

**AMH461 SERIES**

**EMI FILTER  
 HYBRID / HIGH RELIABILITY**

**Description**

The AMH 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 full military temperature range while operating in conjunction with the corresponding AHF 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.

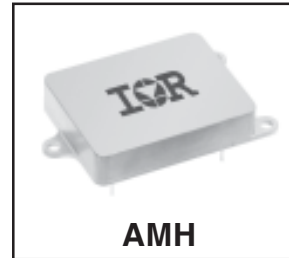
These EMI filters are hermetically packaged in a seam welded enclosure utilizing axially oriented copper-core pins which minimize resistive DC losses. This package has been configured to complement the AHF package as a convenience in system installation and is fabricated with International Rectifier's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

Designed to meet the derating 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 CH grade intended for flight use is fully compliant to the requirements of MIL-PRF-38534 for class H. The HB grade is processed and screened to the class H

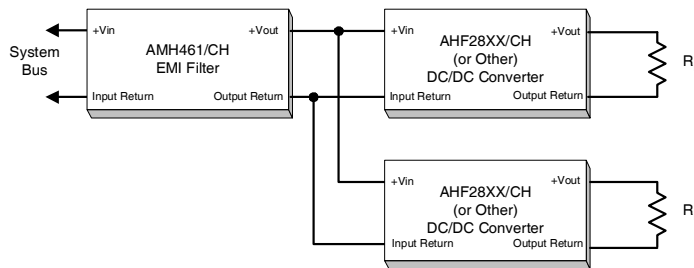
**Features**

- 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

requirements, but does not include element evaluation. The ES grade is processed and screened to a lower grade requirement. Class CH grade and class HB grade are tested to meet the complete group "A" test specification over the full military temperature range with no derating. Variations in electrical, mechanical and screen requirements can be accommodated. Contact IR Santa Clara for special requirements.



**Typical Connection Diagram**



Specifications

ABSOLUTE MAXIMUM RATINGS <i>Note 1</i>		
Input Voltage	-80V to +80V <i>Note 2</i>	
Input Current	2.0 A	
Power Dissipation	2.0 W	
Lead Soldering Temperature	300°C for 10 seconds	
Case Temperature	Operating	-55°C to +125°C
	Storage	-65°C to +135°C

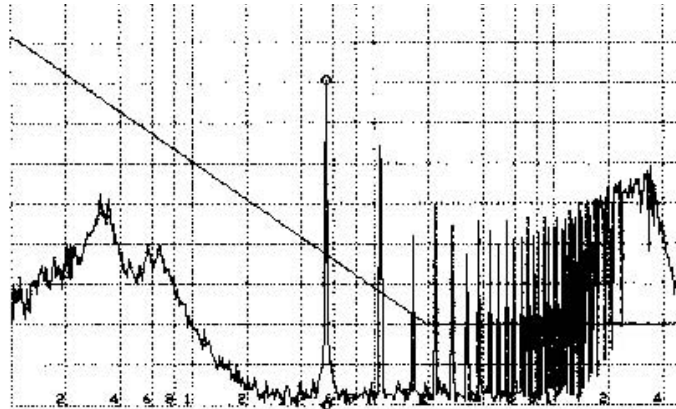
Electrical Characteristics  $-55^{\circ}\text{C} \leq T_{\text{CASE}} \leq +125^{\circ}\text{C}$ ,  $0 \leq V_{\text{IN}} \leq +50$  unless otherwise specified

Parameter	Group A Subgroups	Test Conditions	Min	Nom	Max	Unit
INPUT VOLTAGE	1, 2, 3	$I_{\text{IN}} \leq 500\mu\text{A}$	0		+40	$V_{\text{DC}}$
		Transient <i>Note 2</i>	-50		+50	
OUTPUT CURRENT <i>Note 3</i>					2.0	$A_{\text{DC}}$
DC RESISTANCE <i>Note 4</i>	1	$T_{\text{C}} = 25^{\circ}\text{C}$		150	250	$m\Omega$
POWER DISSIPATION		Maximum Current $T_{\text{C}} = 25^{\circ}\text{C}$			1.0	W
NOISE REDUCTION	4, 5, 6	$T_{\text{C}} = 25^{\circ}\text{C}$	-1.0	+1.0		dB
		1KHz	40	50		
		200 KHz - 500 KHz 500 KHz - 10 MHz	60	80		
ISOLATION	1	Any Pin to Case Tested @ 500VDC	100			$M\Omega$
CAPACITANCE	1, 2, 3	Measured Between Any Pin and Case	30	44	46	nF
DEVICE WEIGHT		Slight Variations with Case Style		30		g

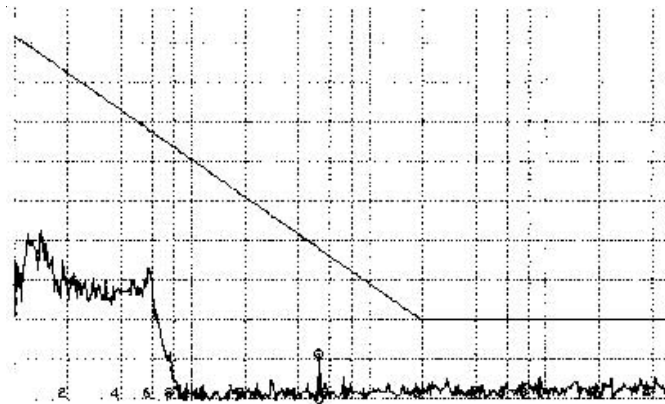
Notes to Specifications

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  $\pm 100$  Volt transient whose duration is  $\leq 100$  ms when  $R_s \geq 0.5 \Omega$ .
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**



**AHF2805S CE03 Performance without AMH461 Filter**

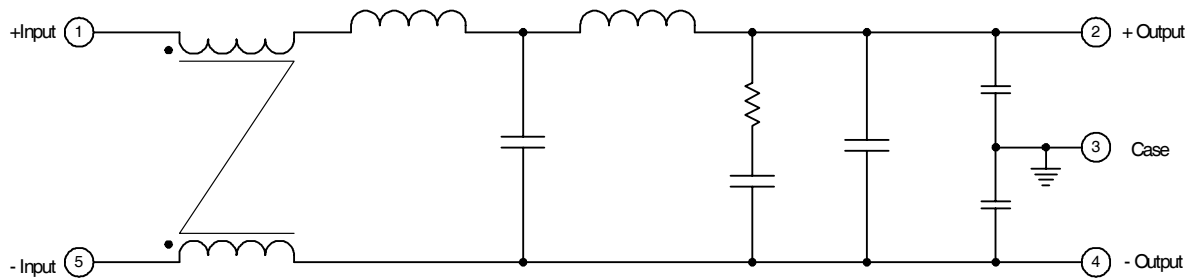


**AHF2805S CE03 Performance with AMH461 Filter**

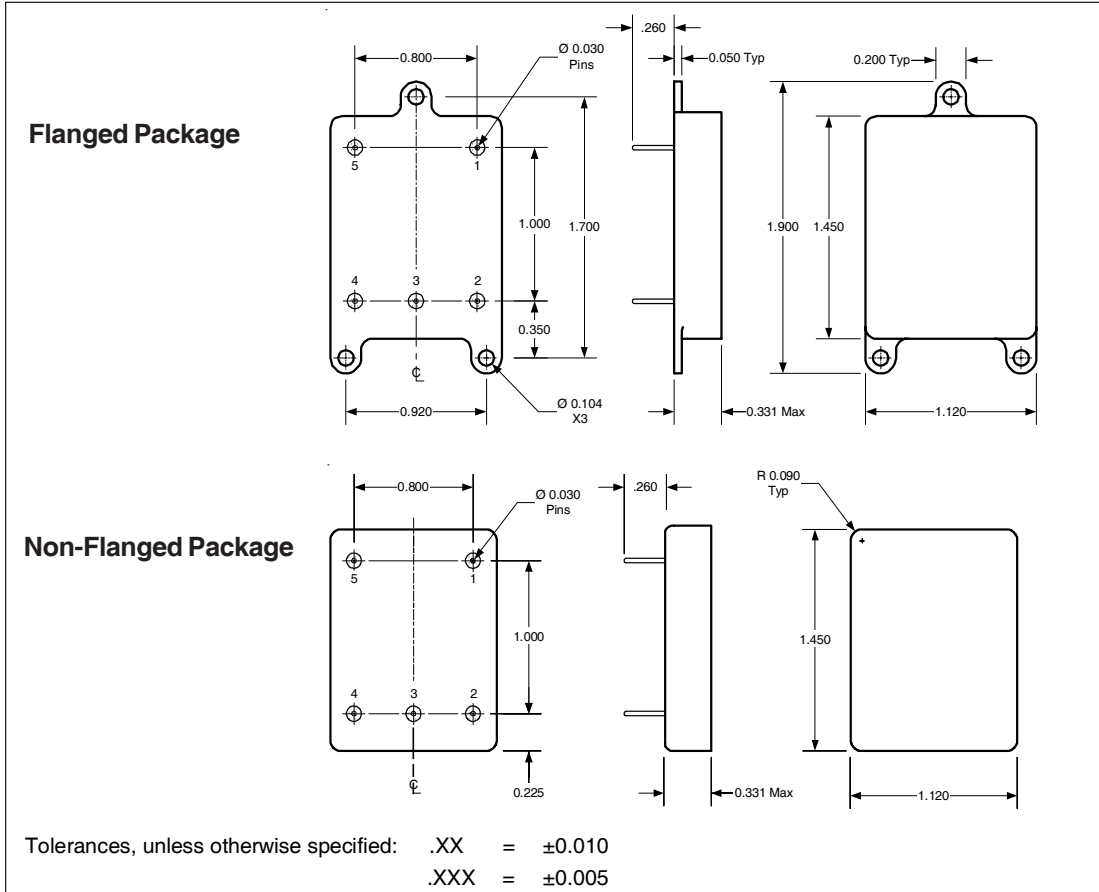
Available Screening Levels and Process Variations for AMH461 Series

Requirement	MIL-STD-883 Method	/CH Suffix	/HB Suffix	/ES Suffix
Temperature Range		-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 C	Cond C	Cond B
Constant Acceleration	2001	Cond A	Cond A	500g
Burn-in Interim Electrical @ 0 hrs	1015	160 hrs @ 125°C	160 hrs @ 125°C	96 hrs @ 125°C
Final Electrical (Group A) Read & Record Data	MIL-PRF-38534 & Specification	-55°, +25°, +125°C	-55°, +25°, +125°C	+25°C
PDA (25°C, interim to final)		10%	10%	—
Seal, Fine & Gross	1014	Cond A, C	Cond A, C	Cond A, C
External Visual	2009	Yes	Yes	Yes

AMH461 Block Diagram



AMH461 Case Style Outline

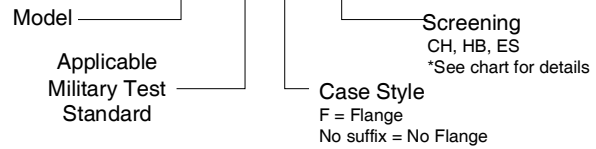


Pin Designation

Pin No.	Designation
1	Positive Input
2	Positive Output
3	Case Ground
4	Output Common
5	Input Common

Part Numbering

AMH 461 F / CH



\* Note: Refer to the Chart on page 4

International  
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Visit us at [www.irf.com](http://www.irf.com) for sales contact information.

Data and specifications subject to change without notice. 06/2004