#### PD-94587

# International Rectifier

# AMH461 SERIES

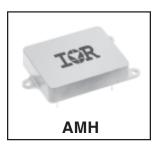
# EMI FILTER HYBRID / HIGH RELIABILITY

# 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

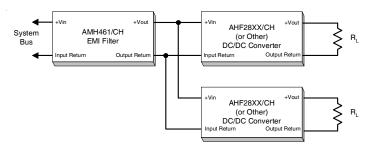


#### **Features**

- 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**



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#### **Specifications**

ABSOLUTE MAXIMUM RATINGS Note 1

-80V to +80V Note 2 Input Voltage

2.0 A Input Current 2.0 W Power Dissipation

Lead Soldering Temperature 300°C for 10 seconds

Case Temperature Operating -55°C to +125°C

Storage -65°C to +135°C

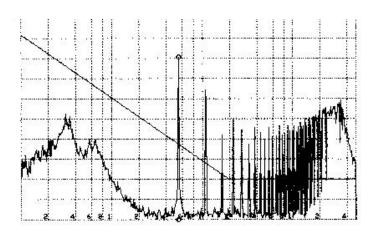
#### **Electrical Characteristics** $-55^{\circ}C \le T_{CASE} \le +125^{\circ}C$ , $0 \le V_{IN} \le +50$ unless otherwise specified

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

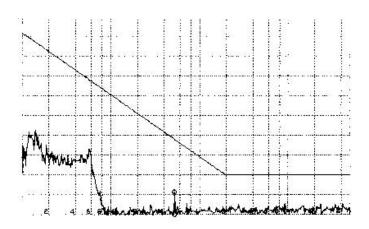
#### Notes to Specifications

- 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

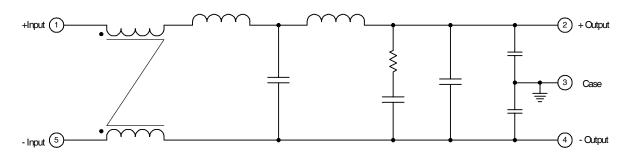
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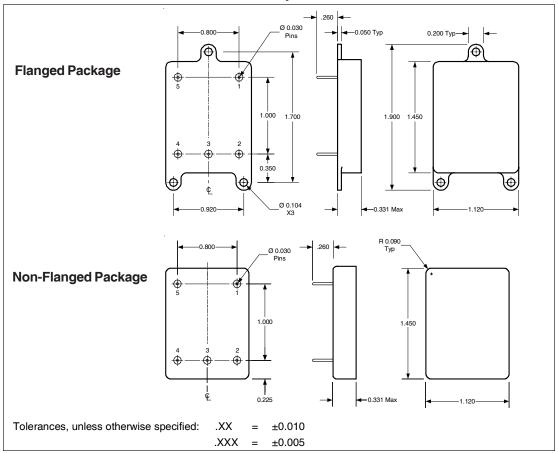
## Available Screening Levels and Process Variations for AMH461 Series

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**



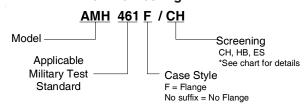
#### **AMH461 Case Style Outline**



#### **Pin Designation**

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

#### **Part Numbering**



<sup>\*</sup> Note: Refer to the Chart on page 4

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