages as a convenience in system installation and is fabricated with IR HiRel rugged ceramic lead-to-package seal assuring long term hermetic seal integrity in harsh environments.

Designed to meet the stringent requirements of military and aerospace use, these devices are manufactured in a facility fully qualified to MIL-PRF-38534, and are available in two screening grades. The flight grade is designed with the requirements of MIL-PRF-38534 for class K.

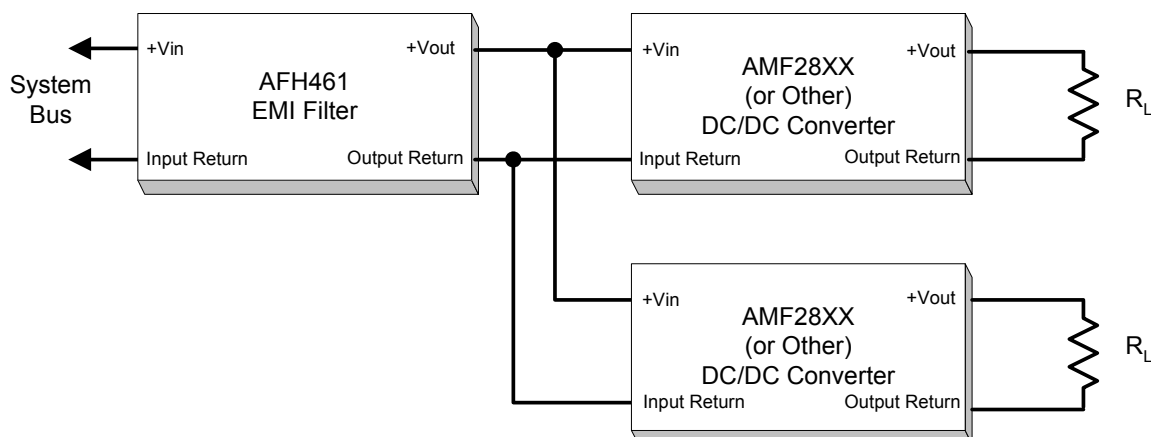


Features

- Up to 2.0 A Output Current
- Attenuation > 60dB @ 500 kHz
- Low Profile Seam Welded Package
- Ceramic Insulated Copper Core Pins
- Operation Over Full Military Temp. Range
- No Derating for -55°C to +125°C

The EM grade is processed and screened to a lower grade requirement. Flight grade are tested to meet the complete group "A" test specifications over the full military temperature range with no derating. The design does not meet MIL-STD-975 voltage derating requirements for some internal components. Variations in electrical, mechanical and screening requirements can be accommodated. Contact IR HiRel San Jose for special requirements.

Typical Connection Diagram



Specifications

Absolute Maximum Ratings, Note 1	
Input Voltage	-80V to +80V, Note 2
Input Current	3.0A
Lead Soldering Temperature	+300°C for 10 seconds
Case Temperature-Operating	-55°C to +125°C
Case Temperature-Storage	-65°C to +135°C

Electrical Performance Characteristics -55°C ≤ T_{CASE} ≤ +125°C, 0 ≤ V_{IN} ≤ +50V unless otherwise specified

Parameter	Group A Subgroup	Conditions	Min.	Nom.	Max.	Unit
Input Voltage	1, 2, 3	I _{IN} < 500 A	0	—	+40	V _{DC}
		Transient, Note 2	-50	—	+50	
Output Current, Note 3			—	—	2.0	A _{DC}
DC Resistance, Note 4	1	T _C = 25°C	—	150	250	mΩ
Power Dissipation		Maximum Current, T _C = 25°C	—	—	1.0	W
Noise Reduction	4, 5, 6	T _C = 25°C	—	—	—	dB
		1.0 kHz	-1.0	—	+1.0	
		200 kHz - 500 kHz	40	—	—	
		500 kHz - 10 MHz	60	—	—	
Isolation	1	Any Pin to Case, Tested @ 500V _{DC}	100	—	—	MΩ
Capacitance	1, 2, 3	Measured between any Pin and Case	32	44	48	nF
Device Weight		Slight variation with Case Style	—	30	—	g

Notes to Specifications

1. Operation above maximum ratings may cause permanent damage to the device. Operation at maximum ratings may degrade performance and affect reliability.
2. Device can tolerate ± 100 Volt transient whose duration is ≤ 100 ms when R_S ≥ 0.5 Ω.
3. Derate Output Current linearly from 100% at 125°C to 0% at 135°C.
4. DC resistance is the total resistance of the device and includes the sum of the input to output resistance and the *return in* to *return out* resistance paths.

Typical Filter CE03 Performance

Fig 1. AHF2805S CE03 Performance without AFH461 Filter

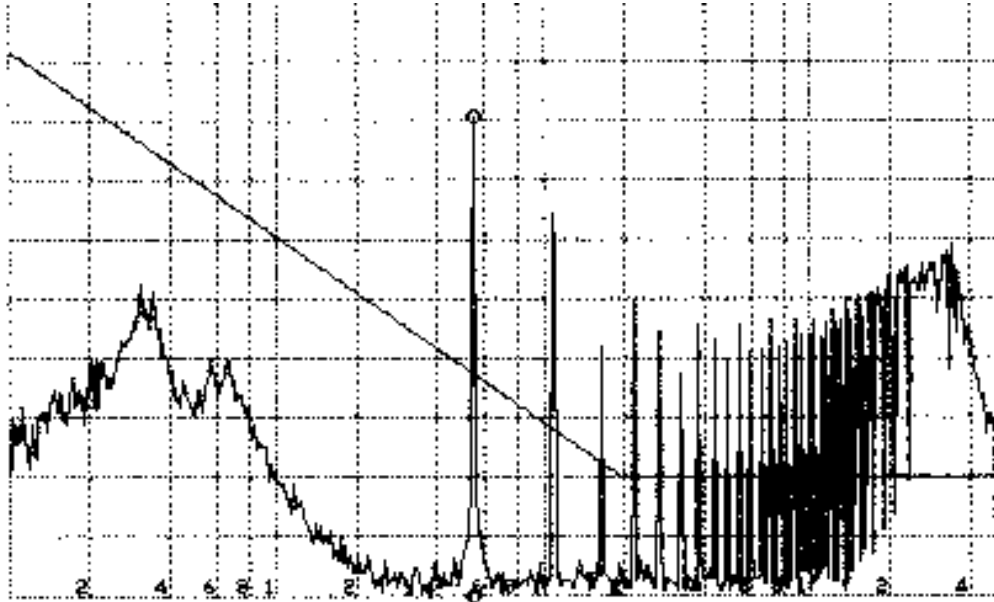
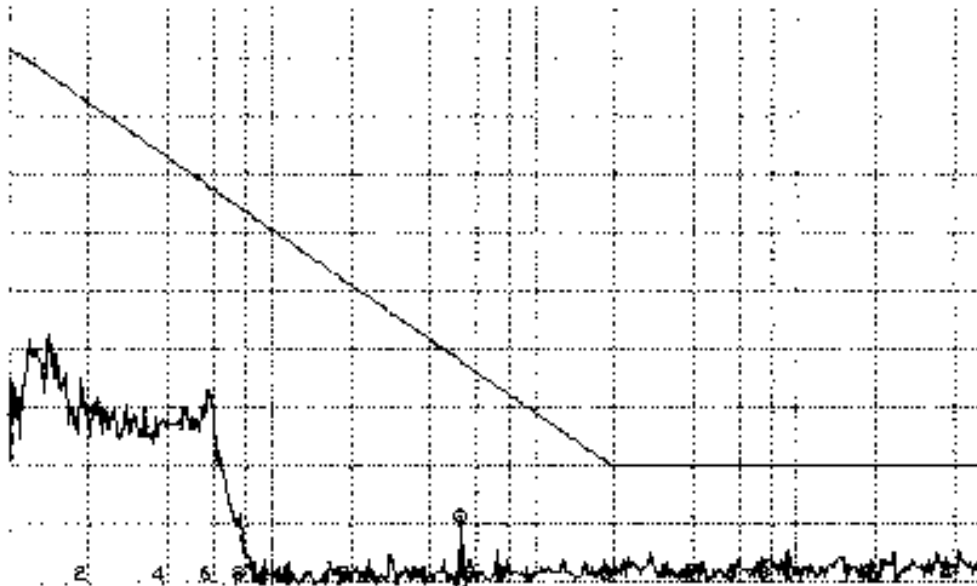


Fig 2. AHF2805S CE03 Performance with AFH461 Filter



Mechanical Outline

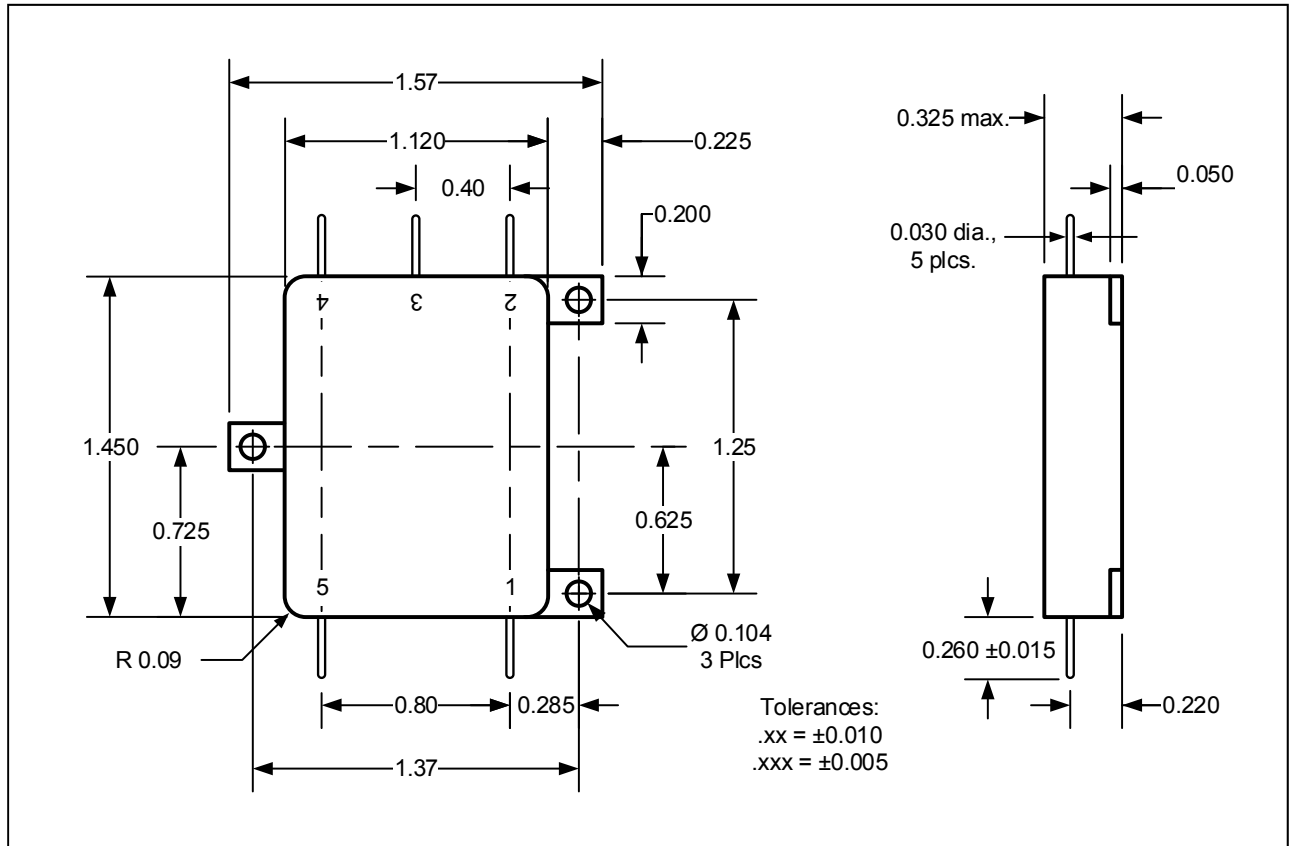
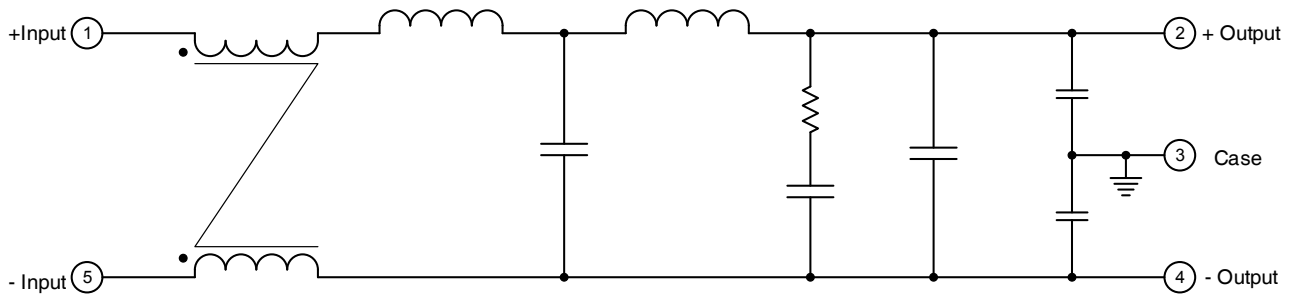


Fig 3. Block Diagram



Pin Designation

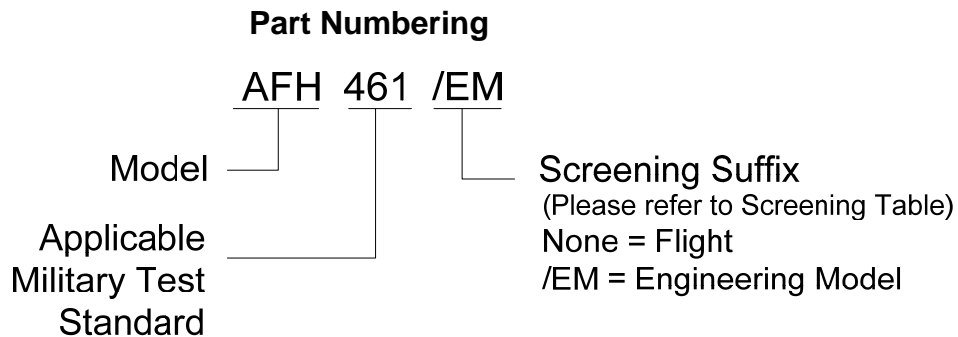
Pin #	Designation
1	+ Input
2	+ Output
3	Case Ground
4	Output Common
5	Input Common

Available Screening Levels and Process Variations

Requirement	MIL-STD-883 Method	Flight No Suffix	/EM Suffix ①
Temperature Range	—	-55°C to +125°C	-55°C to +125°C
Element Evaluation	—	MIL-PRF-38534, Class K	—
Internal Visual	2017	Yes	Yes
Temperature Cycle	1010	Cond C	Cond C
Constant Acceleration	2001	3000 Gs	500 Gs
PIND	2020	Cond A	—
Burn-in Interim Electrical @ 160 hrs	1015	320 hrs @ 125°C (2x160 hrs)	48 hrs @ 125°C
Final Electrical (Group A) Read & Record Data	MIL-PRF-38534 & Specification	-55°C, +25°C, +125°C	-55°C, +25°C, +125°C
PDA (25°C, interim to final)	—	2%	—
Seal, Fine & Gross	1014	Cond A, C	Cond A, C
Radiographic	2012	Yes	—
External Visual	2009	Yes	Yes

Note:

① Any Engineering Model (EM) build with the “EM” Suffix shall only be form, fit and functional equivalent to its Flight Model (FM) counterpart, and it may not meet the radiation performance. The EM Model shall not be expected comply with MIL-PRF-38534 flight quality/workmanship standards, and configuration control. An EM build may use electrical equivalent commercial grade components. IR HiRel will provide a list of non-compliance items upon request.



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The information given in this document shall be in no event regarded as guarantee of conditions or characteristic. The data contained herein is a characterization of the component based on internal standards and is intended to demonstrate and provide guidance for typical part performance. It will require further evaluation, qualification and analysis to determine suitability in the application environment to confirm compliance to your system requirements.

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